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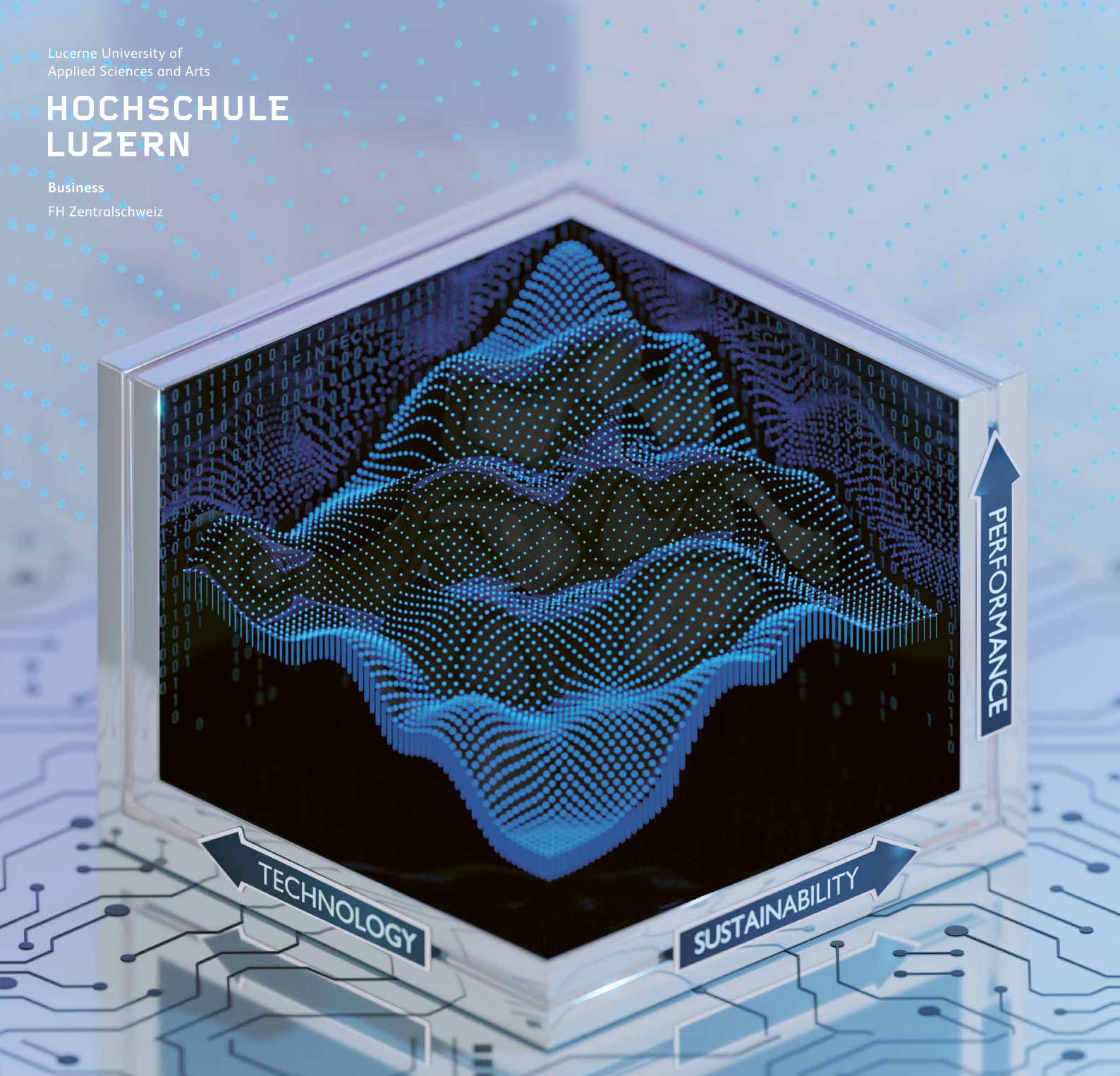

IFZ FINTECH STUDY 2022

An Overview of Swiss FinTech

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Preface

After the size of the Swiss FinTech industry, measured in terms of the number of active Swiss FinTech companies, increased year on year in the past, a decline was recorded for the first time in 2021. At the end of 2021, Switzerland was home to 384 FinTech companies, which corresponds to a decline of 21 companies compared to the previous year. Despite this seemingly negative development, there are also positive trends, such as the record high in venture capital activity. All these developments, whether positive or negative, should be closely followed by the Swiss financial centre, which is one of the global market leaders, because the FinTech industry, which can be seen as the digital spearhead of banking, can make a positive contribution to maintaining the competitiveness of the entire financial sector. However, this will only succeed if the framework conditions for the corresponding companies are favourable.

This study therefore aims to monitor the development of the Swiss FinTech industry, analogous to previous editions of the IFZ FinTech Study. In particular, the focus is to analyse trends in the industry as a whole as well as in the business models of domestic FinTech companies and to identify current challenges in order to enable an assessment of the state of health as well as an identification of possibly necessary adjustments in the industry's environment. In addition, the study shows selected deep dives into areas relevant to the Swiss financial sector that are affected by developments in the FinTech sector. Therefore, it offers insights for a broad spectrum of stakeholders in the Swiss financial sector, be they FinTech companies, traditional financial institutions, or political decision-makers.

The study is structured as follows. Chapter 1 gives an overview of the definitions and methodological approaches applied in this study, while Chapter 2 discusses the results of the empirical analysis of the business models and perceived challenges of Swiss FinTech companies. The business models of globally leading FinTech companies are described in Chapter 3. Chapter 4 shifts the focus from FinTech companies to the quality of the surrounding factors that are relevant for the sector and compares different locations in this respect. In the subsequent chapters, various deep dives follow. While a deep dive into the political and regulatory environment in Switzerland is given in Chapter 5, Chapter 6 gives an overview of the activities with regard to cryptographic assets in Switzerland and Liechtenstein, and Chapter 7 takes an in-depth look at funding and valuation aspects in the Swiss and global FinTech sector. In Chapter 8, the results of a survey of Swiss banks on their views on FinTech are discussed, with the topic of open finance in wealth management segregated into a separated Chapter 9. The two final deep dives in Chapter 10 and Chapter 11 deal with developments in sustainability and cyber security in the FinTech sector, respectively. A summary of the findings, written in 6 theses, is given in Chapter 12, while Chapter 13 lists the factsheets on the Swiss FinTech companies that participated in the survey conducted for this study.

At this point we would like to thank these companies, but also the guest authors, for their valuable contribution. Our thanks also go to the sponsors of this study, namely Finnova, Inventx, SIX, Swiss Bankers Prepaid Services, Swisscom, and Synpulse, for their monetary and content-related support.

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1. Definition and Framework of the FinTech Ecosystem

By Thomas Ankenbrand & Denis Bieri, Institute of Financial Services Zug IFZ

Although the term "FinTech", as an abbreviation of finance and technology, has become established in the financial services industry, it has no globally applicable definition. Consequently, the various publications by different authors on this topic are difficult to compare with each other, as the term is interpreted differently in each case. In order to achieve comparability with previous editions of the IFZ FinTech Study, the definition of FinTech in this study is left unchanged and reads as follows:

> FinTech is defined as technology-based solutions for innovative products, services, and processes in the financial industry, improving, complementing, and/or disrupting existing offerings. Hence, FinTech companies are firms whose main activities, core competencies, and/or strategic focus lie in developing those solutions.

Hence, the three core characteristics of this definition are the need of FinTech companies to *apply technology* to deliver *innovation* in the *financial services industry*. The assessment of the degree of innovation of a solution is inherently difficult as innovation is complex, multidimensional, and unpredictable (Murray & Blackman, 2006). Due to the continuous development of the FinTech sector, this assessment is also changing. A solution that was once considered innovative can lose this status through the emergence of further innovations and is thus also subjective in nature. The other two core characteristics, i.e., the use of technology and the targeting of financial services, can be evaluated comparably well.

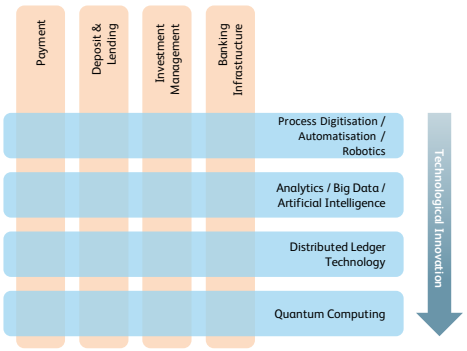

Figure 1.1: FinTech grid

This study distinguishes between four different types of technologies and financial services. An illustration of this is provided by the FinTech grid in Figure 1.1 which serves as the structuring framework for this study and against which each FinTech solution, and thus each company, can be classified. With regard to the applicable technologies on the vertical axis, a distinction is made between the four categories: *Process Digitisation / Automatisation / Robotics*, *Analytics / Big Data / Artificial Intelligence*, *Distributed Ledger Technology*, and *Quantum Computing*, whereby an increasing degree of innovation is generally assumed in this order.

The horizontal axis in Figure 1.1 shows the business areas from the financial services industry in which a FinTech company can operate. Again, a distinction is made between four areas, i.e., *Payment*, *Deposit & Lending*, *Investment Management*, and *Banking Infrastructure*. While the first three product areas are closely related to traditional financial services and therefore comparatively easy to understand and delineate, *Banking Infrastructure* is a somewhat broader area that includes services with regard to the user interface (e.g., personal finance management tools), process

enhancement (e.g., regulatory technology), and infrastructure technology (e.g., exchanges for cryptographic assets). Note that technology-driven solutions related to the insurance business, so-called "InsurTech" solutions, are not considered in this framework, and hence are not part of this study, as corresponding products and services clearly differ from the financial services industry.[1]

With regard to the definition of FinTech used in this study, the lack of a restriction regarding the age of a company should also be noted. In this study, therefore, not only start-ups are considered, but also older companies that meet the aforementioned definition of FinTech. However, a company must be registered in the Swiss Commercial Register to be considered in this study.

While the Swiss FinTech sector is structured by means of the FinTech grid in Figure 1.1, a further framework is needed to assess the companies' business models in a structured way. For this purpose, the Business Model Canvas by Osterwalder and Pigneur (2010) is employed in this study, an approach to break down the key components of a business. It comprises nine building blocks, on the basis of which each business model can be described. In addition to the value proposition, which describes the added value that a company's customers receive by purchasing its products and/or services, there are four building blocks on the production side and four on the distribution side of a business model. The production side includes key partners, key resources, key activities, and cost structure, while the distribution side includes customer relationships, channels, customer segments, and revenue models. Note that, as in previous editions of this study, customer relationships and channels are understood as a single block due to their similarity in content, while the cost structure of business models in the Swiss FinTech sector is not specifically evaluated due to confidentiality.[2]

Note also that the Business Model Canvas serves as the basis for the factsheets presented in Chapter 13 for the companies that participated in the survey conducted as part of the present study.

[1] For an overview of the European InsurTech sector, see Ankenbrand, Frigg, and Schreiber (2021).

[2] More detailed information on the eight building blocks considered, such as their specific definition in the context of the current and previous editions of the IFZ FinTech Study, can be found in Ankenbrand, Bieri, Dietrich, and Illi (2020).

2. Swiss FinTech Companies

By Thomas Ankenbrand, Denis Bieri & Timon Kronenberger, Institute of Financial Services Zug IFZ

This second chapter presents the current status and trends in the Swiss FinTech sector. The analysis includes all companies that qualify under the definition of FinTech in Chapter 1 and are legally incorporated in Switzerland. The basis of the analysis is a proprietary database, which was structured according to the Business Model Canvas introduced in Chapter 1 and compiled in the following three steps:

Step 1: Relevant companies for this study were identified by observing the sector throughout the year 2021. Each of these companies was classified into the FinTech grid based on the main product area in which the company is most active and the most innovative technology it uses for the services and/or products it offers, with the necessary information collected via the company's website.

Step 2: Publicly available information was collected for each company. This information was gathered, for example, from a company's own website as well as from other public sources such as the commercial register. In addition, data provided by the companies in earlier editions of the IFZ FinTech Study were also taken into account.

Step 3: Each company was asked to review the collected data and fill in missing information as well as to give an assessment of the urgency of eight predefined challenges in the industry. This survey of 384 identified Swiss FinTech companies was conducted between December 2021 and January 2022, with a total of 155 participating, corresponding to a response rate of 40 percent.

Note that apart from the breakdown of the sector in the FinTech grid and the information that comes from the commercial register and thus has a high quality and consistency, only information verified by the survey is taken into account in the following evaluation, which is divided into three parts. While Section 2.1 analyses general information about FinTech companies and their business models, Section 2.2 deals with an evaluation of the challenges perceived in the sector, and Section 2.3 provides a summary of the chapter.

2.1. Overview of Swiss FinTech Companies

In the following subsections, general figures on the Swiss FinTech sector as a whole and in-depth information on the companies' business models are given.

2.1.1 General Figures on the Sector

In previous editions of the IFZ FinTech Study, growth in the Swiss FinTech sector was shown for each year. At the end of 2015, at the time of the first assessment, the number of companies was 161, but by the end of 2020 it had increased to 405. In 2021, a decline in the number of active Swiss FinTech companies was observed for the first time, as shown in Figure 2.1 which illustrates the number of companies by product area (left-hand graph) and technology category (right-hand graph). At the end of the year, the sector comprised 384 companies, which corresponds to an absolute decline of 21 companies and a relative decline of 5.2 percent year-over-year. This development was already becoming apparent in recent years, for which ever lower growth rates were reported, and is also consistent with the continuous relative deterioration of the Swiss environment for FinTech companies.[1] Comparing the number of FinTech companies with the total number of registered Swiss companies in the tertiary sector (Federal Statistical Office, 2021) yields that FinTech companies

[1] See Chapter 4 for more information on the quality of the Swiss FinTech environment.

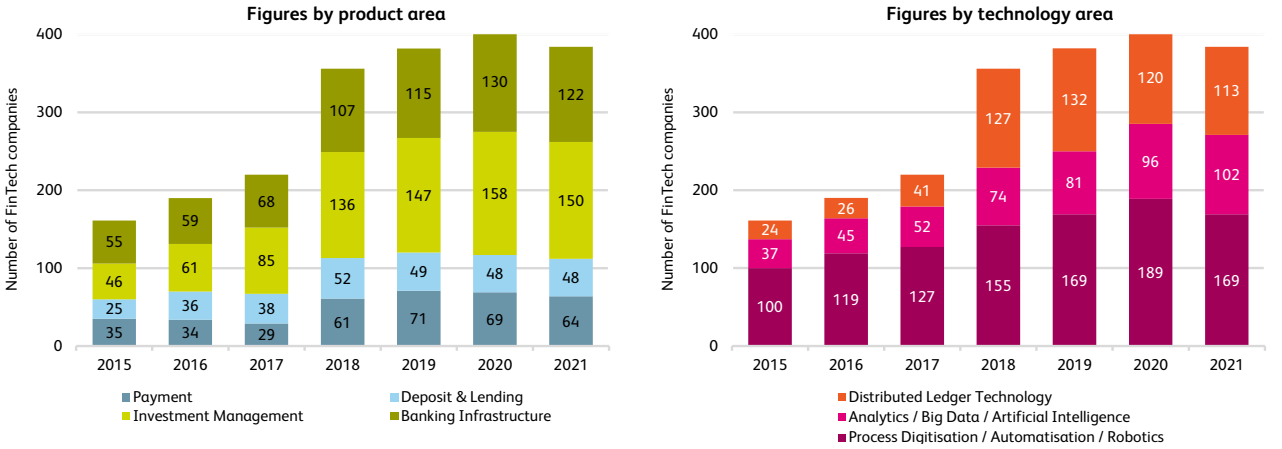

Figure 2.1: Number of FinTech companies by year, and by product area (left-hand graph) and technology category (right-hand graph) (n=384)

only account for around 0.08 percent. In other words, only about one in 1200 companies in the tertiary sector in Switzerland qualifies under the definition of FinTech in Chapter 1.

With regard to the product areas targeted by Swiss FinTech companies, a decline can be observed for *Investment Management* and *Banking Infrastructure* (-8 companies each), and *Payment* (-5 companies), while for *Deposit & Lending* the number of companies remained stable year-over-year. From the technological perspective, a lower number of companies applying concepts from the categories of *Process Digitisation / Automatisation / Robotics* (-20 companies) and *Distributed Ledger Technology* (-7 companies) is observed in a year-over-year comparison. For the latter category, this trend of decreasing numbers of companies has already manifested itself in the years following the emergence of the "Crypto Valley" in 2018 and 2019, while for the former category, it is the first time that a decrease has been recorded. In contrast, Swiss FinTech companies seem to be increasingly using technological concepts from the field of *Analytics / Big Data / Artificial Intelligence*. This development has been evident since the first edition of the IFZ FinTech Study and continued last year (+6 companies), despite the overall decline in the number of FinTech companies in Switzerland.

A breakdown of the year-on-year changes observed in the total sample of Swiss FinTech companies is illustrated in Figure 2.2. The decline of 21 companies in comparison to the year 2020 can be explained by three factors. First, a total of 69 companies were excluded from the sample, e.g., due to business closure, dissolution of a Swiss legal entity, relocation abroad, mergers and acquisitions with or by another company, or a shift of the business model to a non-FinTech sector.

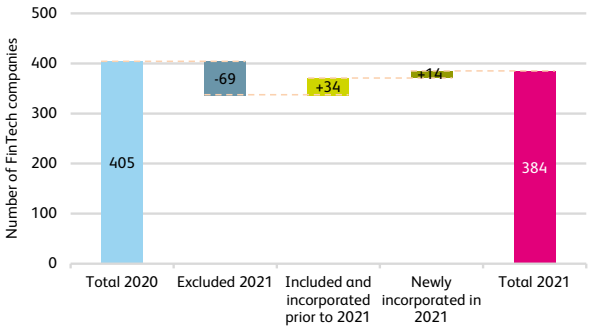

Figure 2.2: Year-over-year change in total number of Swiss FinTech companies

On the other hand, a total of 48 companies were newly included in the sample compared to the year 2020. Of these 48 companies, 34 were founded before 2021 but

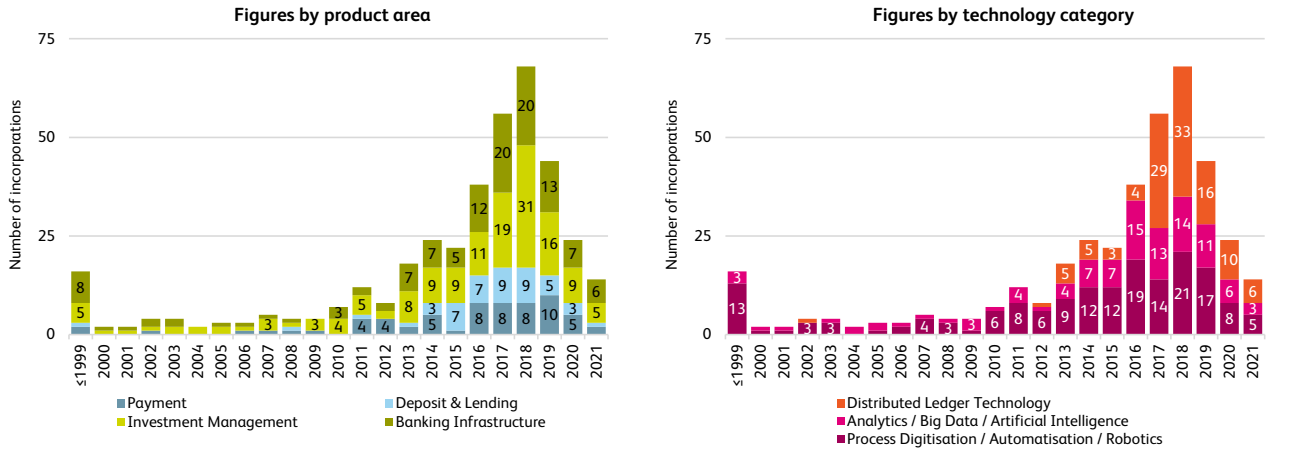

Figure 2.3: Number of FinTech company incorporations per year by product area (left-hand graph) and technology category (right-hand graph) (n=384)

did not meet the definition of FinTech as described in Chapter 1 or did not appear publicly until then. Finally, 14 new FinTech companies were incorporated in Switzerland in 2021.

A general overview of the number of Swiss FinTech company incorporations per year is shown in Figure 2.3, again distinguishing between the product area and the technology category view. It reveals that of the total 384 Swiss FinTech companies, most were legally incorporated in 2018 (68 companies), followed by the years 2017 (56 companies) and 2019 (44 companies). A large part of the Swiss FinTech sector has therefore only emerged in recent years. While the number of incorporations in 2021 may seem comparatively small at 14 given that the total number of newly founded companies in Switzerland in the same year amounted to over 50,000 (IFJ, 2021), this needs to be interpreted with caution. As the evaluations of the last few years have shown, many FinTech companies are not publicly active for the first few months after their legal incorporation and thus operate in secrecy, developing their solutions before they enter the market. The number of foundations for the most recent years is therefore likely to be revised upwards in future editions of the present study.

The product areas in which the companies operate have not fundamentally changed in recent years (see left-hand graph of Figure 2.3). Most foundations consistently fall into the product areas *Investment Management* and *Banking Infrastructure*, while *Payment* and *Deposit & Lending* have a smaller share. A consistent development is also evident with regard to the applied technology areas of the newly founded companies (see right-hand graph of Figure 2.3). In most of the last five years, the technology category *Distributed Ledger Technology* has been responsible for the most company foundations, followed by *Process Digitisation / Automatisation / Robotics* and *Analytics / Big Data / Artificial Intelligence*.

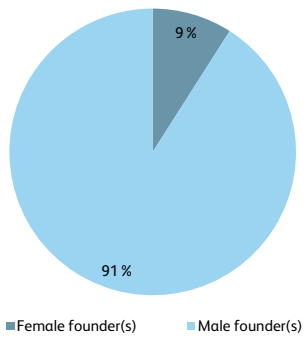

Figure 2.4: Proportion of female founders of Swiss FinTech companies (n=155)

This means that it is not newly founded companies that are responsible for the shifts within the technology categories in the Swiss FinTech sector shown in Figure 2.1, but new technological orientations of older companies. Newly founded companies therefore do not generally offer newer or more innovative technologies than comparatively older companies.

Note that in the Swiss FinTech sector, company foundations are heavily male-dominated. As shown in Figure 2.4, of the 155 companies that participated in the survey of this study, only 14, or 9 percent in relative terms, were (co-)founded by one or more women. This share is lower than for start-ups across all sectors, which have a share of around 20 percent of companies (co-) founded by women (Startup Campus, 2022).

Further note that of the 14 company foundations in 2021, 6 were registered in the canton of Zurich, 3 in the canton of Zug, 2 each in the cantons of Geneva and Vaud, and 1 in the canton of Aargau. This geographical distribution generally corresponds to that of the total 384 Swiss FinTech companies, which is shown in Figure 2.5. It reveals that with a total of 142 resident companies, the canton of Zurich is the largest FinTech hub in Switzerland. Zurich is followed by the canton of Zug with 103, Geneva with 41, Vaud with 25, and Schwyz with 11 companies, respectively. The remaining Swiss cantons are each home to less than 10 companies, with no FinTech companies being registered in the cantons of Glarus, Jura, Solothurn, and Uri.

After having given an overview on the Swiss FinTech sector as a whole, the following sections shed light on the business models pursued by the corresponding companies. The analysis is structured according to the building blocks of the Business Model Canvas by Osterwalder and Pigneur (2010) introduced in Chapter 1.[2]

2.1.2 Value Propositions

The value proposition of a company forms the core of a business model. All the surrounding building blocks aim to produce and distribute the defined value proposition. It outlines the elements of a company's offering and how it intends to differentiate itself from the competition while satisfying the needs of its customers. In the case of FinTech companies, technology-driven solutions are often key to differentiating them from established solutions. However, due to the broad range of

[2] Note that with the exception of Figure 2.6, for which information on the websites of the companies considered in this study was taken into account, and the evaluation on the proportion of female management team and board members in Figure 2.8, which is based on information from the commercial register, only company-verified data is taken into account in the following.

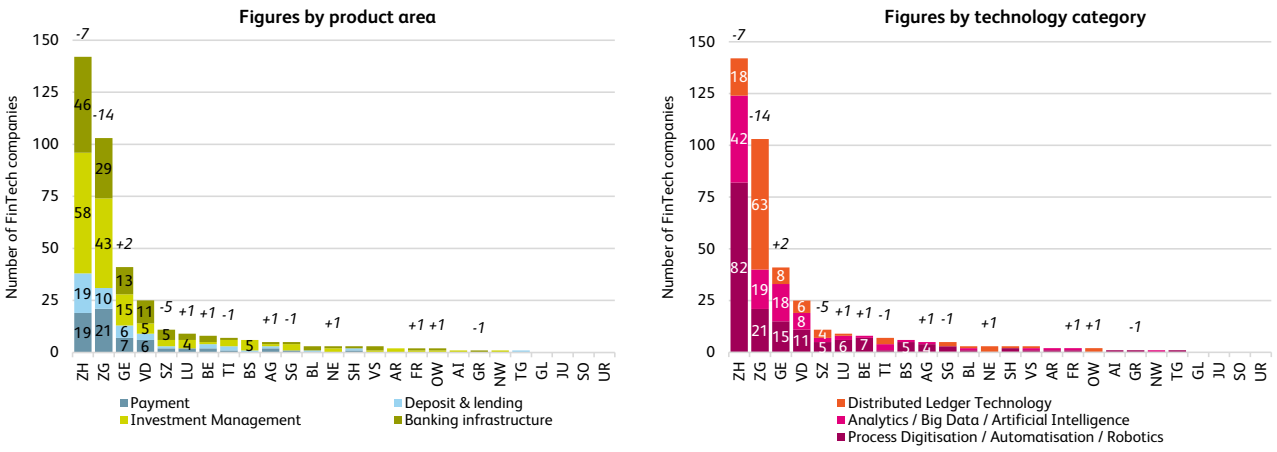

Figure 2.5: Number of FinTech companies by canton, and by product area (left-hand graph) and technology category (right-hand graph) (n=384)

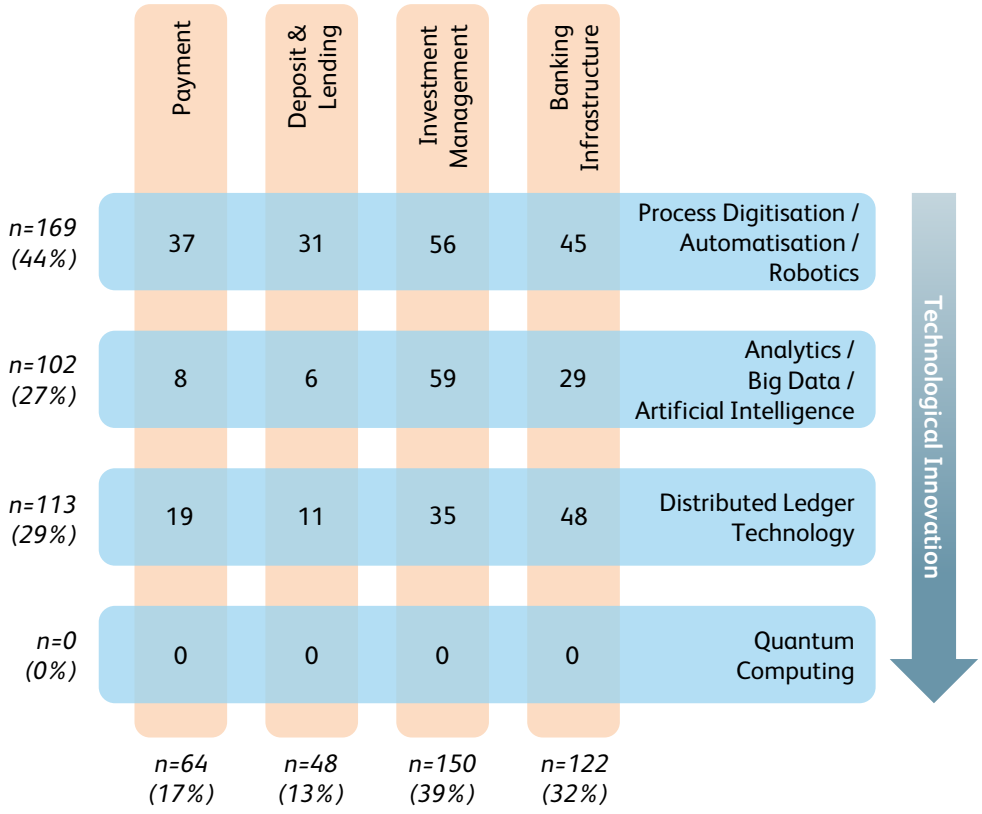

Figure 2.6: Distribution of Swiss FinTech companies according to the FinTech Grid (n=384)

value propositions in the Swiss FinTech sector, an aggregated analysis of them is challenging. In order to obtain an assessment of the general finance-related areas of activity as well as the technologies used by the companies, the FinTech grid introduced in Chapter 1 is considered. The classification of the sector is illustrated in Figure 2.6. While in Figure 2.1 the product areas and technology categories were discussed independently of each other, this chart also shows the intersection of the two perspectives. The figure therefore highlights which product areas are covered by FinTech companies with which technologies. It shows that the greatest accumulations are found for FinTech companies in the *Investment Management* area applying technological concepts from the categories *Analytics / Big Data / Artificial Intelligence* (59 companies) and *Process Digitisation / Automatisation / Robotics* (56 companies). While in the former intersection solutions such as analytics-driven investment strategies are included, the latter includes, for example, robo-advisory platforms. Further clusters of business models are found in the area of *Banking Infrastructure* with applied technologies from the categories *Distributed Ledger Technology* (48 companies) and *Process Digitisation / Automatisation / Robotics* (45 companies). The first cluster includes, for example, providers of crypto exchanges and wallets, while the second includes solutions related to core banking systems or personal finance management and multi-banking tools. Note that from the FinTech companies in the *Payment* and *Deposit & Lending* areas, comparably few are applying technologies related to the *Analytics / Big Data / Artificial Intelligence* category. In these product areas, relatively mature technologies from the *Process Digitisation / Automatisation / Robotics* category (37 and 31 companies, respectively) are most frequently found. Corresponding solutions include mobile payment applications and crowdfunding platforms, respectively. However, there are also some FinTech com-

panies that fall into the category of *Distributed Ledger Technology*, which, for example, offer payment systems for cryptocurrencies or loan platforms in the area of Decentralised Finance (DeFi). Figure 2.6 also shows once again that quantum computing, a technology that is said to have great disruptive potential for the financial industry, has not yet arrived in the Swiss FinTech sector.

2.1.3 Key Resources

Key resources can be understood as the most important assets a company needs to produce its value proposition, such as physical, financial, data, or human capital. These assets are also necessary to fulfil the key activities of a company's business model, as discussed in the next subsection. In the case of the present analysis, the focus is placed on financial capital by determining the amount of financial resources, and on human capital with the number of full-time equivalents. The temporal development of the median values for the total funding and the number of full-time equivalents at Swiss FinTech companies are given in Figure 2.7.

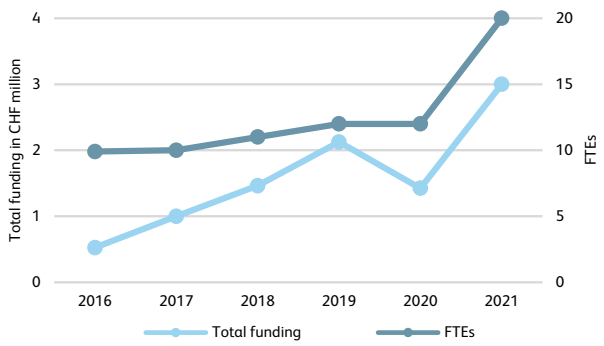

Figure 2.7: Median total funding (n_{2021}=59) and number of employees (n_{2021}=149) by year

The figure shows that for 2021, the median total funding amount in the Swiss FinTech sector is CHF 3 million, while the median number of full-time employees is 20. The progression over time shows that compared to 2020, which was characterised by stagnation in the FTEs and a reduction in total funding, there has been a significant increase in both key figures. There are several possible reasons for this increase. One reason is the general decline in the number of FinTech companies, which is mainly due to the exclusion of comparatively young companies in the sample. These companies typically had relatively small workforce and relatively low financial resources, so their exclusion may have increased the median value of the remaining companies. In addition, the effect of the Covid-19 pandemic, which proved to be less challenging for FinTech companies in comparison to the year 2020 (see Section 2.2 for more details), could have had a positive impact on the development of both key figures. With regard to the increase in the median value for total funding, the generally positive development of venture capital activities in the Swiss FinTech sector (see Section 7.1 for more details) is likely to have had a positive influence, and it should also be taken into account that the key figure for total funding for an individual company cannot in principle decline. Regarding the human capital of Swiss FinTech companies, an evaluation of the geographical distribution of the workforce furthermore shows that a median of 91 percent of employees are localised in Switzerland, while only around 9 percent are employed abroad. This share is higher than in 2020 (86 %), but generally shows no major changes over the last few years.

From a gender perspective, the human capital in the management teams and boards of directors of Swiss FinTech companies is still largely male-dominated. A corresponding assessment is illustrated in Figure 2.8, showing the respective proportions for the last three years.

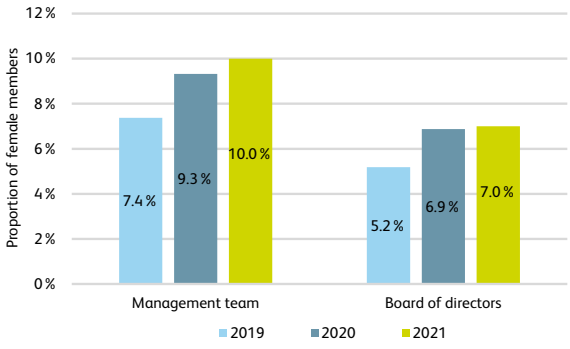

Figure 2.8: Proportion of female management team and board of directors members by year (n_{2021}=384)

The figure illustrates that by the end of 2021, only 10 percent of management team members and 7 percent of board of director members in the Swiss FinTech sector were female. These percentages have increased compared to the previous two years. However, a comparison with the Swiss retail banks shows that while they also have a 10 percent share of women on the management teams, the share on the boards of directors is significantly higher at 25 percent (Dietrich, Lengwiler, Passardi, & Amrein, 2021).

2.1.4 Key Activities

The key activities of a company describe the main use of key resources to fulfil the value proposition. Key activities in this study distinguish between "Programming & Engineering", "Marketing & Finding Clients", and "Operative Business & Serving Clients". The distinction between "Programming & Engineering" and "Marketing & Finding Clients" lies in the possibility of focusing on either the development or marketing of a product or solution in order to build up a customer base. If the customer base is already established, the focus can be on serving clients and day-to-day operations ("Operative Business & Serving Clients"). Note that these focal points of activity do not have to be mutually exclusive.

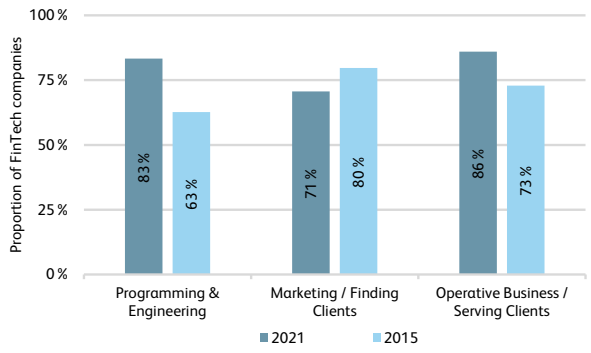

Figure 2.9: Proportion of FinTech companies by key activities and by year (n_{2021}=150, n_{2015}=59, multiple answers possible)

An evaluation of the key activities in the Swiss FinTech sector is given in Figure 2.9, showing the proportions of companies for the three key activities for the year 2021 and the year 2015, i.e., the year of the first edition of the IFZ FinTech Study. The figure shows that for the year 2021, all three key activities are of relevance in the Swiss FinTech sector. However, the development of the solutions as well as the operational business have a larger proportion compared to marketing activities. In 2015, the opposite was the case. Swiss FinTech companies therefore shifted their key activities more towards programming and engineering as well as operating business. Note that this is true for most product areas. The only exception is *Deposit & Lending*, where day-to-day operations are also the most important key activity in 2021, but followed by marketing and customer acquisition rather than programming and engineering the solution. One explanation for this lies in the relatively established offerings in this area, such as crowdfunding platforms, which have already been on the market for several years and require little further development.

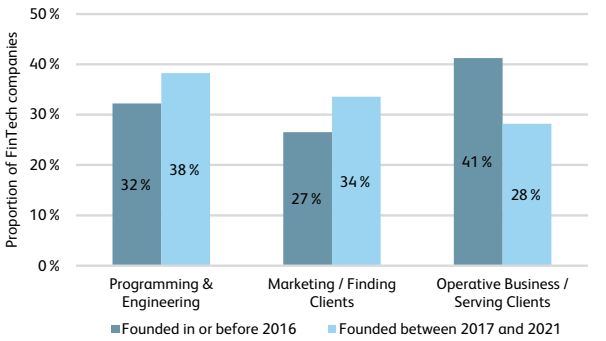

Figure 2.10: Proportion of FinTech companies by key activities, and by year of inception (n=150, multiple answers possible)

The age of a solution or a company generally plays a more important role in relation to the key activities than the product areas and technology categories. An evaluation of the key activities by year of inception is given in Figure 2.10 and highlights that they tend to vary across the life cycle of a company. Comparatively younger companies whose founding year is later than 2016 tend to focus more on the development of their solutions than older companies that, on the other hand,

predominantly run the day-to-day operations. For the latter cohort, marketing activities plays the least important role.

2.1.5 Key Partners

Companies are often dependent on cooperation with other parties in order to successfully implement their value proposition. These key partners, as the third factor on the production side of a value proposition, usually complement the company by providing resources or know-how that the company itself lacks. In the specific case of the FinTech industry, for example, financial institutions as key partners can compensate for the lack of an established customer base or regulatory status. The most frequently named partners among Swiss FinTech companies in 2021, or more precisely, among the companies that provided information in this regard, are SIX (15 mentions), Microsoft (12 mentions), and Swisscom (9 mentions).

2.1.6 Customer Segments

In addition to the production of the services and products that define a company's value proposition, their distribution is also of central importance. First and foremost, the question arises as to exactly which customers the company wishes to offer services or products to. A specific group of customers can be categorised as a customer segment. In the present analysis, a distinction is made between national and international customers on the one hand and companies (B2B) and private individuals (B2C) on the other.[3] This results in four possible customer segments: national B2B, international[4] B2B, national B2C, and international B2C. While the geographic focus of the customer segments (i.e., national, international) is mutually exclusive, the customer groups that a FinTech company serves (i.e., B2B, B2C) are not. In this way, business models for companies that serve both businesses and individuals as customers (B2B and B2C) are also considered.

[3] It should be noted that B2B also includes B2B2C, as companies are the direct customers of such a commerce model.
[4] It should be noted that in the present analysis, an international orientation also includes the Swiss home market.

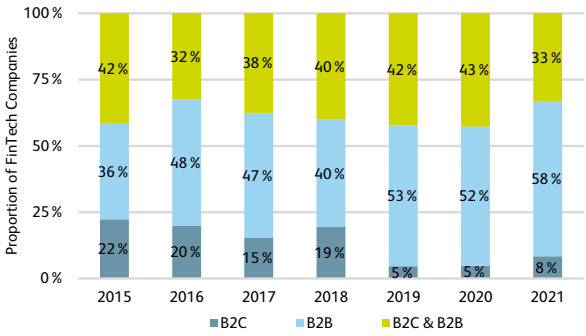

Figure 2.11: Proportion of FinTech companies by customer groups and by year (n_{2021}=154)

An evaluation of the temporal developments in customer groups targeted by Swiss FinTech companies is given in Figure 2.11. It shows that there have been shifts within the customer types over the years. In particular, the focus exclusively on private clients has become marginalised, while the focus on business clients has steadily gained relevance. By the end of 2021, B2B business models already accounted for 58 percent, while B2C business models stood at 8 percent. One third of the Swiss FinTech companies pursued a hybrid strategy, targeting both business and private clients. A breakdown considering the geographical orientation as per the end of 2021 is shown in Figure 2.12.

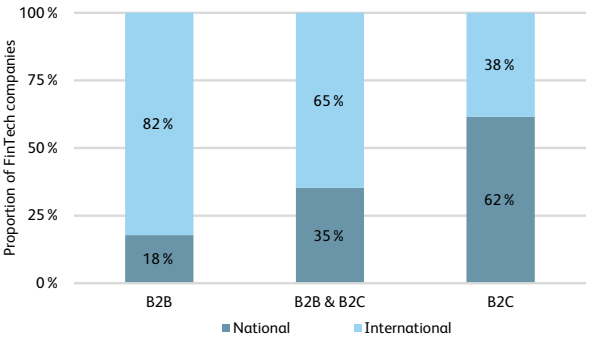

Figure 2.12: Proportion of FinTech companies by customer segments 2021 (n=154)

Accordingly, the clear majority of companies in the B2B segment, which is the largest according to Figure 2.11,

follow an international market strategy. The companies that offer solutions for both business and private customers are also predominantly internationally oriented, with a proportion of around two-thirds. Only Swiss FinTech companies that pursue a pure B2C business model tend to focus on the comparatively small home market of roughly 8 million inhabitants. However, the absolute number of companies in this segment is relatively small for the same reason, as already noted in earlier editions of this study, and comprises to a significant extent of companies in the *Deposit & Lending* product area. From a technological perspective, the largest proportion of companies with a national orientation is attributable to the *Process Digitisation / Automatisation / Robotics* category (41 %), while the two other categories are significantly more oriented towards international markets.

2.1.7 Customer Relationships/Channels

Closely related to customer segments is the determination of how a company wants to interact with its customers and through which channels the company's products or services can be obtained. In the case of FinTech companies, the general way of interacting with the customer and delivering the solution is classified as either digital, personal, or a combination of both approaches. In a fully digital strategy, all services can be implemented through a platform, website, or other scalable digital interaction channel without the need for personal communication. When implementing a fully personal communication strategy, customers rely entirely on direct interaction with an employee. In the hybrid approach, a company interacts with its customers through a combination of digital and personal communication channels.

As observed in previous editions of the IFZ FinTech Study, Swiss FinTech companies tend to pursue hybrid interaction channels. Only the comparatively small number of companies that address private individuals as customers mostly pursue a digital-only interaction strategy, which is due to the necessary scalability of the business model. As shown in Figure 2.13, by the end of 2021, 76 percent of Swiss FinTech companies followed

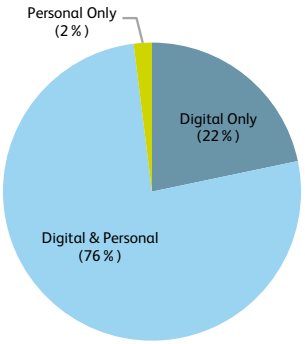

Figure 2.13: Proportion of FinTech companies by channels (n=152)

a hybrid interaction strategy, while 22 percent and 2 percent, respectively, pursued a purely digital or purely personal strategy.

Relatively similar proportions emerge for all the product areas and technology categories, with one exception. Companies in the *Investment Management* product area tend to interact purely digitally less than other FinTech companies. One reason for this could be that many companies in this area offer investment solutions for private as well as business customers, for which an option for personal exchange is often desired by the customer. Since companies in the *Investment Management* product area often build on technologies from the *Analytics / Big Data / Artificial Intelligence* category (see Figure 2.6), e.g., provider of investment strategies from quantitative finance, a lower proportion of purely digital interaction can also be observed for this technology category. What is also notable is the relatively low proportion of digital only business models in the FinTech sector in the *Distributed Ledger Technology* category, which could be understood as a decentralised and therefore rather impersonal counterpart to the traditional financial sector. However, many companies in this technology category do not offer fully digital DeFi solutions based on smart contracts, but rather centralised offerings for a wide range of clients, such as tokenisation services or brokerage services for crypto assets, which in turn may require some personal interaction.

2.1.8 Revenue Models

The revenue model, as the third important factor on the distribution side of a business model, determines how a company generates revenue from its business activities. On the one hand, FinTech companies can apply the same revenue models typically used by banks, such as interest, commissions, or trading. On the other hand, they may opt for revenue models more common to the software industry, such as licence fees or software-as-a-service (SaaS) offerings. Some FinTech companies may also opt for alternative revenue models such as selling advertising space or (analysed) data. As with the main activities, the revenue models pursued by a company are not necessarily mutually exclusive, as some FinTech companies may choose a combination of revenue models in their business model.

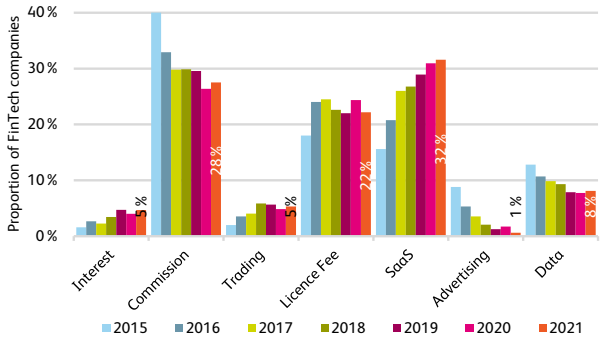

Figure 2.14: Proportion of FinTech companies by revenue models and by year (n_{2021}=155)

The proportions of revenue models pursued by Swiss FinTech companies by year are given in Figure 2.14. While at the beginning of the observation period there were still significant shifts in the shares of the revenue models over the years, these have stabilised in the last two years. The continuous loss of importance of the commission business and the gains of the IT-driven business models have settled at a high level. By the end of 2021, the SaaS revenue model accounted for around one-third of all business models in the Swiss FinTech sector, followed by commission business (28 %) and revenue generation by licence fees (22 %). The proportions of the other four revenue models, i.e., interest business, trading business, advertising, and data, have also stabilised, but at a lower level.

The revenue models pursued in the Swiss FinTech sector at the end of 2021 however, differ considerably between product areas and technology categories, as shown in Figure 2.15. The left-hand graph reveals that while the commission business is applied by more than half of the companies from the product areas of *Deposit & Lending* (88 %), *Payment* (67 %), and *Investment Management* (54 %), the *Banking Infrastructure* area is predominantly driven by the revenue models from the IT-industry, i.e., SaaS (87 %) and licence fees (58 %). The former revenue model is also applied by more than half of the companies from the product areas *Investment Management* (59 %) and *Payment* (57 %).

What stands out from a technological perspective (right-hand graph of Figure 2.15) is the comparably significantly higher proportions of the licence fee, SaaS, and data revenue models for companies applying technologies from the *Analytics / Big Data / Artificial Intelligence* category. This may not come as a surprise, as the business models of these companies are usually strongly data-driven, whereby revenue may not only come directly from the sale of (analysed) data but also from the subscription or licence fees for analysis software. The other two technology categories both reveal proportions of over 50 percent of the corresponding companies for the commission business and revenue generation by SaaS. The high proportion of commission business indicates that these companies often act as intermediaries, as for example in the case of crypto exchanges or also in the case of robo-advisory platforms. The relatively high popularity of commission business in the *Distributed Ledger Technology* category is also due to developments in the DeFi sector. Companies in this area often aim to offer services similar to those in the traditional financial world, but through a more decentralised approach using smart contracts. However, the revenue models do not fundamentally change in the process.

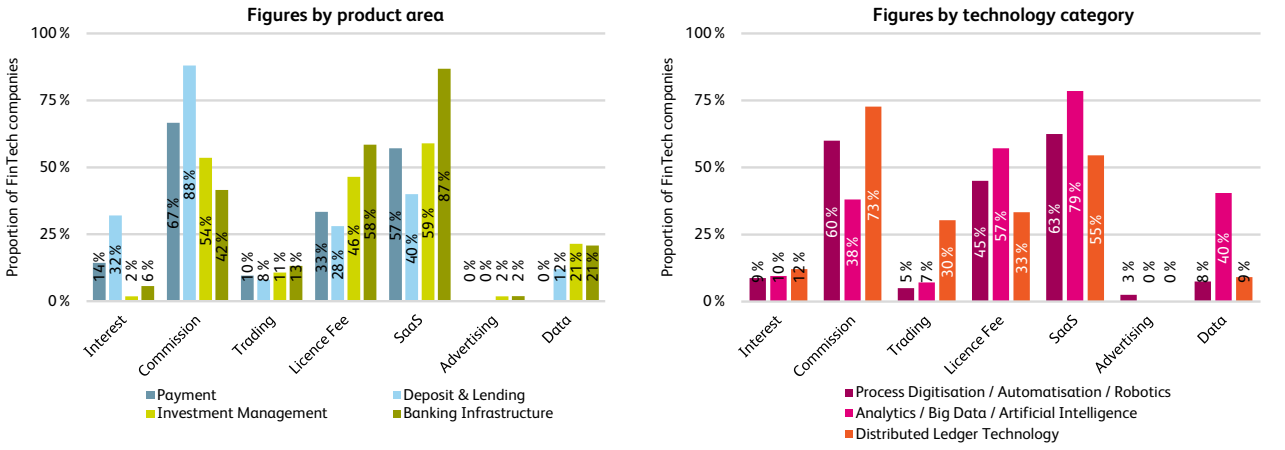

Figure 2.15: Proportion of revenue models used in the Swiss FinTech sector by product area (left-hand graph) and technology category (right-hand graph) (n=155, multiple answers possible)

Looking at the entire Swiss FinTech sector, the average number of revenue models pursued per company is 2.1. At the beginning of the observation period in 2015, this figure was still 1.8, representing a total increase of over 10 percent. Swiss FinTech companies have therefore expanded their cash flow generation options over the years by considering more revenue models per company.

2.2. Sentiment Analysis of Swiss FinTech Companies

Like every sector, the Swiss FinTech sector is also exposed to certain challenges that can impair growth or long-term success. The first step is to recognise and evaluate these in order to develop appropriate solutions, whether by the industry itself or by political decision-makers. As in the previous edition of this study, eight challenges are evaluated. Six of them are based on the survey on the access to finance of enterprises by the European Central Bank (2021). In addition, two more challenges, one on the impact of the Covid-19 pandemic and one regarding the pressure to expand internationally, were added.

The average values for each challenge as perceived by the Swiss FinTech companies disclosing related information are shown in Figure 2.16 on a scale of 1 to 10, where a value of 1 stands for “not pressing”, while 10 means “very pressing”. It shows that the availability of skilled staff or experienced managers (average value of 6.5) is the biggest challenge, followed by the challenge of finding customers (6.4). In last year’s edition of the present study, this ranking was reversed. By some distance, the challenge of international expansion (5.5) is in third place, close to the challenges related to costs of production or labour (5.4), competition (5.3), and regulation (5.2). The two challenges regarding access to financing (4.2) and the impact of the Covid-19 pandemic

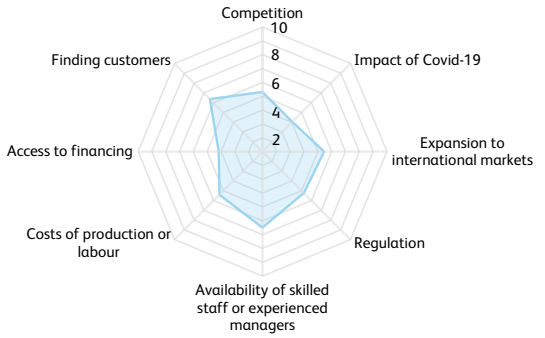

Figure 2.16: Average scores of selected challenges in the Swiss FinTech sector (n=153)

(4.0) are perceived as least pressing by Swiss FinTech companies.

A survey on the same challenges, with the exception of the impact of the Covid-19 pandemic and international expansion, was also conducted among Swiss SMEs in 2021. The results show a high degree of overlap with those of Swiss FinTech companies, although the latter indicate a higher perceived urgency on average across all challenges. The order of urgency of the various challenges differs only in the challenge of finding customers and the availability of skilled staff or experienced managers, which are mentioned first and second by the SMEs (Dietrich, Wernli, & Berchtold, 2021), in contrast to the Swiss FinTech companies, which mention these two items in reverse order.

The average values of the challenges perceived by Swiss FinTech companies are broken down by product area (left-hand panel) and technology category (right-hand panel) in Figure 2.17. The left-hand panel reveals that the challenges are perceived to be relatively similar across the different product areas of FinTech. The heat map shows the most pressing challenges in magenta, while the lowest values are highlighted in blue. The strongest deviations can be observed for the challenge related to international expansion, which seems to be more pressing for companies in the *Payment* and *Banking Infrastructure* product areas, than for companies in the area of *Deposit & Lending*. Other sizable deviations can be found with regard to the impact of the Covid-19 pandemic. Here, companies from the *Deposit & Lending* sector are the most affected, possibly driven by the support measures introduced by the Swiss government for Swiss companies to bridge the Covid-19-related liquidity needs, which can be seen as competition to lending platforms in the FinTech sectors. In addition, access to financing also seems to be comparably more difficult for companies from the same product area than for other Swiss FinTech companies, in particular from the area of *Investment Management*.

From a technological perspective (right-hand panel of Figure 2.17), there are certain notable differences between the three categories. First, competition is perceived to be more pressing by companies applying technologies from the category of *Process Digitisation / Automatisation / Robotics*. One reason for this could be that these companies use comparatively mature and established technologies and therefore might not specifically differentiate themselves from other companies through technological innovation. Second, differences can be found with regard to regulation, which seems to be more pressing for companies from the *Distributed Ledger Technology* category in comparison to

	Figures by product area				Figures by technology category		
	Payment	Deposit & Lending	Investment Management	Banking Infrastructure	Process Digitisation / Automatisation / Robotics	Analytics / Big Data / Artificial Intelligence	Distributed Ledger Technology
Competition	5.2	5.3	5.5	5.2	5.7	4.8	5.0
Finding customers	6.0	6.8	6.2	6.5	6.2	6.7	6.5
Access to finance	4.3	4.8	3.8	4.2	4.0	4.4	4.3
Costs of production or labour	5.0	5.5	5.3	5.6	5.4	5.0	6.0
Availability of skilled staff or experienced managers	6.0	6.1	6.5	6.9	6.6	6.0	6.8
Regulation	5.5	5.8	5.0	5.1	5.4	4.3	6.0
Expansion to international markets	6.0	4.8	5.3	5.8	5.3	5.6	5.7
Impact of Covid	4.1	4.9	3.5	4.2	4.3	4.2	3.1

Figure 2.17: Average scores of selected challenges in the Swiss FinTech sector by product area (left-hand panel) and technology category (right-hand panel) (n=153)

companies from the *Analytics / Big Data / Artificial Intelligence* category in particular. One reason could be the still relatively young age of the technology, which is why the regulatory framework for its use is not yet fully clear, although continuous progress is being made by the Swiss regulator in this regard (see Section 5.3). Third, the companies from the same category also tend to perceive the impact of the Covid-19 pandemic as less pressing than companies from the other two technology categories. One possible explanation for this could be the often decentralised business models of companies in the *Distributed Ledger Technology* category which is why certain restrictions triggered by Covid-19, such as limited cross-border mobility, have not affected them as much as other FinTech companies.

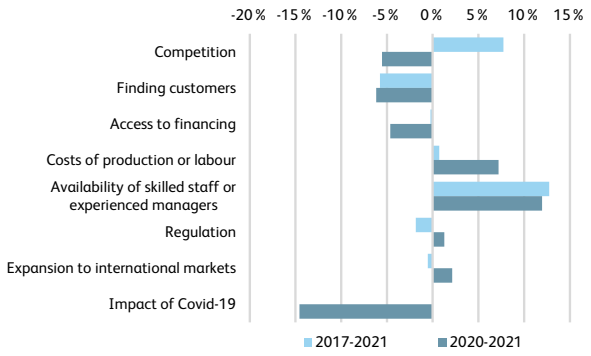

Figure 2.18: Change in average scores of selected challenges in the Swiss FinTech sector (n=153)

However, the overall impact of Covid-19 on the Swiss FinTech industry has decreased over the past year. This can be seen in Figure 2.18, which shows the rates of change in the average values for each of the eight challenges, once compared to 2017[5], the year of the first assessment, and once compared to 2020. It reveals that the perceived impact of the Covid-19 pandemic has decreased by almost 15 percent year-on-year, representing the biggest change of all challenges. The second largest decrease compared to the year 2020 is in the challenge of finding customers, followed by competition. Compared to 2017, however, the latter challenge shows an increasing perceived urgency. The greatest increase in urgency is recorded by the challenge regarding the availability of skilled staff or experienced managers, both year-on-year and compared to 2017. In addition, the challenge of costs of production or labour is also perceived to be more pressing compared to the year 2020. In contrast, challenges related to access to financing, regulation, and international expansion are seen as relatively stable compared to both 2017 and 2020.

[5]Note that the challenge regarding the impact of the Covid-19 pandemic was not assessed in the year 2017.

2.3. Summary

The number of Swiss FinTech companies has declined for the first time since the first evaluation of the sector in the year 2015. While at the end of 2020 a total of 405 companies were located in Switzerland, this figure shrank to 384 at the end of 2021, representing a negative growth of 5.2 percent. From a geographical perspective the largest decline in companies in absolute terms was accounted in the largest Swiss FinTech hubs, i.e., the cantons of Zurich and Zug.

An analysis of the business models of the Swiss FinTech companies reveals that the largest proportion is active in the areas of *Investment Management* and *Banking Infrastructure*. When looking at the technologies applied, the continuous growth of companies in the category of *Analytics / Big Data / Artificial Intelligence* stands out, hence gaining more and more in relevance compared to the technology categories *Process Digitisation / Automatisation / Robotics* and *Distributed Ledger Technology* which, however, still account for most Swiss FinTech companies. An analysis of the total funding per company and the number of full-time equivalents employed revealed that the median values of both figures have increased in 2021 after a decline/stagnation in 2020. This rebound might have multiple reasons, such as the declining pressure from the Covid-19 pandemic or the general decline in the number of Swiss FinTech companies. In addition, the median proportion of employees working in Switzerland was a high 91 percent, which roughly corresponds to the values from previous years. However, the indus-

try as a whole is (still) very male-dominated, as shown by the low proportion of companies (co-)founded by women and the low proportion of women in the management teams and boards of directors of Swiss FinTech companies. With regard to the key activities pursued, the proportion of companies running the operative business as well as programming and engineering products and services has increased in comparison to the beginning of the observation period in 2015. The most frequently named key partners of Swiss FinTech companies emerged as SIX, Microsoft, and Swisscom, underlying their important role in driving innovation in the Swiss financial industry.

In terms of customer segments, there has been a continuous trend towards serving solely business customers over the years, as well as a general orientation towards international markets. The preferred interaction channel hereby is a combination of personal and digital communication. Furthermore, an analysis of the revenues models pursued in the Swiss FinTech sector showed that the proportion of companies for each revenue model has stabilised after some shifts in past years, whereby revenue generation through SaaS, commissions, and licence fees revealed the largest relevance. With regard to the product areas, it became apparent that companies in the *Deposit & Lending*, *Payment*, and *Investment Management*, area in particular rely on commission business, while the *Banking Infrastructure* area is more characterised by IT-driven revenue models. From a technological perspective, the high proportion of IT- and data-driven revenue models in the *Analytics / Big Data / Artificial Intelligence* category is particularly striking. In addition, commission business is highly popular with companies from the *Distributed Ledger Technology* category, also driven by business models in the DeFi area. In general, Swiss FinTech companies seem to have expanded their ways of generating cash flow over the years, which is supported by the increase in the average number of revenue models per company.

In terms of challenges in the Swiss FinTech sector, it was observed that the availability of skilled staff or experienced managers and the search for clients were the two most pressing in 2021. This is true across all product areas and technology categories. Compared to 2020, it was also evident that the Covid-19 pandemic had lost much of its urgency, while costs of production or labour were perceived as more challenging, in addition to the availability of skilled staff and experienced managers. A comparison with Swiss SMEs also showed that the perception of the urgency of the challenges shows great overlap with the FinTech sector.

3. Global FinTech Companies

By Moreno Frigg & Timon Kronenberger, Institute of Financial Services Zug IFZ

In this chapter, an overview of the globally leading FinTech companies is provided. In doing so, the companies are analysed descriptively with respect to their business model, their year of foundation, the domicile country, and the customer segment they primarily address. Alongside these insights, the globally leading FinTech companies are compared to the findings for the Swiss FinTech sector presented in Section 2.1 in order to identify potential differences.

To identify the world's leading FinTech companies, rankings from data providers CBInsights and Crunchbase are aggregated for this purpose, since both rankings aim to highlight such companies. This selection is consistent with last year's edition of the study and thus allows a comparison between the two years.

The aforementioned rankings both apply unique processes to identify globally leading FinTech companies. CBInsights thereby derives their leading 250 FinTech companies in an annually reoccurring process from a universe of more than 17,000 companies, based on several factors. These factors include information on a company's business model, its momentum in the market, and its Mosaic[1] score (CB Insights, 2021). Unlike CBInsights' ranking, which is updated annually, Crunchbase's ranking is constantly changing, based on the so-called "Crunchbase Rank". Said rank is determined by an algorithm using the number of connections a company has on the Crunchbase platform, the frequency with which the company interacts with the platform community, and information regarding funding, articles, and acquisitions, among other factors (Crunchbase, 2016). The following analysis is based on all companies that are among the top 250 ranked companies in the FinTech sector as of 18 November 2021.

Before the analysis of the sample, three data cleansing steps were carried out. In a first step, the collected sample, consisting of 500 entries, has been checked for duplicates, i.e., FinTech companies that occur in both underlying rankings. In this process, a total of 88 entries were removed. Compared to last year's analysis (68 duplicates), this represents an increase of 20 companies, possibly indicating an increasing maturity of the sector. However, the number of duplicate entries identified remains relatively low. One plausible explanation might be the fact that the data providers use different input factors and approaches to determine globally leading FinTech companies. Another reason is the lack of a universally accepted definition of the term "FinTech". In a second step, 32 companies that focus on insurance as a business model and five companies which act as private equity or venture capital funds were removed. In a final step, two companies were identified that are no longer active and therefore excluded from the sample. Consequently, this data cleansing resulted in a final sample of 373 globally leading FinTech companies. Note that although certain companies were excluded based on their business model, this in turn does not necessarily imply that all remaining companies meet all aspects of the definition of the term "FinTech" as set out in Chapter 1.

After the data cleansing process, various data for all companies in the final sample were gathered in order to analyse certain aspects of their business models. All data used for the following analyses are based on publicly available data and allow to assign each company to the FinTech grid presented in Chapter 1, analyse the customer segments they serve, and the countries where the companies are headquartered. In line with the analysis of Swiss-based FinTech companies in Chapter 2, each company was assigned to one of the four product areas of FinTech, i.e., *Payment*, *Deposit*

[1] This score is determined by a machine learning algorithm which takes, besides traditional data, also unstructured and semi-structured data into account and intends to measure the overall health and growth potential of a company (CB Insights, online).

& Lending, *Investment Management*, or *Banking Infrastructure*, as well as to one of the four technological categories, i.e., *Process Digitisation / Automatisation / Robotics*, *Analytics / Big Data / Artificial Intelligence*, *Distributed Ledger Technology*, or *Quantum Computing*. Furthermore, a distinction was again made between business (B2B) and private customers (B2C) and a hybrid approach with regard to the customer segments served, as well as a division of the geographical orientation of a company into the resident national or international market[2].

Figure 3.1 illustrates the classification of the 373 identified globally leading FinTech companies into the FinTech grid. The classification shows that most companies are assigned to the *Banking Infrastructure* product area with 46 percent (170 companies), followed by the *Payment* area with 23 percent (87 companies) and the *Investment Management* area with 16 percent (60 companies). Companies active in the *Deposit & Lending* area account for 15 percent (56 companies) of the total. Considering the technologies applied by the companies, the majority focus on comparably mature concepts from the *Process Digitisation / Automatisation / Robotics* category (69 %; 258 companies). While 16 percent (61 companies) specialise in technologies related to *Analytics / Big Data / Artificial Intelligence*, 14 percent (54 companies) are assigned to the *Distributed Ledger Technology* category. No companies are represented in the last technology category of the FinTech grid, i.e., *Quantum Computing*.

Analysing the intersections of product areas and technology categories in the FinTech grid in Figure 3.1 reveals that the largest amount of companies (28 %; 104 companies) are allocated in the *Banking Infrastructure*

[2]Note that if a company serves customers internationally, it is assumed that it also serves its domestic market.

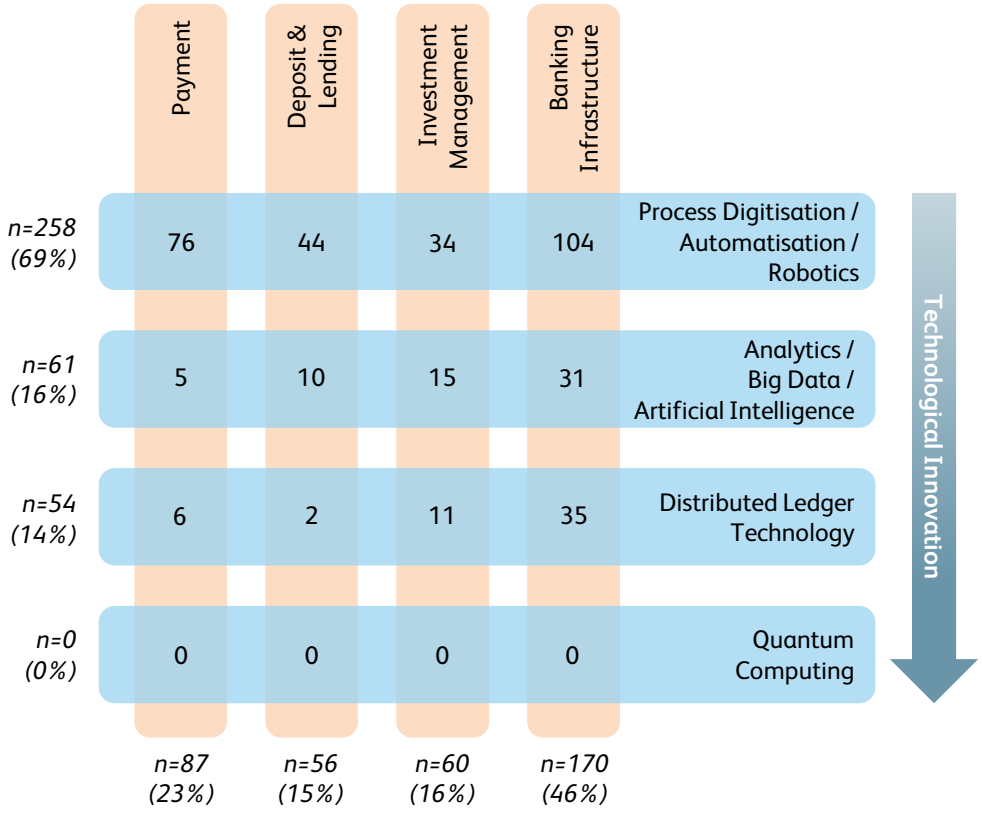

Figure 3.1: Distribution of leading FinTech companies according to the FinTech grid (n=373)

product area in combination with the technology category *Process Digitisation / Automatisation / Robotics*. A second large cluster (20 %; 76 companies) is found in the intersection of *Payment* and *Process Digitisation / Automatisation / Robotics*. This group is followed by 12 percent (44 companies) of companies operating in the area of *Deposit & Lending* and using technological concepts from the *Process Digitisation / Automatisation / Robotics* category. The three most commonly found combinations for globally leading FinTech companies have not changed over the course of a year.

Comparing the results of Figure 3.1 with the analogous classification of the Swiss FinTech sector in Figure 2.6 shows that Swiss FinTech companies are much more active in the *Investment Management* product area, while the share in the area of *Banking Infrastructure* is significantly smaller. This could be due to the fact that Switzerland is considered one of the leading global locations for investment management and wealth management in particular, which makes the location attractive for FinTech companies in the corresponding area. From a technological perspective, it can be seen that Swiss FinTech companies rely more on comparatively innovative concepts from the areas *Analytics / Big Data / Artificial Intelligence* and *Distributed Ledger Technology* than globally leading FinTech companies. The cluster of companies in the latter technology category may be due to the emergence of the "Crypto Valley", which has developed in and around the canton of Zug in recent years. What is also worth noting is that no Swiss FinTech company, nor any globally leading FinTech company, applies quantum computing. To some extent, this could be due to the immaturity of the technology.

Figure 3.2 illustrates the number of company foundations per year of the 373 identified globally leading FinTech companies. From 2000 to 2007, the number of company foundations fluctuates on a low level and no distinct trend can be identified. However, from 2007 onwards until 2012, a steady growth from three companies to 30 companies can be observed. The year 2013 marks a break in this trend with a one-off negative growth rate. From 2014 to 2018, the large amount of newly founded companies is striking, peaking in 2015 with 48 companies. While the number of company foundations is quite high during this period, it is evident that after this peak, the number steadily declines to twelve companies in 2020. None of the identified globally leading FinTech companies was founded in 2021. As mentioned in previous editions of this study, a decline in company foundations in the last years of the observation period is plausible, as the aim of the un-

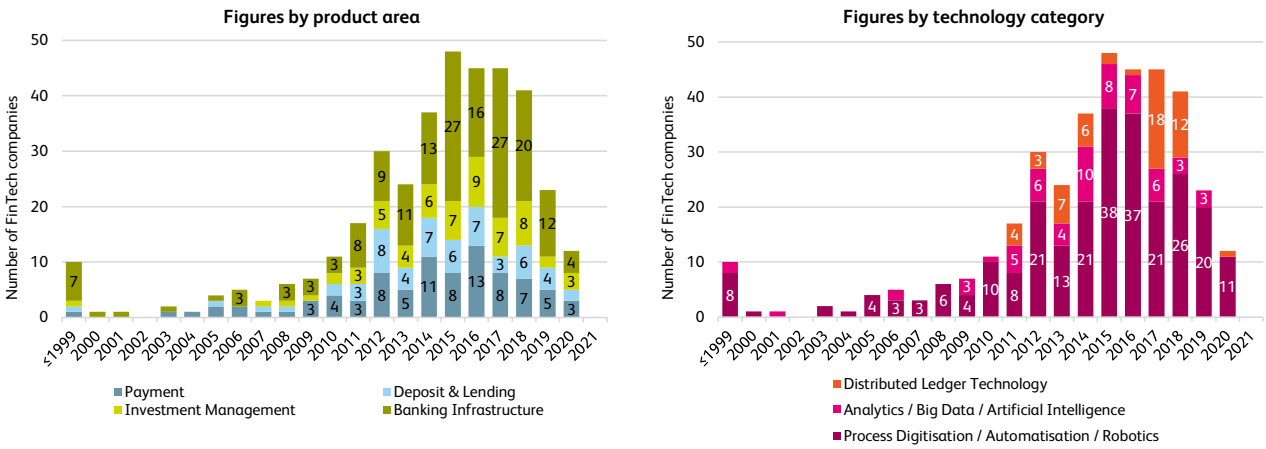

Figure 3.2: Number of leading FinTech company incorporations per year by product (left-hand graph) and technology category (right-hand graph) (n=373)

derlying rankings is to identify industry leaders, which usually need to have been active in the business for several years to reach such a status.

By analysing the number of company foundations by year with a focus on the the product areas (left-hand graph) in combination with the year of foundation, it can be shown that the peaks of company foundations vary across the different areas. While the number of newly founded companies in the areas *Payment* and *Investment Management* is largest in 2016 with 13 and 9 companies respectively, for *Deposit & Lending* a peak can be identified in 2012 with 8 companies. Lastly, the area *Banking Infrastructure* peaked twice (2015 and 2017) with 27 companies each. Regarding the technology categories (right-hand graph) two findings emerge. First, the rise of companies in the *Distributed Ledger Technology* category in the years 2017 and 2018 is evident. Whereas the overall number of companies using said technology amounts to 14 percent, the relative share in these years is 40 and 29 percent, respectively. Second, within the category *Analytics / Big Data / Artificial Intelligence*, it is noticeable that from 2014 onwards, the number of foundations is decreasing each year. This is true for absolute numbers as well as for the relative proportion, except for the year 2019.

Comparing these findings to those from last year, there are no significant changes, with the exception of the peak mentioned in the *Distributed Ledger Technology* category. This peak in the present study is attributable to new sample entries of companies in said technology category in the year 2021.

In Figure 3.3, the distribution of where the globally leading FinTech companies are headquartered is illustrated. The large proportion of companies headquartered in the United States (56 %; 209 companies) is striking. However, note that this large share might be driven by a certain home bias, as the present analysis relies on rankings from two data providers, i.e., CBInsights and Crunchbase, which are both based in the United States. The United States is followed by the United Kingdom with almost 10 percent (36 companies) and India with roughly 9 percent (32 companies). Next up, there is Canada, Germany, and Singapore with 2 percent (8 companies each) and Brazil, Switzerland, France, and Mexico with slightly less than 2 percent (6 companies each). The number of global leading FinTech companies from other countries, grouped as "Others" in Figure 3.3, is equal to 13 percent (48 companies).

Considering the countries of headquarters in combination with the product areas (left-hand graph) reveals further insights. For the three biggest FinTech hubs ob-

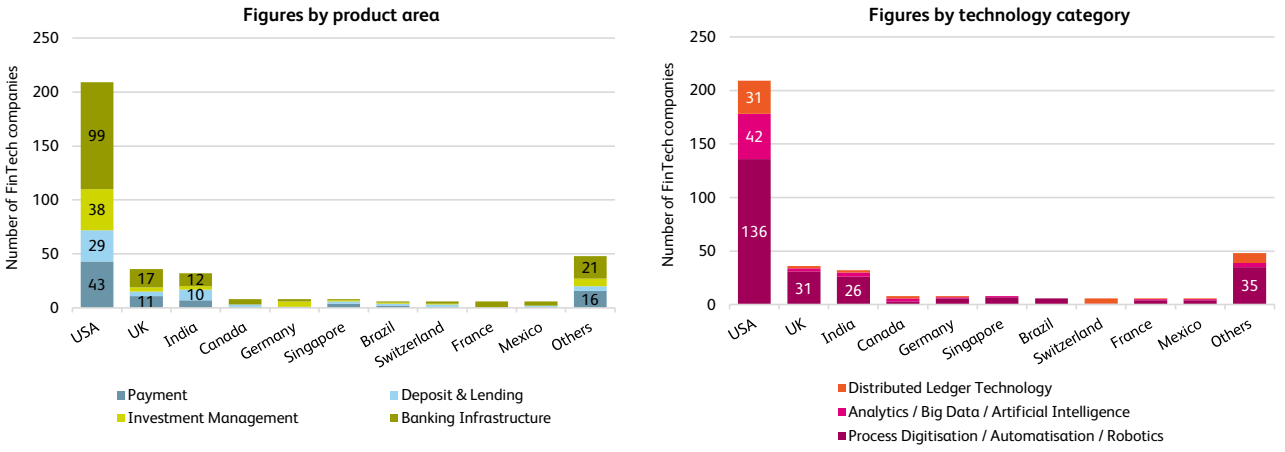

Figure 3.3: Number of leading FinTech companies by country of headquarters, and by product (left-hand graph) and technology category (right-hand graph) (n=373)

served (in terms of number of companies), the distribution regarding the product areas varies. Whereas the distribution in the United States seems to be in line with the full sample, for the United Kingdom and India, deviations are observable. In the United Kingdom, the number of companies active in the *Payment* area are slightly overrepresented while the areas *Deposit & Lending* and *Investment Management* are underrepresented. Regarding India, the proportion of companies in the *Payment* area is in line with the full sample, but for the *Deposit & Lending* area, the relative number of companies is as twice as large as in the full sample. Consequently, the two areas *Investment Management* and *Banking Infrastructure* are both underrepresented. When analysing the combination of domiciles of globally leading FinTech companies with the technology applied, it is noticeable that while the United States is host to as many companies from the *Distributed Ledger Technology* category as expected, the United Kingdom and India only are home to between 5 to 6 percent of their in-sample companies using said technology, compared to the 14 percent from the full sample. Lastly, out of the six identified companies from Switzerland, five of them are applying technologies from the *Distributed Ledger Technology* and one from the *Analytics / Big Data / Artificial Intelligence* category.

In comparison to last year, some of the countries represented in the top ten have changed. While the United States, the United Kingdom, and India remain at the top, Canada has surpassed Germany in terms of absolute number of globally leading FinTech companies. Furthermore, in last year's edition, China and Sweden both appeared among the top ten countries with the most globally leading FinTech companies. This year, however, they were replace by Singapore and Mexico.

In Figure 3.4, the distribution of customer segments served by the identified globally leading FinTech companies is illustrated. Overall, two-thirds of companies are serving customers internationally. Subsequently, one-third focuses on their domestic market. When distinguishing between business customers (B2B), private individuals (B2C), and a combination of both, it can be shown that 54 percent are targeting business customers while 24 percent focus on private individuals. A combination of both segments are served by the remaining 22 percent of companies. Analysing the customer segments in more detail, it is noticeable that with 42 percent, most companies in the sample focus on business customers in a cross-border context. This segment is followed by 16 percent of companies serving private individuals in their home market and 15 percent targeting both business and private customers interna-

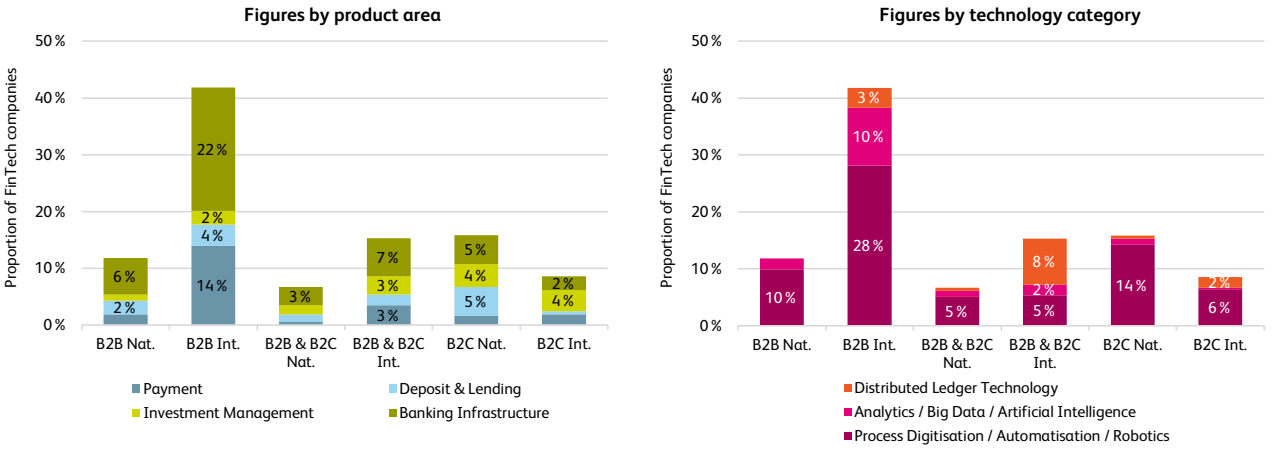

Figure 3.4: Proportion of leading FinTech companies by customer segments, and by product (left-hand graph) and technology category (right-hand graph) (n=373)

tionally. Furthermore, 12 percent of companies focus on business customers in their domestic market and 9 percent on private customers internationally. Finally, companies serving a combination of national business and private customers account for 7 percent.

Regarding the combination of technology categories and the customer segments (right-hand graph), the large share of globally leading FinTech companies from the *Distributed Ledger Technology* category serving both business customers as well as private individuals internationally is striking. This proportion may be explained by the functionality of the technology, as public blockchain networks are accessible to everyone. However, there are also four companies in the sample which use the said technology but focus exclusively on the domestic market. Such restrictions of business activities to the home market may in some cases be related to regulatory requirements, for example.

The findings regarding the analysis of customer segments of the globally leading FinTech companies deviate slightly from those of last year's analysis. Although most companies still serve business customers in a cross-border context, fewer companies appear to be focusing on domestic private individuals customers (-7 percentage points), while more are focusing on a combination of private individuals and business customers internationally (+7 percentage points).

The comparison of Figure 3.4 with the findings for Swiss FinTech companies reveals that the global leaders focus more strongly on the home market. One reason for this could be the size of the home market. According to Figure 3.3, the globally leading FinTech companies are most often located in the United States, the United Kingdom, or India and therefore have a larger home market than Swiss FinTech companies, especially for those with private individuals as target clients. In terms of customer segments however, it can be said that both Swiss and the globally leading FinTech companies focus predominantly on business customers.

To summarise, out of the 373 globally leading FinTech companies, most of them are active in the *Banking Infrastructure* product area. Regarding the technologies applied, more than two-thirds are classified into the comparably mature *Process Digitisation / Automatisation / Robotics* category. By analysing the companies by their year of foundation, it can be shown that most of them were founded in 2015. After this peak, the number of foundations has continuously decreased. Furthermore, with 209 companies, the United States is home to most globally leading FinTech companies. With regard to the customer segments addressed by the companies, it can be observed that most of them are serving business customers in an international context. The analysis also shows that the globally leading FinTech companies tend to use more mature technologies than the Swiss FinTech companies and also differ in terms of product areas with a stronger focus on the *Banking Infrastructure* area. In addition, they have a larger share of companies that only address the home market.

4. FinTech Hub Ranking

By Thomas Ankenbrand & Denis Bieri, Institute of Financial Services Zug IFZ

For years, Switzerland has made a name for itself as a hub for financial services, especially in cross-border business. This pre-eminence has been weakened in recent years by the emergence of new competitors, which is also reflected in the Global Financial Centres Index (GFCI), one of the most prominent rankings for the competitiveness of financial locations. In the latest version of the GFCI, Zurich has dropped eleven places to rank 21st, one place behind Geneva, and is no longer among the top ten locations for financial services globally (Mainelli, Wardle, et al., 2021).

A similar trend has been observed in the FinTech sector in recent years, the sector that is important as a supplier of innovative technology-driven solutions for traditional financial institutions. While Switzerland provides very good conditions for FinTech companies, as shown in last year's editions of the FinTech hub ranking, it has generally lost ground in comparison with other leading locations. The following analysis aims to evaluate whether this tending negative trend has continued in 2021. While Section 4.1 analyses the general conditions for FinTech companies in different locations, Section 4.2 compares these conditions with the individual sizes of the respective industry of the locations considered.

4.1. FinTech Hub Ranking

Like the five previous editions, the sixth edition of the FinTech hub ranking aims to evaluate the quality of surrounding factors for FinTech companies for various international locations. Analogous to the previous year, 35 locations are taken into account, including Zurich and Geneva. As a FinTech ecosystem is a complex system with a multitude of influencing factors, the PEST approach is again used to provide a structuring framework. The acronym "PEST" stands for "political/legal", "economic", "social" and "technological", the four general dimensions that define a FinTech ecosystem in the present analysis. In total, the ranking is based on 74 different indicators from public sources, eleven at city level and 63 at country level. There were minor changes compared to the previous year. Firstly, the indicator on the popularity of a location among expats is now taken into account at city level. Secondly, new sources were used for the indicators on the quality of available infrastructure, the general quality of life, and the level of corporate tax rates, as no update but an adequate replacement was available for the old sources.

The performance scores in the individual PEST dimensions and the overall score are determined by the following methodological steps:

Step 1: Each of the 74 performance indicators is categorised into one of the four PEST dimensions according to its affiliation.[1]

Step 2: For each indicator, an individual ranking of all the 35 in-scope cities is derived, resulting in 35 individual scores ranging from 1, the city with the worst performance, to 35, the city with the best performance. Missing values are replaced by the average rank of all available indicators of the corresponding city in the respective PEST dimension.

Step 3: For each of the four PEST dimensions, a sub-ranking score is calculated for each in-scope city by averaging the affiliated indicator rankings.

Step 4: The overall hub ranking score is derived by aggregating the PEST dimension sub-ranking scores from Step 3 for every in-scope city.

[1] The list of all indicators, their sources, and their affiliation to one of the PEST dimensions can be found in the Appendix.

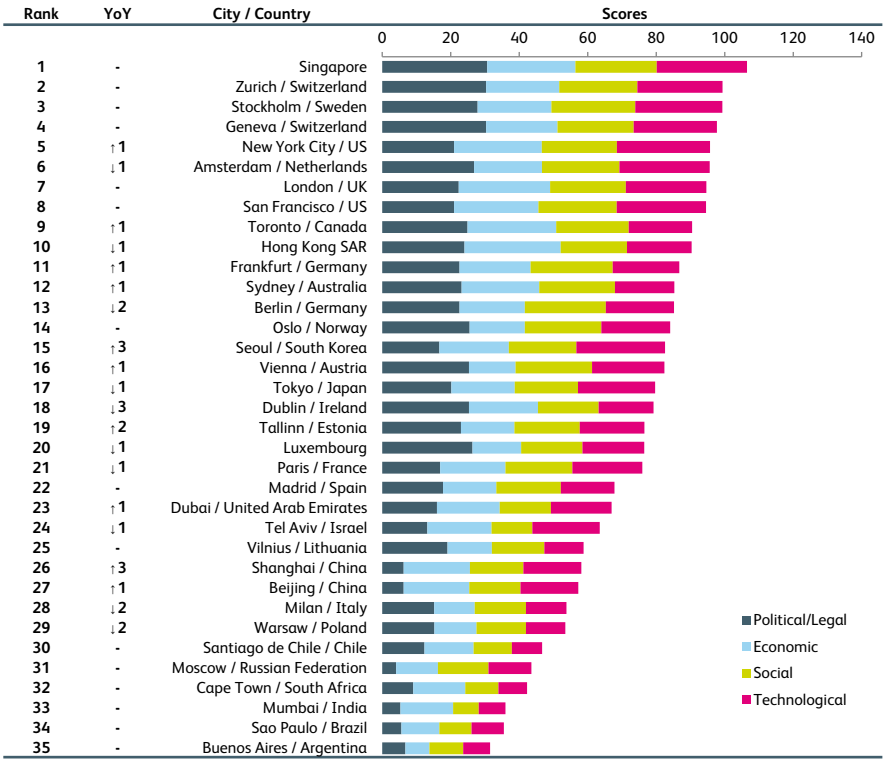

Figure 4.1: FinTech hub ranking

The approach described implies that each of the four PEST sub-ranking scores for each city ranges from 1 to 35.[2] Deriving the total score by aggregating the sub-ranking scores for each city in turn implies that a maximum value of 140 can be achieved.

The results of this year's edition of the FinTech hub ranking are shown in Figure 4.1. Singapore ranks first, showing a significant lead over Zurich and Stockholm in positions two and three, respectively, as represented by the ranking score. Geneva, the second Swiss city considered, finishes fourth. New York City, Amsterdam, London, San Francisco, Toronto, and Hong Kong conclude the top ten of the most favourable environments for FinTech companies. From a regional perspective therefore, half of the top ten FinTech hubs are located in Europe, three in North America, and two in Asia.

[2]Note that a sub-ranking score of 1 results for a city if it performs worst in each indicator ranking of the respective PEST dimension, while a sub-ranking score of 35 is achieved if it performs best in each indicator ranking of the respective PEST dimension.

The constitution of the top ten cities in the current and past hub rankings, which highlights temporal shifts in their order, is shown in Figure 4.2. The figure reveals that Singapore and Zurich have consistently ranked in the top two positions since the first assessment of leading FinTech locations in the year 2017.

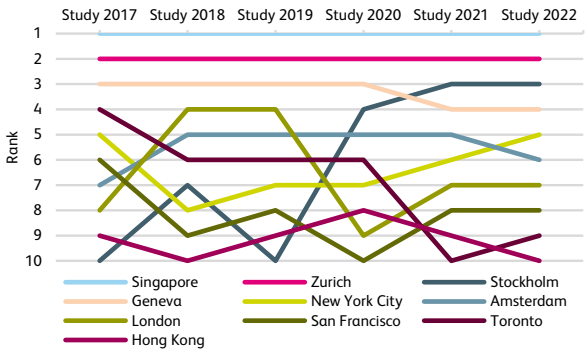

Figure 4.2: FinTech hub ranking by year

The other cities show a more irregular pattern and have experienced at least one change in rank since the first edition of the FinTech hub ranking. These position changes are related to their similar performance scores, which can also be seen in Figure 4.1. The order of the top ten has changed compared to last year in the current ranking for four cities. New York City and Toronto have increased their positions and replaced Amsterdam and Hong Kong, ranking five and nine, respectively. Note again that the scores of New York City and Amsterdam, and Toronto and Hong Kong, are very close to each other, so these position changes must be interpreted cautiously. What stands out from a Swiss perspective is the displacement of Geneva from the top three by Stockholm in last year's edition of the ranking. Stockholm's continuous improvement in the past rankings also poses a threat for Zurich to lose its second place.

The development over time of the relative distance between Zurich and the other top ten cities is shown in Figure 4.3. More precisely, it shows this year's top ten cities' ranking scores divided by the score of Zurich for the current and the past FinTech hub rankings. Consequently, the score of Zurich equals 1 for each year. The figure shows that the relative gap between Zurich and Singapore has remained relatively stable during the observation period, with Singapore's total score about 1.07 times that of Zurich. Geneva also shows a comparably stable distance to Zurich, which is not surprising given that the majority of the indicators considered in the FinTech hub ranking are on a country level. Particularly noteworthy is the strong improvement of Stockholm in recent years, whose performance score in the latest ranking is almost on a par with Zurich. If the trend continues, Zurich will lose second place to Stockholm in the next ranking. Compared to the pursuers, the four leading cities seem to have some distance and were able to extend it slightly in most cases last year.

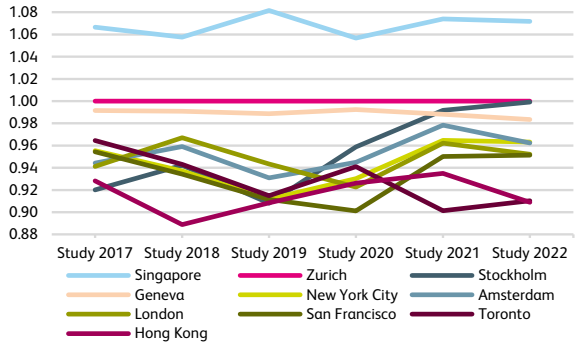

Figure 4.3: Performance of top ten cities relative to Zurich by year

A breakdown of the overall ranking of the top ten cities into the individual PEST dimensions is listed in Table 4.1, along with the changes in ranks compared to the previous year. The table shows that with regard to

	Rank (YoY change)			
City	**Political/Legal**	**Economic**	**Social**	**Technological**
Singapore	1 (±0)	4 (↑1)	3 (±0)	2 (↑1)
Zurich	2 (±0)	9 (↓2)	6 (↑2)	7 (↑1)
Stockholm	4 (±0)	8 (↑2)	1 (±0)	6 (↓1)
Geneva	2 (±0)	10 (↓1)	10 (↓1)	8 (↑1)
New York City	17 (±0)	5 (↓2)	13 (↓2)	1 (±0)
Amsterdam	5 (±0)	14 (↓3)	7 (↓2)	2 (↓1)
London	16 (±0)	2 (±0)	11 (↓2)	9 (↓3)
San Francisco	17 (±0)	6 (↓2)	5 (↑7)	4 (±0)
Toronto	10 (↓1)	3 (↑3)	14 (±0)	19 (↓2)
Hong Kong	11 (↓5)	1 (±0)	17 (↓2)	18 (±0)

Table 4.1: PEST-dimension rankings and year-over-year changes

the political/legal environment, Singapore is the leading location, followed by the two Swiss cities. The top ten perform identically compared to the previous year, with the exceptions of Toronto and Hong Kong, which lose one and five ranks, respectively. In terms of the economic environment, the latter takes the lead, followed by London and Toronto. While Toronto shows the greatest positive improvement year-on-year (up 3 ranks), Amsterdam loses three ranks. According to the evaluation, the social environment is best in Stockholm, and Singapore also, on rank three, achieves a leading role among the top ten locations in the overall ranking. San Francisco shows the biggest improvement, moving up seven places year-over-year. With regard to the technological dimension, New York City in first place and Amsterdam and Singapore jointly in second place are the leading locations. While Geneva, Singapore, and Zurich improve by one rank year-over-year, the other cities listed stagnate or slightly drop in their ranking.

From a Swiss perspective, Table 4.1 reveals that while the political/legal environment for FinTech companies is very favourable in Switzerland, there is room for improvement in the other three dimensions of the PEST framework. In particular, the economic environment seems to be deteriorating relative to other locations. The social environment seems to be a weak point for Geneva in particular (rank 10; down 1 rank year-over-year), while Zurich has developed positively here in the last year (rank 6, up 2 ranks year-over-year). A positive development for both Swiss cities can be observed in the technological environment, where both gain one rank year-over-year. However, their positioning on ranks seven and eight, respectively, shows that there is still some potential for improvement.

4.2. Input and Output Comparison

While the FinTech hub ranking in Section 4.1 assesses the quality of the environment for FinTech companies in selected locations, it does not establish a link with the actual sizes of the local FinTech sectors. This is why in this section, an analysis on the actual output of the selected locations is conducted. In particular, an output ranking is derived based on the following three factors:

1. Number of FinTech companies by location per capita
2. Number of jobs in FinTech companies by location per capita
3. Total funding of FinTech companies by location per capita

The respective data is sourced from Crunchbase (2021), a provider of business information about private and public companies. As the data is only available on a country level, the number of subjects considered is reduced from 35 to 31 compared to the FinTech hub ranking in Section 4.1. In total, the data includes 14,415 FinTech companies that employ a total of 1,938,099 people and are funded with a little over USD 300 billion. The average number of employees per company of 134 and the average financing volume of around USD 21 million indicate that the data tends to include companies that have a certain degree of maturity. Note that to correct for a size effect between the different countries, the three factors measuring the output of the FinTech sectors are divided by the respective population size of a location.

The top ten locations of the rankings for the three output measures and the total output ranking is listed in Table 4.2. The latter is based on the output score in the fourth column which is calculated by aggregating the inverted sub-rankings. This approach follows the one used in the FinTech hub ranking in Section 4.1 and enables a simple comparison of input and output scores for the in-scope countries.

The total rank reveals that analogous to the ranking of the quality of the environment for FinTech companies, Singapore takes the lead with regard to the output of the sector. Hong Kong follows on the second place and Israel ranks third. The top ten is completed by the United Kingdom (4th), Estonia (5th), Luxembourg (5th), Canada (7th), the United States (8th), Ireland (9th), and Switzerland (9th). In terms of sub-

	Sub-rankings				
Location	**FinTechs per capita**	**Jobs per capita**	**Funding per capita**	**Output score**	**Total rank**
Singapore	2	2	3	89	**1**
Hong Kong SAR	5	3	5	83	**2**
Israel	4	7	6	79	**3**
United Kingdom	7	10	1	78	**4**
Estonia	1	9	10	76	**5**
Luxembourg	3	1	16	76	**5**
Canada	10	6	8	72	**7**
United States	11	11	4	70	**8**
Ireland	9	4	14	69	**9**
Switzerland	6	12	9	69	**9**

Table 4.2: Top ten countries of the output ranking

rankings, Estonia is home to the most FinTech companies per capita, Luxembourg has the most FinTech jobs per capita, and the UK shows the highest investment volume in FinTech companies per capita. In terms of sub-rankings, Switzerland performs best in the measure of the number of domestic FinTech companies (rank 6), followed by the investment volume (rank 9) and the number of jobs in the sector (rank 12), and thus seems to perform rather worse in comparison to the input-related ecosystem ranking in Section 4.1, where Zurich reaches rank two and Geneva rank four.

To evaluate the average relationship between the quality of the ecosystems and the size of the FinTech sectors, a linear regression is used. The output score is considered the dependent variable and the input score[3] the independent variable. The results of the linear regression model are shown in Table 4.3.[4] Note that the model does not include an intercept term due to the lack of statistical significance. The regression results show evidence for a positive linear relationship between the input and output scores for the 31 countries considered. The coefficient value of 0.68 indicates that for an increase of one point in the input score the output score increases, on average, by 0.68 points. Hence, the quality of a FinTech ecosystem is significantly positively related to its sector's output.

	Dependent variable:
	Output score
Input score	0.680^{***}
	(0.042)
Observations	31
R^2	0.890
Note:	$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table 4.3: Linear regression model

It must be noted however, that no causal relationships can be substantiated by this simple linear regression model. The findings on the relationship between the quality of FinTech ecosystems and their output performance must therefore be interpreted with caution. However, more extensive econometric approaches are limited by the relatively small sample size.

Based on the regression coefficient and the input scores for Geneva and Zurich calculated in Section 4.1, the

[3] For the countries China, Germany, Switzerland, and the United States, which are represented with more than one city in the FinTech hub ranking in section Section 4.1, the average of the input score of the respective cities is used as a proxy for the country value.

[4] Note that heteroscedasticity robust standard errors based on Davidson, MacKinnon, et al. (1993) were applied. The standard errors are shown in the parentheses in Table 4.3.

model predicts an output score of 67 for Switzerland. Comparing this value with the actual output score of 69 (see Table 4.3) shows that the model works relatively accurately for Switzerland. In terms of content, this can be interpreted to mean that the quality of the environment for FinTech companies in Switzerland is in proportion to the output of the sector as implied by the regression model. With an R^2, a statistical measure for the goodness-of-fit of a model, of 89 percent, the model generally seems to be able to fit the data relatively well.

As a final analysis in this chapter, it is examined whether some of the total 74 indicators of the FinTech hub ranking correlate more strongly with the output score than others. Such an analysis can help to identify possible drivers for the formation of FinTech hubs. This in turn is important for policy makers or associations to advocate for the promotion of the respective sector. The most correlated indicators per PEST dimension are listed in Table 4.4, together with the corresponding correlation coefficient[5] and the best performing location(s). The table reveals that in the political/legal dimension, the ease of paying taxes, the lack of financial restrictions, i.e., a low degree of government control and interference in the financial sector, and the quality of the regulatory environment correlate the most with the output score. With regard to the economic environment, venture capital and joint venture activity reveal the highest correlation with the output score, followed by the quality of the entrepreneurial ecosystem in position three. The most highly correlated indicators in the social dimension are the talent competitiveness, the tertiary level inbound mobility measuring a country's popularity with foreign students, and the quality of labour force. In the technological dimension, the ICT organisational models quality measuring a country's ability with regard to new organisational models such as virtual teams and remote working, the overall degree of creation of mobile applications, and the overall digital competitiveness, i.e., the extent to which countries adopt and explore digital technologies, are the most correlated indicators.

Of these indicators that correlate most strongly with the output score, Singapore, Switzerland, and the United States are ranked most frequently as leading locations in Table 4.4, with three mentions each. Switzerland takes the leading role in terms of lack of financial restrictions, the talent competitiveness, and the quality of the overall labour force.

[5] Note that as a rule of thumb, a correlation coefficient of more than 0.7 represents a strong positive correlation.

Political/Legal		
Indicator	**Correlation**	**Leading Location(s)**
Ease of Paying Taxes	0.85	Hong Kong
Financial Restrictions	0.77	Australia, Switzerland
Regulatory Quality	0.72	Singapore

Economic		
Indicator	**Correlation**	**Leading Location(s)**
Venture Capital Deals	0.90	CAN, HKG, ISR, LUX, SGP
Joint Venture Deals	0.81	Canada
Quality of Entrepreneurial Ecosystem	0.66	USA

Social		
Indicator	**Correlation**	**Leading Location(s)**
Talent Competitiveness	0.71	Switzerland
Tertiary Level Inbound Mobility	0.66	Luxembourg, UAE
Quality of Labour Force	0.65	Switzerland

Technological		
Indicator	**Correlation**	**Leading Location(s)**
ICT Organisational Models Quality	0.73	USA
Mobile App Creation	0.68	Israel, Singapore
Digital Competitiveness	0.65	USA

Table 4.4: Correlations between the output score and individual input indicators

5. Political and Legal Environment

By Daniel Haeberli, Benedikt Maurenbrecher & Alexander Wherlock, Attorneys-at-Law, Homburger AG

FinTech companies, which are domiciled in Switzerland or approach Swiss-based clients, need to carefully analyse financial market regulation, in order to determine whether their activities trigger regulatory requirements. Switzerland's[1] regulatory[2] framework governing activities of FinTech companies consists of various federal laws and implementing ordinances. This subchapter outlines the key elements of the relevant Swiss financial market law.

- The *first part* provides an overview of the Financial Services Act (Section 5.1.1) and the Financial Institutions Act (Section 5.1.2), governing the provision of financial services, offering financial instruments and the respective licensing requirements in Switzerland
- The *second part* then discusses Switzerland's FinTech specific regulation (Section 5.2.1) as well as select federal laws, which may apply to FinTech related activities (Section 5.2.2).
- Finally, the *third part* explains the *FINMA* categorisation of tokens (Section 5.3.1) and summarises the cornerstones of the Swiss DLT Law, which entered into force in 2021 (Section 5.3.2).

5.1. Swiss Financial Market Architecture – FinSA and FinIA

On 1 January 2020 the Financial Services Act ("FinSA") and the Financial Institutions Act ("FinIA") entered into force.

[1] This chapter does not discuss any regulatory frameworks of jurisdictions other than Switzerland.

[2] This chapter focuses on regulatory aspects. There are other legal aspects which may be relevant for FinTech companies and FinTech related activities such as questions concerning tax law, contract law, intellectual property or data protection. Such legal aspects are not covered herein.

FinSA primarily sets-outs requirements applicable to the provision of financial services and the offering of financial instruments in Switzerland. FinIA provides for a comprehensive supervisory licensing regime applicable to portfolio managers, trustees, managers of collective investment schemes, fund management companies and securities firms.

FinSA and FinIA impact both "traditional" financial service providers and FinTech companies. For FinTech companies, in particular the following elements may be of importance:

- The provision of portfolio management or investment advice may trigger requirements to comply with rules of conduct (Section 5.1.1.2.2) or organisational rules (Section 5.1.1.2.3), even if such services are provided into Switzerland on a strict cross-border basis, and portfolio management activities may trigger licensing requirements (Section 5.1.2).
- Companies trying to obtain funding in Switzerland may need to ensure compliance with the new prospectus regime (Section 5.1.1.2.6).

5.1.1 Financial Services Act (FinSA)

With regard to FinSA, FinTech companies need to assess in a first step whether their activities are within the scope of application of FinSA (Section 5.1.1.1). If this is the case, a series of requirements may apply, in particular with regard to client segmentation, rules of conduct, organisational requirements and prospectuses (Section 5.1.1.2). Non-compliance with FinSA requirements may lead to criminal sanctions and fines.[3] Furthermore, if the relevant individual or legal entity is subject to prudential supervision in Switzerland, non-compliance may also have regulatory consequences.

[3] Articles 89 et seqq. FinSA.

5.1.1.1 Scope of Application

FinSA covers financial service providers, client advisers as well as producers and providers of financial instruments.[4]

Individuals as well as legal entities qualify as a *Financial Service Provider* and are subject to FinSA, if they provide Financial Services (see definition below) on a commercial basis in Switzerland or to Swiss-based clients.[5] Consequently, a FinTech company must in particular assess the following:

1. Are Financial Instruments (see definition below) involved and do the activities constitute Financial Services?

2. Are such Financial Services provided on a *commercial basis*?

3. Are such Financial Services provided *in Switzerland* or *to Swiss-based clients*?

When assessing whether a specific activity qualifies as a Financial Service under FinSA, in particular the following definitions are of importance:

- *Financial Instruments* under the FinSA are equity and debt securities, including bonds, units in collective investment schemes, structured products, derivatives and certain types of deposits ("Financial Instruments").[6]

- *Financial Services* under the FinSA are the following activities: (1) acquisition or disposal of Financial Instruments, (2) receipt and transmission of orders in relation to Financial Instruments, (3) management of Financial Instruments (portfolio management), (4) provision of personal recommendations on transactions with Financial Instruments (investment advice), and (5) granting of loans to finance transactions with Financial Instruments ("Financial Services").[7]

The mere offering of Financial Instruments does, in principle, not qualify as a Financial Service. However, there is only limited guidance with regard to the question under which circumstances a specific activity would be considered as a mere offer and hence not a Financial Service.

A commercial activity is an independent economic activity pursued on a permanent and for-profit basis. Financial Services are presumed to be provided on such *commercial basis* if the relevant Financial Service Provider (i) either provides Financial Services to more than 20 clients or (ii) promotes the provision of Financial Services in advertisements, prospectuses, circulars or electronic media (irrespective of whether such Financial Service Provider services 20 or less clients).

Financial Services are deemed to be provided *in Switzerland* in particular if the Financial Service Provider is either (i) domiciled in Switzerland or registered in the Swiss commercial register; (ii) domiciled abroad but maintains at least a factual branch or representative office in Switzerland; or (iii) domiciled abroad but sends client advisers to Switzerland, which then address clients in Switzerland (e.g., during road shows).

In any case it must be noted that for the purposes of FinSA, having a physical presence in Switzerland is not required - FinSA will also be applicable in constellations in which Financial Services are rendered to *Swiss-based clients*, i.e., on a strict cross-border basis.

The latter, in particular, has an impact on FinTech companies domiciled abroad, which engage in activities in the Swiss market without maintaining a physical presence in Switzerland. For example, a foreign FinTech company providing online services relating to portfolio management or investment advice to Swiss-based clients may be subject to requirements under FinSA. In

[4] Article 2 para. 1 FinSA.
[5] Article 3 let. d FinSA.
[6] Article 3 let. a FinSA.
[7] Article 3 let. c FinSA. Note: Article 3 para. 3 FinSO exempts from the definition of Financial Services the provision of advice regarding the structuring or raising of capital as well as the provision of advice in the context of mergers and acquisitions or the acquisition or sale of participations and the services related to such advice.

this context, it must be noted that the requirements under the FinSA largely mirror requirements set out in corresponding regulation of the European Union ("EU")[8], but that there are nonetheless notable differences and therefore a FinTech company compliant with EU rules is not automatically compliant with Swiss rules.

However, there are certain exemptions under FinSA, specifically applicable to Financial Service Providers domiciled outside of Switzerland. Pursuant to a *reverse-solicitation* exemption, the FinSA does, for example, not apply to:

- Financial Services provided by a foreign Financial Service Provider as part of a previously existing client relationship (e.g., an existing portfolio management or investment advisory agreement) that was entered into at the express initiative of a Swiss-based client; and
- Financial Services provided by a foreign Financial Services Provider that have been expressly requested by a Swiss-based client on such client's own initiative.[9]

5.1.1.2 Key Elements

Key elements set out under FinSA concern client segmentation (Section 5.1.1.2.1), rules of conduct (Section 5.1.1.2.2), organisation (Section 5.1.1.2.3), client advisers (Section 5.1.1.2.4), the ombudsman scheme (Section 5.1.1.2.5) and prospectuses (Section 5.1.1.2.6).

Most requirements set-out under FinSA were subject to a two-year phase-in period and must be adhered to since 1 January 2022.

5.1.1.2.1 Client Segmentation – Retail / Professional / Institutional

If a FinTech company qualifies as a Financial Service Provider, it needs to allocate each of its clients – as part of the onboarding process – to one of the following client segments: retail, professional or institutional:[10]

1. *Retail Clients*, also referred to as private clients, are all clients that do not qualify as Professional Clients (as defined below).

2. *Professional Clients* are: (a) financial intermediaries as defined in the Swiss Banking Act, the Swiss Financial Institutions Act and the Swiss Collective Investment Schemes Act; (b) insurance companies as defined in the Swiss Insurance Supervision Act; (c) foreign clients subject to prudential supervision equivalent to the financial intermediaries and insurance companies within the meaning of let. (a) and let. (b); (d) central banks; (e) public entities with professional treasury operations; (f) occupational pension schemes, and other institutions whose purpose is to serve occupational pensions, with professional treasury operations; (g) companies with professional treasury operations; (h) large companies (companies which exceed two of the following parameters: (1) balance sheet total of CHF 20 million, (2) turnover of CHF 40 million and (3) equity of CHF 2 million); and (i) private investment structures with professional treasury operations created for high-net-worth Retail Clients.

3. *Institutional Clients* are Professional Clients as defined in 2. (a)-(d) above, as well as national and supranational public entities with professional treasury operations.

Depending on the client segment, different duties and hence different levels of "client protection" will apply. Consequently, in order to limit the impacts of FinSA, a FinTech company may opt to restrict its activities to Professional Clients and / or Institutional Clients.

Some clients can declare that they waive certain client protection provisions (so-called "opting out") and some other clients can declare that they want to benefit from a higher level of protection (so-called "opting in").[11] Any such declaration to "opt-out" or "opt-in" must be in

[8] MiFID II, Prospectus Directive, PRIIPs.
[9] Article 2 para. 2 FinSO.
[10] Article 4 FinSA.
[11] Article 5 FinSA.

writing (e.g., a physical letter) or in another manner verifiable by text (e.g., an email or WhatsApp message).[12]

5.1.1.2.2 Rules of Conduct

The FinSA sets out rules of conduct, which namely cover A) information duties, B) suitability and appropriateness checks, C) documentation and accountability duties as well as D) duties regarding transparency and due care.

A) Information Duties
The information duties aim at providing clients a comprehensive and transparent overview of the services and products offered by the Financial Service Provider. There are general and specific duties and information may be provided either in writing or electronically, e.g., via a website. If provided electronically, it must be ensured, however, that clients may at all times access, download and save such information to a durable medium (e.g., a hard disk).[13]

Depending on the respective client segmentation, different information duties will apply. In constellations in which Financial Services are provided to Retail Clients, the information duties apply to the full extent. Professional Clients, on the other hand, may waive *general* information duties.[14] Where Financial Services are provided to Institutional Clients, the information duties under FinSA are not applicable.[15]

B) Suitability and Appropriateness
If a FinTech company provides portfolio management services or renders investment advice, it must meet the appropriateness or suitability test requirements set out under FinSA, also if such services are (in whole or in part) provided through an automated or semi-automated "robo-advice" system.

- Suitability: When providing portfolio management services or rendering investment advice under consideration of the client's entire portfolio (so-called "Portfolio-Related Investment Advice"), a Financial Service Provider must enquire about the relevant client's financial situation and investment objectives as well as its knowledge and experience.[16]

- Appropriateness: When rendering investment advice for individual transactions without taking into account the client's entire portfolio (so-called "Transaction-Related Investment Advice"), a Financial Service Provider must obtain information on the client's knowledge and experience and must ensure, before recommending a Financial Instrument, that the recommendation is appropriate for such client.[17]

- If a Financial Service Provider is only involved in the mere execution or transmission of a client order, the Financial Service Provider is not required to conduct such suitability or appropriateness checks.[18] Nevertheless, prior to providing mere execution or transmission services, the client needs to be informed that no appropriateness or suitability checks will be performed.[19]

If Retail Clients are involved, these duties apply to the full extent. With regard to Professional Clients, certain alleviations are set out under FinSA: a Financial Service Provider may, unless there are indications to the contrary, in particular, assume that Professional Clients have sufficient knowledge and experience as well as the capacity to bear the risks underlying the Financial Service in question when conducting the suitability and appropriateness checks.[20] For Institutional Clients, FinSA provides for a blanket non-application of the information duties.[21]

C) Documentation and Accountability Duties
FinSA namely requires Financial Service Providers to record and document (i) the information collected from the client and the services provided in Switzerland or to

[12] Article 5 para. 8 FinSA.
[13] Article 9 para. 3 FinSA and article 12 FinSO.
[14] Article 20 para. 2 FinSA.
[15] Article 20 para. 1 FinSA.
[16] Article 12 FinSA.
[17] Article 11 FinSA.
[18] Article 13 para. 1 FinSA.
[19] Article 13 para. 2 FinSA.
[20] Article 13 para. 3 FinSA.
[21] Article 20 para. 1 FinSA.

clients in Switzerland as well as (ii) the results of suitability and appropriateness checks.[22] Generally, Financial Service Providers are free how they organise such documentation and purely digital solutions are possible.[23] In any case, however, a Financial Service Provider must be in a position to render account to a client within, as a rule, ten business days after a client requested to obtain his / her files. Furthermore, the relevant records and documents must be stored for at least ten years.[24]

If Retail Clients are involved, the duties concerning documentation and accountability apply to the full extent. Professional Clients may waive such duties to a certain extent.[25] For Institutional Clients, the FinSA provides for a blanket non-application of the information duties.[26]

D) Transparency and Due Care

Financial Service Providers must uphold the principles of good faith and equal treatment. They must implement systems and procedures that are appropriate with regard to their size, complexity and business activities and ensure the protection of clients' interests and the equal treatment of their clients. In particular, they must ensure (i) that client orders are registered and allocated promptly and correctly, (ii) that comparable orders are executed in the order in which they were received, unless this is not in the client's interest or not possible due to the nature of the client's order or the market conditions, (iii) that in case orders are pooled, the interests of the clients involved are safeguarded and (iv) that Retail Clients are informed of any material difficulties which could affect the correct execution of their orders.[27]

Furthermore, FinSA requires that client orders are executed in the best interest of the client. Financial Service Providers must ensure the best execution of client orders in terms of cost (taking into account, *inter alia*, any inducements provided by third parties), timing and quality. In order to satisfy this requirement, Financial Service Providers must define and annually review the criteria necessary for the selection of the execution venue (in particular, the price, costs, efficiency and probability of the execution and settlement) and implement appropriate internal directives.[28]

If Retail Clients or Professional Clients are involved, the duties concerning transparency and due care apply to the full extent. For Institutional Clients, FinSA provides for a blanket non-application of the information duties.[29]

5.1.1.2.3 Organisation

Financial Service Providers must ensure that they fulfil their duties under FinSA through internal regulations and an appropriate organisation of operations. They must namely (i) define internal rules that are appropriate with respect to their size, complexity and legal form, as well as in relation the Financial Services they offer and the risks associated therewith; and (ii) select their employees carefully and ensure that they receive training in the rules of conduct as well as in the skills they need to carry out their specific tasks.[30] Furthermore, FinSA provides for organisational requirements with regard to outsourcing,[31] conflicts of interest,[32] payments from third parties ("inducements" or "kick-backs"),[33] and employee transactions.[34]

To date, there remains significant legal uncertainty concerning the question whether the organisational requirements set out under FinSA only apply to Swiss Financial Service Providers or to Financial Service Providers domiciled outside of Switzerland as well.

[22] Article 15 para. 1 FinSA; Dispatch FinSA I FinIA, 8959. Cf. article 25 paras. 5 et seqq. MiFID II.
[23] Dispatch FinSA I FinIA, 8959 et seq.; Pre-consultation report FinSO, 27.
[24] Article 18 FinSO; Dispatch FinSA I FinIA, 8959 et seq.
[25] Article 20 para. 2 FinSA.
[26] Article 20 para. 1 FinSA.
[27] Article 17 FinSA and article 20 FinSO.
[28] Article 18 FinSA and article 21 FinSO.
[29] Article 20 para. 1 FinSA.
[30] Article 21 et seq. FinSA and article 23 FinSO.
[31] Article 23 et seq. FinSA.
[32] Article 25 FinSA.
[33] Article 26 FinSA.
[34] Article 27 FinSA.

5.1.1.2.4 Client Advisers

Under FinSA, "Client Advisers" and "Financial Service Providers" must be strictly kept apart: Client Advisers are *natural persons* (i.e., not legal entities) that render Financial Services either on behalf of a Financial Service Provider or in their own capacity as a Financial Service Provider.

With regard to Client Adviser, the following aspects must be kept in mind:

- *Knowledge and Expertise of Client Advisers*: If a FinTech company qualifies as a Financial Service Provider, its Client Advisers will need to possess the required knowledge with regard to the Swiss rules of conduct (see Section 5.1.1.2.2 above) and a level of expertise appropriate for their activities. If a foreign Financial Services Provider acts on a strict cross-border basis, such Swiss requirements regarding knowledge and expertise are, in our view, only applicable to Client Advisers that actually render Financial Services to Swiss-based clients. Nonetheless, most foreign Financial Service Providers will likely need to establish a "Swiss Desk", i.e., designate specific employees / Client Advisers that are familiar with the Swiss rules of conduct and meet all requirements set out under FinSA.

- *Client Adviser Register*: The following Client Advisers are required to be registered in the so-called Client Adviser Register (*Beraterregister*) in order to be allowed to carry out their activity in Switzerland: (i) Client Advisers of *Swiss* Financial Service Providers, which are not subject to prudential supervision (i.e., independent client advisers) and (ii) Client Advisers of *foreign* Financial Service Providers, which are either not subject to prudential supervision abroad or which provide Financial Services to Swiss-based Retail Clients.[35]

Persons having only very limited contact with clients or potential investors do not qualify as Client Advisers and are thus not subject to the requirements regarding knowledge and expertise as well as the Client Adviser Register. The same applies to employees of a Financial Service Providers that merely support the provision of Financial Services. Examples of such supporting activities include, *inter alia*, the dispatch of product documentation following the expression of interest by a client, the arrangement of meetings with his / her Client Adviser or the support of technical procedures with respect to electronic customer portals or websites of a Financial Service Provider.

5.1.1.2.5 Ombudsman Scheme

Financial Service Providers are required to accede to the Swiss ombudsman scheme.[36]

5.1.1.2.6 Prospectus Requirements

FinSA sets-out a comprehensive prospectus regime, which *inter alia* provides for an ex-ante approval requirement for prospectuses if Financial Instruments are publicly offered or admitted to trading in Switzerland. To date BX Swiss AG and SIX Exchange Regulation AG have been approved by *FINMA* as Reviewing Bodies under *FINMA*, tasked with the review and approval of prospectuses.

In principle, the requirement to publish an approved prospectus applies to all public offerings in or into Switzerland and to all securities (incl. DLT securities) that are to be admitted to trading on a trading venue (see Section 5.2.2.2 below) or a DLT trading facility (see Section 5.3.2.2 below) in Switzerland.[37] However, FinSA contains a series of exemptions and there is for example no requirement to prepare a prospectus if the public offering is addressed exclusively at Professional Investors or if it is directed at fewer than 500 investors.

Under FinSA, an offer is any invitation to purchase a Financial Instrument, if such invitation contains sufficient information on the terms and conditions of the

[35] Client Advisers of foreign Financial Service Providers that are subject to prudential supervision abroad are exempted from this registration requirement to the extent that their activities in Switzerland are directed exclusively at Institutional Clients and / or Professional Clients (Article 31 FinSO).

[36] Article 77 FinSA.

[37] Article 35 FinSA.

offer and the Financial Instrument itself.[38] Therefore, FinTech companies providing information relating to Financial Instruments on an internet-based platform must in particular take into account the following:

- The publication of information relating to Financial Instruments on a platform alone should not *per se* be regarded as an offer but the manner in which access to the platform is structured will be decisive.

- If information on the Financial Instrument can only be accessed by the interested client / investor on an internet-based platform via a search entry (e.g. when searching for ISIN / Valor or product name), no offer from the FinTech company operating this internet-based platform (reverse solicitation) will be deemed to have been made. The result of the search should not have any other legal consequences than an (oral or written) information on a financial instrument at the request of an interested investor.

- Also, if the client / investor must first log in with his / her password on an internet-based platform, it can be assumed that no offer will be made by the FinTech company operating this internet-based platform.

- However, it must be noted that in both scenarios mentioned above, a reverse solicitation constellation will only be at hand if no advertising by the "provider" or one of its representatives in relation to the specific Financial Instrument preceded the actions of the investor.[39]

5.1.2 Financial Institutions Act (FinIA)

FinIA sets out a comprehensive licensing regime for financial institutions. *Financial Institutions* within the meaning of FinIA are: (1) portfolio managers; (2) trustees; (3) managers of collective assets; (4) fund management companies and (5) securities firms (formerly securities dealers).

Instead of a sectorial approach, FinIA provides for a "pyramid approach", implementing a rather light touch regulation for portfolio managers and trustees and increasingly stricter regimes for managers of collective assets, fund management companies and securities firms.

FinIA defines common core requirements that must be met by all Financial Institutions. All Financial Institutions regulated under FinIA must for example implement an appropriate organisation (risk management, effective internal control system, etc.) and must be effectively managed in Switzerland. Furthermore, both the Financial Institution itself as well as the persons in charge of their administration and management must meet the regulatory fit and proper test and must therefore have a good reputation and ensure proper business conduct.

For FinTech companies, the key aspects of FinIA are the following:

- *Portfolio managers* (e.g., independent external asset managers) are subject to prudential supervision. Such supervision will be conducted by an independent supervisory organisation (*Aufsichtsorganisation*) that itself will be licensed by *FINMA* for this purpose. In July 2020 *FINMA* authorised the first supervisory organisations for portfolio managers.[40]

- *Securities firms* require a license from *FINMA* and are subject to supervision as well as a series of specific regulations. A FinTech company will qualify as a securities firm within the meaning of FinIA if it engages, on a commercial basis, in either (a) dealing in securities in its own name but on its clients' account, or (b) short-term transactions in securities on its own account and either thereby potentially affects systemic stability, acts as a participant on a trading venue or operates as an organised trading facility, or (c) market making activities by engaging in short-term transactions in securities while setting public bid and ask

[38] Article 3 let. g FinSA.
[39] Article 3 para. 6 let. a FinSO.
[40] See FINMA (online).

prices (permanently or on request).[41] Depending on the relevant business model and activities, FinTech companies may in particular qualify as own-account dealers.

As far as regulatory licensing requirements are concerned, the Swiss regime is largely based on the so-called principle of territoriality (*Territorialitätsprinzip*). Therefore, as long as a FinTech company is domiciled abroad and provides Financial Services into Switzerland on a strict cross-border basis, i.e., without establishing a physical presence in Switzerland, such activities (with a few exceptions) will not trigger Swiss regulatory licensing requirements under FinIA. Such activities may, however, be subject to the requirements under FinSA (see Section 5.1.1 above).

5.2. Other Key Regulation

This subchapter summarises key elements of the Swiss FinTech Specific Regulation (Section 5.2.1) and provides an overview on select Swiss federal laws (Section 5.2.2), which may – besides FinSA and FinIA (see Section 5.1 above) – be applicable to FinTech related activities.

5.2.1 FinTech Specific Regulation

The Swiss FinTech specific regulation comprises three "pillars": the so-called FinTech license (Section 5.2.1.1), a regulatory innovation area ("sandbox") (Section 5.2.1.2) and the settlement accounts exemption (Section 5.2.1.3).

5.2.1.1 FinTech License

Since 1 January 2019 the Swiss Banking Act ("BA") provides for two licensing categories (i) the regular banking license and (ii) the FinTech license pursuant to Article 1b BA, (also referred to as "banking license light").

Before the FinTech license was introduced, only formally licensed banks were permitted to (i) accept deposits from the public on a professional basis or to (ii) recommend themselves for such deposit taking activities. Given that generally all repayment-liabilities vis-à-vis clients qualify as *deposits* and since accepting deposits from more than 20 persons will qualify as acting on a *professional basis* (see Section 5.2.2.1 below), certain business models of FinTech companies would have required a regular banking license under the BA.

With the FinTech license, companies not engaging in the classic banking business (interest rate differential business; *Zinsdifferenzgeschäft*), e.g., by using short-term deposits for long-term lending or investment activities, now have a viable alternative. The FinTech license is attractive for companies that are mainly active in the financial sector but which (i) may limit their operations to accepting either deposits of less than CHF 100 million or crypto assets (*kryptobasierte Vermögenswerte*)[42] and which (ii) do not invest the accepted funds nor pay interest thereon. Hence, the license may for example be attractive for companies offering payment services or platform funding services.

However, there are a number of aspects that have to be taken into account when considering applying for a FinTech license. In order to obtain the license from *FINMA*, the company must go through a rather lengthy (depending in particular on the complexity of the business model and the quality of the license application) approval process[43], which is, however, less burdensome than the licensing process for a regular banking license. In this process, the company will namely be required to evidence that it meets requirements regarding (i) organisation and financial and regulatory audits, (ii) corporate governance (the board of directors must for example consist of at least three persons) and (iii) capital (e.g., minimum capital of 3 percent of the deposits accepted from the public, i.e., up to CHF 3 million, but at least CHF 300,000).

Furthermore, once the FinTech license has been granted by *FINMA*, any deposits or crypto assets held by the company must be either (i) segregated from the

[41] Article 41 FinIA.

[42] In the sense of article 5a BO.

[43] See the FINMA guidelines for FinTech licence applications (FINMA, 2018a) (version of 2 August 2021), which are available in German, French as well as English.

assets of the company or (ii) recorded in the company's books in such a manner that they can be shown separately from the company's own funds at any time (if the company opts for the latter option, a more comprehensive audit is required).[44]

If the maximum deposit threshold of CHF 100 million is exceeded, the company must notify *FINMA* within 10 days and must submit a regular bank license application within 90 days.[45]

Finally, holders of a FinTech license are required to comprehensively inform their clients about the risks of their business model, their services and the technologies used. Furthermore, the company's clients must be informed that their deposits with the company are not protected by the Swiss deposit insurance regime. Solely mentioning this information in general terms and conditions is insufficient and if the information is made available electronically, it must be ensured that clients may at any time view, download and save such information. Also, the information must be made available *prior* to entering into the agreement with the client and the client must have had enough time to understand the information prior to concluding the contract.[46]

5.2.1.2 "Sandbox"

The "sandbox" exemption allows engaging in activities which under former regulation would have triggered bank licensing requirements. Companies accepting deposits from the public are deemed *not* to be acting on a commercial basis, provided

(i) the deposits or crypto assets accepted do not exceed the threshold of CHF 1 million;

(ii) the company does not engage in the interest rate difference business (*Zinsdifferenzgeschäft*); and

(iii) the clients are informed prior to depositing the funds that the company accepting the funds is not supervised by *FINMA* and that the funds are not protected by the Swiss deposit insurance regime.[47]

Under the current regulation, it is allowed to invest the deposits accepted, provided that the threshold of CHF 1 million is not exceeded and that the company does not engage in the interest rate difference business.

If the deposit or crypto asset threshold of CHF 1 million is exceeded, the company must notify *FINMA* within 10 days and must – in each case depending on the respective activities – either submit a regular bank license application or a FinTech-license application within 30 days. During the interim period between the filing of the license application and *FINMA's* decision on the request, the other conditions still need to be met, i.e., no interest may be paid on such deposits and the information duties vis-à-vis depositors must be satisfied. Also, *FINMA* may on a case by case basis decide that no further deposits may be accepted until the end of the license application process.[48]

If the company decides to inform its customers about the lack of *FINMA* supervision and the lack of deposit insurance protection via its website, certain requirements must be met. First, the information must be displayed separately from other information. Therefore, solely mentioning it in general terms and conditions is insufficient. Second, this information must be displayed in text and in reproducible form. Third, the company's customers need to expressly confirm that they took note of the information.

The "sandbox" exemption is designed to create a regulatory safe harbour, where FinTech companies, in particular, are able to test their business ideas and provide certain financial services without becoming a regulated entity under Swiss banking regulation. However, it must be noted that companies engaging in activities within the "sandbox" are still likely to be subject to anti-money laundering regulation (see Section 5.2.2.4 below) and may therefore nonetheless need to adhere to certain regulatory requirements under Swiss law.

[44] Article 14f BO.
[45] Article 1b para. 6 BA.
[46] Article 7a BO.
[47] Article 6 para. 2 BO.
[48] Article 6 para. 4 BO.

Therefore, the "sandbox" should not be misunderstood as a "regulation free" area.

5.2.1.3 Settlement Accounts Exemption

Funds held in customer accounts of securities firms, DLT trading facilities, precious metal dealers, portfolio managers or similar companies which exclusively serve the purpose of settling customer transactions do not qualify as deposits within the meaning of the BA and therefore do not trigger bank licensing requirements, provided the funds are not interest-bearing and are forwarded within 60 days. The exemption, in particular, facilitates the operation of funding platforms.

5.2.2 Selected Federal Laws

The Swiss regulatory framework relevant for FinTech companies is, apart from the FinSA (see Section 5.1.1 above) and FinIA (see Section 5.1.2 above), in particular shaped by the following federal laws and their implementing ordinances:

- the *Banking Act* ("BA"), which regulates banking activities / deposit taking as well as the supervision of banks and of holders of FinTech licenses (see Section 5.2.1.1 above);
- the *Financial Market Infrastructure Act* ("FMIA"), which governs the organisation and operation of financial market infrastructures (*inter alia*, trading venues and payment systems) and the conduct of financial market participants in securities and derivatives trading;
- the *Anti-Money Laundering Act* ("AMLA"), which regulates the prevention of money laundering and terrorist financing and the due diligence in financial relationships and transactions;
- the *Consumer Credit Act* ("CCA"), which governs consumer credits, i.e., loans granted on a professional basis to individuals for purposes other than business or commercial activities; and
- the *Collective Investment Schemes Act* ("CISA"), which governs in particular the approval requirement for foreign and Swiss collective investment schemes.

The following sub-chapters provide a high-level overview of this regulatory framework applicable to banks (Section 5.2.2.1), trading facilities (Section 5.2.2.2), payment systems (Section 5.2.2.3), anti-money laundering (Section 5.2.2.4), consumer credits (Section 5.2.2.5) and collective investment schemes (Section 5.2.2.6).

5.2.2.1 Banks

In Switzerland, only licensed banks and holders of FinTech licenses (see Section 5.2.1.1 above) are permitted to accept deposits from the public on a professional basis or to recommend themselves for such deposit taking activities.[49] Furthermore, only licensed banks (not holders of a FinTech license) may use or refer to the term "bank" or "banker" in their company name, their company purpose or in advertisement documentation.[50] Any unauthorised acceptance of deposits or advertising of such services may be subject to criminal sanctions.[51]

Generally, a company is considered to be a bank,[52]:

(i) if it is mainly active in the financial sector; and

(ii) if it accepts deposits from the public in an amount *higher* than CHF 100 million on a professional basis or recommends itself publicly for such deposit taking activities[53]; or accepts deposits from the public in an amount of *up to* CHF 100 million on a professional basis or recommends itself publicly for this purpose and reinvests these deposits or pays interest thereon.[54]

[49] Articles 1a and 1b BA.
[50] Article 1 para. 4 BA.
[51] Articles 46 and 49 BA; Article 44 FINMASA.
[52] Companies are also considered to be banks if they refinance themselves significantly with loans from several banks that do not own any qualified / significant shareholdings in them in order to finance any number of persons or companies with which they do not form an economic unit of their own and in any manner possible; see article 1a let. c BA.
[53] Article 1a let. a BA.
[54] Article 1a let. b BA.

A company is considered to be *active in the financial sector* if it renders or procures financial services, in particular, by engaging in the deposit taking or lending business, securities trading, investment or portfolio management or accepting crypto assets for itself or for third parties.[55] Deposit taking is generally deemed to be performed on a professional basis (see "sandbox" exemption; Section 5.2.1.2 above), if an individual or legal entity (a) continuously accepts more than 20 deposits from the public or crypto assets in collective custody or (b) recommends itself publicly for such deposit or crypto asset taking activities (regardless of whether the company actually continuously holds more than 20 deposits from the public or crypto assets or not).[56]

Generally, all repayment-*liabilities* via-à-vis clients qualify as deposits within the meaning of the BA.[57] There are, however, a number of exemptions. Amongst others, the following liabilities are exempt, i.e., do not qualify as deposits:[58]

- funds provided in consideration of a contract providing for the transfer of property or the rendering of a service (e.g., prepayments that form part of the consideration for a purchase agreement are exempt, but granting a loan with a duty to repay is not exempt);
- funds which are transferred as a security;
- credit balances on client accounts of securities firms, DLT trading facilities, precious metal dealers, portfolio managers or similar companies which solely serve the purpose of the settlement of client transactions, provided no interest is paid on these funds and provided they are forwarded within 60 days;
- funds that to a small extent are transferred to a payment instrument or a payment system and that are exclusively used for future purchases of goods or services, provided no interest is paid on these funds; and
- bonds and other debt instruments that are standardised and issued *en masse* or uncertificated rights with the same function (book-entry securities) if, at the time of the offer, investors are informed in a certain form[59] about (1) the name, registered office and the purpose of the issuer as set out in a brief description, (2) the interest rate, issue price, subscription period, payment date, maturity and redemption terms, (3) the most recent annual financial statements and consolidated financial statements together with the audit report and, if more than six months have passed since the balance sheet date, the interim financial statements, if any, of the issuer and the guarantor, (4) the collateral provided and (5) the representation of bondholders, insofar as this is included in the investment conditions.

Furthermore, the following deposits are *not* considered to be deposits *from the public*:[60]

- deposits from domestic and foreign banks or other companies under state oversight;
- deposits from shareholders owning qualified shareholdings (more than 10 percent of the share capital or the votes) in the debtor and any parties affiliated or related with such shareholders; and
- deposits from institutional investors with professional treasury departments.

Activities of FinTech companies may involve accepting deposits from the public (e.g., if a FinTech company accepts funds from investors and subsequently transfers funds to its clients). In order to reduce the risk that such activities qualify as regulated deposit taking under the BA, the following should be considered:

[55] Article 4 para. 1 let. a BO. Furthermore, holding companies owning predominantly participations in companies active in the financial sector are themselves considered active in the financial sector; article 4 para. 1 let. b BO. Finally, significant group companies (Wesentliche Gruppengesellschaften) as defined in article 3a BO are deemed to be active in the financial sector too; article 4 para. 1 let. c BO.
[56] Article 6 para. 1 BO.
[57] Article 5 para. 1 BO; FINMA-Circular 2008/3, para. 10.
[58] Article 5 para. 3 BO.
[59] See article 64 para. 3 FinSA. E.g., electronically via the issuer's website.
[60] Article 5 para. 2 BO.

- FinTech companies may decide to refrain from accepting any funds in the first place.

- If deposits are involved, the FinTech company may want to stay within the scope of application of the "sandbox" exemption (see Section 5.2.1.2 above) or it may want to avoid accepting more than 20 deposits from the public or crypto assets in collective custody and refrain from recommending itself publicly for this purpose.[61]

- If deposits are involved, the FinTech company can try to ensure that only exempt liabilities are in fact involved. This would, for example, be the case if credit balances on client accounts solely serve the purpose of the settlement of client transactions and if no interest is paid on these funds.[62]

- FinTech companies can also decide to issue bonds or other debt instruments and, at the time of the offer, to inform investors in compliance with article 5 para. 3 let. b BO as well as article 64 para. 3 FinSA (see above).

- Finally, FinTech companies can consider obtaining a FinTech license (see Section 5.2.1.1 above), which allows them to accept deposits from the public up to CHF 100 million and crypto assets.

5.2.2.2 Trading Facilities

Trading venues, i.e., stock exchanges and multilateral trading facilities, are regulated financial market infrastructures under FMIA.[63] They require a license from *FINMA*[64] and are subject to a series of specific regulations.

- A stock exchange is an institution for multilateral securities trading *where securities are listed* and whose purpose is the simultaneous exchange of bids between several participants and the conclusion of contracts based on non-discretionary rules.[65]

- A multilateral trading facility is an institution for multilateral securities trading whose purpose is the simultaneous exchange of bids between several participants and the conclusion of contracts based on non-discretionary rules *without listing securities*.[66]

Hence, the key difference between the two types of trading venues is that at a stock exchange *listed* securities are being traded whereas at a multilateral trading facility *unlisted* securities are being traded (see Section 5.3.2.2 for information about a recently introduced financial market infrastructure, the "DLT Trading Facility", where primarily "DLT Securities" are being traded).

Under Swiss law, "securities" (*Effekten*) are instruments, which are:

(i) standardised;

(ii) suitable for mass trading and;

(iii) either certificated securities (*Wertpapiere*), uncertificated securities (*einfache Wertrechte*), ledger-based securities (*Registerwertrechte*), derivatives[67] or intermediated securities (*Bucheffekten*).[68]

Typical examples of securities include not only shares, bonds, notes and other debt instruments, but may for example also include participations and / or sub-participations in a loan if such participations and / or sub-participations are standardised and suitable for mass trading.

An instrument is deemed to be standardised and suitable for mass trading if it is (a) either publicly offered

[61] Whether for example the mere publication of credit requests via crowdlending platforms constitutes a public recommendation to accept deposits is still open. To our knowledge, FINMA does not seem to be interpreting the law this way.
[62] Article 5 para. 3 let. c BO; See also the FINMA Fact sheet Crowdfunding (2020).
[63] Article 2 let. a sec. 1 and 2 FMIA.
[64] Article 4 para. 1 FMIA.
[65] Article 26 let. b FMIA.
[66] Article 26 let. c FMIA.
[67] Derivatives are "financial contracts whose value depends on one or several underlying assets and which are not cash transactions". See article 2 let. c FMIA and article 2 paras. 2 to 4 of the Financial Market Infrastructure Ordinance ("FMIO").
[68] Article 2 let. b FMIA and article 3 let. b FinSA.

and has the same structure (interest, maturity) and denomination (amount) or (b) if it is placed with more than 20 investors and has not been specifically created for a particular counterparty / investor.[69] It is important to note that not only listed instruments but also unlisted instruments qualify as securities.

Even if no securities are traded, an institution or trading platform can still qualify as a so-called organised trading facility ("OTF"). OTFs[70] within the meaning of FMIA are establishments for:

- multilateral trading in securities or other financial instruments whose purpose is the exchange of bids and the conclusion of contracts based on discretionary rules;
- multilateral trading in financial instruments other than securities whose purpose is the exchange of bids and the conclusion of contracts based on non-discretionary rules;[71] and
- bilateral trading in securities or other financial instruments whose purpose is the exchange of bids.

FinTech companies operating a platform that allows for trading of shares, standardised debt instruments or other financial instruments, including securities issued in the form of tokens (see Section 5.3.1 below), might qualify as regulated trading venues. Should a particular business model include such activities, the main question will oftentimes be whether the relevant FinTech company qualifies as an MTF (if securities are involved) or as an OTF, and hence requires a license as a bank, securities firm, DLT trading facility or trading venue.[72]

5.2.2.3 Payment Systems

Payment systems are regulated financial market infrastructures under FMIA.[73] A payment system is "an entity that clears and settles payment obligations based on uniform rules and procedures".[74]

Specific duties of payment systems (e.g., regarding settlement and liquidity) have been set out in the implementing ordinance of the FMIA.[75] A payment system requires a license from *FINMA*[76] if (a) this is necessary for the proper functioning of the financial market or the protection of financial market participants and (b) if the payment system is not operated by a bank.

Operating a payment system may involve deposit taking. However, there is a "safe harbour rule"[77] which may be applicable to FinTech companies in this context. Funds that to a small extent are transferred into a payment instrument or a payment system and that are exclusively being used for future purchases of goods or services may not qualify as deposits, provided no interest is paid thereon. The following requirements must be met:[78]

(i) the funds may only be used for future purchases of goods or services;

(ii) the maximum account balance per customer may not exceed CHF 3,000 at any time; and

(iii) no interest may be paid thereon.

If these requirements are met, the liabilities involved do not qualify as deposits and hence no banking license is required.

5.2.2.4 Anti-Money Laundering

Ensuring compliance with anti-money laundering regulation, i.e., the Anti-Money Laundering Act ("AMLA") and implementing regulations, often constitutes one of the key regulatory challenges for FinTech companies, both from an organisational and financial perspective. Swiss anti-money laundering regulation is based on three key elements:

[69] See article 2 para. 1 FMIO.
[70] Article 42 FMIA.
[71] The term "non-discretionary rules" means that the operator of the trading facility has no discretion as to how interests may interact. Hence, the operator of the trading facility does not have discretion over how a transaction is to be executed.
[72] Article 43 para. 1 FMIA.
[73] Article 2 let. a sec. 6 FMIA.
[74] Article 81 FMIA.
[75] Article 82 FMIA i.c.w. article 66 et seqq. FMIO.
[76] Article 4 para. 2 FMIA.
[77] Article 5 para. 3 let. e BO.
[78] FINMA-Circular 2008/3, para. 18.1.

- supervision of financial intermediaries either directly by *FINMA* or by self-regulatory organisations, which are themselves *FINMA*-supervised;
- due diligence, reporting, identification and record-keeping requirements applying to all financial intermediaries; and
- sanctions in case of non-compliance.

Article 305bis of the Swiss Criminal Code ("SCC") contains the criminal provision that prohibits all forms of money laundering. It stipulates that "any person that carries out an act that is aimed at preventing the identification of the origin, the tracing or the forfeiture of assets which he knows or must assume originate from a felony or aggravated tax misdemeanour is liable to a custodial sentence not exceeding three years or to a monetary penalty".

Financial intermediaries are divided into two groups:

- Financial intermediaries belonging to the "*banking sector*" if they are subject to comprehensive, prudential regulation under special legislation covering the whole range of their activities. Under these specific laws, a financial intermediary is supervised in its activities by the appropriate regulatory authority designated in each of these laws. Such financial intermediaries are for example banks, holders of a FinTech license, portfolio managers, trustees, securities firms, DLT trading facilities, insurance companies or certain payment systems.[79]
- Financial intermediaries belonging to the "*non-banking sector*" if they "on a professional basis accept or hold on deposit assets belonging to third parties or assist in the investment or transfer of such assets".[80] According to a non-exhaustive list, this definition covers, in particular, persons who: (i) carry out credit transactions (in particular in relation to consumer loans or mortgages, factoring, commercial financing or financial leasing), (ii) provide services related to payment transactions, in particular by carrying out electronic transfers on behalf of other persons, or who issue or manage means of payment such as credit cards, (iii) trade for their own account or for the account of others in banknotes and coins, money market instruments, foreign exchange, precious metals, commodities and securities (stocks and shares and value rights) as well as their derivatives, (iv) make investments as investment advisers or (v) hold securities on deposit or manage securities.[81] Before engaging in business activities, such financial intermediaries must join a self-regulatory organisation recognised by *FINMA*.[82]

Many activities typically conducted by FinTech companies, as for example business models involving holding or depositing assets on behalf of clients, are subject to the anti-money laundering regulation. In principle, there are four approaches for FinTech companies to ensure compliance with anti-money laundering regulations:

(i) they can completely refrain from financial intermediation activities;

(ii) they can cooperate with a regulated financial intermediary, such as a bank, as far as financial intermediation activities are required;

(iii) they can join a self-regulatory organisation and comply with anti-money laundering regulations; or

(iv) if they are financial intermediaries belonging to the "*non-banking sector*"[83], they can structure their business model in such way that they provide their services only to financial intermediaries belonging to the "*banking sector*"[84] or to foreign

[79] Article 2 para. 2 AMLA.
[80] Article 2 para. 3 AMLA.
[81] The Anti-Money Laundering Ordinance ("AMLO") and FINMA-Circular 2011/1 set out further details as to when the professional practice of financial intermediation is subject to supervision.
[82] Article 14 para. 1 AMLA.
[83] Article 2 para. 3 AMLA.
[84] Article 2 para. 2 AMLA.

financial intermediaries that are subject to equivalent supervision.

Apart from a limited number of exceptions[85], all *professional* financial intermediaries are subject to the AMLA and the requirements set-out thereunder. A financial intermediary is generally deemed to engaging in financial intermediation on a professional basis if:[86]

- its activity generates a gross revenue of more than CHF 50,000 per calendar year;
- it enters into business relationships with more than 20 contracting parties per calendar year that are not limited to a one-time activity or if it maintains at least 20 such relationships per calendar year;
- it has unlimited power to dispose over assets belonging to others exceeding CHF 5 million at any point in time; or
- it executes transactions of a total volume exceeding CHF 2 million per calendar year.

The financial intermediaries' duties are set out under AMLA[87] and the implementing ordinances and regulations.[88] Key duties are the:

- duty to personally identify the client, i.e., the contracting party;
- duty to identify the beneficial owner / economic beneficiary of the assets;[89]
- duty to re-identify the beneficial owner / economic beneficiary of the assets in certain circumstances;
- specific clarification / verification duties amongst others with regard to transactions or business relationships with heightened risks;
- duties relating to documentation of transactions and verifications as well as relating to record keeping;
- duty to implement organisational measures, e.g., regarding training of employees and controls; and
- duty to report cases of suspicions of money laundering to the *Money Laundering Reporting Office Switzerland* ("MROS").

Under certain circumstances and provided that specific requirements are met reduced duties may apply.

5.2.2.5 Consumer Credits

The Consumer Credit Act ("CCA") applies to consumer credits, i.e., loans granted to individuals on a professional basis for purposes other than business or commercial activities. Further, loans granted on a non-professional basis are subject to the CCA, provided they are granted in cooperation with a crowdlending broker (*Schwarmkredit-Vermittler*), e.g., an operator of a crowdlending platform.[90]

Therefore, FinTech companies may be subject to the regulations relating to consumer credits. The following duties / rights under the CCA may be of particular importance:

- duty to obtain a license in order to be allowed to grant or broker loans to consumers on a professional basis;[91]
- restrictions relating to the advertisement for consumer credits;[92]
- requirements regarding the form and content of consumer credit agreements;[93]

[85] Article 2 para. 4 AMLA.
[86] Article 7 para. 1 AMLO.
[87] See article 3 et seqq. AMLA.
[88] The agreement relating to the Swiss banks' code of conduct with regard to the exercise of due diligence (VSB 16) is of particular importance. It contains a detailed set of rules in connection with the identification of clients and beneficial owners.
[89] Pursuant to the revised AMLA (that is expected to enter into force mid 2022) the financial intermediary will not only have to establish the identity but also have to verify the identity of the beneficial owner (article 4 para. 1 revised AMLA).
[90] Article 2 let. b CCA.
[91] Article 39 CCA.
[92] Article 36 et seqq. CCA.
[93] Article 9 et seqq. CCA.

- duty not to exceed the maximum effective annual interest rate set by the *Swiss Federal Council*;[94] and

- duty to check the consumer's creditworthiness[95] as well as the right to access the information made available by the Credit Information Office (*Informationsstelle für Konsumkredit*).[96]

5.2.2.6 Collective Investment Schemes

Collective investment schemes are "funds raised from investors for the purpose of collective investment, and which are managed for the account of such investors".[97] Generally, collective investment schemes regulation must be considered whenever a particular business model of a FinTech company entails the pooling of funds or risks in connection with an investment.

An entity or a financial product qualifies as a collective investment scheme if the following criteria are met: (1) funds (2) that are raised from (more than one) investors (3) for the purpose of being collectively managed (4) for the account of such investors, (5) whereby the investors' investment needs are met on an equal basis.

The licensing requirements as well as the supervision of fund management companies and managers of collective assets is governed by FinIA. Furthermore, the rules regarding the acquisition or disposal of units in collective investment schemes as well as the offering of such financial instruments will, subject to phase-in periods, be governed by FinSA. It must be noted, however, that units in collective investment schemes are the only Financial Instrument covered by the FinSA that will be subject to additional product-specific supervisory rules under CISA.

[94] Article 14 CCA.
[95] Article 22 CCA, article 28 et seqq. CCA.
[96] Article 23 et seqq. CCA.
[97] Article 7 CISA.

5.3. DLT and Blockchain – Swiss Regulatory Framework

Recently, Switzerland saw remarkable developments in distributed ledger technology ("DLT") and blockchain related business activities:

- In August 2018, *FINMA* granted the first asset manager of collective investment schemes license to a company focusing on investment management in the area of crypto assets (*Crypto Fund AG*).

- In November 2018, the world's first exchange traded product for investments in crypto assets was launched on the *Swiss stock exchange SIX* (by *Amun AG*).

- In August 2019, *FINMA* granted banking as well as securities dealer licenses to two companies focusing on products and services relating to digital assets (*Sygnum Bank AG* and *SEBA Bank AG*).

- In October 2019, the *Swiss stock exchange SIX* announced a cooperation with the *Swiss National Bank*, which aims at exploring technological options to make *digital central bank money* available for the trading and settlement of tokenised assets.[98]

- In September 2021, *SIX Digital Exchange AG (SDX)*, an affiliate of the *Swiss securities exchange SIX Swiss Exchange*, formally received the regulatory approval as a central securities depository from *FINMA*, while the associated company *SDX Trading AG* was approved to act as a securities exchange.[99] The obtained licenses enabled *SDX* to go live with a "fully regulated, integrated trading, settlement, and custody infrastructure" based on the blockchain technology.[100]

[98] See SIX Media Release of 8 October 2019 (SIX, 2019).
[99] See FINMA Press Release of 10 September 2021 (FINMA, 2021c).
[100] See SIX Media Release of 10 September 2021 (SIX, 2021b).

- Later in September, *FINMA* has approved the first crypto fund (*Crypto Market Index Fund*) according to Swiss law.[101]

- Finally, in November 2021, *SDX* was launched by issuing the world's first digital bond in a fully regulated environment.[102]

The attitude of Switzerland's federal government, the *Federal Council*, and *FINMA* towards developments such as DLT and blockchain remains positive. However, those novel technologies have paved the way for the emergence of Decentralised Finance (DeFi), which increasingly challenges the current financial market regulation - also in Switzerland (see excursus on page 53).

In December 2018, the *Federal Council* published a detailed report covering the legal framework for DLT and blockchain in Switzerland. The report concluded that the existing Swiss legal framework is, in principle, "fit" for technical developments such as DLT and blockchain. Nonetheless, a need for selective improvements was identified.

Only a few months later, the *Federal Council* had an initial draft law prepared, which then went through a comprehensive public consultation process. Based on feedback received, the *Federal Council* published the finalised draft law concerning DLT and blockchain on 27 November 2019.

In September 2020, the draft of the DLT Law was approved by the *Swiss Parliament* and partly entered into force on 1 February 2021. The second part of the DLT Law as well as the associated blanket ordinance (DLT Ordinance) entered into force on 1 August 2021. The DLT Ordinance sets out the necessary adjustments to ten existing ordinances.

This subchapter first discusses select aspects of the *FINMA* categorisation of tokens (Section 5.3.1). Then the cornerstones of the DLT Law are summarised (Section 5.3.2).

[101] See FINMA Press Release of 29 September 2021 (FINMA, 2021d).
[102] See SIX Media Release of 18 November 2021 (SIX, 2021c).

5.3.1 *FINMA* Categorisation of Tokens

A key element of the Swiss regulatory framework applicable to DLT and blockchain is the categorisation of tokens introduced by *FINMA* in its "ICO Guidelines" of 16 February 2018.[103] *FINMA* distinguish the following categories of tokens:

- *Payment tokens* (according to *FINMA*, synonymous with "pure" cryptocurrencies), are tokens which are intended to be used, now or in the future, as a means of payment for acquiring goods or services or as a means of money or value transfer. Such cryptocurrencies do not give rise to any claims towards an issuer or a third party. Consequently, according to the prevailing view, these tokens are "purely factual intangible assets". Examples of such cryptocurrencies are bitcoin (including numerous "altcoins" built upon the basic technical framework used for bitcoin) or Ether.

- *Utility tokens* are tokens that are intended to provide access digitally to an application or service by means of a DLT-based infrastructure.

- *Asset tokens* represent assets such as a debt or equity claim against the issuer. Asset tokens promise, for example, a share in future company earnings or future capital flows. In terms of their economic function, such tokens may qualify, therefore, as equities, bonds or derivatives. Tokens which enable physical assets to be traded on a DLT-infrastructure also fall into this category according to *FINMA*.

FINMA points out that tokens may fall into more than one of these three basic categories: such *hybrid* tokens are, for example, asset tokens or utility tokens, which at the same time qualify as payment tokens.

On 11 September 2019, *FINMA* published a supplement to its "ICO Guidelines", which focused exclusively on "stable coins" ("Stable Coins Guidelines").[104] The

[103] See Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICO's), published 16 February 2018 (FINMA, 2018b).
[104] See FINMA media release of 11 September 2019 (FINMA, 2019).

Stable Coins Guidelines were published against the background of a request of the *Libra Association*, i.e., a not-for-profit entity domiciled in Switzerland, which fostered the development of the planned global currency Libra.[105] The *Libra Association* had asked *FINMA* for an assessment of how the Libra project, in particular the issuance of the Libra "stable coin", would likely be treated under Swiss financial market laws. *FINMA* took this opportunity to not only provide its initial views on Libra, but to publish the comprehensive Stable Coins Guidelines, which indicate how *FINMA* will assess projects involving tokens linked to an underlying asset.

FINMA pointed out that it will continue to apply a "substance over form" approach as a general principle, also with regard to "stable coins", just as it did and still does with regard to any other kind of token. *FINMA* furthermore mentioned that the design and the technical details of "stable coins" vary substantially. Nonetheless, according to *FINMA*, "stable coins" may on a high-level be categorised based on (i) the type of "underlying" or asset underlying the coin and (ii) the rights which holders of such coins have:

- *Currency backed coins*: If a stable coin is backed by currencies and the holders of such a coin have a right towards the issuer to redeem the coin at a fixed price (e.g., 1 coin for 1 CHF), such issuer may be deemed to accept deposits from the public and hence the licensing requirements under the BA might be triggered (see Section 5.2.2.1 above). If a coin is backed by a basket of currencies and if the holders of such coin have a right towards the issuer to redeem the coin at the current value of such a basket (net asset value), such coin may qualify as a unit in a collective investment scheme and hence trigger licensing requirements under the CISA (see Section 5.2.2.6 above). Also, such currency backed stable coins might constitute a payment system (see Section 5.2.2.3 above).

- *Commodities backed coins*: If a stable coin is backed by commodities, the regulatory consequences depend on the type of commodity and whether the holders of such a coin have only (i) a contractual claim against an issuer or whether they have (ii) a right *in rem* with regard to the underlying commodity. In the latter case, financial market regulation does generally not apply and the stable coin does, in particular, not qualify as a security, if certain requirements are met. If the coin only grants a contractual claim, however, this likely triggers requirements under the BA (if the commodities are precious metals) or the coin may qualify as a security or a derivative (if the commodities are other commodities than precious metals). Furthermore, such commodity backed stable coins may possibly also constitute units in collective investment schemes.

- *Real estate backed coins*: If a stable coin is backed by real estate, such coin will likely be qualified as a unit in a collective investment scheme, hence triggering a licensing requirement under CISA (see Section 5.2.2.6 above).

- *Securities backed coins*: If a stable coin is backed by a single security (e.g., shares of a particular company), the coin as such will likely qualify as a security, and may, depending on the specifics of the individual case, constitute a derivative or even a structured product. If the coin is backed by a *basket* of securities, however, it will in most cases constitute a unit in a collective investment scheme within the meaning of CISA (see Section 5.2.2.6 above).

It must be noted that these *FINMA* guidelines are of an indicative nature only and not legally binding. In any case, however, the specifics of each "stable coin" project will need to be assessed based on the relevant details of the envisaged design of the token and the legal relationships between the parties involved.

[105] See the Libra White Paper (Libra, 2019). In April 2020, the Libra Association applied to FINMA for a payment system license. However, the focus of the project was shifted to the USA, whereupon the Diem Association (the former Libra Association) suspended the license application in May 2021; see FINMA Press Release of 12 May 2021 (FINMA, 2021a).

With the regard to the questions, whether a particular token (or coin) is a Financial Instrument (see Section 5.1.1.1 above) for the purposes of the FinSA, the following must be noted:

- Whether a token is a Financial Instrument or not depends on its economic function and, derived from this, what rights are represented by or linked to such particular token. Consequently, it must be assessed on a case-by-case basis whether a token qualifies a Financial Instrument or not.
- *Asset tokens*, *hybrid tokens* and *stable coins* granting their holders for example participation and voting rights in a corporation or rights to the repayment of debt are likely Financial Instrument for the purposes of the FinSA.
- *Payment tokens* are to date not treated as securities by *FINMA* and are generally[106] not deemed to be Financial Instruments within the meaning of FinSA.
- *Utility tokens* are currently also not treated as securities by *FINMA*, provided (i) their sole purpose is to confer digital access rights to an application or service and (ii) the tokens can actually already be used in this manner when they are issued. Such "pure" utility tokens, which neither partially nor exclusively function as an investment in economic terms, are also no Financial Instruments for the purposes of the FinSA. For an example see the legal qualification of user tokens in connection with liquidity pools on decentralised exchanges in the excursus on page 50.

5.3.2 DLT Law

The cornerstones of the DLT Law of 25 September 2020 are the introduction (i) of so-called Uncertificated Register Securities (*Registerwertrechte*) (Section 5.3.2.1), (ii) of a new license category for operators of DLT trading facilities (*DLT Handelsplattformen*) (Section 5.3.2.2) and (iii) of rules governing the segregation of crypto assets and data in insolvency proceedings (Section 5.3.2.3).

The DLT Law was approved by Swiss Parliament in September 2020. Whilst the provisions allowing for a creation of Uncertificated Register Securities are in force since 1 February 2021 (see Section 5.3.2.1), the additional aspects of the DLT Law entered into force on 1 August 2021.

5.3.2.1 Uncertificated Register Securities

The DLT Law has introduced a new concept of so-called "Uncertificated Register Securities" (*Registerwertrechte*), which aims at increasing legal certainty in connection with the "tokenisation" of rights and financial instruments. Based on the DLT Law, Swiss law now provides for the possibility of an electronic registration of rights and claims that has the same functionality and entails the same protection as a negotiable security.

Legal positions admissible as underlying rights of such Uncertificated Register Securities include rights against issuers, such as contractual claims or membership rights (e.g., shares in a corporation). Consequently, asset tokens, utility tokens, hybrid tokens as well as "stable coins" (see Section 5.3.1 above) may be issued in the form of Uncertificated Register Securities. Payment tokens, i.e., cryptocurrencies can, however, not be issued in the form of Uncertificated Register Securities since they do not give rise to any claims, which could serve as an underlying right.

In order to create Uncertificated Register Securities the involved parties (e.g., the issuer of an instrument as debtor and the holders of the instrument as creditors) must enter into a registration agreement (*Registrierungsvereinbarung*). Based on this agreement the relevant right (i) is entered into the so-called "Register of Uncertificated Securities" (*Wertrechteregister*) and (ii) may exclusively be asserted based on and transferred via this register.[107]

[106] Payment tokens may constitute deposits (Einlagen) and could therefore potentially be in scope of article 3 let. a ciph. 6 FinSA: "Financial Instruments are (…) deposits whose redemption value or interest is risk- or price-dependent, (…)".

[107] Article 973d para. 1 CO.

Excursus: Liquidity Pools on Decentralised Exchanges[108]

A decentralised exchange (DEX) is an exchange, which enables immediate and direct trading of crypto assets based on smart contracts. Instead of an order book, that centralised exchanges (CEX) use to match bid and ask offers, DEX use liquidity pools to ensure a liquid market in a specific crypto asset. A liquidity pool is an asset pool that is filled with (usually two different) coins in a certain ratio, which enables swaps between the two coins without having to rely on a counterparty willing to enter into a trade. Instead, a trader sends his / her coins to the liquidity pool and receives the paired coins from the liquidity pool in return. This system relies on liquidity providers. In return for making their tokens available to the liquidity pool, liquidity providers receive a passive income, usually in the form of transaction fees paid by traders for a swap in the respective pool.

One Swiss use case for example involves a service provider offering tokenisation services. In order to ensure a liquid market for such tokens, the service provider creates a liquidity pool and issues a user token on a DEX that can be purchased by investors against payment of a specific cryptocurrency. The user token enables the investor to participate in and contribute to the respective liquidity pool that pairs the cryptocurrency with the token created on the tokenisation platform. Interested buyers and sellers can then trade those tokens on the DEX in a liquid manner.

If the service provider is domiciled in Switzerland, it may potentially be subject to Swiss financial market laws:

- Anti-Money Laundering Act: Persons or entities that provide services related to payment transactions qualify as financial intermediaries (see Section 5.2.2.4 above), if they assist in the transfer of virtual currencies, such as cryptocurrencies, if such service provider (i) maintains a durable business relationship with its counterparties or (ii) may exercise control over the virtual currencies.[109] Fully autonomous systems that do not enter into a permanent business relationship with their users are excluded from the scope of the AMLA. Typically, the service provider therefore does not qualify as a financial intermediary as long as it does not exercise control over the tokens.

- Legal Qualification and Prospectus Requirement: Pursuant to FinSA, a person publicly offering securities (*Effekten*) to retail investors in Switzerland is required to prepare and publish a prospectus (see Section 5.1.1.2.6 above). Accordingly, if the user tokens qualify as securities, the service provider will generally be required to publish a prospectus. User tokens, which merely grant an investor access to the liquidity pool, will typically be deemed "pure" utility tokens and as such do not qualify as securities. Furthermore, this qualification requires that there are no monetary claims of the token holder against the service provider and that the service provider does not have any influence on the functionality of the smart contract or custody of the tokens. Otherwise, a banking or FinTech license may be required.

However, in order to determine the applicability of the Swiss financial market laws, it is necessary to analyse the situation on a case-by-case basis. In view of the numerous possibilities of implementation, the views expressed above may differ in practice and are limited to the described constellation.

[108] For further details see Wherlock and Haeberli (2021).
[109] Article 4 para. 1 let. b AMLO.

The register must meet certain minimum requirements in order to qualify as a Register of Uncertificated Securities within the meaning of the DLT Law:

(i) the register must, by means of technical procedures, grant the creditors, but not the debtor, actual power of disposal (*Verfügungsmacht*) over their rights;

(ii) the register's integrity must be ensured by implementing the appropriate technical and organisational protective measures that prevent unauthorised changes to the register (e.g., joint administration by several independent parties);

(iii) the content of the registered rights, the functioning of the register itself and the registration agreement must be recorded either directly in the register itself or in accompanying data linked to the register; and

(iv) creditors must be able to view the information and data which concerns themselves and they must be able to verify, without third party support or intervention, the integrity of the content of the register concerning themselves.[110]

In its dispatch of the DLT Law, the *Federal Council* mentions certain existing DLT-systems that are currently deemed suitable to fulfil the statutory minimum requirements. Both permissionless (e.g., Ethereum) as well as permissioned (e.g., Corda, Hyperledger Fabric) systems are mentioned in this (non-exhaustive) list.

The DLT Law also allows to bridge the new framework with the "traditional" book-entry securities (*Bucheffekten*) concept. In particular, it is possible to register Uncertificated Register Securities with a "*traditional*" *custodian* (e.g., *a bank*) and to subsequently book them into a "traditional" securities account. Hence, Uncertificated Register Securities can easily be transferred to the "old world" of book-entry securities, if desired.

[110] Article 973d para. 2 CO.

5.3.2.2 DLT Trading Facilities

Under ancient Swiss law, there were only three categories of trading facilities: stock exchanges, multilateral trading facilities and organised trading facilities (see Section 5.2.2.2 above). Due to certain reasons, these categories were deemed unsuitable for trading involving crypto assets, e.g., because retail clients do not have direct access to stock exchanges or multilateral trading facilities. Instead, these trading venues are only open to holders of a securities firm license and certain other regulated participants.[111]

Under the DLT Law, a new license category for (centralised) financial market infrastructures was introduced. These so-called "DLT Trading Facilities" (*DLT-Handelssysteme*) may offer services in the areas of trading, clearing, settlement and custody of DLT-based assets not only to regulated financial market participants but also to unregulated corporates as well as individuals, potentially including retail clients.

A license as a DLT Trading Facility can be obtained by trading venues that allow for the simultaneous exchange of offers between several participants and the conclusion of contracts based on non-discretionary rules and, in addition, provide for: (1) the admission of unregulated corporates or individuals; (2) the custody of DLT Securities based on uniform rules and procedures; or (3) the clearing and settlement of trades in DLT Securities based on uniform rules and procedures.[112]

"DLT Securities" (*DLT-Effekten*) are securities that are suitable for mass trading and either have the form of (i) Uncertificated Register Securities (*Registerwertrechte*) or the form of (ii) other uncertificated securities (*Wertrechte*) held in distributed electronic registers and which, by means of technical procedures, grant the creditors, but not the debtor, the actual power of disposal over the uncertificated securities.[113]

[111] Article 34 para. 2 FMIA.
[112] Article 73a FMIA.
[113] Article 2 let. b^{bis} FMIA.

Payment tokens as well as (mere) utility tokens that do not serve an investment purpose do not constitute DLT Securities since they do not qualify as securities in the first place. However, a DLT Trading Facility may also permit the trading of payment and utility tokens that do not qualify as DLT Securities.

The licensing requirements for DLT Trading Facilities are largely modelled after the requirements for traditional trading venues (i.e., stock exchanges and multilateral trading facilities). However, specific rules with respect to, for example, the admission of participants and the admission of DLT Securities have been added.[114] Furthermore, additional requirements for certain types of DLT Trading Facilities have been established, e.g., for DLT Trading Facilities that admit retail investors as participants and therefore require higher standards of customer protection.[115] On the other hand, relief from certain requirements applicable to DLT Trading Facilities that are considered "small" in terms of number of participants or trading and custody volume, respectively, have been granted.[116]

5.3.2.3 Insolvency

Crypto assets such as cryptocurrencies and tokenised financial instruments are often stored with third party custodians, such as exchanges or wallets providers.

Under ancient law it was unclear whether crypto assets held by a custodian on behalf of a client were to be segregated in the bankruptcy of the custodian, especially if the creditor or investor did not hold (any) private key(s). The DLT Law therefore introduced a new segregation regime that allows the segregation of crypto assets for the benefit of the relevant creditors or investors in the bankruptcy of the custodian, if certain requirements are met, including, in particular, the following:

- First, the relevant custodian must have an obligation vis-à-vis the relevant creditor or investor to keep the crypto assets available for him at all times. This means that the custodian may, for example, not use such crypto assets for proprietary business or own-account transactions.

- Second, the crypto assets are only segregated if they can be either (i) unambiguously allocated to the individual creditor or investor (however, there is no need that such allocation occurs directly on the relevant DLT-system itself) or (ii) allocated to a group of investors or creditors and it is evident what share of the joint holdings belongs to a given creditor or investor. The latter option allows a pooling of crypto assets held for several creditors or investors.

In addition, the access to data in insolvency in general is regulated under the DLT Law. Under ancient Swiss law it was not clear whether digital data stored by a third party custodian (e.g., a cloud provider) could be segregated from the bankruptcy estate of such custodian. The DLT Law introduced a right to request segregation of digital data regardless of whether such data has any (market) value or not (e.g., a holiday picture) in the bankruptcy proceedings of a custodian. The person requesting such segregation must show that it has a specific entitlement to the data for which the segregation is being requested (e.g., a statutory or contractual claim). Furthermore, the person requesting segregation may be required to pay a fee in advance, which will then be used to cover the costs of the data retrieval and segregation.

[114] For an overview see FINMA guidelines for applications concerning licensing as a DLT trading facility (FINMA, 2021b) (version of 2 August 2021), which are available in German, French as well as English.
[115] Article 58i et seq. FMIO.
[116] Article 58l FMIO.

Excursus: Decentralised Finance – Regulatory Challenges and Perspectives

The current financial market regulation is increasingly challenged by the rapid growth of Decentralised Finance (DeFi). This excursus aims at briefly presenting the most basic regulatory issues – the solutions have yet to be found.

- *Whom should regulators address?* The current regulatory regime focuses on the person or entity in control of an operation. In the DeFi context, there usually exists no such person or entity, as blockchain technology and smart contracts replace central entities. Therefore, the regulators lack personal regulatory touchpoints. Furthermore, the identification of users, developers and, in particular, operators is complicated by the pseudonymous nature of DeFi and the distribution of the network. Finally, even if operators could be identified, chances would be high that they lack the ability to modify the relevant DeFi protocol or transaction due to the autonomous and decentralised nature of DeFi.

- *Which regulator is responsible for the regulation and supervision of a particular DeFi-application?* DeFi is a globalised system with hardly any territorial touchpoints, while regulators are generally limited to act within the borders of their country (*Territorialitätsprinzip*). One could argue that the responsibility to regulate a particular DeFi-application therefore either falls to no specific regulator or to all regulators at the same time. This legal uncertainty has negative effects on all parties involved and stands in the way of innovation.

- *How can clients be protected and the proper functioning of the market be ensured?* The diverse DeFi-use cases do most of the time not fit into the current regulatory framework and cannot be subsumed under existing legal provisions. There is a wide range of possible approaches for future regulation, although Switzerland is still far from finding a consensus on the right way forward. Anyway, it is questionable whether national approaches are expedient – an international collaboration seems to have better chances of success.

6. Crypto Assets Market in Switzerland and Liechtenstein

By Thomas Ankenbrand, Denis Bieri, Timon Kronenberger & Damian Lötscher, Institute of Financial Services Zug IFZ; Aetienne Sardon, Christian Schüpbach & Dominic Vincenz, Swisscom AG

Developments in distributed ledger technology (DLT) have led to the emergence of a new type of assets in recent years. These so-called "crypto assets" can serve different purposes and have increasingly become the focus of investors due to their characteristics as a new and independent asset class, including their potential for portfolio optimisation or diversification (see, e.g., Ankenbrand and Bieri (2018), or, more recently, Bianchi (2020)). As a result, an ecosystem has emerged that facilitates exposure to crypto assets through the use of traditional investment vehicles, such as funds, but also through the ongoing facilitation of access to direct investments through providers, such as crypto exchanges, wallet providers, or recently, more and more regulated banks. However, the market microstructure of this ecosystem, as well as the volume of the different business models in the market for crypto assets in Switzerland and Liechtenstein, is still quite unclear and has not yet been investigated and surveyed in a structured manner. A study that was created in cooperation between the Institute of Financial Services Zug IFZ and Swisscom aims to fill this gap in the research. In particular, the study aims to structure the Swiss and Liechtenstein ecosystem for crypto assets, identify the relevant participants, and highlight their business models and business volumes as accurately as possible. The remainder of this chapter discusses the key findings of this study.[1]

[1] For more information, see the full publication of Ankenbrand, Bieri, Kronenberger, et al. (2021), which can be publicly accessed here.

6.1. Structure of the Ecosystem for Crypto Assets

The Swiss and Liechtenstein investment ecosystem for crypto assets can be structured based on the market activities observed. A corresponding framework is given in Figure 6.1. The three vertical layers *Off-Chain*, *Centralised On-Chain*, and *Decentralised On-Chain*, refer to the provision of crypto asset-related financial products and services, as well as the degree of centralisation of the provider. Specifically, *Off-Chain* includes all products and services which are offered in connection with indirect investment vehicles in crypto assets by financial service and infrastructure providers, while *Centralised On-Chain* and *Decentralised On-Chain*, in contrast, focus on direct investments in crypto assets, implying the direct involvement of DLT. With respect to the latter two layers, a distinction is made between centralised and decentralised provision of crypto-related products and services. In the former, central intermediaries offer products and/or services, while in the latter, investors interact directly via (smart contract-based) software protocols in a DLT network. In general terms, smart contracts, first proposed in the 1990s by Szabo (1997), are blockchain-based programs that execute when certain predefined conditions are met.

The horizontal axis in Figure 6.1 lists four different main processes provided in the crypto assets ecosystem from an investment perspective, along with the layer *Investors*, which summarises different investor types. While the layer *Issuers* includes all participants that create crypto assets or related products and services, *Investment Services* focuses on investment-focused service providers, *Trading Infrastructure* on providers offering trading venues, and *Post-trading Infrastructure* on providers of services but also technological solutions involved after a change in ownership of a crypto asset.

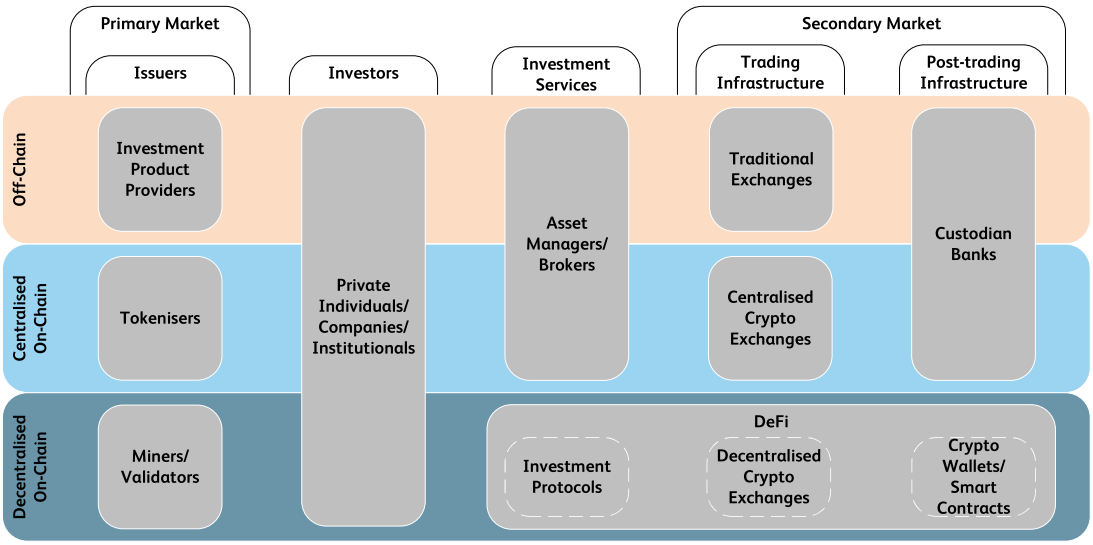

Figure 6.1: Structure of the investment ecosystem for crypto assets

6.2. Product and Service Offering

In Switzerland and Liechtenstein, there is a growing number of companies with an increasingly diverse range of crypto assets-related products and services. This is reflected in the broad range of services offered by crypto assets-related companies surveyed in the study, which is shown in Figure 6.2.[2] The magenta highlighted boxes mean "is offered" and the blue boxes mean "is not offered." The analysis shows that there are highly diversified companies such as Sygnum Bank AG, Maerki Baumann & Co. AG, and Hypothekarbank Lenzburg AG, which cover eleven of the twelve business areas surveyed. SEBA Bank AG and Crypto Finance AG also offer a variety of products and services. However, there are also companies such as Aktionariat AG, Base58 Capital AG, Relai AG, SwissOne Capital AG, and daura AG that specialise in selected crypto assets activities. The figure also shows that the business area "Tokenisation & Issuance" is most frequently covered by the companies surveyed, followed by services in the areas of trading, custody, and brokerage of crypto assets.

The increasing diversity of the Swiss and Liechtenstein ecosystem for crypto asset investments is underlined by the number of crypto assets-related products traded on the SIX Swiss Exchange. Figure 6.3 gives an overview of the recent development of the total number of crypto-related financial products traded on the SIX Swiss Exchange from the perspective of product types (left-hand graph) and product underlying (right-hand graph).[3] The left-hand chart reveals that while the number ETPs traded has increased continuously since August 2020, the month in which the first data in this regard is publicly available, the number of structured products has decreased. With regard to the latter, the decline is driven by the decreasing number of mini-futures as they overcompensate for the increase in the number of tracker certificates and the comparably stable development of the small number of reverse convertibles. At the end of September 2021, ETPs accounted for 56 percent of all crypto-based financial products on the SIX Swiss Exchange, while structured

[2] The survey took place between July 2021 and September 2021 among a total of 77 Swiss and Liechtenstein companies that offer various products and services related to crypto assets investments. Of these 77 companies, 20 participated in the survey.

[3] Note that in some cases, multiple financial products are listed under a single ISIN.

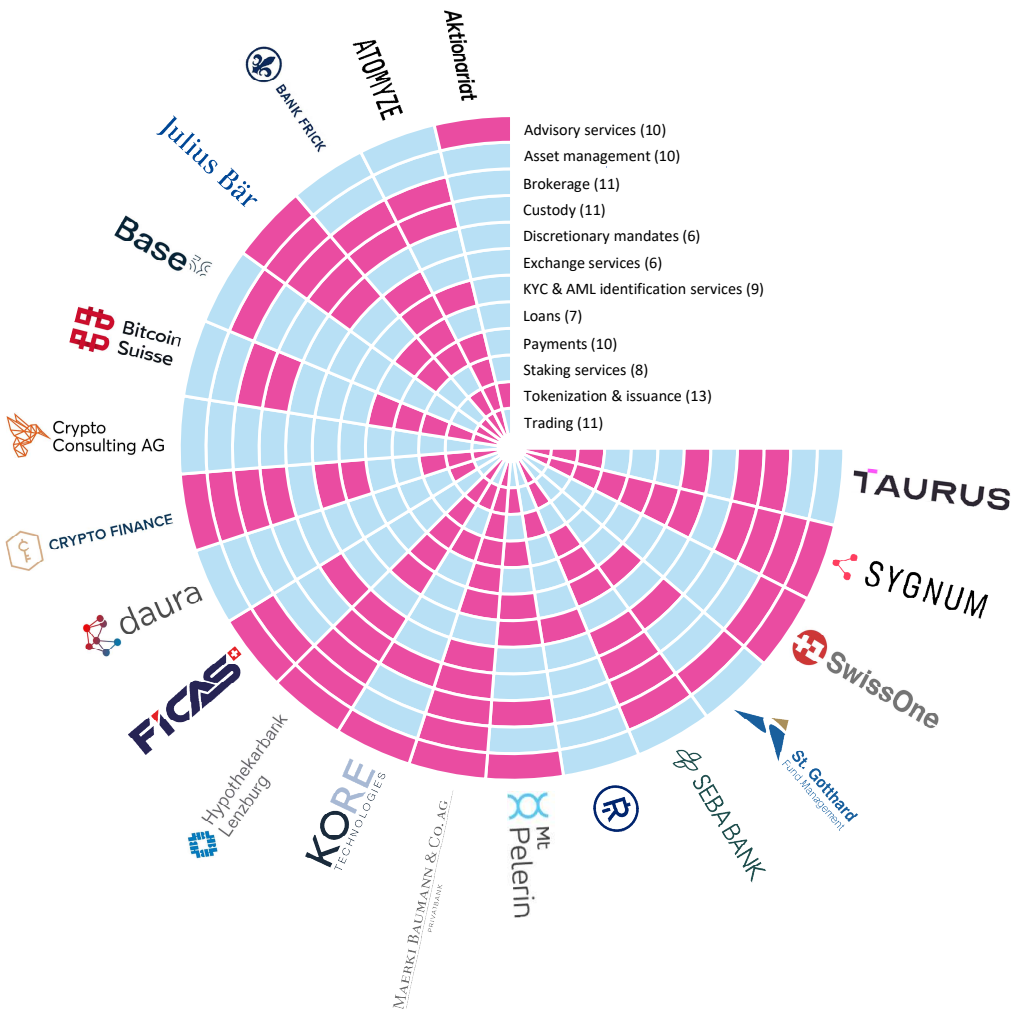

Figure 6.2: Key activities of companies from factsheets received

products accounted for 44 percent. With 38, 30, and 25 financial products, Leonteq Securities AG, Bank Vontobel AG, and 21Shares AG were the largest providers as of the end of September 2021 (SIX, 2021a).

The right-hand chart of Figure 6.3 reveals the underlying crypto assets of the listed financial products. As of September 2021, Bitcoin (36 financial products) served as the most used underlying asset, followed by Ether (34), indexes (26), i.e., baskets of multiple crypto assets, other crypto assets (25), Litecoin (9), and Ripple (7). From a temporal perspective, there is a slight shift from Ether, Litecoin, and Ripple as underlying assets towards index products and other crypto assets (e.g., Tezos and Solana). To conclude, the increasing diversity of the Swiss and Liechtenstein ecosystem for crypto asset investments is not only reflected in the key activities of surveyed companies but also in the decreasing dominance of, for example, Ether as underlying in the indirect investment products traded on SIX Swiss Exchange. Instead, products with other crypto assets and also crypto indices as underlyings are increasingly offered.

6.3. Market Volumes

The Swiss and Liechtenstein market for crypto investments has grown strongly over the past three years.

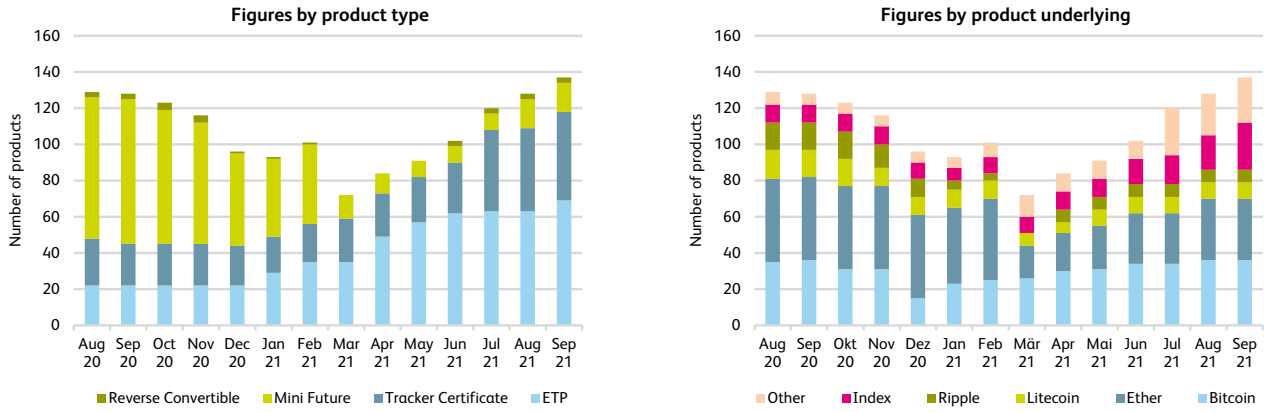

Figure 6.3: Number of crypto-related financial products traded on the SIX Swiss Exchange per month by product type (left-hand graph) and underlying asset (right-hand graph) (source: SIX Crypto Reports)

This can be seen, for example, in the volume invested in crypto ETPs and open-end funds (see Figure 6.4, left-hand graph).[4] Such investments are also referred to as indirect investments with combined total assets of roughly CHF 3.7 billion at the end of September 2021. Estimates of Swiss direct investment in crypto assets, i.e., the direct buying and holding of crypto assets, is difficult and not directly possible due to the inherent pseudonymity of blockchain technology. However, a method based on on-chain and website traffic analysis can be used to approximate corresponding volumes. Specifically, the annual trading volume of Switzerland on the 15 largest centralised and decentralised crypto exchanges can be approximated by analysing the share of web traffic routed from Switzerland compared to the total web traffic on centralised and decentralised exchanges' websites. This analysis yields a trading volume of CHF 96.6 billion from October 2020 to September 2021 in Switzerland. The

[4] The figure takes into account all corresponding crypto-related products that are either available for sale or are traded or domiciled in Switzerland and/or Liechtenstein.

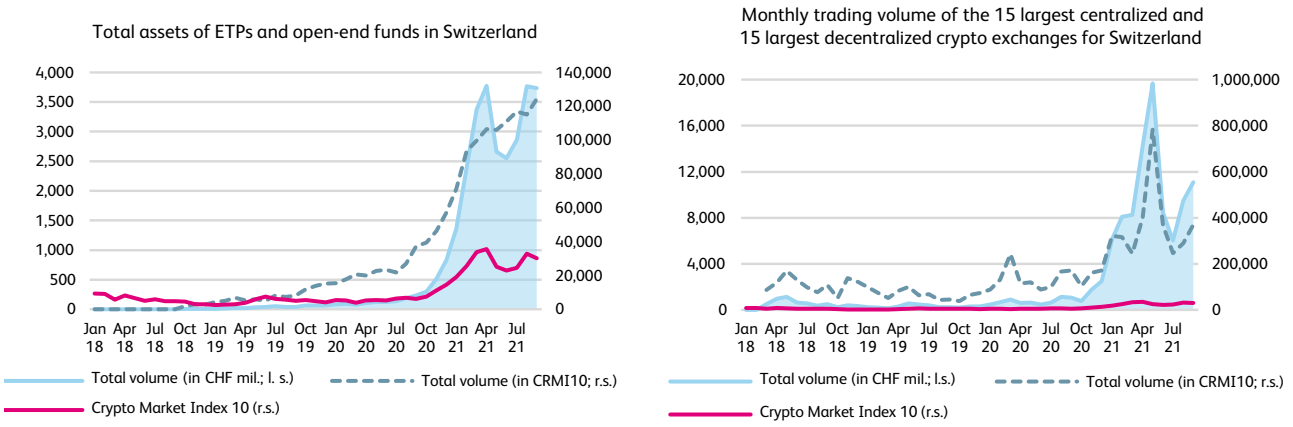

Figure 6.4: Total assets of ETPs and open-end funds (left-hand graph; source: Morningstar Direct) and monthly trading volume of the 15 largest centralised and decentralised crypto exchanges for Switzerland (right-hand graph; source: CoinGecko (2021), Semrush (2021))

time course of the monthly trading volume is shown in Figure 6.4. Indirect investment products account for a trading volume of CHF 7 billion in the same period under review. However, a comparison with the total trading volume of all asset classes on the SIX Swiss Exchange of CHF 1.4 trillion shows that trading volumes in the crypto asset ecosystem are still comparatively small.

Of the total trading volume of Swiss-based investors in direct crypto assets investments, the estimated annual trading volume on centralised crypto exchanges (CHF 92.6 billion) is significantly higher than on decentralised crypto exchanges (CHF 4.0 billion). The largest centralised exchange, Binance, accounts for nearly half of it. While Bitstamp has the highest percentage of Swiss users, BtcTurk Pro recorded almost no site visits from Switzerland. In comparison, the largest decentralised crypto exchange Uniswap (v2) reveals a significant smaller volume than the biggest centralised crypto exchange with only CHF 2.26 billion. The lower trading volume on decentralised exchanges compared to centralised crypto exchanges might be explained by the fact that decentralised exchanges are still in an earlier stage of development than their centralised counterparts. In addition, according to Lin et al. (2019), decentralised crypto exchanges have a higher trading latency, lower liquidity, and typically less intuitive user interfaces compared to centralised exchanges. Due to the last point, decentralised exchanges are still predominantly used by investors with a comparably high level of technological expertise. Another reason for the large difference might be that centralised crypto exchanges often allow fiat money to be exchanged for crypto assets, while this is not feasible for decentralised exchanges. Therefore, centralised crypto exchanges act as a bridge from traditional finance to the crypto assets ecosystem.

6.4. Tokenisation

Tokenisation describes the digital representation of any type of assets on a blockchain. As it is difficult to obtain a comprehensive overview of tokenisation activities due to the lack of public data, selected developments with regard to equities, currencies, and other assets are highlighted shortly in the following.

Several companies are active in the field of equity tokenisation in Switzerland and Liechtenstein.[5] Aktionariat AG, for example, tokenised the company's shares and offered them publicly via its own website. As a further provider of tokenisation services, daura AG provides the technology to maintain the share register based on DLT.

In Switzerland however, not only have shares been tokenised, but also Swiss francs. With Bitcoin Suisse AG, Jarvis Network, and Sygnum Bank AG, three providers were identified that provided corresponding stablecoins, i.e., tokens that are directly linked to the value of the Swiss franc, at the end of September 2021.

Besides equity and the Swiss franc, other assets have been subject to tokenisation in the Swiss and Liechtenstein crypto assets ecosystem. In particular, so-called non-fungible tokens (NFTs), i.e., tokens that are not copyable, have increasingly become the focus of investors in recent months. NFTs are basically digital certificates of authenticity and ownership, which has made them an increasingly popular way to buy and sell ownership of or rights to, for example, digital artwork, video clips, or music (Ethereum.org, 2021). One example of tokenisation of artwork originating in Switzerland is the project "The Hashmasks" by Suum Cuique Labs, which was launched in the canton of Zug at the beginning of 2021. In a single weekend, a digital art collection created by over 70 artists worldwide, consisting of 16,384 unique digital portraits, was sold for USD 16 million. By the end of September, nearly 5,000 Ethereum addresses held at least one such portrait (HZ, 2021).[6]

[5] One initiative that is driving the tokenisation of Swiss companies' shares is the Capital Markets and Technology Association (CMTA). The CMTA is an independent association founded by leading players from the financial, technology, and legal sectors in Switzerland with the shared goal of creating common standards for the issuance, distribution, and trading of securities in the form of tokens using distributed ledger technology (CMTA, 2021).

[6] For more information, see https://www.thehashmasks.com/.

6.5. Asset Management

Providers of indirect investment products for crypto assets can hedge part of their risk by investing directly in the crypto assets the issued product is based on. This is reflected, for example, in the balance sheets of Bank Vontobel AG, 21Shares AG, and Leonteq Securities AG. The strong growth in the market for indirect crypto assets investments is also reflected in the growth of the fair value of crypto assets in the balance sheets of these companies, which already amounted to CHF 1,424 million at the end of 2020, representing an increase of CHF 1,120 million, or a growth rate of 368 percent in relative terms, in a year-over-year comparison (Vontobel, 2021; 21Shares, 2021; Leonteq, 2021).

6.6. Custody

For public blockchain networks, there is typically no central control authority or point of contact, and private keys are the main element with which holders of crypto assets carry out transactions. Therefore, key management is critical. If an investor loses his/her private key, he/she cannot regain access to it from a central authority by requesting a new key. Recovering a private key is only possible if a suitable backup solution, such as secure management of seed phrases, is in place.

Custody solution providers for crypto assets are service companies that offer secure storage solutions by managing private keys for their clients. These services are developed for both institutional and private clients. Their main goal is to ensure the availability, confidentiality, and integrity of private keys and the information needed to recover them in case of a loss. There are a number of Swiss and Liechtenstein companies providing custody services (see Figure 6.2). Bitcoin Suisse AG, for example, offers a custody service that is based on a cold storage concept for different accounts for 37 different crypto assets (as of 10 October 2021). The accounts associated with this service have a combined value of CHF 5 billion. Note that companies that offer custody services may offer additional services, like Bitcoin Suisse AG, which also helps to stake crypto assets on behalf of their clients, for example. Private keys can also be stored in a wallet designed as a smartphone app. One provider of such a solution is Breadwinner AG, which offers a wallet to store different crypto assets, or more precisely, the corresponding private keys for, for example, Bitcoin, Ether, and Bitcoin Cash. The total volume of crypto assets under custody of this solution amounted to over USD 20 billion as of 10 October 2021 (Breadwinner, 2021).

In the area of direct investments, centralised crypto exchanges often also offer custody solutions for customers. Among other things, this has the advantage that trading in crypto assets can be carried out flexibly and quickly without the tokens in question first having to be transferred from a private wallet to exchange accounts. The relevant public addresses used for the custody of clients' crypto assets are usually public, for example, for reasons of transparency. It must be said however, that the use of custodial services provided by centralised crypto exchanges entails a risk, as the private keys for accessing the corresponding crypto assets remain with the exchange and are not under the control of the investor.

6.7. Outlook

Although the Swiss and Liechtenstein crypto assets ecosystem already offers a variety of innovative solutions, existing companies are expected to expand their offerings and new players to enter the market in the coming years. One of the building blocks for this could be the newly introduced law on DLT trading facilities (see Section 5.3.2.2). The granting of corresponding licences by FINMA is expected to become a reality in the coming months. In addition, the development in the field of Decentralised Finance (DeFi) is likely to lead to further innovation in the future, for example in the areas of staking crypto assets, automated asset management, or derivatives.

7. Funding and Valuation of FinTech Companies

By Thomas Ankenbrand, Denis Bieri & Moreno Frigg, Institute of Financial Services Zug IFZ

This chapter gives an overview on funding activities in the FinTech industry (Section 7.1) as well as an analysis on the valuation of listed FinTech companies (Section 7.2).

7.1. Funding of FinTech Companies

Financial capital is one of the most important resources of a business model, needed to create and deliver a company's value proposition. There are various ways for companies to raise funding. A distinction is typically made between internal financing, i.e., funding a company using personal finances or operating revenue (so-called "bootstrapping"), and external financing. With regard to the latter, venture capital in particular has played a significant role in the FinTech sector in recent years. It is a form of private equity and a type of financing that investors typically provide to start-ups and small businesses that they believe have long-term growth potential (Hayes, 2021). The development of venture capital investments in the global FinTech sector is shown in Figure 7.1.

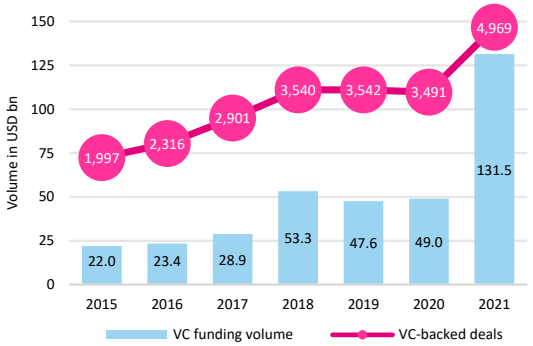

Figure 7.1: Global venture capital investments in FinTech (source: CB Insights (2022))

The figure shows that there was a strong increase in the global volume of venture capital invested compared to previous years. With a financing volume of USD 131.5 billion in 2021, this represents a record high and is more than double the amount raised in 2020. Compared to 2015, for which the first figures are available, the volume has increased almost sixfold. A similar development to the investment volume can also be observed in the number of venture capital financing rounds, although less pronounced. As Figure 7.1 shows, 4,969 venture capital financing rounds were conducted in the year 2021, representing a growth of 42 percent compared to the year 2020. Compared to 2015, the growth stands at roughly 150 percent. The fact that the global venture capital financing volume in FinTech companies has grown stronger than the absolute number of rounds shows that the average investment size has increased over the years. This is mainly due to the increasing number of so-called "mega-rounds", i.e., financing rounds with a volume of over USD 100 million. In 2021, 343 such mega-rounds were recorded with a total volume of USD 86.5 billion, accounting for two-thirds of the total financing volume. With 114 rounds and a volume of 23.9 billion, these figures were significantly lower in 2020 (CB Insights, 2022).

For Switzerland, a similar development can be observed in terms of venture capital activity. Across all sectors, a total of CHF 3.1 billion was raised in 2021, as by a report by startupticker.ch (2022). Compared to the previous year, the invested volume was 44 percent higher. An analysis by Dealroom (2022) comes to similar conclusions. According to their report, Swiss start-ups across all sectors raised a total of USD 3.1 billion in 2021, an increase of USD 700 million compared to 2020.

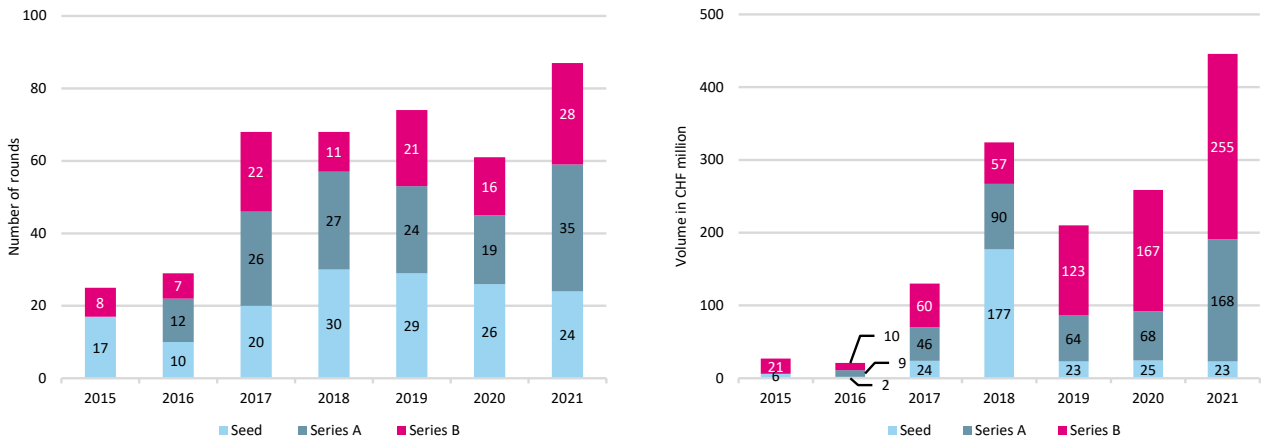

Figure 7.2: Venture capital invested in Swiss FinTech companies (source: own data)

The increase in venture capital activity can also be observed specifically in the Swiss FinTech sector. This is underlined in Figure 7.2, showing the total number of venture capital rounds (left-hand graph) and the corresponding aggregated investment volumes in CHF[1] million (right-hand graph) by year. The figure also distinguishes between three stages of financing, i.e., Seed, Series A, and Series B funding.[2] It reveals that the year 2021 was a record year for VC investment activity, both in the number of financing rounds and the volumes raised. In particular, 87 rounds raising a total of CHF 446 million were counted. Compared to the year 2020, this corresponds to a growth rate of 43 percent in the deals count and 72 percent in the financing volume. Both growth rates are higher than those of the total venture capital activities of all sectors in Switzerland, which shows that the FinTech sector has developed particularly well in 2021. Most of the rounds in the FinTech sector in 2021 can be assigned to Series A funding (35 rounds), followed by Series B (28 rounds), and Seed (24 rounds) funding. The decreasing number of Seed rounds has manifested itself continuously since 2018. A slightly differing trend can be seen in the aggregated volumes recorded. At CHF 255 million, Series B deals account for 57 percent of the total venture capital volume raised in 2021 and thus take the largest share. Series A and Seed rounds account for 38 and 5 percent of the total, with CHF 168 million and CHF 23 million, respectively.

This suggests that the average funding size of Series B rounds is larger than those of earlier stages, which is due to the fact that companies that go through a Series B financing round typically have a certain maturity and are established in the market, and need correspondingly more capital for further growth than companies in earlier stages.

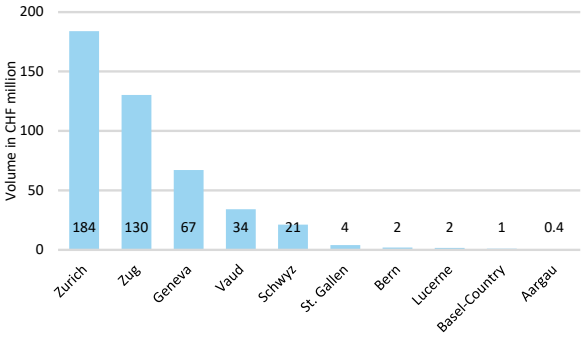

Figure 7.3: Venture capital invested in Swiss FinTech companies by canton (source: own data)

[1] Investment volumes have been converted to CHF using yearly average exchange rates.
[2] Note that all later stage funding rounds are summarised under Series B funding.

Figure 7.3 shows the geographical distribution of the venture capital volume invested in Swiss FinTech companies in 2021 by cantons. It reveals that the largest cantons as measured by the number of resident FinTech companies (see Figure 2.5) are also the largest cantons with regard to the investment volumes absorbed. Zurich takes the top position with an investment volume of CHF 184 million, followed by Zug (CHF 130 million), Geneva (CHF 67 million), Vaud (CHF 34 million), Schwyz (CHF 21 million), St. Gallen (CHF 4 million), Bern (CHF 2 million), Lucerne (CHF 2 million), Basel-Country (CHF 1 million), and Aargau (CHF 400,000).

The distribution of the number of financing rounds and venture capital volume invested in Swiss FinTech companies by product areas and technology categories is shown in Figure 7.4. The left-hand graph shows that the volume is relatively constant across the three product areas *Payment*, *Deposit & Lending*, and *Investment Management*, while *Banking Infrastructure* accounts for a slightly larger amount. In terms of the number of rounds, *Investment Management* and *Banking Infrastructure* each have a larger total than the other two areas. A more diverse picture emerges from the breakdown by technology category in the right-hand graph of Figure 7.4. FinTech companies that use technologies from the fields of *Process Digitisation / Automatisation / Robotics* and *Distributed Ledger Technology* make up the largest share in terms of the number of financing rounds as well as in terms of the volume collected. This is consistent with the total number of FinTech companies classified into the respective categories (see Figure 2.6).

In general, the emergence of corporate venture capital investors (CVCs) can be seen as one of the reasons why venture capital activities have increased in Switzerland in recent years. Although most Swiss CVCs are still young, most of them operate professionally with a dedicated team responsible for corporate venture (startupticker.ch & SECA, 2021). The most important reason for investment is access to new technologies (startupticker.ch & SECA, 2021), which is why FinTech companies regularly become investment targets for established financial services providers.

Initial Public Offerings (IPOs) as an exit strategy for founders and investors have also gained traction in the global FinTech industry over the past years. The absolute number of annual IPOs of FinTech companies worldwide is shown in Figure 7.5, with a distinction also made between continents. The figure is based on data provided by Crunchbase (2021) and reveals that 2021 was a record year with a total of 39 IPOs, representing

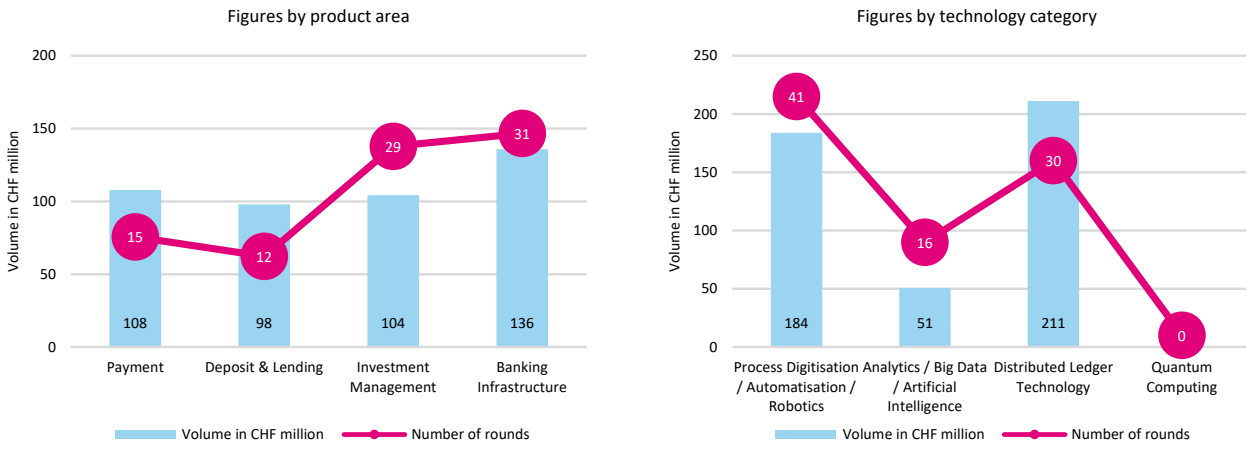

Figure 7.4: Venture capital volume invested in Swiss FinTech companies by product area (left-hand graph) and technology category (right-hand graph) (source: own data)

an increase of 50 percent in a year-over-year comparison. The increase in 2021 also represents a trend reversal, as the number of IPOs fell in 2020 compared to 2019. Comparing the 39 IPOs with the total number of 2,388 deals in 2021 (Go, 2021) reveals that with a proportion of 1.6 percent, FinTech accounts for a minor share of all activity. Nevertheless, as shown in Figure 7.5, the most activity takes place in North America with 23 IPOs in 2021, followed by Europe with 10. The continents of Asia, Australia, and South America each account for 2 IPOs, while no FinTech company went public in Africa in 2021.

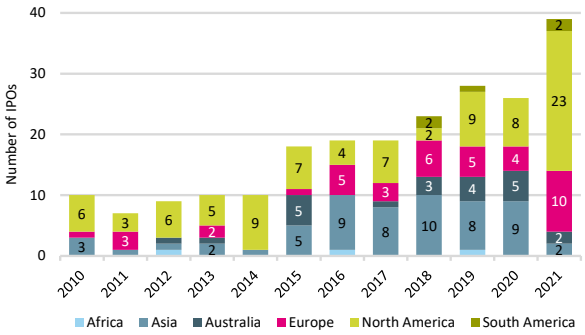

Figure 7.5: Number of FinTech IPOs by continent by year (source: Crunchbase (2021))

Of the ten FinTech IPOs in Europe, none took place in Switzerland. However, in 2021, Smart Valor received conditional approval to list on the Nasdaq First North Growth Market (startupticker.ch, 2021b).

In an IPO, the founders and investors of a company can make an exit, as the shares are sold to the public. Another exit route is the private sale of the company to another. FinTech company acquisitions, from the buyer perspective, have gained in relevance globally over the past years as shown in Figure 7.6. The figure is again based on data provided by Crunchbase (2021) and highlights a somewhat exponential trend in the number FinTech company acquisitions over time. A total of 310 takeovers are counted for 2021, while this figure was 198 in 2020. Consistent with the findings for IPOs, the continents of North America and Europe also represent the greatest activity in terms of FinTech company acquisitions. While the former accounts for 148 deals in 2021, the latter accounts for 95. The remaining acquisitions took place in Asia (34), South America (18), Australia (8), and Africa (7).

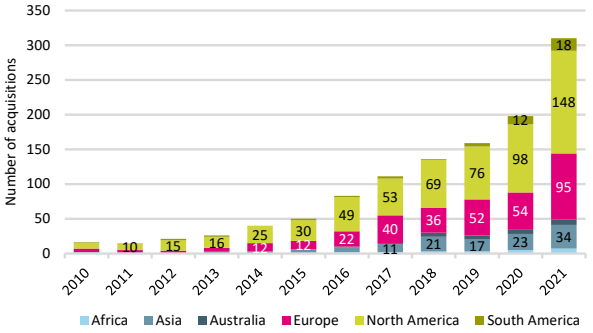

Figure 7.6: Number of FinTech acquisitions by continent by year (source: Crunchbase (2021))

Switzerland also saw a number of acquisitions of FinTech companies in 2021. These include the acquisitions of Appway by FNZ (Appway, 2021), of Assentis Technologies by Smart Communications (Smart Communications, 2021), of numas by Allocare (Allocare, 2021), of Run My Accounts by Infoniqa (Infoniqa, 2021), and the acquisition of majority stakes of Accounto by AXA (startupticker.ch, 2021a) and Crypto Finance by Deutsche Börse (Crypto Finance, 2021).

In addition to traditional funding mechanisms, another type of fundraising has emerged with the advent of distributed ledger technology (DLT). Companies can sell DLT-based tokens that represent a certain stake in a project to investors via so-called “token sales”, who in turn profit from a possible increase in their value.[3] Through such token sales, companies are able to raise funds from the broader public instead of traditional intermediaries like venture capitalists and institutional investors (Chen, 2018). The development of the global token sale activity across all industries is shown in Figure 7.7, revealing that token sales have gained again in popularity after two years of declining volumes. For

[3] It should be noted that tokens do not necessarily have to represent a financial claim against a company, but can also represent another benefit, such as an entitlement for the use of a service or product.

the year 2021, a total of 481 token sales are counted, raising a volume of USD 5.7 billion. This is a strong increase compared to the previous year, which had only 91 rounds and a total volume of USD 0.7 billion. However, the numbers are still comparably low compared to 2018, which saw more than twice the number of funding rounds and roughly four times the investment volume as 2021. One reason for the renewed interest in this alternative form of financing and also the increased funding volume[4] could be the generally positive market sentiment in the crypto assets sector. The largest recorded token sale was the one of Fei Protocol which raised a total of roughly USD 1.7 billion (ICO Drops, 2022).

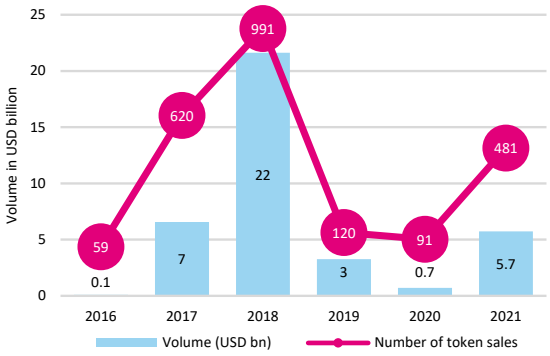

Figure 7.7: Token sales global across all sectors (sources: CoinSchedule (2019), ICO Drops (2022))

The Swiss FinTech sector counted one token sale in 2021. Concordium, a developer of a compliance-ready public blockchain infrastructure, completed a USD 36 million private token sale in April 2021 (Yahoo Finance, 2021). However, as with traditional types of financing, e.g., venture capital, it cannot be ruled out that more private funding rounds in the form of token sales have taken place without being made public.

7.2. Valuation of FinTech Companies

In recent years, stock markets in Europe, North America, and Asia performed exceedingly well, marked by recurring all-time highs. Despite this, certain sectors performed exceptionally well while others underperformed the broad market substantially. In Switzerland, one example that serves as evidence regarding the underperformance is the banking sector. Comparing the price index of the broad market (SPI PR) and the one that represents the banking sector in Switzerland (SWX SP Banks PR[5]), the difference in returns is striking (see Figure 7.8). Indexed at 100 as of January 2015, the SPI yielded a return of 50.1 percent while the performance of Swiss banks is negative with minus 39.0 percent during the sample period, which ends in December 2021. While the annualised mean return of the SPI amounts to 6.0 percent and the volatility to 12.1 percent, the mean return of the index representing Swiss banks amounts to minus 6.8 percent and the volatility to 22.4 percent.[6]

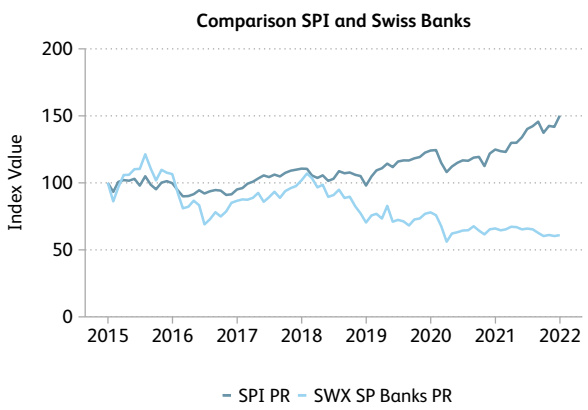

Figure 7.8: Comparison of SPI PR and SWX SP Banks PR

7.2.1 Motivation for a Global FinTech Index

Given the different stock price dynamics of sectors, it is of interest to examine whether stock returns of FinTech companies differ from returns of a broad stock in-

[4] Many token sales accept other crypto assets as payment, which means that when their value increases in USD, the funding volume of token sales in USD also increases.

[5] The index is constructed as a value-weighted price index consisting of 22 Swiss banks (SIX, 2022).

[6] An analysis of the difference between mean returns using total return indices rather than price indices shows similar results. Specifically, the level of mean returns for the two indices increases by about three percentage points. Furthermore, it shows that the change in volatility for the two indices is marginal.

dex. To conduct such an analysis, one approach might be to gather information of stock indices representing the FinTech industry in different countries and in a next step, aggregate these indices. However, specific FinTech sector indices do not exist in numerous countries, which subsequently leads to a country bias. A second approach consists of searching for listed FinTech companies on a global scale and gathering price and market capitalisation data, which in turn allows for the construction of a global FinTech index. Although this second approach appears promising, it raises a number of challenges. First, it is of importance to identify as many listed FinTech companies as possible. After the identification, if available, information on prices as well as market capitalisation need to be gathered. In addition a conversion of the data to a reference currency is required, which allows for aggregating the data into the construction of an index. Lastly, it is possible that certain companies are listed on a stock exchange but might have characteristics of a penny or micro stock (i.e., low market capitalisation, extreme return and volatility patterns). If no value-weighted aggregation is chosen to construct the index, one must correct for such characteristics to reduce or eliminate the influence of those stocks.

7.2.2 Data and Index Construction

As described in Section 7.2.1, both approaches to build a global FinTech index are subject to challenges. Nevertheless, this chapter aims to construct such an index based on the second approach proposed. To minimise the described shortcomings of such an analysis, different data sources and certain constraints were used, which are described in more detail in this section.

First, in order to identify as many FinTech companies as possible, the Crunchbase database was used, resulting in a sample of 311 companies. Second, publicly available data was used to classify the FinTech companies. Thereby, the same classification system as in Chapter 1 was applied. More specifically, the companies were classified into the FinTech grid and segmented into the customers and market served. This process allows to ensure that the sample contains only true FinTech companies and to form various sub-indices (see Section 7.2.4). Due to this classification, the sample size was further reduced. Since 29 companies were identified as private equity, private debt, or SPAC vehicles, 21 companies focus on insurance as business model, eleven companies had no accessible homepage[7], and four companies were no longer active, these companies were removed from the sample. In summary, this data cleansing removed a total of 65 companies, leaving 246 companies in the sample. Third, in order to gather tickers, monthly prices, and monthly market capitalisation of these FinTech companies, the market data provider Bloomberg was accessed. Out of the 246 companies, Bloomberg provided data for 166 companies. The time series of prices as well as market capitalisations were then converted to US dollars.

After the aforementioned data gathering process, a global FinTech index, referred to as the "IFZ FinTech Index" in the following, can be constructed. In order to have as numerous companies as possible represented in the IFZ FinTech Index and thus to achieve a certain diversification within the index, the formation of the index starts in January 2015. Furthermore, this allows formation of various sub-indices (e.g., *Banking Infrastructure* sub-index) with a minimum of five constituents, again in order to achieve a diversification of the sub-indices constructed. The starting year 2015 is also in line with the analysis presented in Section 7.1. In this respect, the year 2015 marks somewhat a structural break, in which numerous IPOs of FinTech companies took place. After defining the starting period, a decision regarding the weights of the constituents in the IFZ FinTech Index must be made. Naturally, the value-weighted approach comes into question. However, after analysing the data, large differences in market capitalisation would impact the weightings of the index heavily.[8] Since the aim of the IFZ FinTech Index is to represent the FinTech sector on a global scale, a value-weighted approach would lead to a strong bias towards

[7] Note that when a company has no active homepage, a verification of its business model and to check if the company is truly following a FinTech business model is not possible.

[8] Note that the proportion of companies listed in the USA in certain months would sum up to over 70 percent.

the United States. Accordingly, the index was constructed using equal weights and rebalanced monthly. Additionally, a constraint was applied when forming the index. That is, only stocks with a market capitalisation of more than USD 150 million were taken into account, implying that so-called micro caps were excluded and therefore, extreme return and volatility patterns do not impact the index. A portrait with key figures of the IFZ FinTech Index is given in Table 7.1.

IFZ FinTech Index	
Currency	USD
Number of constituents	106
Market capitalisation in million	19,856.9
Product area exposure	
Payment	21.7 %
Deposit & Lending	23.6 %
Investment Management	15.1 %
Banking Infrastructure	39.6 %
Technology category exposure	
Process Digitisation / Automatisation / Robotics	70.8 %
Analytics / Big Data / Artificial Intelligence	21.7 %
Distributed Ledger Technology	7.5 %
Customer segment exposure	
B2B	33.0 %
B2B & B2C	43.4 %
B2C	23.6 %
Market served exposure	
National	35.8 %
International	64.2 %
Regional exposure	
USA	49.1 %
China	8.5 %
Australia	7.5 %
Others	34.9 %

Table 7.1: Portrait of the IFZ FinTech Index as of December 31, 2021

7.2.3 Performance of the IFZ FinTech Index

In this section, the performance of the IFZ FinTech Index is analysed and compared to various benchmarks consisting of the MSCI World Equal Weighted Price Index, MSCI World Banks Price Index (value-weighted), and the MSCI World Information Technology Price Index (value-weighted).[9] Such selection enables the comparison of the sector's performance with that of a broad stock index as well as with sectors in between which the FinTech industry is positioned.

Figure 7.9 illustrates the performance of the four aforementioned indices. Although there is variation between the indices until the end of 2016, all of them yielded a positive return. However, during this period, the MSCI World Price Index performed worst. After 2016, the development of two groups seems to emerge. In this context, it is striking that the IFZ FinTech and the information technology index yield a disproportionately higher return in contrast to the broad stock index and the index representing banks. Nevertheless, during the start of the COVID-19 crisis (March 2020), the IFZ FinTech Index and the MSCI World Price Index converge to a similar value. Afterwards however, there is a much stronger increase in the return of the IFZ FinTech Index than that of the broad stock index. Looking at the full sample period, it is evident that the IFZ FinTech Index underperformed the information technology index but outperformed the broad stock index and the index representing banks. Given the substantial outperformance compared to banks and the similarity of patterns with the information technology index, one hypothesis suggests that the IFZ FinTech Index is associated more strongly with the technology sector than with the banking sector.

The aforementioned different patterns described are also reflected in the key metrics (see Table 7.2). Accordingly, over the sample period, the highest annualised mean return was achieved by the MSCI World IT Index with 22.1 percent, followed by the IFZ FinTech Index with 13.2 percent and the MSCI World Index with 6.8 percent. The worst return is achieved by the MSCI World Banks Index with 3.4 percent. The principle that a higher return must be accompanied by a higher risk cannot be confirmed based on this analysis. It is apparent that the index with the worst performance ex-

[9] Note that both MSCI and Bloomberg do not provide information on MSCI equally weighted world indices in the information technology and banking sector. Therefore, data on value-weighted indices was used for the present analysis.

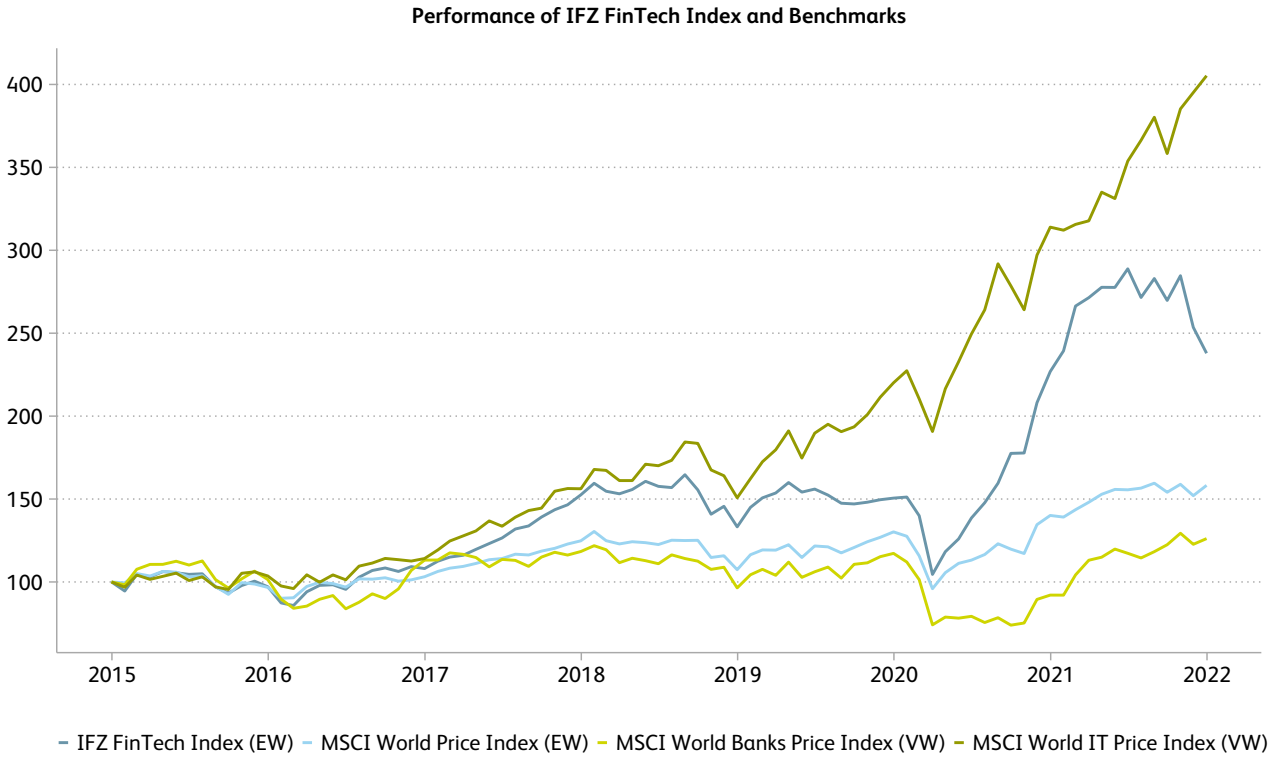

Figure 7.9: Comparison of IFZ FinTech Index with selected benchmarks

hibits the highest annualised volatility and the best index (as measured by the mean return achieved) the second lowest. A comparison of the indices using the Sharpe ratio[10], i.e., a risk-adjusted metric, reveals that the performance of the MSCI World IT Index with a Sharpe ratio of 1.22 is indeed superior compared to the others. The information technology index is followed by the IFZ FinTech Index with 0.59 and the MSCI World Index with 0.39. The worst performing index is the one representing the banking industry with a Sharpe ratio of 0.12 over the whole observation period.

Index	Mean Return	Volatility	Sharpe ratio
IFZ FinTech	13.2 %	21.0 %	0.59
MSCI World	6.8 %	15.2 %	0.39
MSCI World Banks	3.4 %	21.6 %	0.12
MSCI World IT	22.1 %	17.4 %	1.22

Table 7.2: Performance Metrics of the IFZ FinTech Index and Benchmarks

[10] Since all metrics are represented in USD, the U.S. 1 Month Treasury Bill Rate was used for the calculation of all Sharpe ratios.

7.2.4 Performance of Sub-indices

Although the performance of the IFZ FinTech Index appears to be quite promising, it is of interest to evaluate whether the performance of certain business models of FinTech companies diverge from the one of others. More specifically, the IFZ FinTech Index was divided into various sub-indices based on the characteristics collected as part of the data gathering process. Accordingly, sub-indices were created for each product area, technology area, customer segment, and market served by the companies. As a consequence, each company is always a component of four sub-indices[11]. As mentioned in Section 7.2.2, a minimum number of five companies was defined to achieve a certain degree of diversification in each sub-index. Due to this constraint, the construction of the *Payment* sub-index is formed from July 2015 onwards.[12] Furthermore, the

[11] E.g., *Banking Infrastructure*, *Analytics / Big Data / Artificial Intelligence*, *B2C*, and *International*.

[12] Due to this, all product area sub-indices were indexed to 100 on July 2015, resulting in a sample period from July 2015 to December 2021.

Distributed Ledger Technology sub-index could only be formed from December 2020 onwards. However, due to this short time period, it was decided to omit this sub-index.

Figure 7.10 shows the performance of the four sub-indices for the product areas in FinTech, i.e., *Payment*, *Deposit & Lending*, *Investment Management*, and *Banking Infrastructure*. The two sub-indices with the highest returns during the sample period are the *Payment* sub-index and the *Investment Management* sub-index with an annualised mean return of 26.1 and 25.5 percent, respectively. These are followed by *Banking Infrastructure* with 8.2 percent, and lastly *Deposit & Lending* with 3.0 percent.

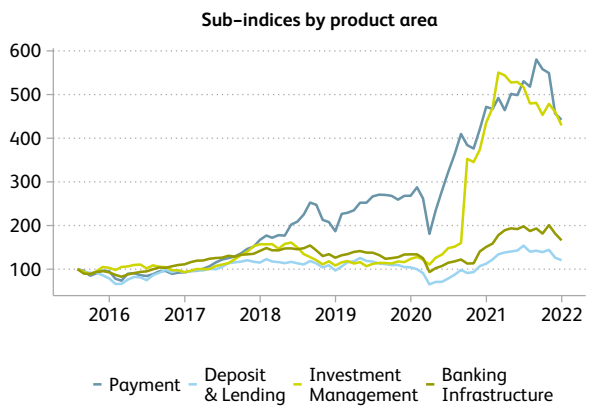

Figure 7.10: Comparison of the product area sub-indices

The same findings apply when analysing the risk-adjusted performance (see Table 7.3). The highest Sharpe ratio by far is generated by the *Payment* sub-index, attributable to its substantially lower volatility compared to the *Investment Management* sub-index.

In the following paragraph, the sub-indices from the technology category are analysed. Figure 7.11 depicts the performance of the respective sub-indices. Looking at the entire sample period, it is evident that the *Process Digitisation / Automatisation / Robotics* sub-index outperforms with an annualised mean return of 13.9 percent. However, this is mostly attributable to the returns

Index	Mean Return	Volatility	Sharpe ratio
Payment	26.1 %	31.9 %	0.79
Deposit & Lending	3.0 %	25.7 %	0.08
Investment Management	25.5 %	51.8 %	0.47
Banking Infrastructure	8.2 %	21.4 %	0.34

Table 7.3: Performance Metrics of the Subindices by product area

realised past the beginning of the COVID-19 crisis. At the start of the crisis, the value of this sub-index is almost equal to the other one, i.e., the *Analytics / Big Data / Artificial Intelligence* sub-index, with levels of 107 and 105, respectively. Although both sub-indices recovered quickly, the *Analytics / Big Data / Artificial Intelligence* sub-index yields an annualised mean return of 9.9 percent and thus underperforms.

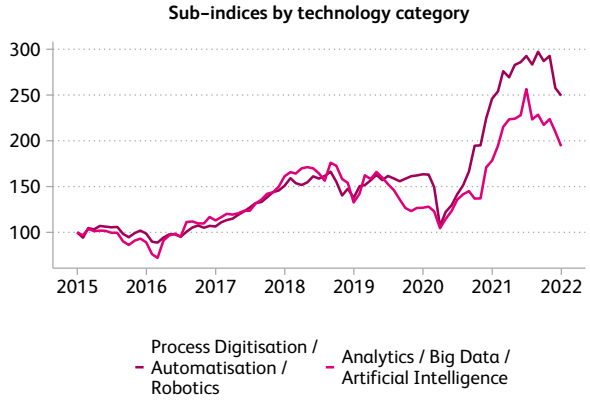

Figure 7.11: Comparison of the technology category sub-indices

With regard to the Sharpe ratios (see Table 7.4), the same ranking applies as for mean returns. That is, the higher Sharpe ratio with 0.61 is offered by the *Process Digitisation / Automatisation / Robotics* sub-index, and the lower one by the *Analytics / Big Data / Artificial Intelligence* sub-index with a ratio of 0.36.

Index[13]	Mean Return	Volatility	Sharpe ratio
Digitisation	13.9 %	21.5 %	0.61
AI / Big Data	9.9 %	25.3 %	0.36

Table 7.4: Performance Metrics of the Subindices by technology category

The performance of the sub-indices by customer segments served is illustrated in Figure 7.12. Of these, the *B2B* sub-index shows the highest annualised mean return with 18.7 percent. This sub-index is composed of companies that serve exclusively business customers. It is followed by the sub-index consisting of companies serving only private customers (*B2C* sub-index) with a mean return of 10.3 percent, and lastly, the sub-index comprising companies serving both business and private customers (*B2B* & *B2C* sub-index), with 8.2 percent. However, the difference within the sample period between the latter two is rather small. This is primarily attributable to the worse performance of the *B2C* sub-index during the last year.

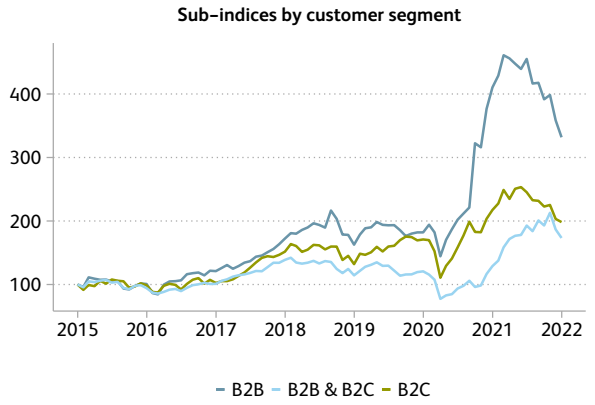

Figure 7.12: Comparison of the customer segment sub-indices

Table 7.5 summarises the performance metrics of the aforementioned sub-indices. Again, the sub-index with the highest mean return (*B2B* sub-index) provides the highest Sharpe ratio with 0.62 and the one with the lowest mean return (*B2B* & *B2C* sub-index) the lowest one at 0.33.

Index	Mean Return	Volatility	Sharpe ratio
B2B	18.7 %	28.9 %	0.62
B2B & B2C	8.2 %	22.4 %	0.33
B2C	10.3 %	24.3 %	0.39

Table 7.5: Performance Metrics of the Subindices by customer segment

A last distinction is made between the sub-indices differentiated by markets served (see Figure 7.13). While from the beginning of the sample period up to the outbreak of the COVID-19 crisis the sub-index containing companies focusing on serving the home market (*National* sub-index) outperforms, the opposite is true after this period. At the start of the crisis, the sub-indices were at a similar level of 116 (*National* sub-index) and 120 (*International* sub-index). Although both sub-indices recovered well, the return of the *International* sub-index increased far stronger than the *National* one.

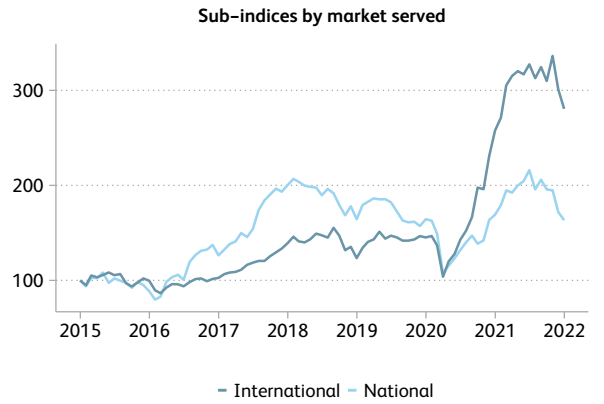

Figure 7.13: Comparison of the market served sub-indices

As a result, the annualised mean return of the *International* sub-index amounts to 15.9 percent, while the *National* sub-index only yields a mean return of 7.3 percent. Again, Table 7.6 depicts the performance metrics of both sub-indices. While the volatility is nearly

[13] The abbreviations are as follows: Digitisation = Process Digitisation / Automatisation / Robotics; AI / Big Data = Analytics / Big Data / Artificial Intelligence.

equal, the Sharpe ratios of 0.67 for the *International* sub-index and 0.27 for the *National* sub-index diverge substantially due to the previously mentioned mean returns.

Index	Mean Return	Volatility	Sharpe ratio
International	15.9 %	22.3 %	0.67
National	7.3 %	23.9 %	0.27

Table 7.6: Performance Metrics of the Subindices by market served

7.2.5 Conclusion and Outlook

The IFZ FinTech Index, as an attempt to measure the performance of the global FinTech sector from an investor's point of view, shows a strong performance during the sample period from January 2015 until December 2021. In comparison to a global broad stock index, the MSCI World Equal Weighted Price Index, the mean return of the IFZ FinTech Index is almost twice as high. Furthermore, it also substantially outperformed the index representing banks on a global scale. However, compared to the information technology index, the performance falls short. Although the overall performance of the IFZ FinTech Index is appealing, it is shown that certain categories of FinTech companies performed better than others. That is, the sub-indices by product area are dominated by the performance of the *Payment* sub-index and the *Investment Management* sub-index. While the differences in terms of performance in the technology category is not substantial, it becomes apparent that in the customer segments, the *B2B* sub-index performance is superior in comparison to the other two sub-indices. A considerable difference in performance is also observed in the sub-indices by market served. Thereby, the Sharpe ratio of the *International* sub-index is more than twice as large as the one of the *National* sub-index. It remains to be seen whether the performance of the IFZ FinTech Index and the various sub-indices remains stable or whether they will be subject to substantial changes over time.

8. Banks and FinTech

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This chapter describes the impact of new technologies on established banks and how they are dealing with them. In Section 8.1, an annual survey of IT managers at Swiss banks is conducted as part of the CIO Barometer. In Section 8.2, the focus shifts from a micro to a macro perspective. Here, the influence of FinTech on Swiss banks is analysed at an aggregate level. In the last section, i.e., Section 8.3, an outlook on the interplay between the metaverse and the financial industry is given.

8.1. CIO Barometer

The sixth edition of the CIO Barometer was conducted at the end of 2021. This is a survey that aims to gather information on current trends and developments in the Swiss banking market. The CIOs of the Swiss banks were asked about the challenges they face and the extent to which these are being addressed at a strategic and operational level. The questions were posed in such a way that the present was mapped and a forecast for the future could be made. The structure was kept similar to the previous surveys in order to maintain comparability. After the methodology is presented in Section 8.1.1, the results of this year's CIO Barometer follow in Section 8.1.2.

8.1.1 Methodology

Constructed as an anonymous survey among IT representatives of Swiss banks, the CIO Barometer attempts to capture the most recent developments and structure them into different dimensions relevant to bank IT. As a basis for structuring the survey and its analysis, the IT balanced scorecard concept by Van Grembergen and Saull (2001), which relies on the original balanced scorecard approach by Kaplan and Norton (1996), is used. The main dimensions considered are *User orientation*, *Operational excellence*, *Business contribution*, and *Future orientation*, whereby all of them are evaluated from the perspective of the banks' IT departments. Each dimension is further divided into three indicators expected to be relevant for the assessment of the respective dimension. The participants were asked to rate all three indicators per dimension on a four point scale, reflecting their priorities ranging from very low (1), low (2), high (3), to very high (4). Priorities have been assessed for the present and their expected importance in five years. Furthermore, general questions concerning information about the bank were asked. These include general information to put the banks into segments and questions about allocation of financial resources.[1] Some changes were made to the indicators and the wording of the IT balanced scorecard. The word "Usability" was added to the "Client experience" indicator, "Mobile application" was changed to "Embedded finance", and "Composability of systems" was added to the "Development of ecosystems" indicator. Furthermore, the indicator "Reduction of time-to-market of new products and processes" was replaced by "Modularisation and modernisation of the IT architecture".

8.1.2 Results of the CIO Barometer

The findings of the CIO Barometer are divided into three sections below. While Section 8.1.2.1 provides a descriptive analysis of the sample, Section 8.1.2.2 analyses the IT priorities, and Section 8.1.2.3 evaluates the IT costs at Swiss banks.

8.1.2.1 Sample Description

At the beginning of December 2021, a total of 232 representatives from the IT departments of Swiss banks were written to and asked to complete the survey. 51

[1] All previous editions of the survey relied on the same approach. Slight changes to questions have been implemented over time.

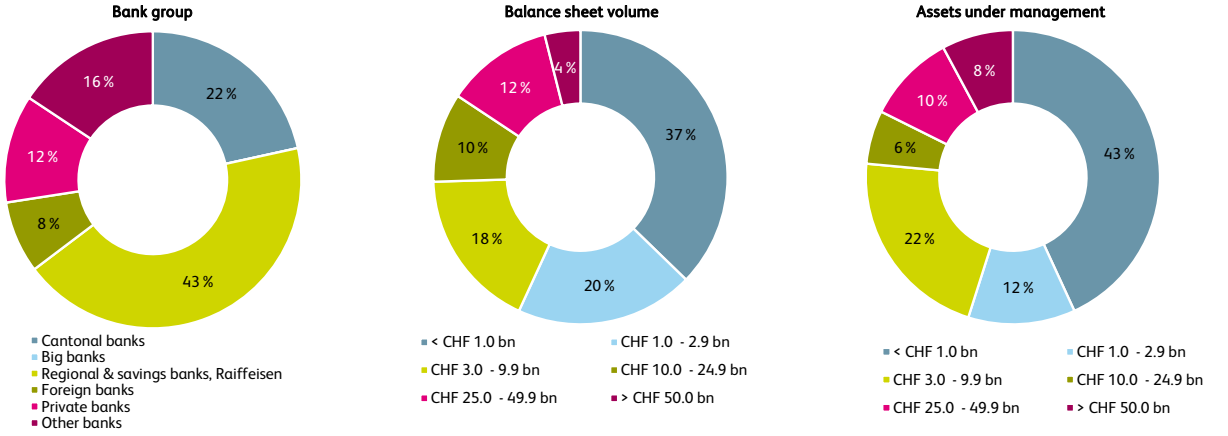

Figure 8.1: Survey participants according to bank group (left-hand diagram), balance sheet volume (middle diagram), and assets under management (right-hand diagram) (n=51)

complete questionnaires were returned, which corresponds to a response rate of 22 percent. Figure 8.1 shows an overview of all participating banks. On the left-hand side, the banks are divided into bank groups. The majority of the responding banks (43 %) are regional banks, savings banks, and the Raiffeisenbank, which is grouped as a single institution. With 22 percent, the cantonal banks are the second largest banking group that participated in the survey. The remaining survey participants include foreign, private, and other banks. Big banks did not participate in the survey.

The ring diagram in the middle of Figure 8.1 shows the distribution of participating banks with regard to the volume of their balance sheet. Almost three-fifths (57 %) of the banks that participated in the survey have a balance sheet volume of less than CHF 3 billion. Medium sized banks make up 28 percent, and 12 percent of the participating banks have a balance sheet volume between CHF 25 billion and 50 billion. Two participants, or four percent in relative terms, have a balance sheet of over CHF 50 billion.

The ring diagram on the right-hand side of Figure 8.1 represents the proportions of assets under management. It shows that this is roughly the same distribution as the balance sheet volume. More than half (55 %) of the participants manage less than CHF 3 billion assets, while 28 percent are in a range between CHF 3.0 billion and 24.9 billion. 18 percent of all participants have more than CHF 25 billion assets under management.

A comparison to the basic population of Swiss banks (SwissBanking, 2021) reveals that the sample of the CIO Barometer cannot be considered representative for the Swiss banking sector. The biggest differences are on one hand, the proportion of cantonal banks, regional and savings banks and Raiffeisen, which are larger than in the overall population, and on the other hand, the smaller proportion of foreign banks. Nevertheless, the results of the survey provide a useful overview of the strategic priorities and further developments in the Swiss banking sector with regard to aspects of information technology.

8.1.2.2 IT Balanced Scorecard

The survey results for the four dimensions of the IT balanced scorecard, i.e., *User orientation*, *Business contribution*, *Operational excellence*, and *Future orientation*, are shown in Figure 8.2. With an average value of 3.24, the dimension *Business contribution* has the highest priority, followed by *Operational excellence* with a value of 3.18. The dimensions *Future orientation* and *User orientation* both achieve a value below 3, whereby the

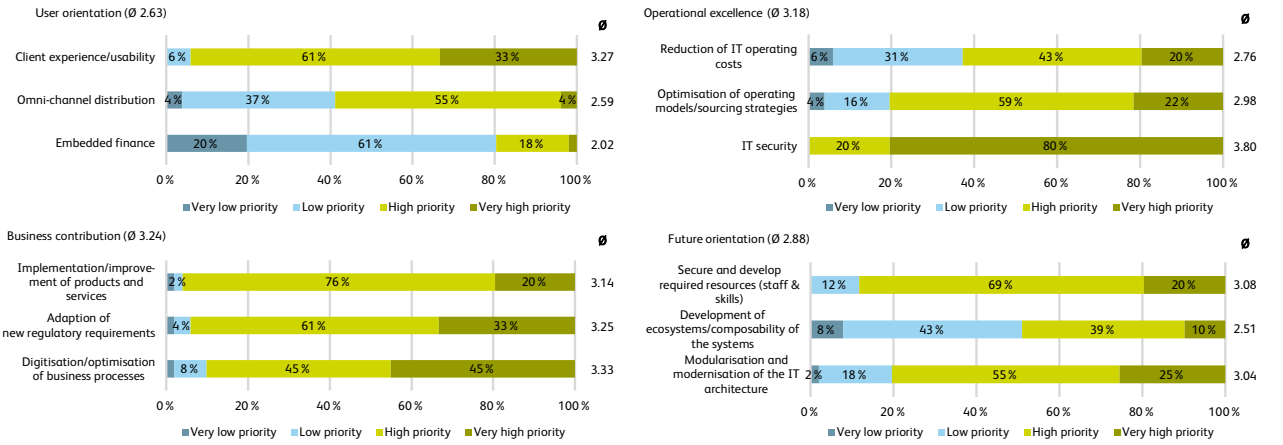

Figure 8.2: Results for the IT balanced scorecard 2021 (n=51)

latter, with a value of 2.63, has a lower value than the former with 2.88.

In comparison to the assessment from the year 2020, some differences can be observed. For example, the value for *User orientation* decreased by 0.21 points. All other dimensions, however, showed growth. It is noteworthy that *Future orientation*, with a plus of 0.32 points, became considerably more important compared to the year 2020. As a consequence, it overtook the dimension *User orientation* in the order of the highest priorities in 2021. *Business contribution* with 0.14 points and *Operational excellence* with 0.12 points also show positive growth. However, it should be noted that the changes could also be influenced by the adjustments in the wording of the indicators. In general, Swiss banks seem to be fairly consistent in their beliefs about the role of IT for their business.

With regard to the individual indicators, it becomes apparent that "IT security" is the leading indicator across all dimensions, with an average score of 3.80. Compared to last year's results, the proportion of participants attributing a very high priority to this indicator increased from 56 percent to 80 percent. This proportion also exceeds the value from two years ago (74 %). It is also noteworthy that the indicator "Digitisation/optimisation of business processes", with a value of 3.33, has displaced the indicator "Adaption of new regulatory requirements" (3.25) in second place among the most prioritised indicators. Other important indicators are "Client experience/usability" (3.27), "Implementation/improvement of products and services" (3.14), "Secure and develop required resources (staff & skills)" (3.08), and "Optimisation of operating models and sourcing strategies" (2.98). The least prioritised indicator is "Embedded finance" with a value of 2.02. This is also the reason why the average value of *User orientation* has decreased year-on-year. There is a bigger gap to the next indicators "Development of ecosystem/composability of the systems" and "Omni-channel distribution" with values of 2.51 and 2.59, respectively. Last year, these two indicators were also assigned comparably low values. Both indicators however, are expected to grow in importance for the foreseeable future. The expected priority score, assessed for five years ahead of when the survey took place, increases for both indicators by 0.61 and 0.39 points, respectively. The banks therefore assume that the relevance of financial ecosystems and the importance of omni-channel distribution will increase in the future.

Figure 8.3 provides an overview of the temporal development of the average scores per dimension of the IT balanced scorecard. The expected average score in 2026 is derived from this year's survey participants' ex-

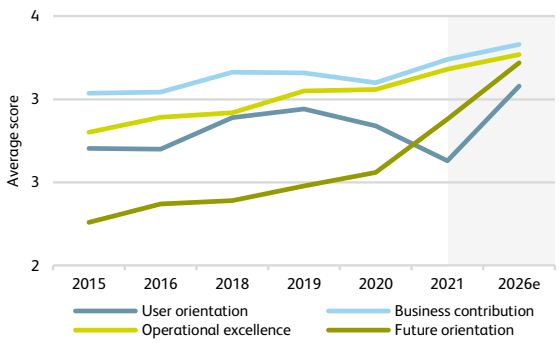

Figure 8.3: Priority averages of the four dimensions over time (n_{2021}=51)

pected priority that each underlying indicator will have in five years' time. The average importance of all dimensions is anticipated to be higher in five years. This expectation was already evident in last year's study. When looking at the individual dimensions, it is noticeable that *User orientation* shows a slight decrease in its average score since 2019. But on a five-year view it shows the largest increase in importance (+0.45), driven by the comparably high growth in the indicators "Embedded finance" (+0.67), "Omni-channel distribution" (+0.39), and "Client experience/usability" (+0.32). Likewise, according to the survey, the dimension *Future orientation* will also become significantly more important, again driven be the increase in priority for all underlying indicators. As already mentioned, the indicator "Development of ecosystem/composability of the systems" in particular is expected to gain in importance (+0.61). In the two currently most important dimensions, i.e., *Business contribution* and *Operational excellence*, the indicators "Digitisation/optimisation of business processes" (+0.20) and "Reduction of IT operation costs" (+0.20) increase the most, although less strongly than those with the greatest increase in priority across all four dimensions of the IT balanced scorecard. Like in last year's survey, the only indicator that is expected to lose importance in the future is "Adaption of new regulatory requirements" (-0.03). Furthermore, the indicator with the highest priority today, i.e., "IT security", will only see a marginal change in priority in five years' time (+0.06) and will thus remain a top priority for Swiss banks in the long term.

The evaluation of the indicators in this year's CIO Barometer shows that Swiss banks see the greatest future increase in relevance in the areas of "Embedded finance", "Development of ecosystem/composability of the systems", and "Omni-channel distribution". The first two developments in particular are likely to require certain IT skills from the banks for planning and successful implementation and are also likely to be accompanied by changes in the current IT infrastructure at Swiss banks. An approximation of Swiss banks' internal IT capacities and focus is given in the following Section 8.1.2.3.

8.1.2.3 Cost Management

The costs structure at Swiss banks can be used as a reference point to estimate their IT capacities. The temporal development of the proportions of IT costs in the banks' labour costs (left-hand graph) and general and administrative costs (right-hand graph) are highlighted in Figure 8.4. The graph on the left-hand side reveals that only 16 percent of labour costs are affiliated with information technology. This is exactly the same percentage distribution as in the last year and only slightly higher than in the year 2019. On the contrary, general and administrative costs, as shown in the right-hand graph of Figure 8.4, are driven significantly by expenses for information technology. At the end of 2021, these accounted for around 37 percent, a share that has declined slightly in each of the last two years. The larger share of IT-related costs in general and administrative costs compared to the share in labour costs could potentially be explained by a relatively high degree of outsourcing at Swiss banks. This in turn could indicate that the trends that banks consider more important for the future, such as open financial ecosystems or embedded finance, cannot be driven internally by the banks themselves, but can only be implemented in cooperation with specialised third-party partners, like, for example, FinTech companies.

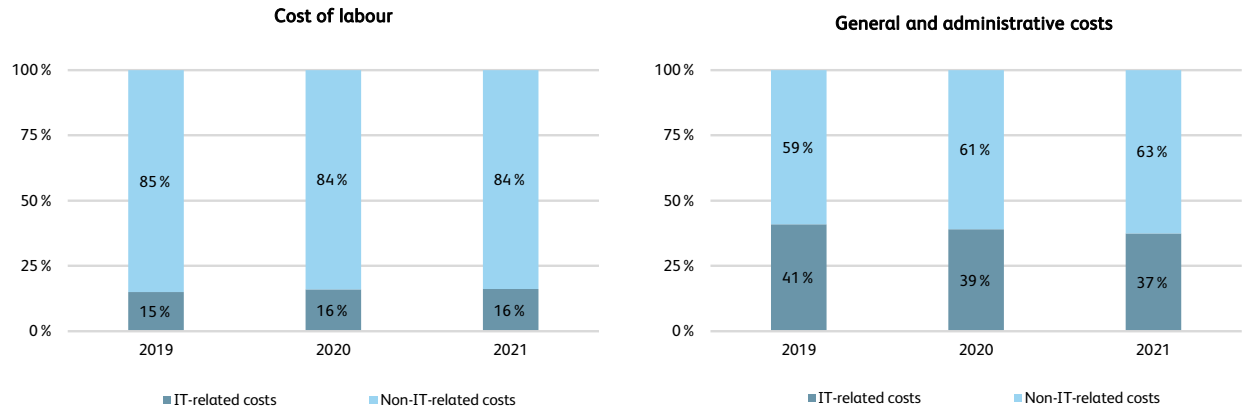

Figure 8.4: Average percentage of IT-related and non-IT-related costs (n=51)

This is also underlined in Figure 8.5, which shows the percentage of IT costs related to innovative activities (”change-the-bank”) and related to ensuring operational activity (“run-the-bank”) at Swiss banks.

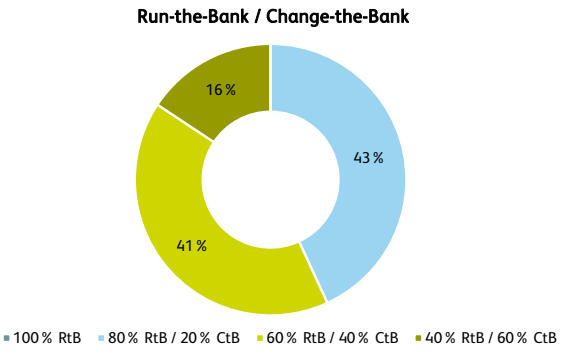

Figure 8.5: Percentage of IT costs associated to change-the-bank and run-the-bank (n=51)

Possible answers range from 100 percent change-the-bank and zero percent run-the-bank to the opposite, zero percent change-the-bank and 100 percent run-the-bank. The figure reveals that 43 percent of the participating banks spend 80 percent of their IT costs on ongoing operations. Two-fifths of the participants have a mix of 60 percent run-the-bank and 40 percent change-the-bank. The remaining 16 percent invest more in innovative activities than for operational business and thus have a distribution of 60 percent change-the-bank and 40 percent run-the-bank. No bank focuses 100 percent on run-the-bank or change-the-bank. Compared to last year’s results, the banks are focusing more on run-the-bank activities again this year. Given banks’ priorities for more innovative distribution, interaction, and operating models, the relatively low innovation capacity could be a barrier to implementation. This suggests that banks will not develop the solutions themselves, but will adopt and integrate existing operational solutions from third parties such as platform providers for financial ecosystems[2].

8.2. Benefits of FinTech for Banks

Swiss FinTech companies affect the domestic banking sector not only as competitors but also as providers for traditional financial institutions. As described in Section 2.1.6, 58 percent of Swiss FinTech companies are pursuing a pure B2B business models. To quantify parts of their various impacts on Swiss banks, the development of productivity indicators of the latter might be consulted. In Figure 8.6, costs and income of all Swiss banks are compared to the related business volumes, balance sheet, and assets under management.

[2]For more information on the role of open financial ecosystems in Swiss wealth management, see Chapter 9.

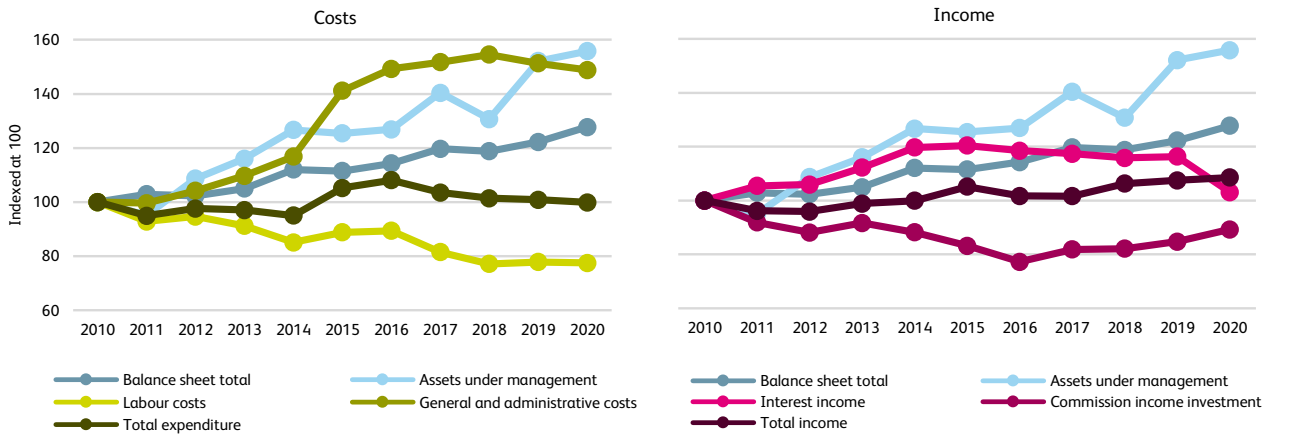

Figure 8.6: Size, costs, and income indicators for Swiss banks indexed at 100 in 2010 (source: Swiss National Bank (2021))

The left-hand graph shows the indexed development of costs and business volume indicators starting at base year 2010 at 100. Apart from slight deviations, the total expenditure stays constant over the analysed time period, although its cost drivers developed less steadily. Labour costs are declining, subsequent to decreasing numbers of employees, but stabilised since 2018 close to 80 percent compared to the base year 2010. On the other hand, the overall increasing general and administrative costs reached their peak in 2018 and declined thereupon down to 150 percent compared to the base year. Given their predominately opposed trends, the cost drivers lead to a constant total expenditure. Considering the increasing business volume indicators, i.e., assets under management and balance sheet, banks in general continue to improve their efficiency. Nevertheless, higher asset prices also contributed to the general increase in the value of assets under management over the sample period.

The right-hand graph of Figure 8.6 features the indexed time series of total income, consisting of net income from interest and commission income from securities and investment business, along with the previously mentioned business volume indicators. It is striking that net interest income dropped significantly in 2020 after a rather lateral development in the previous six years. The drop can be explained by value adjustments in lending business in regard to default risks. The gross income of interest stayed constant compared to recent years. Commission income declined over the analysed time period, but has recovered partly since 2018 considering the absolute numbers. In relation to the assets under management, commission income increased only in 2018 (+7.7 %) and 2020 (+2.9 %), probably benefiting from rather volatile asset prices and increased trading activity. Furthermore, the increase in commission income might also be a hint for product and/or process innovations of Swiss banks subsequent to higher competition but more importantly intensified collaboration with Swiss FinTech companies.

In summary, banks can handle higher volumes without cost increases. The increase in efficiency can be achieved through the use of technology, which is often sourced externally, including from FinTech companies.

8.3. Banks and the Metaverse

A metaverse can be understood as a network of three-dimensional virtual worlds that focuses on social connections and is often described as an evolution of the

internet as a virtual world, or from Web 2.0 to Web 3.0. It is facilitated through the use of virtual and augmented reality technologies.

The term "metaverse" originated in the 1992 science fiction novel Snow Crash as a portmanteau of "meta" and "universe". Second Life is often referred to as the first metaverse because it combines many aspects of a virtual online world with users represented as avatars. Currently, multiplayer online games such as Minecraft or Fortnite represent the most far-reaching metaverses. The importance of the gaming market as first "real" metaverses is underlined by Microsoft's acquisition at the beginning of 2022. The company acquired Activision Blizzard for USD 68.7 billion, which is the publisher of the widely popular games Call of Duty, Warcraft, and Candy Crush (Microsoft, 2022). In 2021, the gaming industry generated USD 180.3 billion in revenue (Newzoo, 2022), underlying the business case for such acquisitions.

The expectations associated with the metaverse are exemplified by Facebook. The company has renamed itself "Meta" and has given itself a new vision to help bring the metaverse to life. The strategy is also underlined by the company portfolio. In addition to the social media platforms Facebook and Instagram, the portfolio also includes a hardware manufacturer, Oculus, whose products enable access via virtual and augmented reality to Meta's metaverse (Meta, 2022).

BigTech companies, as champions of web 2.0, are positioning themselves for web 3.0, in which the metaverse is an essential component. Web 2.0 brought mobile internet via the cloud with large platforms offering services such as shopping, chatting, broadcasting, and streaming. The users themselves still are often the product through their transaction and identity data, which is then monetised by the large platforms via advertising. Web 3.0 promises to be more decentralised and make it easier for users to control and commercialise their own data (Lee, 2022).

It is currently estimated that around 15 percent of global GDP can be attributed to the digital economy. In the future, between 15 and 33 percent could go to the virtual world. With market growth between 2.5 and 25 percent of the digital economy, this leads to a market volume between USD 2.6 and USD 12.5 trillion (Lee, 2022).

Within a metaverse, things are possible that are impossible, dangerous, or illegal in the real world. The gaming industry provides many examples of this, but the real world is the anchor point, mainly concerning economic laws, especially since interoperability between the real and virtual worlds is desired. In concrete terms, this means that financial services are also needed in a metaverse.

A brief overview of the (possible) financial services in a metaverse can be given based on the verticals of the FinTech grid (see Figure 1.1). In the area of *Payment*, there are various applications which are primarily based on distributed ledger technology. One example of this is Mana. Mana is a crypto asset that can be used in the metaverse Decentraland for the purchase and trade of virtual land or other assets (Decentraland, 2022). By tokenising assets in a metaverse, the growing offerings of Decentralised Finance (DeFi) can also be leveraged in the *Deposit & Lending* and *Investment Management* product areas (see Chapter 6). If distributed ledger technology is used as the banking infrastructure in a metaverse, it could become difficult for traditional banks to find and implement their business models in the virtual world.

Even though it is difficult to develop a business strategy in a metaverse, standing on the sidelines is more expensive than a controlled engagement to build up know-how, identify cooperation partners in the new ecosystem, and develop hypotheses on future business models. J.P.Morgan is also pursuing this strategy with its Onyx lounge in Decentraland (J.P.Morgan, 2022).

9. Open Finance in Wealth Management

By Thomas Ankenbrand & Denis Bieri, Institute of Financial Services Zug IFZ

9.1. Introduction

Open Finance is a trending topic in banking and describes the use of open ecosystems for seamless API-based interaction between financial service providers but also non-financial companies and private individuals. In general, open ecosystems can be understood as systems between interacting organisations and are enabled by modularity and complementarity properties (Hakanen, 2021), with data as the key resource. Most financial services providers today typically have access only to data generated through their own client relationships and to market data obtained from domain-specific market data aggregators. This data does not cover all client-, asset-, or market-specific information and therefore does not harvest the full potential (Deloitte, online).

Open ecosystems, which require standardisation of IT interfaces and are usually offered, managed, and operated by technology-driven companies, can alleviate these problems by facilitating interactions and exchanges of value (e.g., in the form of data) among a large number of participants and therefore hold the potential to increase granularisation of the banking value chain. The openness of the network enables the entry of new, highly specialised market players whose products and services may improve, complement, or even disrupt individual existing solutions, thus achieving, for example, greater cost efficiency and customer or product value.

From a practical perspective, open financial ecosystems are expected to significantly gain in relevance in the Swiss financial services industry, as shown in Figure 9.1. While for the year 2021, less than half of the participants of the CIO Barometer (see Section 8.1) attribute a high or very high priority to the development of open financial ecosystems[1], this figure is expected to be at over 80 percent for the year 2026.

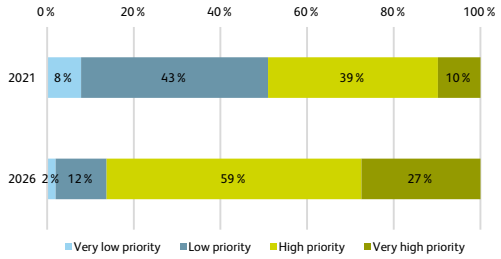

Figure 9.1: Development of financial ecosystems

The greatest impact is expected in the area of payment transactions, but investment management is also affected. This was the conclusion of a survey among Swiss banks for the last edition of the present study in the year 2020. In that survey, over 50 percent of the respondents stated that the impact of open financial ecosystems in the area of investment management is either high or very high. A corresponding positioning is of great importance for the Swiss financial centre, which plays a leading role worldwide in wealth management, a business area that is closely linked to investment management.

The important role of wealth management for Switzerland is underlined in Figure 9.2. It reveals that Switzerland accounted for USD 2.6 billion in offshore assets by the end of 2020, accounting for 23.7 percent of the total international market volume. However, this share declined in 2020 as other countries recorded stronger growth than Switzerland.

The growth rates of the market volume in cross-border wealth management for the leading countries are high-

[1] Note that the exact wording of the indicator in the survey is "Development of ecosystem/composability of the systems".

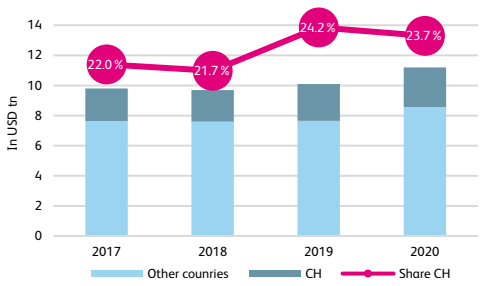

Figure 9.2: International market volume (source: Deloitte (2021))

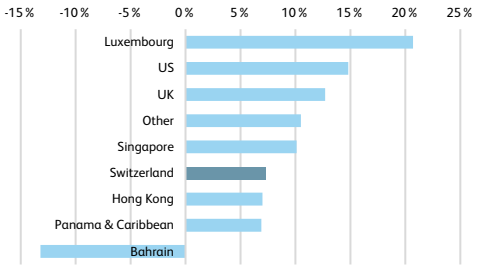

Figure 9.3: International market volume growth in 2020 (source: Deloitte (2021))

lighted by Figure 9.3. The figure shows that offshore assets booked in Luxembourg, the United States, and the United Kingdom in particular grew more strongly than those booked in Switzerland.

The need for Swiss wealth management to continue to evolve in order to remain a global leader in the long term raises the question of how the industry is positioned today and how it intends to position itself in the future in light of the increasing importance of open financial ecosystems.[2] Established wealth managers cannot ignore this development or they will be squeezed out by new market entrants or risk an exodus of existing customers for reasons such as unsatisfied customer needs or inefficiency. However, the new opportunities created by open financial ecosystems can also be embraced as an opportunity by traditional wealth managers. On the one hand, new distribution channels can be created to offer own products and services to third parties. On the other hand, an open network can also be used to obtain individual resources (e.g., with regard to data and analytics) from specialists in line with demand.

The aim of this chapter is to elicit the views of market participants affected by Open Finance in wealth management by means of a survey. The survey was conducted not only among Swiss banks[3], which play a key role in traditional wealth management, but also among Swiss FinTech companies that operate in this business[4]. This is to ensure that possible differences in perception between banks and third-party FinTech providers regarding open financial ecosystems in wealth management can be uncovered. As far as the banks participating in the survey are concerned, it should be noted that many of them do not have their core business in wealth management. This is also indicated by the fact that retail banks are overrepresented in the sample, while foreign banks are underrepresented (see Figure 8.1). It should also be noted that there are market participants in Swiss wealth management who are already much further along in terms of Open Finance. Their views are also underrepresented due to the structure of the present sample.

Before presenting the findings from the questionnaire in Section 9.4, Sections 9.2 and 9.3 first outline the initiatives to foster open financial ecosystems in the wealth management business launched internationally and in Switzerland, respectively.

[2] An assessment of the role of open financial ecosystems in wealth management can also be found in Ankenbrand, Bieri, and Berchtold (2022).

[3] The survey was part of the CIO Barometer whose additional analyses are presented in Section 8.1.

[4] For this purpose, all FinTech companies were surveyed that were assigned to the product area *Investment Management* in the figure Figure 2.6. Of these companies, a total of 31 took part in the survey.

9.2. Situation Globally

Globally, there are initiatives in various countries that aim to promote the opening of interfaces in the financial sector. In most cases however, these initiatives are not exclusively geared towards wealth management but are more general and often relate to banks, which is summarised under the term "Open Banking". Open Finance is an extension of this bank-focused approach and aims to expand data sharing and third-party access to a wider range of financial sectors and products.[5] In general, a distinction between two different approaches to promote open financial ecosystems can be made, i.e., a regulatory- and a market-driven approach. While in the former, the regulator sets the framework for the implementation of open financial ecosystems to which market participants must adhere, the latter is based on the assumption that the market best determines the framework for open financial ecosystems itself, and thus should not be regulated by the government. Regulatory-driven initiatives to promote Open Finance that are also relevant for wealth management can be found in different countries. In the United Kingdom, for example, the Financial Conduct Authority (FCA) issued a call for input to explore the opportunities and risks of Open Finance in 2019. The results of this action were published in 2021, alongside describing the goal of Open Finance. This includes taking into account the needs of consumers from the outset, including vulnerable and digitally excluded consumers, designing systems and standards with consumers in mind, and creating the right incentives and conditions for the sustainable development of Open Finance (FCA, 2021).

In the European Union, the Payment Services Directive 2 (PSD2) provides a legal framework for opening interfaces in the financial services industry. The regulation addresses banks and covers ensuring access to records about a bank customer's payment account and defining roles for payment initiation and account information that enable the provision of basic payment services. However, there are efforts to expand the scope of PSD2 like "openFinance" by the Berlin Group. The initiative is a pan-European coalition of various stakeholders and aims to extend access to customers' financial data to broader data sources and additional account types, such as savings, loans, and investments (Berlin Group, online), thus also further exposing wealth management services to the concept and impact of open financial ecosystems. The initiative is mainly industry-driven and therefore follows more of a market-driven approach to promote open financial ecosystems.

In the United States and Canada too, a predominantly market-oriented approach to Open Finance is being pursued. A leading role is played by the Financial Data Exchange (FDX), a non-profit standards body consisting of a broad range of stakeholders from the financial services industry like financial institutions, FinTech companies, and financial data aggregators. The initiative fundamentally aims to enable end-users to better understand, use, and benefit from their own financial data in a secure and reliable way (FDX, online). Although FDX is not specifically focused on wealth management, this business area is seen by its members as an interesting use case for open financial ecosystems, according to a survey conducted in 2021 (FDX, 2021).

9.3. Situation Switzerland

Like the United States and Canada, Switzerland follows a more market-driven than regulatory-driven approach to foster financial ecosystems in general. Government agencies hence do not independently enforce binding guidelines but nevertheless actively engage in the field. The lack of a uniform government-defined framework for open financial ecosystems has led to multiple initiatives and platforms in Switzerland targeting the API-based exchange of data and services between (non-) financial services providers.[6]

In Switzerland, the OpenWealth Association in particular is dedicated to promoting open financial ecosystems in wealth management. The goal of

[5] For a discussion of the delineation of different types of open financial ecosystems, see Ankenbrand, Bieri, Frigg, Grau, and Lötscher (2021).

[6] For an overview of Swiss initiatives and platforms, see Ankenbrand, Bieri, Frigg, et al. (2021).

the OpenWealth Association is to define, maintain, and distribute the global open API standard for the international wealth management community including financial institutions, financial intermediaries, WealthTech, and other technology companies. The initiative envisions the use of the same API standard for client management (client onboarding and life cycle management including client data, KYC, addresses, and documents), custody services (positions and transactions), and securities trading based on well-known semantic and established industry standards (ISO20022, FIX). It also focuses on standardised consent and security handling for reusable and secure strong customer authentication, knowledge sharing for best practice implementation and API capabilities, and a regulatory and compliance framework with OpenWealth connectivity (OpenWealth Association, online).

9.4. Survey Results

As discussed in Section 9.1, wealth management is an integral part of the Swiss financial centre, which values open financial ecosystems with increasing importance. The need for Open Finance in wealth management is seen as similar by both banks and FinTech companies for different client segments. This is underlined in Figure 9.4, which, like the subsequent analyses in this chapter, is based on a survey conducted as part of this study, in which 51 Swiss banks and 31 Swiss FinTech companies participated. In general, the fact that more than half of the banks and FinTech companies perceive the need for Open Finance for most customer segments, be it for private or corporate clients, to be high or very high, further indicates the relevance of this trend. Furthermore, the figure reveals that FinTech companies consistently perceive a slightly greater need for Open Finance in wealth management than Swiss banks.

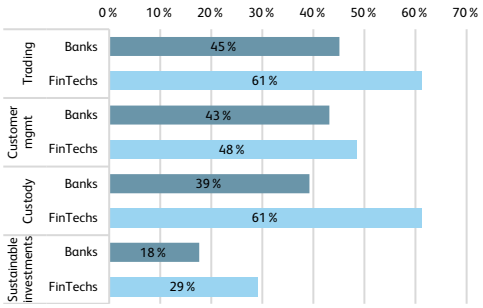

Figure 9.5: Potential of Open Finance in wealth management (multiple answers possible)

In terms of financial services, it is evident that banks as well as FinTech companies see the greatest potential of Open Finance in wealth management in the trading business. This is highlighted in Figure 9.5, which indicates the percentage of respondents who see corresponding potential per financial service. With 45 per-

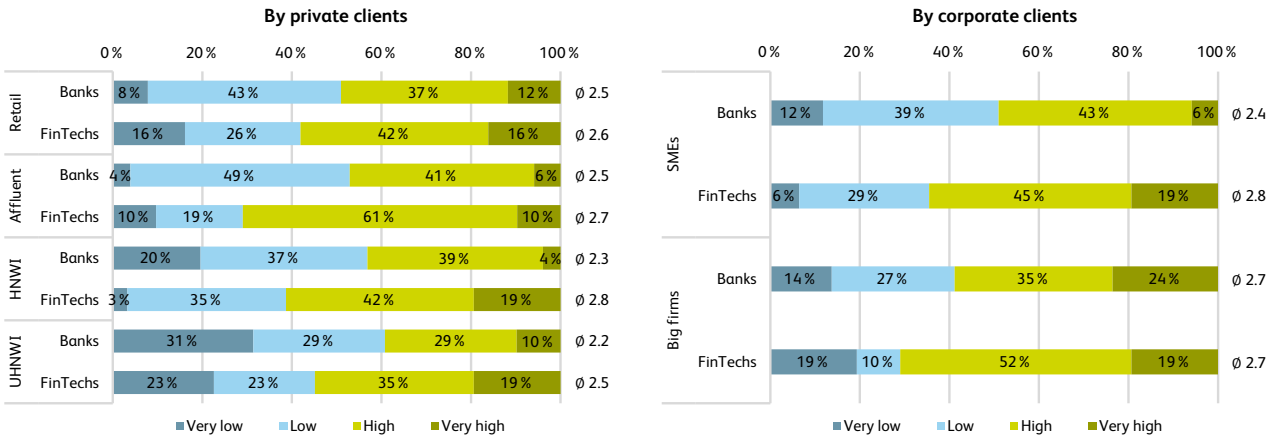

Figure 9.4: Need for Open Finance in wealth management by customer segment (n_{Banks}=51, $n_{FinTechs}$=31)

cent of the banks and 61 percent of the FinTech companies trading represents the largest potential. However, the same percentage also achieves custody among FinTech companies. The second and third highest potential as perceived by banks is seen in customer management, which ranks third among FinTech companies, and custody. For both of the groups surveyed, the potential of Open Finance in wealth management is smallest in the area of sustainable investments.

The obstacles to the adoption of Open Finance in wealth management, as well as its (expected) benefits, are listed in the two tables in Figure 9.6, showing the percentage of companies that agree with each item. Both tables are arranged in descending order of the difference between the opinion of the banks and the opinion of the FinTech companies. The largest divergence (37 percentage points) is observed for the obstacle of losing clients due to the implementation of Open Finance in wealth management. While 47 percent of banks see this as an obstacle, the proportion of FinTech companies is significantly lower at 10 percent. The second largest difference (24 pp) results for the lack of demand, with 33 percent of banks and only 10 percent of FinTech companies stating this as an obstacle. The third largest discrepancy (22 pp) is found in the dependence on partners, with 31 percent of banks and again 10 percent of FinTech companies reporting that this is a barrier for adoption. At the bottom of the table are those obstacles that stand out as particularly severe for FinTech companies in comparison to banks. The lack of incentives for the latter to participate in open financial ecosystems in wealth management represents the biggest difference with the perception of banks, followed by legacy systems which are among the biggest obstacles for both groups. A lack of strategy represents the third largest difference (-17 pp) in perceived obstacles between FinTech companies and banks. What is also noteworthy is that the obstacle of the lack of standardisation and security of APIs is perceived as highly relevant by both groups, with 55 of the companies each expressing an opinion in this direction. The difficult and/or expensive integration into the core banking systems of Open Finance in wealth management also represents another important obstacle for both groups.

The right-hand table in Figure 9.6 shows an analogous evaluation of the advantages generated by Open Finance in wealth management. It can be seen in this context that banks do not mention any of the advantages significantly more often than FinTech companies. On the other hand, efficiency gains are seen as an advantage especially by FinTech companies, which is the biggest difference compared to banks (-33 pp). Other benefits more frequently cited by FinTech firms include

Obstacle	Banks	FinTechs	Difference
Loss of clients	47 %	10 %	37 %
Lack of demand	33 %	10 %	24 %
Dependence on partners	31 %	10 %	22 %
High effort and costs	47 %	26 %	21 %
Cannibalisation of own business	41 %	23 %	19 %
Reputational damage	10 %	0 %	10 %
Lack of partner certification	12 %	3 %	9 %
Missing client interaction	8 %	0 %	8 %
Legal/regulatory uncertainty	20 %	16 %	3 %
Lack of internal know-how and resources	25 %	23 %	3 %
Lack of pressure to implement new business models	31 %	29 %	2 %
Difficult/expensive integration into the core banking	47 %	45 %	2 %
Lack of management support/capacity/understanding	33 %	32 %	1 %
Missing standardisation and security of APIs	55 %	55 %	0 %
Lack of understanding of the opportunities/possibilities	27 %	35 %	-8 %
Missing strategy	20 %	32 %	-13 %
Legacy systems	41 %	58 %	-17 %
Missing incentives for banks	18 %	45 %	-28 %

Advantage	Banks	FinTechs	Difference
New business opportunities	48 %	45 %	3 %
Expansion of client base	28 %	26 %	2 %
Future-proof IT-Infrastructure	38 %	52 %	-14 %
Simpler collaboration with third parties	58 %	74 %	-16 %
Better customer experience	54 %	71 %	-17 %
Efficiency gains	38 %	71 %	-33 %

Figure 9.6: Obstacles and advantages of Open Finance in wealth management (multiple answers possible)

improved customer experience in wealth management through Open Finance (-17 pp) and simplified collaboration with third-party providers (-16 pp). The latter advantage is mentioned most frequently by both groups.

Although the benefits of Open Finance in wealth management are recognised by both banks and FinTech companies, the two groups differ in the way they engage in this development. This is underlined in Figure 9.7. On a scale from 1 ("wait and see and adopt operational solution") and 4 ("actively participate in standardisation"), banks, with an average value of 2.0, tend to be more passive with regard to the active fostering of Open Finance in wealth management. FinTech companies, on the other hand, with an average score of 2.8, are more willing to actively participate in standardisation efforts, which are essential for broad adoption of this development.

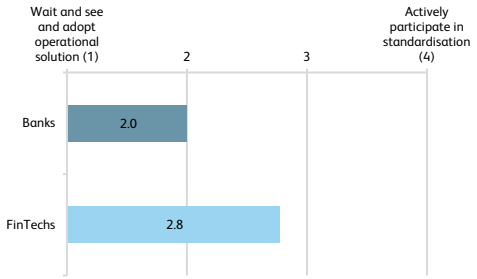

Figure 9.7: Engagement for Open Finance in wealth management

As a consequence, there are also differences between the two groups in terms of responsibilities for the required standardisation, as shown in Figure 9.8. While banks as well as FinTech companies see the regulator comparatively less as a driving force in the standardisation of Open Finance in wealth management, 20 percent of banks and 29 percent of FinTech companies would like to have umbrella organisations like Swiss FinTech Innovations (SFTI) or the Swiss Bankers Association (SBA) in the lead. However, the most desired standardisation bodies differ between banks and FinTech companies. Banks, on the one hand, prefer platform providers (45 %) to be responsible for the standardisation of Open Finance in wealth management, which may also be directly related to the comparatively low willingness for standardisation efforts by the banks themselves. Banks thus prefer to outsource these activities to third-party providers accordingly. Another reason for this could be the sample on which the evaluation is based. The overrepresentation of retail banks, where wealth management is not often the core business, could lead to the relatively large support for platform providers, which generally offer fully functional solutions, in Figure 9.8. FinTech companies, on the other hand, most often see associations and networks as a leading force in standardisation. This is also in line with FinTech companies' greater willingness to engage, whilst they seem to prefer to do so through an appropriate framework such as associations or networks.

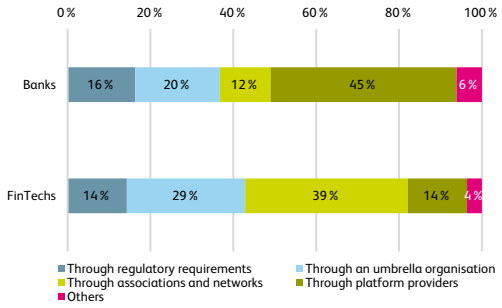

Figure 9.8: Responsibility for the standardisation of Open Finance in wealth management

9.5. Summary

Wealth management is an important pillar of the Swiss financial sector, but it faces tough competition from other countries. In order to be a global leader in the long term, the industry must continuously adapt to new developments. One of these developments, which according to the banks' own estimates will become increasingly relevant in the coming years, is open financial ecosystems ("Open Finance"). In terms of wealth management, Open Finance already seems to be generating demand among various client groups. While Swiss banks see the greatest potential in trading, Swiss FinTech companies also see great potential in the area

of custody. The benefits are seen most strongly by both banks and FinTech companies in simplified collaboration with partners, followed by potentially better customer experience and efficiency gains. Also, both groups agree that the lack of standardisation and security of the required APIs is still a major obstacle. Compared to FinTech companies, banks perceive the potential loss of customers as a much bigger obstacle, while FinTech companies consider the lack of incentives for banks to participate as more obstructive than banks.

The two groups also differ in terms of the role that they want to play in the standardisation of Open Finance in wealth management. While banks see themselves more as adopters of solutions that already work, FinTech companies see themselves in a more active role in defining the standardisation that open ecosystems are built on. Banks see the responsibility in this regard resting most strongly with platform providers, while for FinTech companies it's with associations and networks. However, the former may also be due, to a certain extent, to the sample on which the analysis is based, which includes not only banks specialised in wealth management and in which retail banks are overrepresented.

In general, it can be said that both banks and FinTech companies have recognised the potential of Open Finance in wealth management. However, in order to exploit this potential, a broad adoption of common standards is necessary, which the banks and FinTech companies are currently struggling with, even though corresponding initiatives and scalable platforms, such as the OpenWealth Association or b.Link from SIX, already exist and are in operation in Switzerland.

10. Sustainability and FinTech

By Nadine Berchtold, Institute of Financial Services Zug IFZ; Manuela Disch, Swisscom AG

10.1. Introduction

According to the United Nation, a total investment of USD 5 trillion to 7 trillion per year is required to meet the Sustainable Development Goals, but in 2014, the total annual investment was at the level of USD 1.4 trillion (United Nations, 2014). Hence, one challenge is to close the investment gap by channeling funds toward sustainable projects and companies. The importance of sustainability in the financial industry is no longer argued. The political, scientific, and public discussion has shifted from the question *if* to *how* sustainability can be implemented.

10.1.1 Political and Legal Background

In June 2020, the Swiss Federal Council announced in its report on sustainability in the financial sector the goal of further strengthening its position for sustainable financial services. In the report they recognised the important role of FinTech companies for the Swiss financial centre as innovation partners for existing financial institutions but also as potential competitors. Thus, FinTech companies are considered to be essential for the future sustainability development and competitiveness of the Swiss financial centre (State Secretariat for International Finance SIF, 2021b). Subsequently, in November 2020, the green FinTech action plan was released as a collaboration of the new network of start-ups and experts in green FinTech and the State Secretariat for International Finance. The plan contains 16 action points which merge technologies and sustainable finance and build the cornerstone for a future sustainable financial sector (State Secretariat for International Finance SIF, 2021a).

The European Union (EU) addresses sustainable FinTech with two separate strategies: The Digital Finance Strategy (European Commission, 2020) and the Action Plan on Sustainable Growth (European Commission, 2021). If combined, the two strategies present ideas on how to tackle the sustainability issues from the financial and technological sides.

10.1.2 Economic Background

Corporates have started to pay more attention to sustainability issues and also report their standing. For instance, 92 percent of the S&P 500 and 70 percent of the Russell 1000 published sustainability reports in 2020 (Governance & Accountability Institute Inc., 2021). Further, the volume of sustainable investments is increasing at a rapid pace (Stüttgen & Mattmann, 2021) and new sustainable lending products are released on a regular basis (Bloomberg, 2021b). The need for new firms that help companies and investors to better collect and leverage sustainability data is eminent, especially because the market for this type of offering is still small (see Section 10.4).

10.1.3 Social Background

Social pressure for sustainable financial products has grown in recent years. Several times environmental activists demonstrated in front of the two biggest Swiss banks, Credit Suisse and UBS, and demanded to immediately stop financing projects and companies that harm the environment. In 2021, Greenpeace published a report about the sustainability promises of Swiss banks and their actual products (Greenpeace Schweiz, 2021). In addition to the increased awareness for sustainable financial products, a higher share of the population is familiar with new technologies.

10.1.4 Technological Background

Every technological innovation represents a new opportunity for sustainable development. These opportunities arise not only in conventional industries, but also in the financial industry. There is sustainability-oriented technology (sometimes referred to as “CleanTech”) like

electric transport, long-term energy storage, and carbon capture and storage. On the other hand, there are technologies which are not specifically addressing sustainability issues but can be applied for sustainability business cases as well. Internet-of-Things (IoT), for example, simplifies data collection and increases accuracy, distributed ledger technology improves transparency, and artificial intelligence helps interpret large datasets.

10.2. Definition of Sustainable FinTech

"Sustainable FinTech" combines the three dimensions of sustainability, finance, and technology. The definition of the term "FinTech", which can be found in Chapter 1, needs to be extended by the sustainability dimension for defining sustainable FinTech companies.

Sustainable FinTech is defined as technology-based solutions for **sustainable** innovative products, services, and processes in the financial industry, improving, complementing, and/or disrupting existing offerings. Hence, **sustainable** FinTech companies are firms whose main activities, core competencies, and/or strategic focus lie in developing those solutions **with the principal goal to contribute to sustainable development**.

Drawing a line between sustainable and non-sustainable FinTech companies is not trivial. It is important to note that as a FinTech company it is not sufficient to only offer one sustainable product or service as an option to be considered as sustainable. It is the vision of the FinTech company that must unequivocally reflect the goal of contributing to sustainable development. The definition above also points out that simply conducting business in a sustainable way (e.g., reducing waste or offering good working conditions), without offering services or products that specifically aim to tackle the sustainability challenge, is also insufficient to count as a sustainable FinTech company. Thus, the narrow definition leaves little room for greenwashing.

Sustainable FinTech companies are to be distinguished from green FinTech companies. The Green Digital Finance Alliance and Swiss Green Fintech Network have developed the "Green Fintech Taxonomy and Data Landscape" and published at the end of 2021 an interim report. Their definition is as follows: "Green fintech solutions are defined as technology-enabled innovations applied to any kind of financial processes and products all while intentionally supporting Sustainable Development Goals or reducing sustainability risks". Similar to the definition of sustainable FinTech in the present study, the green FinTech report also specifies the insufficiency of an optional green product offer in order to be eligible as a green FinTech company. In the current version, the definition does not specifically in- or exclude FinTech companies with a social focus (Green Digital Finance Alliance and Swiss Green Fintech Network, 2021).

Note that technology firms covering the insurance business (InsurTech) are excluded from this study and not part of the definition given.

10.3. Sustainable FinTech Categories

Within the definition of sustainable FinTech, the companies can be further categorised according to their individual features and business model. One way to categorise FinTech companies is by using the three dimensions environment, social, and governance (ESG), which are often used in the financial industry when referring to sustainability. A FinTech company can address an issue of one individual dimension or combine them.

In general, sustainable FinTech can operate in the same business areas as conventional FinTech companies, i.e., *Payment*, *Deposit & Lending*, *Investment Management*, and *Banking Infrastructure* (see Figure 1.1). Sustainable FinTech companies shift these business areas by excluding non-sustainable practices.

Further, sustainable FinTech can apply the same technologies that are used by conventional FinTech, i.e., *Pro-*

cess Digitisation / Automatisation / Robotics, *Analytics / Big Data / Artificial Intelligence*, *Distributed Ledger Technology*, and *Quantum Computing* (see Figure 1.1).

Further, the business relation can be distinguished among business-to-business (B2B) and business-to-consumer (B2C). The business relation is important to estimate the range and scale of influence of its products. It also infers the degree of brand awareness.

10.4. Market Overview

For the market analysis of sustainable FinTech companies in Switzerland, the above definition to categorise them was used. The FinTech companies from Chapter 2 build the target population of the analysis.[1] An algorithm which searched the websites of the 384 FinTech companies from the population for pre-defined sustainability key words[2], and suggested a business model which was in line with the definition of a sustainable FinTech was run. Next, those FinTech companies were analysed where most of the key words matched. The business models were assessed individually to detect misleading information on the website and validate the sustainability link. Out of all 384 Swiss FinTech companies, the following 17 FinTech companies were identified that fulfil the definition of sustainable FinTech:

- 3rd-eyes analytics AG
- BitLumens GmbH
- blueyellow AG
- COVALENCE SA
- elleXX universe AG
- Fea Money Switzerland GmbH
- greenmatch AG
- Ground Up Project SA
- IMPAAKT SA
- Yova AG (Inyova)
- MyDIO SA
- Norsia SA
- Pexapark AG
- RepRisk AG
- RETREEB SA
- Sustainaccount AG
- Symbiotics SA

[1] The FinTech Map by Swisscom (Swisscom, 2021) visualises all Swiss FinTech start-ups.
[2] Including "ESG", "sustainability", "green", "impact", and more.

10.4.1 Environment, Social, and Governance

Figure 10.1 shows the distribution of the 17 FinTech companies among the three sustainability dimensions (E, S, and G). Currently, FinTech companies that focus on the dimension G are underrepresented. There is no FinTech company which exclusively focuses on the dimension G, or G combined with S. The dimensions E and S, on the other hand, are similarly represented in the sample. Three FinTech companies focus on the dimensions E and S simultaneously. Another three and two FinTech companies specifically cover the dimension S and E. Additionally, there are eight FinTech companies that focus on all three dimensions together.

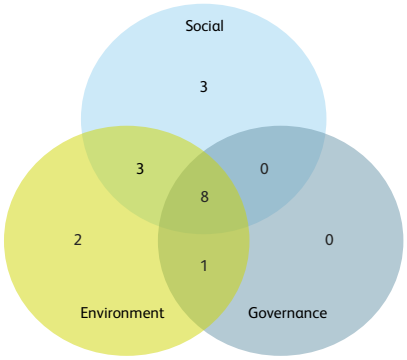

Figure 10.1: Sustainable FinTechs by ESG dimension

Currently, for the area E, many regulatory frameworks have been developed by international authorities and investors agree on relevant environmental (notably climate) metrics. Hence, the common agreements for relevant environmental factors boost the founding of new companies that specialise in this area, for conventional companies as well as FinTech companies. Surprisingly, there are not more distributed ledger technology companies dealing with the dimension G, although

the technology would be predestined for certain governance issues. However, the dimension G is the most established among the three dimensions. Companies have dealt with governance issues such as risk management, corporate values, reporting standards and transparency, senior manager remuneration, and anti-bribery/corruption policies for a long time. The advanced state might be the reason, for the low number of FinTech companies focusing on G.

10.4.2 Business Focus

The majority (12) of sustainable FinTech companies in Switzerland are active in the *Investment Management* product area. Briefly summarised, this includes asset liability management and investments with a focus on sustainable financial products (3rd-eyes analytics and Yova), female investing (elleXX), sustainability scoring and sustainability risk analysis (COVALENCE, IMPAAKT, Norsia, RepRisk, and Sustainaccount), buy, sell, or manage renewable energy (blueyellow, greenmatch, and Pexapark), and a market access platform for impact investing (Symbiotics). The high number of FinTech companies active in sustainable investments is not surprising. Investments are, among all financial business areas, the most developed sustainability area. They have been covered at an early stage of sustainable finance and in the meantime many frameworks have been developed, making it the most clearly defined area. The other business areas share the remaining FinTech companies. The area *Banking Infrastructure* is covered by the two FinTech companies, BitLumens and Fea Money Switzerland, which focus on facilitating the scaling of green technologies to off-grid communities and female banking, respectively. *Payment* is covered by MyDIO and RETREEB with green and ethical payment solutions. Ground Up Project is active in the business area *Deposit & Lending* (crowddonation platforms are specifically excluded from the study). The area of *Deposit & Lending* particularly reveals great potential for further development. The right technology could help to overcome the current barriers which would lead to a massive increase of sustainable deposits and sustainable lending.

10.4.3 Technology

The 17 sustainable FinTech companies identified make use of three different technologies. 47 percent automise and digitise processes and work with robotics, 41 percent work with data and analyse it with algorithms, and 12 percent use distributed ledger technology. Compared to the overall Swiss FinTech sector, sustainable FinTech companies seem to be more involved in the analytics field rather than in the automatisation field. This reflects the above-mentioned need for more robust ESG data and analysis. For further development in every area of sustainable finance, the data situation needs to improve, since it forms the foundation of sustainability. Distributed ledger technology is represented among sustainable FinTech companies as it is in the overall population. Quantum computing has not been applied so far[3], even though in the area of sustainable finance it offers great potential, especially in the business field of trading optimisation and risk profiling.

Figure 10.2 shows the distribution of the sustainable FinTech between the two dimensions of business focus/product areas and technology categories.

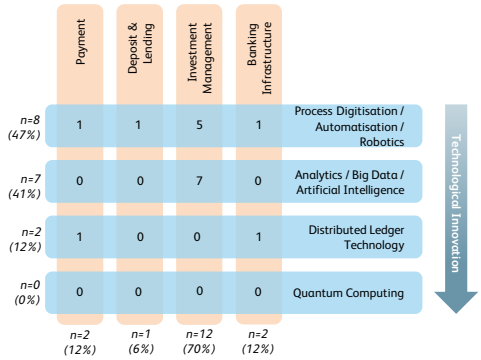

Figure 10.2: Distribution of sustainable FinTech companies according to the FinTech grid (n=17)

[3]This applies for conventional and for sustainable FinTech companies.

10.4.4 Customer segments

Swiss sustainable FinTech companies target both business and private clients. Most of them even connect both directions of business relationships. Six are active in the B2B business and three in the B2C business. Additionally, eight sustainable FinTech companies address both client segments.

10.5. Conclusion and Outlook

From a political, economic, social, and technological perspective, there is a need for innovative FinTech companies in the sustainability sector. With less than 5 percent of all Swiss FinTech companies focusing specifically on sustainability, currently the Swiss market for sustainable FinTech is small. The most developed business area is *Investment Management*, which reflects the general state of development in sustainable finance. The sustainability focus lies primarily in the area of environmental and social issues. To develop the market further, in the future the gap of sustainable FinTech companies in the business area *Deposit & Lending* and the gap of sustainable FinTech companies covering the governance dimension need to be filled. Sustainable FinTech contributes to channelling funds toward sustainable projects and companies more efficiently in order to meet the Sustainable Development Goals.

11. Cyber Security

By Alexandra Arni, SwissBanking; Esther Hänggi, Lucerne School of Computer Science and Information Technology; Roman Flütsch, Inventx AG

When talking about cyber security, most people intuitively think of a lonely hacker sitting in a basement and writing clever code to steal money from a wealthy bank client. In reality, attackers are rarely solitary nerds and cyber security is not solely about protecting the customer's account balance. Cyber attacks are an international, professional, and profitable business with a large economic impact.

11.1. Cyber Crime Economy

In May 2021, a ransomware attack led to the shutdown of one of the major fuel pipelines in the United States (U.S.) (Reuters, 2021a). The resulting shortage made gas prices spike on the U.S. East Coast and caused people to panic buy. The operator, Colonial Pipeline Company, paid a ransom of over USD 4 million worth of bitcoins, though about half of it was later recovered according to the U.S. Department of Justice (ABC News, 2021).

The economic consequences of such attacks are often devastating for the targeted organisation and go well beyond the paid ransom. Even more damaging usually are opportunity costs due to production downtime and additional costs for the repair of the IT system, lost intellectual property, damage to reputation, and even a decrease in employees' morale (McAfee, 2020). In their 2021 Swiss CEO survey, PwC (2022) found that 83 percent of the CEOs believed that cyber risks could damage their companies' sales, marketing, distribution, and public relations. 100 percent of the questioned CEOs considered cyber crime a risk, making it top of the list.

The effects of cyber attacks are not limited to the primarily targeted organisation. CSIS (2020) and McAfee (2020) estimate the global costs incurred by cyber crime in 2020 at USD 1 trillion, and this figure might still be too low (Cybercrime Magazine, 2020; World Economic Forum, 2020). As in the case of the Colonial Pipeline, attacks on energy supply, telecommunication networks, or the healthcare system can negatively impact society as a whole. These services therefore need additional protection. Attacks on such critical infrastructure, of which the financial sector with the electronic payment infrastructure is a part of, are increasing (Noguchi & Ueda, 2018).

The Internet is global. Criminals therefore do not need to be physically located close to their targets, but can reside wherever they find the best legal conditions. Many cyber crime organisations are said to have close ties to local governments (McAfee, 2020). The Colonial Pipeline attack was no different (Quartz, 2021). Verizon (2021) estimates that the motivation for over 90 percent of attacks is financial, carried out largely by organised crime. In the Darknet, part or all of an attack can be commissioned for money. World Economic Forum (2022) reported offers to hack social media accounts or change school grades for a few hundred dollars. McAfee (2020) states that *cyber crime is now a specialised "professional" activity*. This professional setup allows cyber criminals to act quickly when a new opportunity presents itself: when employees moved to work from home in April 2020 and VPN servers and remote access tools became vital for many organisations, criminals swiftly made them a target (Bundeskriminalamt, 2020). The Swiss National Cyber Security Centre saw the number of reported attacks triple in this month (SWI swissinfo.ch, 2020).

The protection side has also seen a professionalisation over the last few years. Specialised organisations offer security consulting, services, and solutions. A typical services portfolio is depicted in Figure 11.1 and includes threat intelligence, security audits, external security operations centre, or the management and operation of

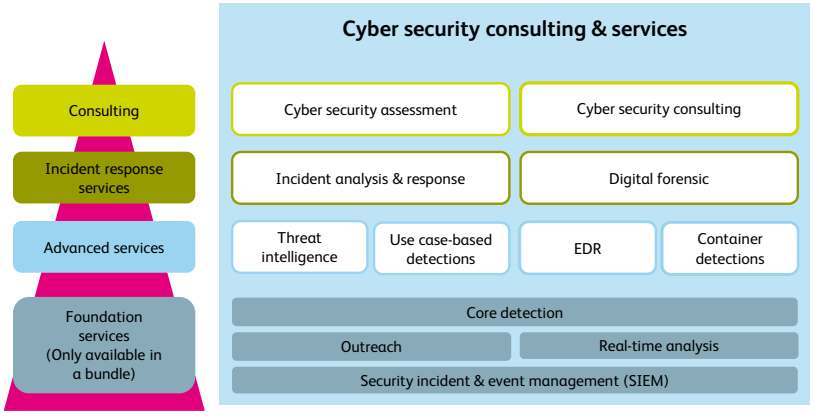

Figure 11.1: An example of a Cyber security service portfolio of a provider (Inventx, online)

all or part of the IT infrastructure. Fortune Business Insights (2022) puts the cyber security market size at about USD 150 billion in 2020 and expects it to double in less than a decade (see also Gartner (2021)). Cyber security insurances have equally emerged. SwissRe (2021) estimates the global premiums at USD 6.9 billion, which is however, a mere 0.5 percent of the economic costs as estimated by McAfee (2020). While the volume is still small compared to the costs of incidents, the cyber insurance market has seen annual growth rates of between 20 and 30 percent in the last few years (SwissRe, 2021). Organisations also increasingly collaborate to fight cyber crime more effectively. They join forces within an industry or between the public and private sector (for a Swiss example, see excursus on page 93.

11.2. Trends in Threats

While most attacks are made opportunistically where the criminals see it as the "best investment", they often proceed along a similar line of action. The "cyber kill chain" (Lockheed Martin, 2021), as illustrated in Figure 11.2, divides an attack into several stages. During a preparation phase information about the target is gathered and the attack prepared, e.g., by researching social media or using automated network scanning tools. This is followed by an intrusion phase, where the attacker sends phishing mails or installs a malware which opens the door for a later attack. Finally, in a third phase, the actual attack is carried out. The attacker takes control of the system and achieves the original goal.

Attackers can "outsource" some of these activities and buy part or all of the above actions *as a service*. Especially useful for attacks are software vulnerabilities that are not yet publicly known and for which there is no patch available. Hackers sell a single way to exploit such a *zero-day vulnerability* for prices up to USD 1 million (MIT Technology Review, 2021).

A *zero-day* is a computer-software vulnerability either unknown to those who should be interested in its mitigation (including the vendor of the target software) or known and without a patch to correct it (Wikipedia, 2022).

Software vendors also offer money to learn and remediate vulnerabilities in their products through *bug-bounty programs*, but the prize money offered is typically much lower (ZDNet, 2020). Google's Project Zero Team, dedicated to making zero-day exploits harder by doing their own security research, observed that the number of zero-day exploits which are abused "in the wild" has

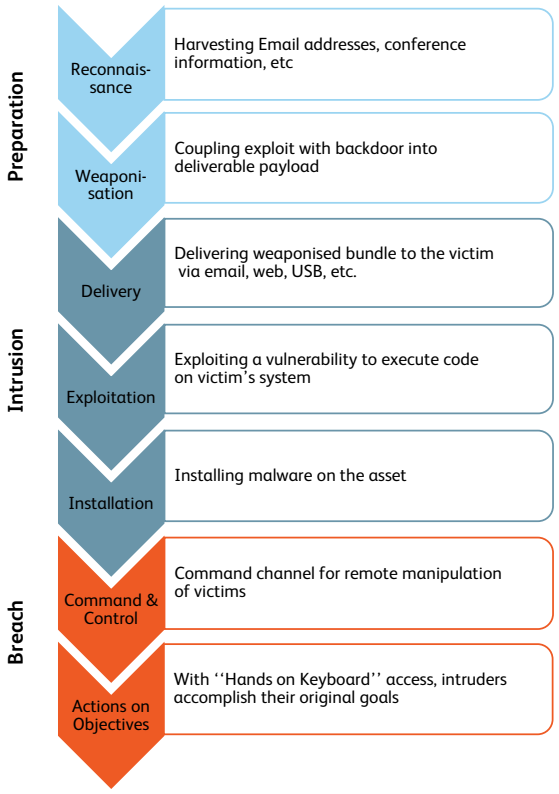

Figure 11.2: Phases of a cyber attack according to the cyber kill chain (Lockheed Martin, 2021)

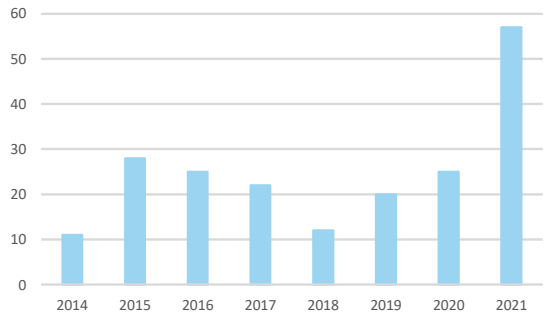

Figure 11.3: Number of zero-day vulnerabilities observed to be exploited "in the wild", according to data from Project Zero (2022)

doubled from 2020 to 2021 (Project Zero, 2022) (see Figure 11.3). This is not necessarily bad news, since it could simply mean that less exploits go undetected.

When new vulnerabilities become public, they are quickly exploited at large scale until a patch is provided. In December 2021, a vulnerability in the logging library "log4j" allowed the take over of the complete system in a relatively easy way (CVE, 2021). Within hours, hacker groups started to exchange code to exploit it and software to scan for vulnerable systems (Rapid7, 2021). Check Point, a producer of security products such as firewalls and intrusion detection systems, observed over 60 variants of the attack within the first 24 hours (Check Point, 2021). The magazine Wired describes that criminals first abused access to the systems to mine cryptocurrencies and to do espionage (Wired, 2021). However, they also installed backdoors for later access to the system even after the original vulnerability was patched. Once installed, the criminal groups can wait for a good opportunity to execute the actual attack, or respectively sell access to other groups such as ransomware gangs. It is not unusual for breaches to remain undetected for a long time; IBM Security (2020) found the average time it takes an organisation to identify a malicious data breach to be 230 days. To contain it took an additional 85 days on average.

Sophisticated attacks using new technology or zero-day vulnerabilities are however, only the tip of the iceberg. While these attacks are especially difficult to come by, a much bigger proportion of attacks use well-known technology and tactics. These include exploiting a well-known vulnerability on an outdated system or social engineering tactics like phishing mails to obtain credentials, or a *CEO fraud*, where criminals masquerade as a high-ranking executive to fool the finance department into paying a "bill". Another "classic" are compromised passwords, which was identified as the initial entry point of the Colonial Pipeline breach (Bloomberg, 2021a).

Not all threats come from the outside. A frequent threat agent are disgruntled employees, who try to cause damage to their organisation. Even more incidents are caused unintentionally. In October 2021, the website of Facebook and related services such as In-

stagram and WhatsApp suffered a massive outage and were unavailable for more than 5 hours (Krebs, 2021). This prevented the company's employees from accessing their email accounts and even blocked them out of the physical buildings since the access card system was tied to the domain. Online services of other organisations which use "log-in with Facebook" were also affected. Facebook later claimed that the incident was due to a simple configuration change caused by human error (Engineering at Meta, 2021).

And finally, some threats are not human. In March 2021, a large fire at a data centre of the Cloud Computing company OVH in Strasbourg resulted in the websites of almost half a million domains going temporarily offline (Reuters, 2021b) including, ironically, sites used by cyber criminals (Infosecurity Magazine, 2021).

Threats are intentional or unintentional and can be natural, technical, or human in nature.

The Swiss Federal Council warns in the National Cyber Risk Strategy (Federal IT Steering Unit, 2018) that many major cyber incidents are not the result of targeted attacks, but due to human error, technical failures, or natural events. They remind that these incidents must not be neglected when planning for effective cyber security measures.

Excursus: Cyber Security in the Financial Market – the Swiss Example

Swiss banks and insurance companies have come to realise that fighting cyber risk requires joint efforts – between the industry's players and with the government. Public-private partnership is the only way to succeed. Therefore the Swiss Bankers Association (SBA, SwissBanking) worked out strategic goals for cyber security in the financial market, at the same time with the Federal Government's revised national strategy for the protection of Switzerland against cyber risks (NCS II), issued in 2018. The first of these goals – implemented in the meantime – was the establishment of a centralised government unit responsible for questions of cyber security within the federal administration and coordinating its efforts with the economy. In 2021, the National Cyber Security Centre (NCSC), led by a high-ranking delegate of the Federal Government, has become fully operational.

Currently, banks, insurance companies, their associations, the SIX Group, and federal authorities such as the NCSC, FINMA, SIF and the Swiss National Bank are working – under the lead of the NCSC – on a joint project to strengthen resilience in the Swiss financial market by

- providing a state-of-the art information exchange between banks, insurers, and with the government;
- building a crisis organisation for the financial market;
- improving sensitivity for and prevention against cyber risks.

The new platform should become operational during 2022. This kind of cooperation, with precisely defined roles and responsibilities of all stakeholders, is a key element of Swiss economic policy. However, it is important to keep in mind that the first responsibility for fighting cyber risk remains with the individual banks and insurance companies.

11.3. Security Controls Expecting a Breach

Threats are diverse, and so are the provisions against them. Technical tools are thereby only a small part of the solution; organisational structure and processes are just as important. Figuratively speaking, the best encryption function is worthless if the whole world knows the password.

While there are numerous best practice guidelines which contain valuable information, each company has to decide for themselves which controls are suitable. The first step towards cyber risk management is therefore to *understand* the current situation and context.

What *assets*, including physical infrastructure, data and personnel, need to be protected? What are their security goals (see Figure 11.4)? And how critical are they to the business process? The organisation's legal and and regulatory context also needs to be taken into consideration. Third-party products and services have to be understood to manage supply chain risks. The library "log4j", for example, was maintained by only a handful of volunteers. Since it is free and easy-to-use, it was integrated in numerous commercial software products which were then affected by a vulnerability in this library (CVE, 2021).

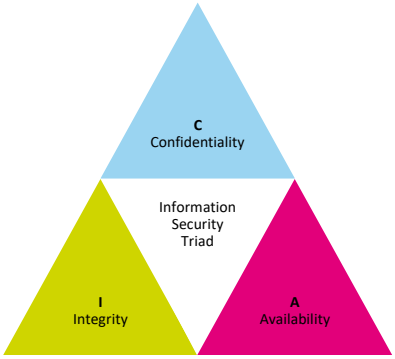

Figure 11.4: The goals of information security are *confidentiality*, *integrity* and *availability*, forming the so-called "CIA triad". Sometimes authenticity, accountability, or non-repudiation are further distinguished.

Once the assets are identified, an understanding of the threats and their consequences allows to evaluate the cyber risks and prioritise the action to be taken.

A single attack can thereby impact several assets and security goals. FireEye Mandiant Services (2021) describes how "modern" ransomware attacks have evolved. After disrupting the business by making their target's *data unavailable* through encryption, the attackers steal and threaten to publish *confidential* information, such as *client data* or *intellectual property*. In the aftermath of an attack, this information is sometimes used for additional coercion tactics such as damaging the victims *reputation* by having media write about the incident.

The NIST cyber security framework (National Institute of Standards and Technology, 2018), illustrated in Figure 11.5, describes the life cycle of cyber security risk management as five functions, which shall be implemented as an ongoing process. After identifying its cyber risks, an organisation can proceed to the four further functions: protect, detect, respond, and recover.

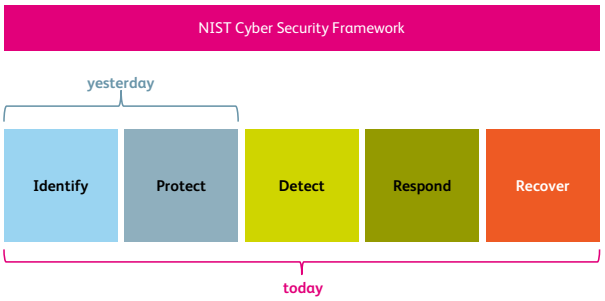

Figure 11.5: The functions of the NIST cyber security framework (National Institute of Standards and Technology, 2018)

For each function, several desirable outcomes are described. To give but a few examples, *protect* includes an active management of roles and rights both on a technical and organisational level, as well as awareness training of personnel. *Detect* involves monitoring technical and personnel activities and regular security assessments to find out about issues. *Respond* defines a plan for what to do when an incident is detected, including communication with business partners and the public. Finally, *recover* states that getting business back to normal after an incident also needs to be planned.

Information security controls can be of an organisational, technical, or physical nature and they can prevent, correct, or detect an incident.

While until recently, most organisations concentrated almost exclusively on the first two NIST functions, i.e., recognising threats and preventing incidents from happening, the latter three functions have lately come more into focus. Detect, respond, and recover all happen *after* an incident has already occurred. This highlights that organisations should expect a successful attack and plan accordingly. The question is not *if* you are breached, the question is when, as the saying goes. It has therefore become best practice to "assume breach" when designing IT systems and using a "zero trust" cyber security model (see excursus on page 96).

This paradigm shift aligns with the portfolio of external security services providers: Besides the "classical" protection mechanisms such as firewalls, vulnerability scans, and malware detection, they typically offer tools to proactively search for threats, and detect and mitigate intrusion or fraud in real-time. These modern tools employ machine learning technologies on big data to recognise attacks at an early stage and ideally before any damage occurs.

11.4. A Risk-based Approach

Perfect security is neither feasible nor desirable. The goal is to find the sweet spot between the risk of not implementing sufficient controls and loosing money through an incident, and the risk of loosing money through measures which are too costly.

To find the appropriate balance, cyber risks cannot be considered separately from a business perspective, but are an integral part of it. Does an outdated legacy application really need to keep running because an important business unit needs it? How much does it cost to retire it? And how much to keep it running with the risk of an incident? Can the risk be brought down to an acceptable level and, if yes, at what cost?

While specific operational tasks can be outsourced to professional IT providers the *responsibility* for cyber risk management, pondering security costs against benefits, and the related business decisions, remains the duty of the organisation (Bundesamt für Sicherheit in der Informationstechnik, 2017). A close collaboration between the organisation and the external security services provider is therefore beneficial. For example, when a vulnerability such as in "log4j" (CVE, 2021) needs to be handled, the external cyber resilience team can assess the situation and give a recommendation on how to proceed. This allows the internal Chief Information Security Officer (CISO) or Information Security Officer (ISO) to take an informed and risk-based decision. The external security operations team can then proceed to implement the actual patching of the systems.

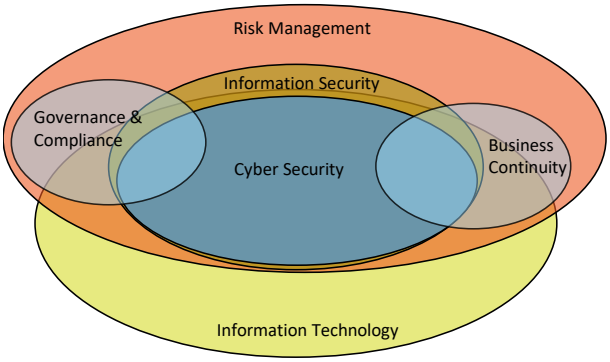

Figure 11.6: Business domains connected with cyber security. *Information security* is similar to cyber security, but extends to information which is not in electronic form

These considerations show that cyber security is not an isolated domain. Indeed, it is closely intertwined with risk management, governance, business continuity, and IT operations, as depicted in Figure 11.6. Consequently, cyber risk management needs to be an inherent part of the business model (World Economic Forum, 2021). The detailed understanding of a company's key assets and services gained through this process and the necessary changes can be turned into a competitive advantage. They enable business outcomes which allow organisations to view cyber security as an opportunity (Zurich, 2019).

Excursus: Zero Trust Model

The concept *zero trust* is often used to highlight a contrast to a *moat*-like IT infrastructure. The latter is built modelling a fortress and divided into an internal, trustworthy and an external, untrusted part. The core is protected by several layers of firewalls, anti-virus checks, authentication, and authorisation. The big hurdle is to get inside - once there, there are almost no checks anymore.

In a zero trust model on the other hand, all devices, services etc. are a priori considered untrusted, independently of "where" in the network they are located. Before devices or users can connect to any part of the system, they must authenticate and any action which is taken within the system must be authorised. Zero trust assumes that an attacker is already in the system ("assume breach") and protects the infrastructure accordingly.

Zero trust further requires any security decision to be based on its risk, considering the context. This means, for example, that the decision whether a device is allowed or denied access to data is influenced by factors such as the sensitivity of the data, location of the device, or time of the day. In line with the "least privilege" or "need-to-know/need-to-have" principle, any participant in the IT network - be it user, device, or service - should only have access to the resources they need. Security-relevant activities need to be logged and monitored for attacks. These insights are then fed back into the risk-based security decisions.

In reality, professional IT networks have never been a moat. It has long been best practice to segment a network into further smaller network zones with an associated security level, to authenticate and authorise users and actions, to monitor the infrastructure to recognise attacks and make risk-based decisions. Zero trust takes these principles even further and creates "microsegments" on network level or even on the level of services. Authentication and authorisation are strictly required from both end points and connections are encrypted even within the company's network. The degradation of the clear distinction between "internal" and "external" leads to a so-called *perimeterless* network.

To implement zero trust in IT architecture is therefore not a yes or no question, but rather a concept or guideline according to which an organisation builds or adapts its IT systems. This architecture fits well with the trend that users access the company's network from within the office buildings, from home or on the road, and they use their own (mobile) devices to do so. Even when the company uses a mobile device management policy or requires a VPN connection, their control over the security of these end points is limited. Zero trust accounts for this by the motto "never trust, always verify". Assuming that an attacker is already within the network further limits the reach attacks can have once they pass the outer perimeter or when they come from within, i.e., through an insider.

On the side of the company resources, a clear cut between internal and external has also become difficult since most organisations integrate external services and cloud applications located at various physical sites into their system. On top of this, a large part of modern IT infrastructure is "virtualised" and several servers may physically run on the same machine. Zero trust consequently focuses on separating application and services, rather than network segments. This change of focus does not mean that successful concepts from network security like firewalls should be thrown overboard. These allow to mitigate a large number of attacks on a network level already at the outskirts of the system and should be used where reasonable.

Any organisation can therefore take a zero trust approach as their guiding principle and decide, based on their specific situation, which aspects of it to implement. Indeed, many organisations already follow zero trust concepts as part of standard best practice, even when not calling it so.

12. Conclusion and Outlook

This year's IFZ FinTech Study highlights the most relevant and current developments in the Swiss FinTech sector. The core findings are summarised in the following statements and theses:

Fewer but more mature Swiss FinTech companies. The number of Swiss FinTech companies in 2021 has declined for the first time since the first survey in 2015. Although there is a decline in number, the Swiss FinTech companies surveyed are back on a growth path. This is reflected in both the median number of employees in the companies and the median total funding, both of which have risen again considerably compared to the stagnation or decline in 2020. In addition, venture capital activity in the Swiss FinTech sector reached a record level in 2021, both in terms of the number of financing rounds and the volume raised.

An international strategy pays off. The tendency for FinTech companies to focus on B2B business models has continued to grow. Also, these models are predominantly internationally oriented. The weakly growing Swiss home market is often too narrow for growth-hungry FinTech companies. The success of an international orientation can also be seen in the share price performance of listed FinTech companies globally. Since 2015, when the number of IPOs of FinTech companies started to increase, their performance has been significantly better compared to nationally oriented FinTech companies.

Sustainability is on the way. The inclusion of environmental, social, and governance (ESG) criteria into financial decision-making is on the way to become the new normal. However, the Swiss FinTech sector still has relatively few companies with a clear sustainability focus. Most of these companies focus on the area of investment management and target all three sustainability dimensions (E, S, and G).

No broad adoption of standards, no open wealth management. Open wealth management is important for Swiss banks and FinTech companies and offers good opportunities for success. The reasons are the global market size and the Swiss market share. According to the CIO Barometer, Swiss banks have recognised the potential of financial ecosystems as a future operating model. However, in order to realise this potential, a broad adoption of common standards is necessary, which the banks and FinTech companies are currently struggling with, even if corresponding initiatives and scalable platforms are already available and operational in Switzerland.

Analytics is more than a buzzword. While terms like analytics, artificial intelligence, and big data have become fashionable in the financial industry, the facts show that they are more than just buzzwords. Over the years, more and more Swiss FinTech companies have adopted these technological concepts. This is in contrast to other technologies, which have seen a decreasing number of FinTech companies in the last year. The importance of analytics activities is likely to increase further in the future, also because the potential of smart data use in the financial sector is increasingly recognised but not yet fully harvested.

Will the metaverse help blockchain technology make a breakthrough? Web 3.0 with the metaverse is fuelled by the gaming industry, BigTech companies, and companies applying distributed ledger technology. Even if the motives and goals are different, a strengthening of ownership and disposition rights of data through decentralised structures is emerging. Distributed ledger technology can play a central role in this development. A first taste of this could have been experienced in 2021 with the hype around non-fungible tokens (NFTs).

13. Factsheets of Swiss FinTech Companies

In this chapter, the factsheets of all 155 companies that participated in the survey for the analysis in Chapter 2 are shown. The factsheets are based on the Business Model Canvas by Osterwalder and Pigneur (2010) and contain general information, such as the year of foundation and the canton of the company headquarters, as well as detailed information on a company's business model. At this point, we would like to thank all companies that took part in the survey.

Companies

Companies

Companies

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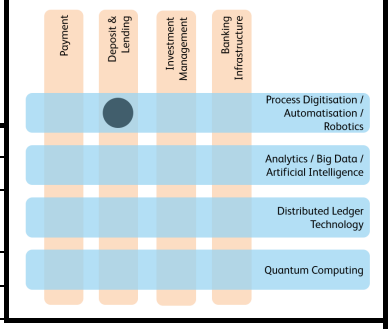
3circlefunding GmbH
https://www.3circlefunding.ch/

Multi-product crowdfinancing platform - with the aim of giving both borrowers and lenders more freedom and control over their loans, 3circlefunding allows borrowers to set loan interest rates and investors to sell loan parts in its secondary market.

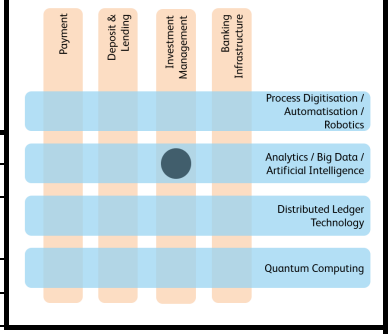


Year of foundation	2015
Domicile (canton)	ZH
Employees … of which in CH	3 3
Valuation	
Total funding	CHF 0
Board members	
Management team	Anthony McCarthy, Nicole Steinemann, Maria Corlett
Key partners	Bisnode

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

3rd-eyes analytics AG
https://3rd-eyes.com/

We develop software that empowers wealth and insurance advisors to provide goal-based, individual, realistic and sustainable wealth and life event planning. Our solutions provide a holistic assessment and simulation of the clients' wealth, optimises their asset allocation across various capital scenarios, and recommends a set of financial products for execution.



Year of foundation	2015
Domicile (canton)	ZH
Employees … of which in CH	22 12
Valuation	CHF 20,000,000
Total funding	CHF 4,330,000
Board members	Stephan Mohrhardt, Thomas Pütter, Marc Mettler, Rodrigo Amandi, Stephanie Roswitha Feigt
Management team	Stephanie Roswitha Feigt, Rodrigo Amandi, Michael Koschinsky, Marc Mettler
Key partners	Synpulse, Morningstar, BhfS, Investment Navigator, Wize byTeamWork, Logismata, Avaloq, Altoo

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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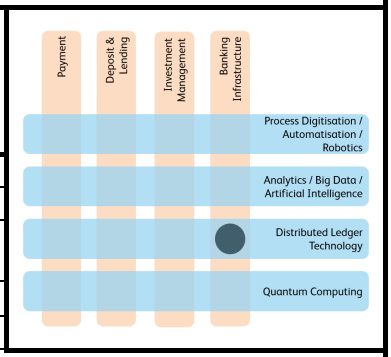
4cash.exchange - 4bridges GmbH

https://4bridges.ch
https://4cash.exchange

Swiss based Cryptocurrency Exchange based in Zurich. 4bridges follows the cryptocurrency principals & share the values of the cryptocurrency community. Great team of open minded, highly motivated entrepreneurs. With the launch of 4cash.exchange important infrastructure has been created, licensed and registered for the community. Access to financial freedom and self custody has become reality.



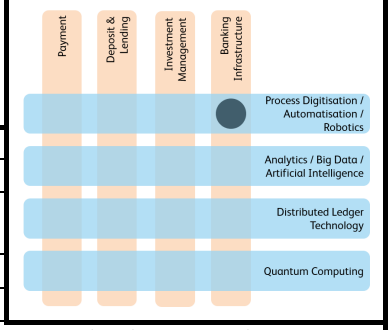
Year of foundation	2019
Domicile (canton)	ZH
Employees … of which in CH	5 2
Valuation	CHF 8,000,000
Total funding	CHF 605,000
Board members	Simon Tiberius Fundel, Robin Caduff, Emad Hassanipanah
Management team	Simon Tiberius Fundel, Robin Caduff, Emad Hassanipanah
Key partners	SRO-VQF, MME Compliance AG, KYC Spider AG

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Accounto AG

https://accounto.ch/

Accounto represents a paradigm shift in bookkeeping for sme and trust companies by removing the actual booking and administrative work from both parties. Thanks to the bookkeeping automatisation, trust companies are able to scale their business model and deliver latest financial figures to their sme clients.



Year of foundation	2018
Domicile (canton)	ZH
Employees … of which in CH	35 20
Valuation	
Total funding	CHF 2,000,000
Board members	Daniela Jacqueline Schneeberger, Dominique Andreas Kasper, Michael Manz, Alain Veuve, Alessandro Micera
Management team	Jan-Hendrik Heuing, Kilian Perrin, Andreas Ros-Lang
Key partners	AXA, Treuhand Suisse, Swiss Finance Startups, Expert Suisse, swissICT

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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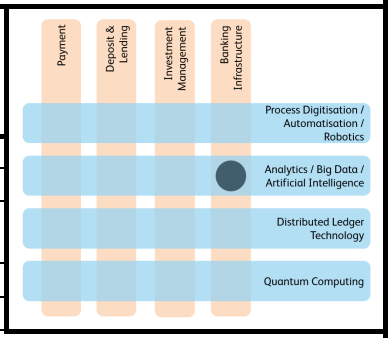
Acodis AG
https://www.acodis.io/

We're on a mission to turn any document into structured data in seconds using Intelligent Document Processing (IDP).

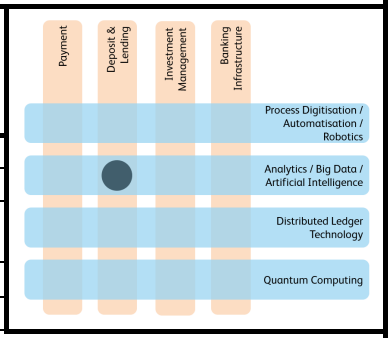


Year of foundation	2016
Domicile (canton)	ZH
Employees … of which in CH	27 27
Valuation	
Total funding	CHF 4,700,000
Board members	Martin Keller, Bernd Franz Josef Schopp, Mathias Simon Jäggi, Beat Steiner, Patrick Emmisberger
Management team	Martin Keller, Benjamin von Deschwanden, Patrick Emmisberger, Patrick Bürkle
Key partners	Microsoft, Swisscom

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Acredius AG
https://www.acredius.ch/

Acredius is a Swiss independent crowdlending platform. Private and institutional investors can diversify their portfolios starting from a CHF 200 investment. SMEs and startups get access to fair loans using their traditional and non-traditional data.



Year of foundation	2017
Domicile (canton)	ZH
Employees … of which in CH	17 7
Valuation	
Total funding	
Board members	Nada Chebli-Raafat, Ghassen Ben Hadj Salah, Thomas Hentz
Management team	Ghassen Ben Hadj Salah
Key partners	TMF Group, Kellerhals Carrard

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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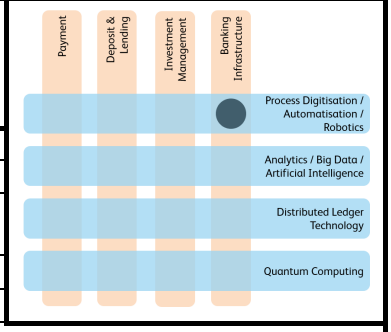
Adamant Lane AG
https://adamantlane.com/

Adamant Lane's SaaS platform, LiquidityHub, delivers fully integrated services for trade finance products – always customized to your needs, completely on cloud and yet 100 % compliant.

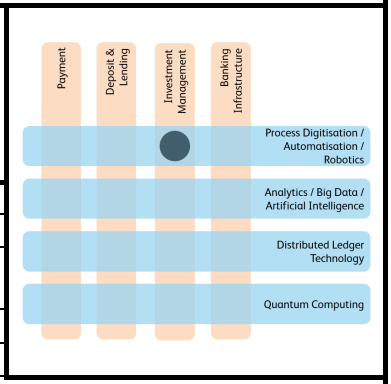


Year of foundation	2019
Domicile (canton)	ZH
Employees … of which in CH	18 6
Valuation	
Total funding	
Board members	Jon Turnes, Marc Thomas Clapasson
Management team	Otto Johannsen, Oliver Schreiber
Key partners	SAP SE, SAP Fioneer, KYC Providers, Credit Insurances, ..

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Additiv AG
https://additiv.com/

Leading catalyst for change in the financial services industry driven by the new possibilities of digitalisation and "Embedded Finance". Based on its DFS platform, the "Wealth-as-a-Service" platform offering enables new operating, servicing and sourcing models – differentiating value propositions, out-of-the-box, at a cost advantage. additiv partners with the world's leading financial institutions, giving them the intelligence to maximize customer engagement and unleash growth.



Year of foundation	1998
Domicile (canton)	ZH
Employees … of which in CH	200 50
Valuation	
Total funding	
Board members	Benjamin Paul Robinson, Rolf Theo Schönauer, Thomas Scherr, Roger Steiner
Management team	Michael Stemmle, Eric Andersson, Dario Bernasconi, Yann Kudelski, Guy Levy, Vlad Magereanu, Christine Schmid, Silvan Schriber, Adrian Weiss, Thomas Schornstein, Pieter Zylstra
Key partners	Technology and expert partners: Microsoft, unblu, Idnow, fidentity, edgelab, and others. Sales and implementation partners: accenture, Qcentris, synpulse, Fehr Advice, and more than 20 others.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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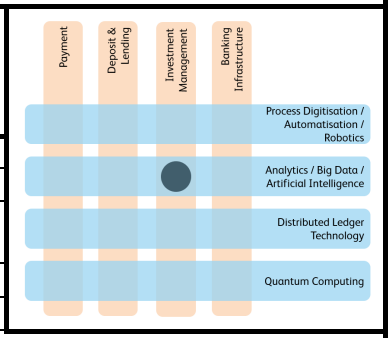
Aisot Technologies AG
https://www.aisot.ch/

More data, less time to react: growing complexity makes markets more volatile and harder to interpret. Aisot collects, processes and makes sense out of data. aisot's real-time AI insights put you ahead of volatile markets.

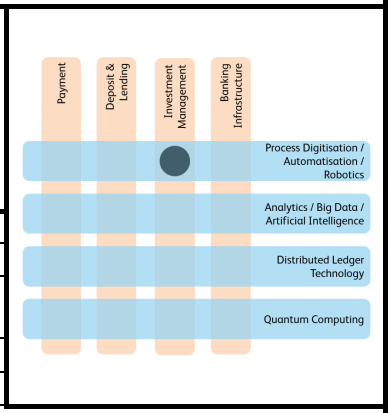


Year of foundation	2021
Domicile (canton)	ZH
Employees … of which in CH	7 5
Valuation	
Total funding	CHF 415,000
Board members	Stefan Klauser, Nino Antulov-Fantulin
Management team	Stefan Klauser, Nino Antulov-Fantulin, Roger Peyer
Key partners	Lake Crypto

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

aixigo (Schweiz) AG
https://www.aixigo.com/

aixigo provides the world's fastest API-based wealth management platform for creating individual, innovative and profitable wealth management services. aixigo drives innovation by creating future-proof wealth management software that exceeds today's standard on speed and usability, with a constant focus on serving a real client need. With 20+ years of deep expertise in the field, aixigo is a global leader in API-based investment advisory, portfolio management, analysis, monitoring and risk management tools.



Year of foundation	2019
Domicile (canton)	ZH
Employees … of which in CH	146 1
Valuation	
Total funding	
Board members	Roland Schlager, Erich Borsch, Urs Ehrismann
Management team	Arnaud Picut, Christian Friedrich, Tobias Haustein
Key partners	GFT, zühlke, Synpulse, ti&m

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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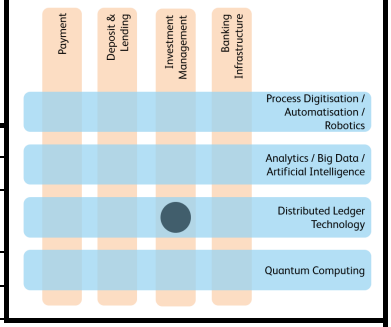
Aktionariat

Aktionariat AG
https://aktionariat.com/

Aktionariat AG offers a set of tools for Swiss companies to create a market for their shares on their own website. Open technology. No intermediaries. Powered by the Ethereum blockchain.



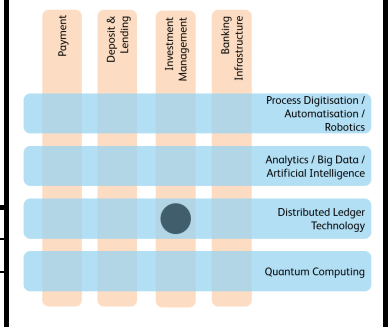
Year of foundation	2020
Domicile (canton)	ZH
Employees … of which in CH	9.5 7.5
Valuation	CHF 11,400,000
Total funding	CHF 1,650,000
Board members	Murat Ögat, Luzius David Meisser
Management team	Murat Ögat, Luzius David Meisser, Nicola Plain
Key partners	LEXR

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

AlgoTrader

AlgoTrader AG
https://www.algotrader.com/

AlgoTrader is the global institutional leader in algorithmic trading and execution infrastructure for both digital and traditional assets. With its advanced software solutions, AlgoTrader gives banks, hedge funds, brokers, crypto funds and other financial institutions an end-to-end platform for best execution and event-driven alpha generation. The company's offering includes WIRESWARM, a digital asset trading and connectivity platform for banks and brokers, AlgoTrader QUANT, an end-to-end quantitative trading solution with automated trade signal generation and order execution, and AlgoTrader OEMS, a state-of-the-art Order and Execution Management System for systematic and discretionary buy-side institutions with managed connectivity to over 400 liquidity venues.



Year of foundation	2014
Domicile (canton)	ZH
Employees … of which in CH	35 35
Valuation	
Total funding	CHF 9,700,000
Board members	Martin Adalbert Wiedmann, Theo Woik, Roger Daniel Altorfer, Andreas Flury, Martin Alexander Trepp
Management team	Andreas Flury, Stuart Petersen, Jakob Bosshard, Bartosz Wójcik, Felix Saible, Stefan Koller
Key partners	Fireblocks, Metaco, Taurus, Custodigit, Avaloq, IBM, Microsoft

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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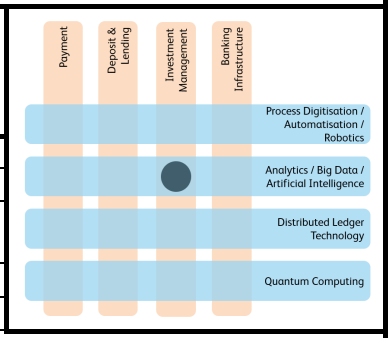
ALLINDEX AG
https://www.allindex.com/

We democratize the creation of customized indices and model portfolios via a white-label software-as-a-service web platform and mobile app (B2B and B2B2C).

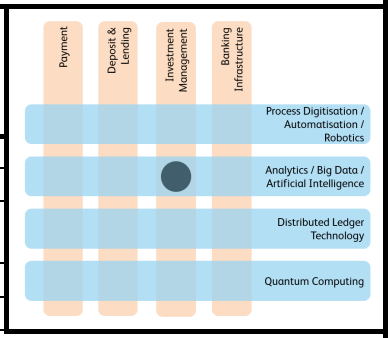


Year of foundation	2018
Domicile (canton)	ZH
Employees … of which in CH	8 4
Valuation	
Total funding	
Board members	Christian Alois Kronseder, Robert Leopold Bareder, Reinhard Stary, Peter Knez
Management team	Christian Alois Kronseder, Robert Leopold Bareder
Key partners	Asia Financial

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

Alphasys AG
https://www.alphasys.ch/

Alphasys AG is a dynamic software enterprise. With Netfolio, we have developed a software solution for in-depth and professional asset management.



Year of foundation	2003
Domicile (canton)	ZH
Employees … of which in CH	12 12
Valuation	
Total funding	
Board members	Andreas Bachmann, Fabrizio De Ambroggi
Management team	Andreas Bachmann, Fabrizio De Ambroggi
Key partners	SIX, ZHAW, OpenWealth Association, theScreener, Investment Navigator, CDDS

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

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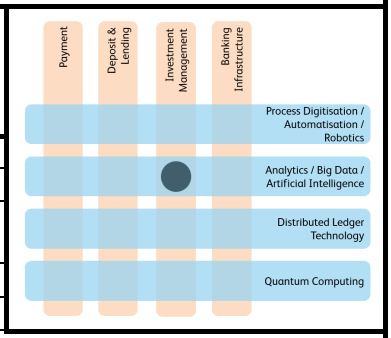
Alquant AG
https://alquant.com/

Alquant offers investment solutions based on innovative data analysis and supervised algorithms, combined with a lean investor experience and an unmatched level of transparency.

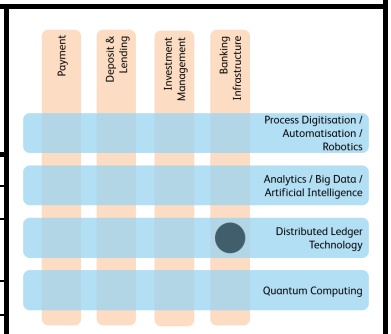


Year of foundation	2018
Domicile (canton)	NW
Employees … of which in CH	6 6
Valuation	
Total funding	
Board members	Guillaume Bourquenoud, Valentin Moullet, Nhat Quang Pham Huu
Management team	Guillaume Bourquenoud, Valentin Moullet, Nhat Quang Pham Huu
Key partners	None

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

ALTCOINOMY SA
https://alt.co/

alt is a supervised financial intermediary specialized in cryptocurrency services. The company focuses on institutional crypto trading, substantial cash-outs, and complex KYC on digital assets. For early crypto adopters, alt undertakes the full KYC & AML procedure, including forensic analysis of their crypto assets, and supports them in opening accounts in Swiss private banks.



Year of foundation	2017
Domicile (canton)	GE
Employees … of which in CH	15 15
Valuation	
Total funding	Self-funded
Board members	Constantin Papadimitriou, Konstantinos Lanaras, Olivier Cohen
Management team	Konstantinos Lanaras, Olivier Cohen, Afsaneh Heyat
Key partners	MME, Scorechain, Chainanalysis, OA Legal, Bit2C, Canton of Geneva

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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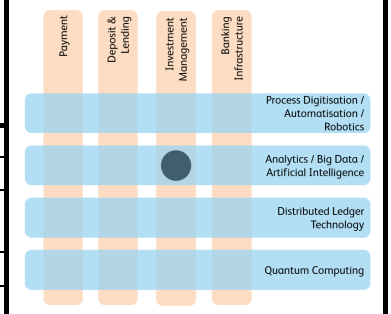
Altoo AG
https://altoo.io/

The Altoo Wealth Platform empowers wealthy individuals and their families to consolidate and interact intuitively with their total wealth.

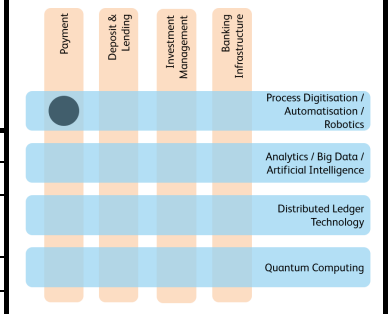


Year of foundation	2017
Domicile (canton)	ZG
Employees … of which in CH	25 25
Valuation	
Total funding	
Board members	Soren Holm Mose, Joris Engisch, Fabian Markus Tschan
Management team	Martin Stadler, Ian Keates, Stefan Thiel, Stefan Weber, Philip Hediger
Key partners	Our clients are the key partners: Altoo stands for "altogether": Our features and user experience have been developed in co-creatorship with our clients and they are our best ambassadors to win new clients.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

AMNIS Treasury Services AG
https://www.amnistreasury.com/

Reshaping international banking for SMEs: SMEs are left behind with existing treasury solutions and pay exorbitant fees for international banking activities. As a licensed European Payment Institution (granted Nov 21), we bring global transaction banking to SMEs across Europe and offer solutions beyond traditional transaction banking offerings.



Year of foundation	2014
Domicile (canton)	ZH
Employees … of which in CH	26 15
Valuation	
Total funding	CHF 3,000,000
Board members	Peter Gerlach, Stefan Bürzle, Philippe Christen, Robert Bloch, Michael Guido Wüst, Doris Beck
Management team	Michael Guido Wüst, Robert Bloch, Philippe Christen, András Ratz
Key partners	Bank WIR, bexio, Microsoft

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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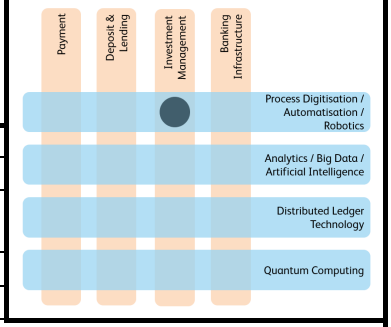
AM-One AG
https://www.am-one.ch/

Complete outsourcing platform with Swiss cloud hosting and operational services for independent asset managers and family offices.

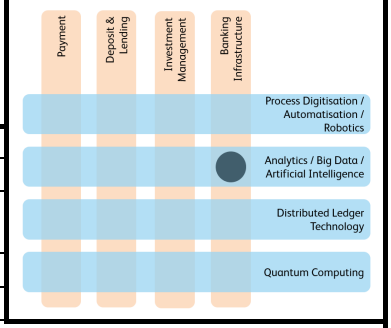


Year of foundation	2017
Domicile (canton)	ZG
Employees … of which in CH	300 >300 (Group)
Valuation	
Total funding	
Board members	Urs-Peter Oehen
Management team	Philipp Bisang, Dominic Greenwood, George Prapopoulos
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Apiax AG
https://www.apiax.com/

Apiax offers the most powerful tools to master complex financial regulations digitally.



Year of foundation	2017
Domicile (canton)	ZH
Employees … of which in CH	75+
Valuation	
Total funding	CHF 11,600,000
Board members	Sonja Stirnimann, Nicolas Blanchard, Jürg Christian Steiger, Ralph Marco Mogicato, Philip Schoch
Management team	Nicolas Blanchard, Philip Schoch, Ralf Huber, Thomas Suter
Key partners	BDO, EY, InvestGlass, new access, Temenos, VisionCompliance, Wealth Dynamix

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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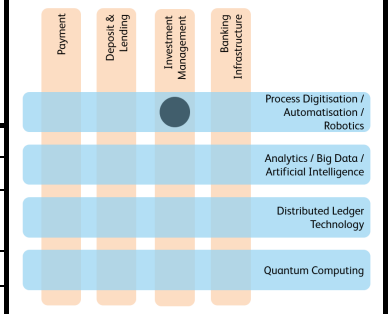
Appway AG

https://www.appway.com/

By automating workflows across people, systems, and data, Appway gives financial services businesses everything they need to get the job done and provide exceptional experiences at every touchpoint.



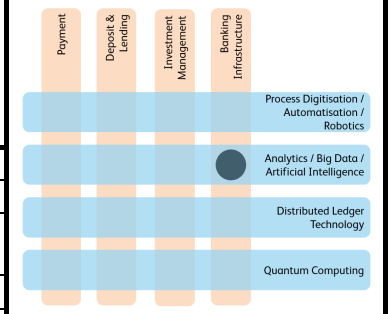
Year of foundation	2003
Domicile (canton)	ZH
Employees … of which in CH	140 111
Valuation	
Total funding	
Board members	Hanspeter Wolf, Oliver Brupbacher
Management team	Hanspeter Wolf, Oliver Brupbacher, Marco Totaro, Benedict Geissler, Mark Holenstein
Key partners	See https://www.appway.com/screen/partners

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Ariadne Business Analytics AG

https://www.ariadne.swiss

Ariadne provides next generation core finance systems. Ariadne fills an important gap in the supply landscape for system support for existing banks and new financial service providers. The systems for core banking services (SolitX), decentralized financial platforms and for risk and finance analytics (AnalytX) are all based on a Smart Financial Contract concept based on the ACTUS standard. To learn more, visit https://www.ariadne.swiss/.



Year of foundation	2015
Domicile (canton)	ZG
Employees … of which in CH	17 4
Valuation	
Total funding	CHF 1,300,000
Board members	Willi Franz Brammertz, Daniel Imfeld-Binzegger
Management team	Willi Franz Brammertz, Shirish Kalangi, Daniel Imfeld-Binzegger, Wolfgang Breymann, Jefferson Braswell
Key partners	Caspe Labs, Nucleus Finance, Actus, Mobile First Finance, Nosco Analysis, Oded, ZHAW

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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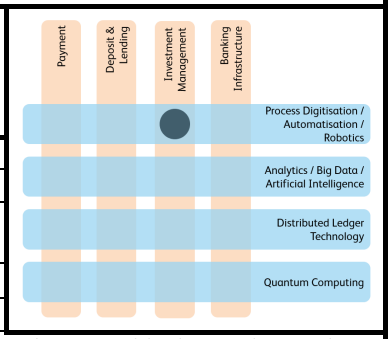
Assetmax AG
https://www.assetmax.ch/

Manage portfolios across several custodians with readily available data and in compliance with customer objectives and regulation.

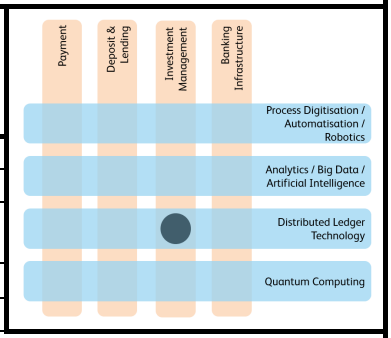


Year of foundation	2014
Domicile (canton)	ZH
Employees … of which in CH	42 42
Valuation	
Total funding	
Board members	Alexander Christen, Simon Hauswirth, Massimo Nicola Ferrari, Markus Oswald, Christophe Héribert André Audergon, Sven Robert Müller
Management team	Massimo Nicola Ferrari, Sven Robert Müller
Key partners	Altoo, Edgelab, Evooq, Indigita, Investment Navigator, Performace Watcher, Prometeia, World-Check, GW-Group, Synpulse, BDO, Noveras, Numas, GWP, Swisscomply, Tinext, Bloomberg, SIX

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Atomyze AG
https://www.atomyze.ch/

Our vision is to facilitate the tokenization of commodities, enabling them to be traded in a simple and secure way, and bring new access, increased liquidity, optimized efficiency, and improved transparency to the industry, within a seamless ecosystem.



Year of foundation	2018
Domicile (canton)	ZG
Employees … of which in CH	25 25
Valuation	
Total funding	
Board members	Alexander Michael Stoyanov, Hans Konstantin Nikolaus Graf Von Schweinitz, Alexander Freedland, Robert Michael Henry Osborne, Stephan René Arnet
Management team	Marco Carlo Grossi, Philipp E. Dettwiler, Valerio Matriciani, Sibil Melliger, Michael Stockinger, Bertalan Vecsei
Key partners	Linux Foundation, HLF, SBF, Norilks Nickel, GPF, Trafigura, Traxys, Umicore, Glencore, IXM, Brinks, ICBCS, Metaal Transport, SocGen

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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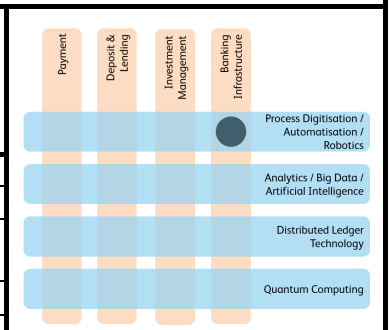
Avaloq Group AG
https://www.avaloq.com/

Avaloq is a global leader in digital banking solutions, core banking software and wealth management technology. It provides powerful cloud solutions for banks and wealth managers through business process as a service (BPaaS) and software as a service (SaaS). Avaloq is a subsidiary of NEC Corporation, a global leader in the integration of IT and network technologies.

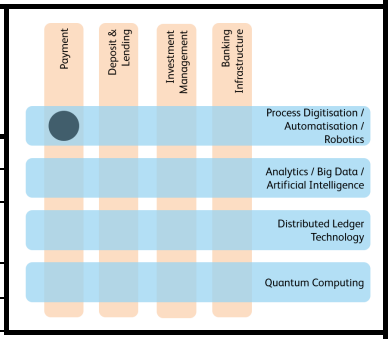


Year of foundation	1985
Domicile (canton)	SZ
Employees … of which in CH	>2,400
Valuation	
Total funding	
Board members	Tomoki Kubo, Tomonori Hira, Daichi Iwata, Asako Aoyama, Francisco Fernandez, Peter Schöpfer
Management team	Thomas Beck, Martin Greweldinger, Martin Büchi, Barry Frame, Hubert Gmünder, Uwe Krakau, Tobias Marbler, Thomas Widmer, Jesper H. Sorensen
Key partners	NEC Corporation

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Avance Pay AG
https://www.avance-pay.com/

As expert in the banking and payment area, Avance Pay specializes in the development of innovative solutions for NFC-based and contactless payments.



Year of foundation	2011
Domicile (canton)	BE
Employees … of which in CH	5 4
Valuation	
Total funding	
Board members	Peter Nicoleit, Herbert Gartner
Management team	Peter Nicoleit, Peter Danz, Heinz Bircher-Nagy, Herbert Gartner
Key partners	

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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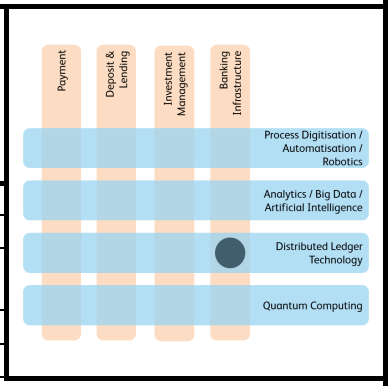
aXedras AG
https://www.axedras.com/

aXedras is connecting and digitalizing the precious metal industry. aXedras is a DLT infrastructure and application provider for product and data integrity in the bullion market (and for other high-value industries). aXedras has been developing a distributed Corda application which operates on a permissioned and private blockchain and which efficiently combines integrity, traceability and confidentiality of business transactions on a technical level.

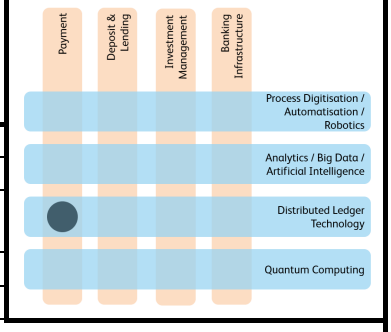


Year of foundation	2018
Domicile (canton)	SZ
Employees … of which in CH	20 9
Valuation	
Total funding	
Board members	Frank Richard Süss, Oliver Kehl, Urs Röösli
Management team	Urs Röösli, Iwan Lottenbach
Key partners	ASFCMP, SBG, Microsoft, R3, Scalefocus, SFTA, USI, LBMA, WGC

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Aximetria GmbH
http://www.aximetria.com/

Aximetria offers infrastructure and end-user services in the domain of cryptocurrency for financial institutions / banks and retail clients.



Year of foundation	2018
Domicile (canton)	ZG
Employees … of which in CH	32 32
Valuation	
Total funding	
Board members	
Management team	Alex Axelrod
Key partners	Tinkoff Group

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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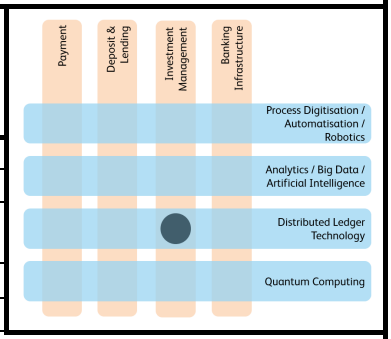
Base58 Capital AG
https://base58.ch/

We are a technology-driven investment firm specialized in crypto assets.

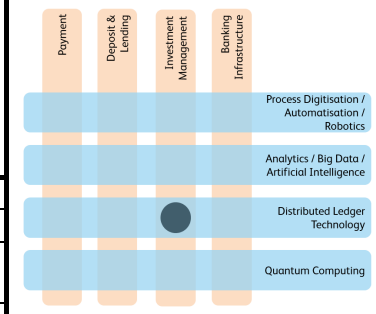


Year of foundation	2017
Domicile (canton)	ZG
Employees … of which in CH	4 3
Valuation	
Total funding	
Board members	Christian Frey, Ivo Sauter, Fabio Federici
Management team	Fabio Federici
Key partners	Coinbase, Fireblocks

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Bitcoin Suisse AG
https://www.bitcoinsuisse.com/

Founded in 2013, Bitcoin Suisse is the Swiss crypto-finance and technology pioneer and market leader. Bitcoin Suisse has helped to shape the crypto and blockchain ecosystem in Switzerland and has been a driving force in the development of the 'Crypto Valley' and 'Crypto Nation Switzerland'. As a regulated Swiss financial intermediary, Bitcoin Suisse offers prime brokerage, trading, custody, lending, staking and other crypto-financial services for private and institutional clients. Bitcoin Suisse has built a team of over 290 highly qualified experts at its locations in Zug, Copenhagen, and Liechtenstein.



Year of foundation	2013
Domicile (canton)	ZG
Employees … of which in CH	290+ 240+
Valuation	CHF 302,500,000
Total funding	CHF 45,000,000
Board members	Roger Studer, Arthur Vayloyan, Urs Alois Bigger, Giles Barry Keating, Niels Niklas Bang Nikolajsen, Luzius David Meisser
Management team	Arthur Vayloyan, Andrej Majcen, Lothar Cerjak, Markus Perdrizat, Mauro Casselini, Peter Camenzind, Philipp Vonmoos, Ricardo Schlatter, Sven Ramspott
Key partners	Worldline, CoinRoutes

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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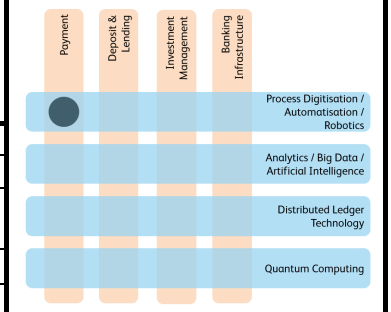
BLP Digital AG
https://www.blp-digital.com/

Automated ERP processes such as delivery note and invoice control, as well as order registration through Artificial Intelligence.

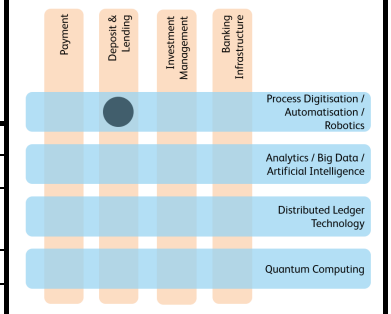


Year of foundation	2019
Domicile (canton)	ZH
Employees … of which in CH	14 14
Valuation	
Total funding	
Board members	Tim Beck, Sven Beck
Management team	Tim Beck, Sven Beck
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

bob Finance - Valora Schweiz AG
https://bob.ch/

bob Finance is a Zurich-based FinTech company that provides digital consumer finance products to Swiss consumers. Core products include buy now pay later offerings (bob invoice, bob zero) as well as consumer loans up to CHF 80'000 (bob credit).



Year of foundation	2015
Domicile (canton)	ZH
Employees … of which in CH	~30 ~30
Valuation	
Total funding	
Board members	
Management team	Hilmar Scheel, Wolfgang Gröschel, Tim Ackermann, Martin Fischer
Key partners	Glarner Kantonalbank, PostFinance, Apple, Breitling, Richemont etc.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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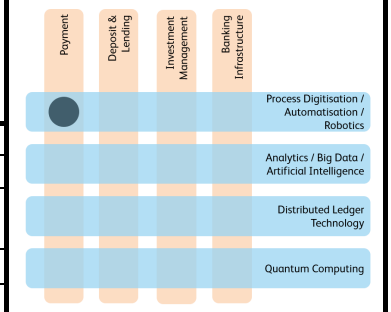
b-Sharpe SA
https://www.b-sharpe.com/

b-Sharpe is a Fintech that provides fair exchange rates for small and middle sized companies as well as private individuals.

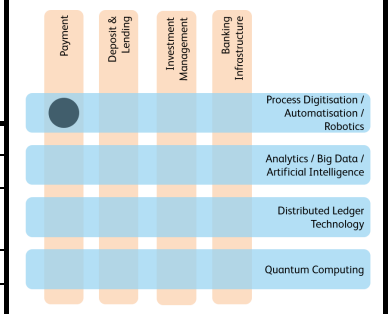


Year of foundation	2006
Domicile (canton)	GE
Employees … of which in CH	22 22
Valuation	
Total funding	CHF 100,000
Board members	Philippe Echenard, Didier Eicher, Jean-Marc Sabet, Xavier de Villoutreys
Management team	Jean-Marc Sabet, Xavier de Villoutreys, Julien Dubost, Nicolas Lombard
Key partners	Cooperative Migros Geneve

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

Byjuno AG
https://www.byjuno.ch/

Byjuno is a FinTech start-up within the payment and consumer finance industry for alternative payments.



Year of foundation	1986
Domicile (canton)	ZG
Employees … of which in CH	65 15
Valuation	
Total funding	
Board members	Anna Julia Reuszner, Per Christofferson, Christian Markus Stolz
Management team	Christian Markus Stolz, Mike Strahm, Michele Pintori
Key partners	SBB, ZVV, Migros, Decathlon, Datatrans

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

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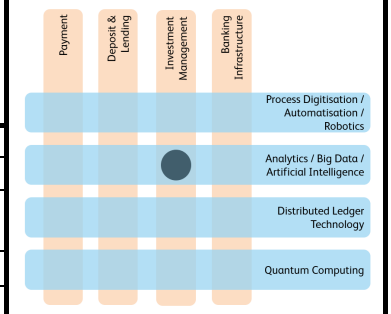
Canopy Europe AG
https://canopy.cloud/

Canopy is a financial data aggregation and analytics platform. We take financial transactions data in any format, from any custodian and create hyper personalized analytics and dashboards on it.

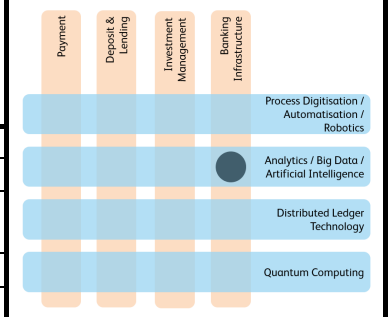


Year of foundation	2018
Domicile (canton)	ZG
Employees … of which in CH	40 2
Valuation	
Total funding	CHF 18,300,000
Board members	Sharma Tanmai, Andrea Elia
Management team	Sharma Tanmai, Wu Eryn, Sinan Biren
Key partners	Bloomberg, FactSet, Morningstar, Sustainalytics, Tableau, AWS, MS Azure, Safe Swiss Cloud

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Capnovum (Switzerland) GmbH
https://capnovum.com/

Capnovum helps regulated entities keep up with ever-changing regulations by successfully automating the end-to-end process.



Year of foundation	2016
Domicile (canton)	ZH
Employees … of which in CH	11-20 1-10
Valuation	
Total funding	
Board members	
Management team	Inga Jovanovic, Niclas Nilsson, Derek Forder
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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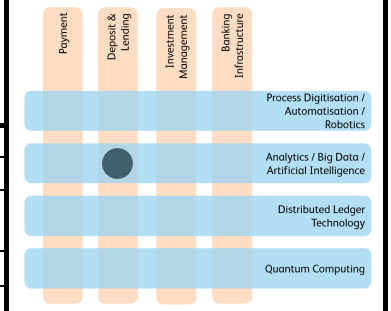
Cashare AG
https://www.cashare.ch/

Cashare is the first disruptive FinTech company in Switzerland, established in January 2008 and has been running as pioneer since then an independent crowdlending platform with the biggest investors crowd in this country.

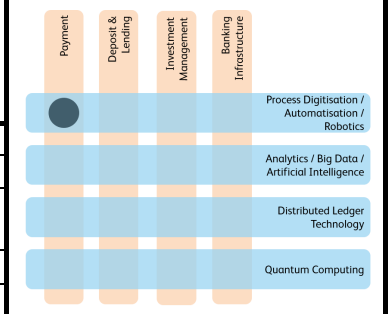


Year of foundation	2008
Domicile (canton)	ZG
Employees … of which in CH	20 20
Valuation	CHF 42,300,000
Total funding	CHF 4,400,000
Board members	Jan Frederic Mörmann, Michael Andreas Borter, Roger Müller
Management team	Michael Andreas Borter, Roger Müller, Michael Boge
Key partners	PwC, CRIF, Creditreform, Bisnode, AXA, Fairpower, academic gateway

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

CashSentinel SA
https://www.cashsentinel.com/

We provide compliant payment processing and a digital onboarding and contracting portal to marketplaces, acquirers, PSPs and independent businesses.



Year of foundation	2012
Domicile (canton)	VD
Employees … of which in CH	12 6
Valuation	CHF 8,000,000
Total funding	CHF 2,700,000
Board members	Jean-Frédéric Thomas, Sylvain Bertolus, Jean Pascal, Michael Chaille
Management team	Sylvain Bertolus, Milena Nikolic, Stéphane Ongagna
Key partners	Worldline (ex-SIX Payment Services), Datatrans

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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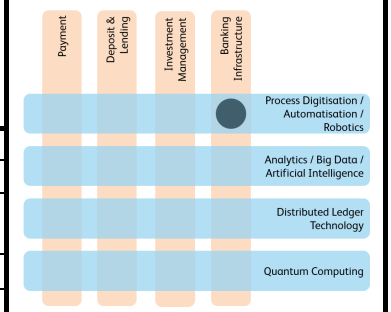
Confinale AG
https://confinale.ch/

Confinale combines banking expertise with software competence, making us the perfect partner for digitisation projects at banks. We focus our IT consulting on five specialist areas in the banking sector: Wealth advisory, tax, compliance, regulatory reporting, credit business and - across all topics - integration solutions.

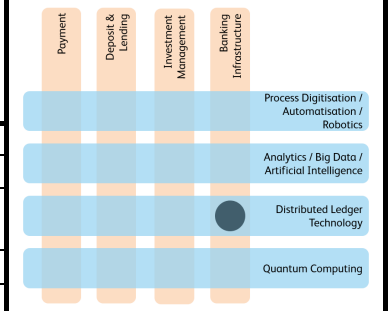


Year of foundation	2012
Domicile (canton)	ZG
Employees … of which in CH	80 68
Valuation	
Total funding	
Board members	Thomas Twerenbold, Roland Staub, Jonas Misteli
Management team	Roland Staub, Jonas Misteli, Florian Schrag, Andreas Egli, Fabian Erni
Key partners	Avaloq, SIX, AxiomSL, PwC, Flowable, Appway, Actico, Investment Navigator, Wolters Kluwer Financial Services

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Covario Holding AG
https://www.covar.io/

Our prime service platform provides comprehensive financing, trading, clearing and custody solutions.



Year of foundation	2019
Domicile (canton)	ZG
Employees … of which in CH	25 24
Valuation	
Total funding	CHF 6,000,000
Board members	Mark Banner, Deepak Gulati, Felix Peter Schmidheiny, Friedrich Maximilian Gero Paul Büttiker
Management team	Mark Banner, Keith Noyes, Patrik Gilli, Richard Forss, Eamon Comerford, Florian Giovannacci, Friedrich Maximilian Gero Paul Büttiker, Deepak Gulati, Felix Peter Schmidheiny
Key partners	Fireblocks, Chainalysis, Zuger Kantonalbank, Signature Bank, Silvergate, Maerki Baumann, Fidelity Digital Assets, Metaco, MME

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
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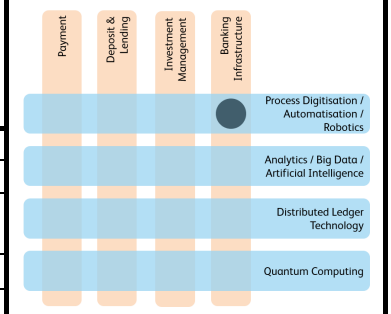
Crealogix Holding AG
https://crealogix.com/

CREALOGIX Group (SWX:CLXN) is a Swiss Fintech 100 company and is among the global market leaders in digital banking. Using the products from CREALOGIX, financial institutions can better respond to evolving customer needs in the area of digital transformation.

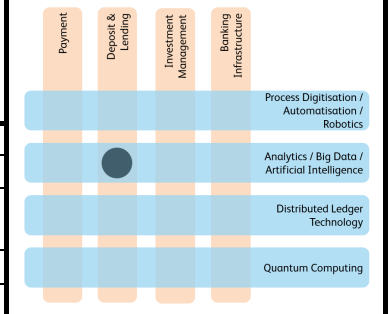


Year of foundation	1996
Domicile (canton)	ZH
Employees … of which in CH	650 200
Valuation	CHF 170,000,000
Total funding	
Board members	Rudolf Noser, Ralph Marco Mogicato, Christoph Andrea Schmid, Richard Dratva, Bruno Richle
Management team	Oliver Weber, Richard Dratva, Daniel Bader, David Moreno
Key partners	Adesso, CGi, Cognizant, DXC, HPE, IBM, Oracle, redhat, Inventx, Meniga, unblu, Entersekt, Promon, Swisscom, Syngenio, Synpulse, Zeb, Qontis, OneSpan, and more

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Credit Exchange AG
https://www.creditexchange.ch/

Development of an open exchange for the mortgages business to fundamentally innovate and digitalise the mortgage market in Switzerland.



Year of foundation	2018
Domicile (canton)	ZH
Employees … of which in CH	6 6
Valuation	
Total funding	
Board members	Fabio Perlini, Johannes Höhener, Reto Kuhn, Sven Rump
Management team	Andrea Canonica, Tiago Cruz, Liza Ulrich
Key partners	Bank Avera, Swisscom, Mobiliar, Vaudoise, Additiv, Q-centris

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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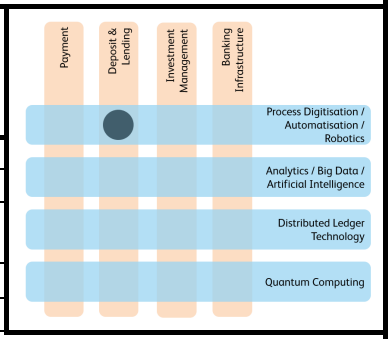
creditworld AG
https://www.creditworld.ch/

The online marketplace for SME financing in Switzerland.

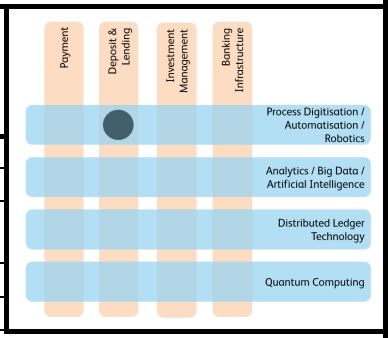


Year of foundation	2015
Domicile (canton)	SH
Employees … of which in CH	11 11
Valuation	
Total funding	
Board members	Thomas Wilfried Girschweiler, Kai Ren
Management team	Kai Ren, Philipp Schnyder
Key partners	Euler Hermes, Die Meyerlustenberger Lachenal Froriep AG, PolyReg

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Crowd4Cash - Crowd Solutions AG
https://crowd4cash.ch/

We are an innovative company in the financial service sector, specialized in supporting SME and corporates regarding instalment solutions in their offline and online business (loan as service).



Year of foundation	2016
Domicile (canton)	ZG
Employees … of which in CH	7 5
Valuation	
Total funding	CHF 1,200,000
Board members	Roger Bossard, Peter Paul Oesch
Management team	Andreas Oehninger, Roger Bossard
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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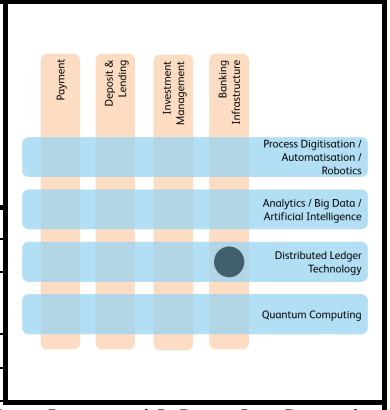
Crypto Finance AG
https://www.cryptofinance.ch/

The Crypto Finance Group was founded in June 2017 and provides transformative financial services in crypto and blockchain technology for institutional clients. The group provides a full suite of professional digital asset financial services. The group provides services in three core businesses: wealth management, with the first regulated crypto asset manager authorized by FINMA; the broker in 24/7 trading of Crypto Assets; as well as infrastructure services for the secure storage of crypto assets and tokenization projects.

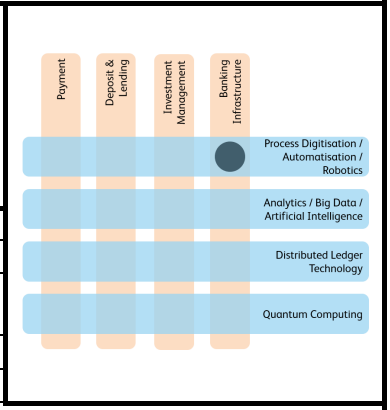


Year of foundation	2017
Domicile (canton)	ZG
Employees … of which in CH	95 (Feb 1., 2022) 92
Valuation	
Total funding	CHF 36,000,000
Board members	Eric Leupold, Uwe Schweickert, Alexander Vogel, Hans-Peter Wyss, Raymond J. Baer, Jan Brzezek, Philipp Cottier, Fabian Schär
Management team	Jan Brzezek, Stijn Vander Straeten, Urs Lehmann, Sarina Christner, Lewin Boehnke, Chris Benros, Alisher Tashpulatov
Key partners	

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Cynos AG
https://www.cynos.ch/

Cynos is a full-service compliance provider offering IT solutions and comprehensive compliance services to support financial institutions in their regulatory compliance. The Cynos Toolbox is the first digital compliance solution for financial institutions to efficiently deal with the newly introduced requirements imposed by FinIA/FinSA and the AML obligations. The Compliance Service Centre support financial institutions in the design of compliance frameworks and policies, in implementing new regulations and acts as compliance function required under FinIA.



Year of foundation	2019
Domicile (canton)	ZH
Employees … of which in CH	7 4
Valuation	CHF 5,000,000
Total funding	CHF 750,000
Board members	Stefan Zumtaugwald, Daniel Gonzenbach, Pascal Forster, Claude Ehrensperger
Management team	Claude Ehrensperger, Stefan Zumtaugwald, Florian Patscheider, Mohammad Alavi, Loric Szalai
Key partners	Inventify AG

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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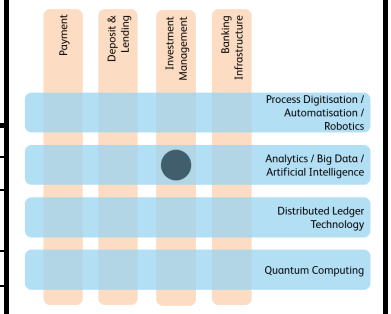
datalevel AG
https://www.datalevel.ch/

datalevel's Data Refinery Box refines your financial data and forms the solid basis for the implementation of innovative banking models.

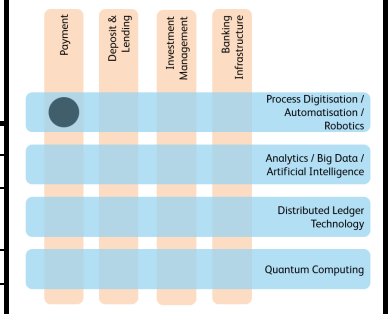


Year of foundation	2017
Domicile (canton)	ZH
Employees … of which in CH	7 7
Valuation	
Total funding	CHF 100,000
Board members	Manfred Köhl, Reinhard Stary, Wolfgang Millat, Peter Christian Strittmatter
Management team	Wolfgang Millat, Peter Strittmatter
Key partners	OneDigit

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Datatrans AG
https://www.datatrans.ch/

We are the online payment experts for demanding customers with individual requirements.



Year of foundation	2001
Domicile (canton)	ZH
Employees … of which in CH	55 55
Valuation	
Total funding	
Board members	Thomas Willenborg, Daniel Ellersiek, Oliver Heister
Management team	Thomas Willenborg, Daniel Ellersiek, Oliver Heister
Key partners	Mastercard, Visa, Twint, PostFinance, INT/Byjuno, PayPal, Amex, EPS, MFGroup, REK/Reka, Paysafecard, UATP/AirPlus, Manor MyOne, SwissBilling, Diners, SOFORT/Klarna, Google Pay, Apple Pay, Worldline, Nexi/Nets (ex Concardis), Card Complete, PayOne etc.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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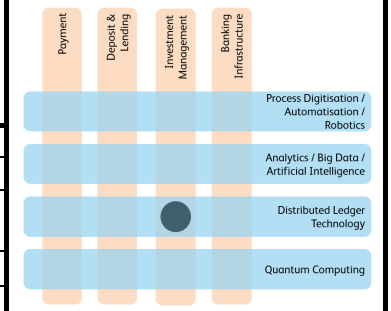
daura ag
https://www.daura.ch/

daura is the digital share platform for financing and investing in Swiss SMEs: Thanks to the blockchain technology, the existing share register is easily digitized and capital increases are carried out quickly and inexpensively at the push of a button.

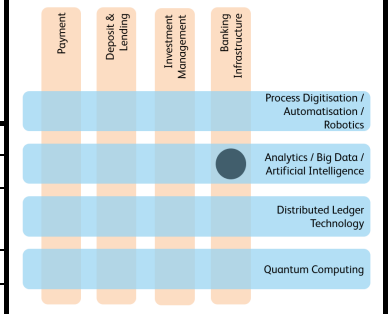


Year of foundation	2018
Domicile (canton)	ZH
Employees … of which in CH	10 10
Valuation	
Total funding	
Board members	
Management team	Peter Schnürer
Key partners	BEKB, BDO, CustoDigit, FS PARTNERS, Foundera, MME, OBT, PFLab, Raiffeisen (RUZ), SIX, Swisscom, Sygnum, Wenger & Vieli

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

decentriq - dq technologies AG
https://decentriq.ch/

Decentriq is an enterprise SaaS platform providing data clean rooms - allowing users to leverage data previously not possible.



Year of foundation	2019
Domicile (canton)	ZH
Employees … of which in CH	
Valuation	
Total funding	
Board members	Eugene Kenneth Pentimonti, Maximilian Groth, Stefan Alexander Julian Sebastian Deml
Management team	
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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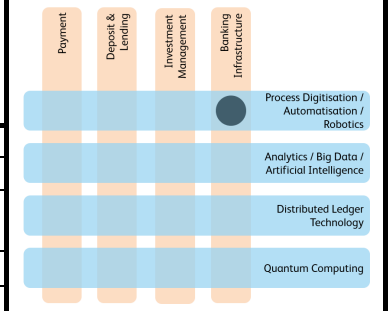
Delega Treasury AG
https://www.delega-banks.com/

Cloud Based/ SAAS B2B company for digitalization of bank signatories for mid & large sized corporation.

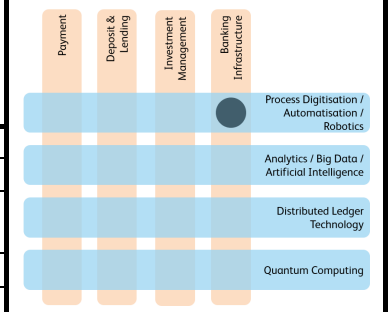


Year of foundation	2020
Domicile (canton)	ZG
Employees … of which in CH	7
Valuation	CHF 4,500,000
Total funding	CHF 277,000
Board members	Riccardo Balsamo
Management team	Riccardo Balsamo, Patrick Ramseyer, Elenia Gamba, Cristina Giambarresi
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

deltaconX AG
https://deltaconx.com/

deltaconX is a “full-service” provider offering a unique software and support package specifically tailored to the community of European financial-, energy- and commodity trading organisations.



Year of foundation	2018
Domicile (canton)	LU
Employees … of which in CH	21 4
Valuation	CHF 10,000,000
Total funding	CHF 0
Board members	Thomas Buk
Management team	Thomas Buk, Dominik Klimesch
Key partners	Allegro, Finastra, Finnova, Ignite ETRM, KRM22, Murex, SimCorp, VisoTech

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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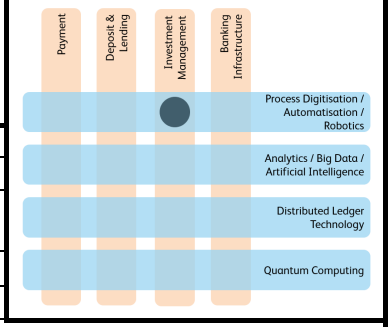
DESCARTES FINANCE AG

https://descartes-finance.com/

Investing is very demanding and yet very simple, if the possibilities of digitalisation are fully exploited. Descartes Finance has been following this path consistently since its launch in 2017, thereby driving forward the democratization of financial services (investment and pension services).



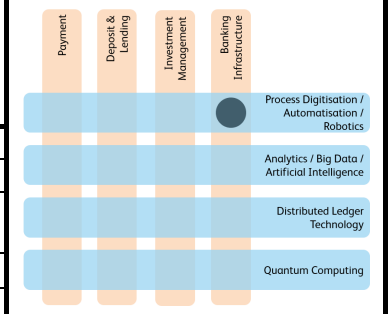
Year of foundation	2015
Domicile (canton)	ZH
Employees … of which in CH	7 7
Valuation	
Total funding	
Board members	Anna Stünzi, Mirjam Schaffner, Rino Borini, Eric Gisiger
Management team	Adriano Lucatelli, Angela Agostini Dagmara Nägeli, Christian del Bianco
Key partners	Swisscanto Invest, OLZ, UBS, Vontobel, Lienhardt Privatbank

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

DSwiss AG

https://www.dswiss.com/

We offer digital safes, mailboxes for bank documents delivery and secure exchange platforms for financial advisors and customers.



Year of foundation	2006
Domicile (canton)	ZH
Employees … of which in CH	80 70
Valuation	
Total funding	
Board members	Stephanie Mareen Roller, Marc Erni, Roland Zeller, Walter Hürsch, Lukas von Känel
Management team	Tobias Christen, Michael Tschannen, John Schriber, Burkhart Böttcher, Michael Gubelmann
Key partners	Karakun

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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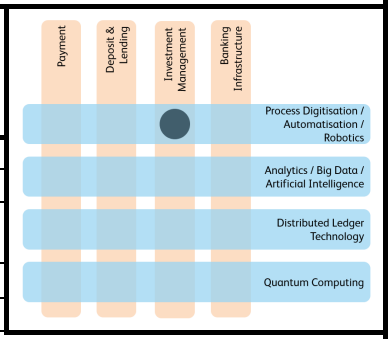
DUFOUR CAPITAL AG
https://www.dufour-capital.ch/

Dufour Capital offers individual rule-based investment solutions tailored to the needs of financial institutions and private investors.

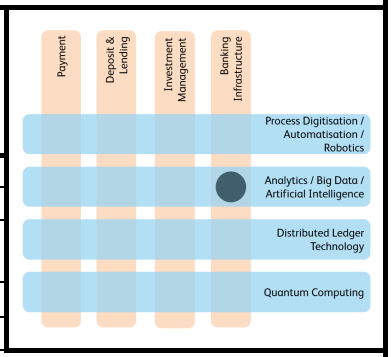


Year of foundation	2011
Domicile (canton)	ZH
Employees … of which in CH	4 4
Valuation	
Total funding	CHF 500,000
Board members	Richard Colin Müller, Marc Harry Weber, Ryan Eric Held, Sascha Patrick Freimüller
Management team	Ryan Eric Held, Sascha Patrick Freimüller
Key partners	VZ VermögensZentrum

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Dydon AG
http://dydon.net/

At Dydon, we understand that AI-based solution implementation tops the list of needs for businesses to transition into the era of prime efficiency and results. Based on Dydon's flexible AI platform a unique offering for sustainable finance has been realised supporting the core topics: EU Taxonomy Assessment, ESG Rating and Corporate Carbon Emission Measuring & Monitoring.



Year of foundation	2016
Domicile (canton)	ZH
Employees … of which in CH	12 4
Valuation	
Total funding	
Board members	Hans-Peter Güllich, Katharina Dalka, Pierre Suhrcke
Management team	Hans-Peter Güllich, Katharina Dalka, Dejan Prokic
Key partners	Verband öffentlicher Banken Deutschland, Capco

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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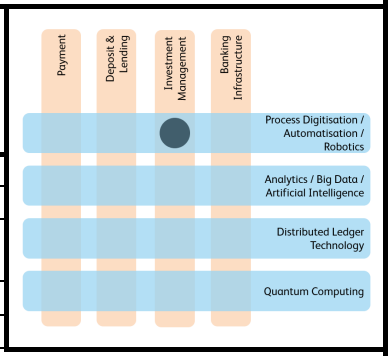
ECOFIN — Ecofin Holding AG
https://www.ecofin.ch/

ECOFIN has been creating value for financial services providers and investors for more than 30 years: innovative, scientifically proven, user-friendly software tools for banks, comprehensive, consistent data models for financial services providers, sound advice for pension funds and trusts, as well as optimal investment and pension products for family offices and SME.

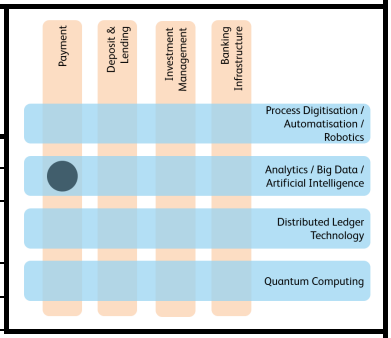


Year of foundation	1986
Domicile (canton)	ZG
Employees … of which in CH	50+ 50+
Valuation	> CHF 50,000,000
Total funding	Equity capital
Board members	Nicole Kistler Huber, Alexandra Janssen, Maarten Christopher Janssen
Management team	Maarten Janssen, Christian Dicke
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

eCollect — eCollect AG
https://ecollect.org/

We apply high-end technology to cover the full receivables management process for you: from the initial invoice to the final payment.



Year of foundation	2014
Domicile (canton)	ZG
Employees … of which in CH	45
Valuation	
Total funding	Fully bootstrapped
Board members	Thimo Seidel, Marc Schillinger, Maximilian Barth
Management team	Marc Schillinger
Key partners	Operative Hubs = eCollect Bulgaria EOOD, eCollect Germany GmbH

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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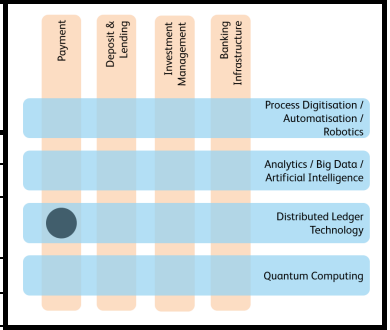
Ecoo AG
https://www.ecoo.ch/

ecoo is a digital revolution. It is a conditional payment system that can be tailored for your specific needs; whether you want to engage your local community, want to design a state-of-the art loyalty program or are organising an event. ecoo connects people and companies by creating digital and earmarked coins or points for their ecosystem.

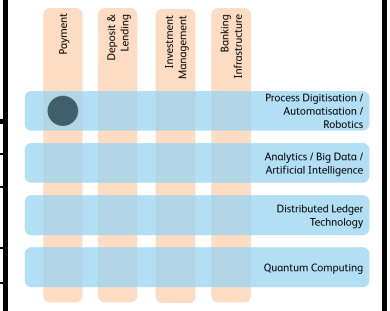


Year of foundation	2021
Domicile (canton)	ZG
Employees … of which in CH	5 5
Valuation	
Total funding	CHF 1,000,000
Board members	Marc van Nuffel, Alessandro Decarli, Claudia Sauter, Daniel Jörg, Raffaele Carmine
Management team	Sebastian Hersberger
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

EM Exchange Market GmbH
https://exchangemarket.ch/

Exchange Market enables people to do currency exchanges.



Year of foundation	2012
Domicile (canton)	ZH
Employees … of which in CH	6 3
Valuation	
Total funding	
Board members	
Management team	Michael Wychowaniec
Key partners	Swiss Finace Startups, Zürcher Kantonalbank, PolyReg, AML Revisions AG

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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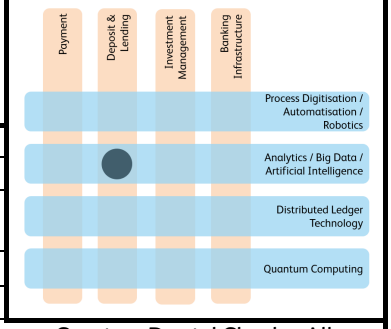
e-Potek SA
https://www.e-potek.ch/

e-Potek is a Fintech that is revolutionizing the Swiss mortgage financing market.

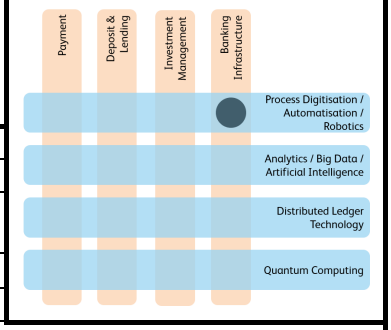


Year of foundation	2018
Domicile (canton)	GE
Employees … of which in CH	29 29
Valuation	CHF 25,000,000
Total funding	
Board members	Cyril de Bavier, Alexandre Paul Jean Marie Hamaide-Tollinchi, Simon Comina, Daniel Charles Albert Udry
Management team	Florian Bienefelt, Yannis Eggert, Romain Dequesne, Corentin Huard
Key partners	Credit Suisse, UBS, Swisslife, Zurich Insurance, Valiant, Real Force, Real Advisor

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

ERI Bancaire SA
https://www.olympicbankingsystem.com
https://eri.ch

ERI is an international company, specialising in the design, development, implementation, and support of an integrated, real-time banking software package: the OLYMPIC Banking System.



Year of foundation	1989
Domicile (canton)	GE
Employees … of which in CH	402 183
Valuation	
Total funding	Self-funded
Board members	Monika Assaraf, Yehuda Assaraf
Management team	Jean-Philippe Bersier, Benoît Jacquat, Franck Lamoureux
Key partners	Technology partners (IBM, Oracle, Red Hat, Microsoft, BIAN) and solution parters (+60 solution software suppliers). We are also corporate sponsors of the F10 (initiated by SIX) start-up incubator in Zurich.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
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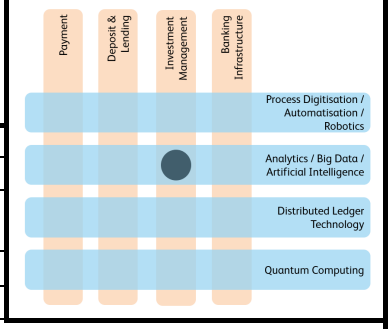
ETFbook - SquaredData GmbH
https://www.etfbook.com/

Platform delivering analytics and insights into the world of European-domiciled ETFs.

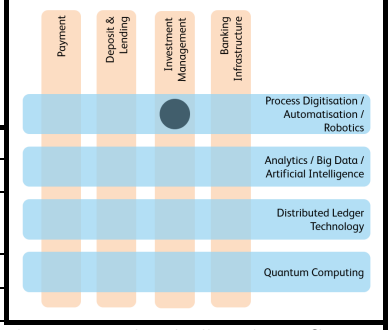


Year of foundation	2019
Domicile (canton)	ZH
Employees … of which in CH	3 3
Valuation	
Total funding	
Board members	
Management team	Janus Pawel, Bartłomiej Igła
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Everon AG
https://everon.swiss/

Everon offers a complete range of digital private banking services in a hybrid model to affluent and HNWI clients. The all-in-one app enables clients to get access to tailor-made, exclusive investment opportunities.



Year of foundation	2019
Domicile (canton)	ZH
Employees … of which in CH	10 10
Valuation	
Total funding	
Board members	Michael Georg Eugen Rümmelein, Florian Rümmelein, Jonas Bächinger, Michael Albrecht Bufler
Management team	Florian Rümmelein, Jonas Bächinger
Key partners	Hypothekarbank Lenzburg, Liberty Vorsorge

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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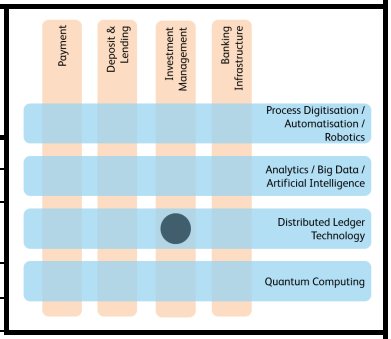
FICAS AG
https://ficas.com/

FiCAS is a specialized crypto-asset investment firm committed to delivering better than market performance through actively managed crypto investment products.

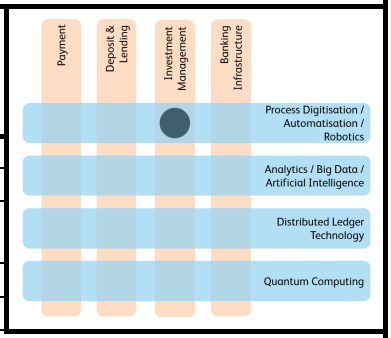


Year of foundation	2019
Domicile (canton)	ZG
Employees … of which in CH	10 10
Valuation	
Total funding	
Board members	Sanjeev Karkhanis, Daniel Leo Diemers, Mattia Luigi Rattaggi, Ali Mizani Oskui
Management team	Ali Mizani Oskui
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Findependent AG
https://findependent.ch/

With our simple and transparent investment-app, findepenent makes investing as natural and easy as saving on a bank account.



Year of foundation	2019
Domicile (canton)	AG
Employees … of which in CH	4 4
Valuation	CHF 6,000,000
Total funding	CHF 750,000
Board members	Matthias Bryner
Management team	Matthias Bryner, Nadine Hitz, Beat Müller
Key partners	Hypothekarbank Lenzburg

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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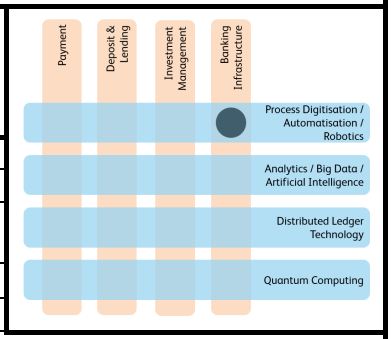
Finform AG
https://www.finform.ch/

Finform standardises, industrialises and digitalises compliance formalities. We offer a complete digital customer onboarding and KYC formalities approving, for standard and complex cases.

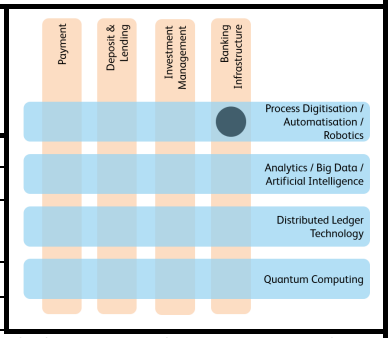


Year of foundation	2016
Domicile (canton)	BE
Employees … of which in CH	30 30
Valuation	
Total funding	> CHF 20,000,000
Board members	Claudia Bläuenstein, Markus Fuhrer, Peter Dominik Delfosse, Daniel Schütz
Management team	Alessandro Rausa, Stephan Käser, Ronald Fuchs, Michael Rumpf
Key partners	Axon Ivy, Axon FinTech, AxonActive, Post CH, CRIF, Intrum, Klippa

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

finnova AG Bankware
https://www.finnova.com/

Finnova is a leading provider of end-to-end banking software in the Swiss financial centre.



Year of foundation	1974
Domicile (canton)	AG
Employees … of which in CH	450 450
Valuation	
Total funding	CHF 500,000
Board members	Heinrich Leuthard, Pascal Niquille, Hendrik Lang, Robert Gebel, Hans Zehetmaier, Stephan Frohnhoff
Management team	Hendrik Lang, Simon Kauth, Raphael Widmer, Daniel Bernasconi, Markus Metzger, Olaf Romer
Key partners	Finnova maintains an actively managed network with more than 80 services, product and technology partners.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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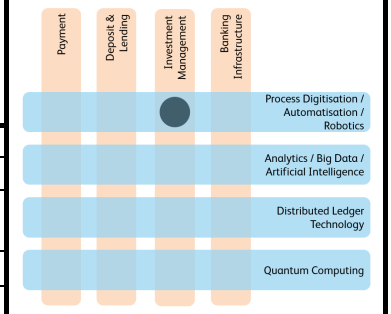
finpension AG
https://finpension.ch/

finpension is a provider of retirement savings solutions.

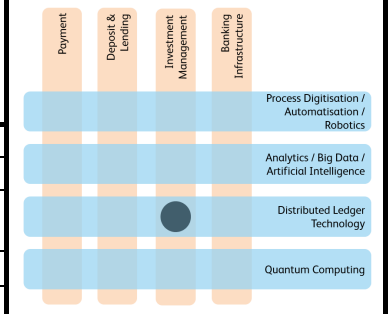


Year of foundation	2017
Domicile (canton)	LU
Employees … of which in CH	20 19
Valuation	
Total funding	CHF 500,000
Board members	Gaëtan Alexandre Maraite, Beat Bühlmann, Ivo Blättler
Management team	Beat Bühlmann, Ivo Blättler
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

flov technologies AG
https://www.flovtec.com/

We are a Swiss technology company with the purpose to unlock digital assets by providing liquidity.



Year of foundation	2018
Domicile (canton)	ZG
Employees … of which in CH	11 9
Valuation	
Total funding	CHF 4,500,000
Board members	Frank Klaus Floessel, Florian Wimmer, Daniel Leo Diemers
Management team	Anton Golub, Nicolas Grawe, Khaled Yassin
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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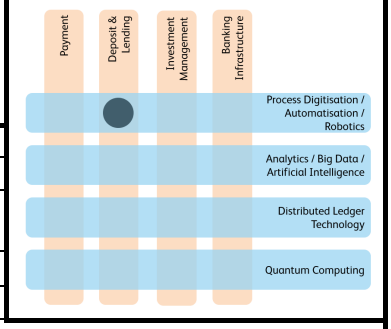
Foxstone SA
https://www.foxstone.ch/

Foxstone democratizes real estate investment by offering intitutional quality opportunities to Swiss citizens and residents by increasing transparency and lowering the minimum investment amount to 25'000.-.

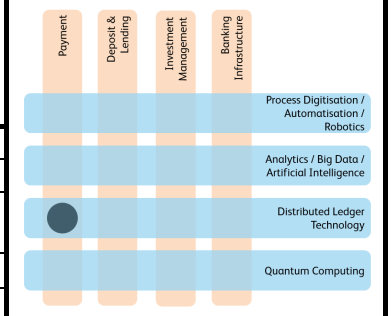


Year of foundation	2016
Domicile (canton)	GE
Employees … of which in CH	20 20
Valuation	
Total funding	
Board members	Dan Amar, Michael Lahyani
Management team	Dan Amar, Yossi Amar, Michael Lahyani, David El-Eini
Key partners	Vaudoise, Investis, Ochsner & Associés, PwC, Borel & Barbey, CBRE, Naef, Régie du Rhône

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

FQX AG
https://fqx.ch/

FQX provides a secure, efficient and compliant electronic promissory note (eNote™) infrastructure.



Year of foundation	2019
Domicile (canton)	ZH
Employees … of which in CH	15 9
Valuation	
Total funding	CHF 4,700,000
Board members	James Courtenay, Philipp von Randow, Benedikt Schuppli, Stephan Dominik Meyer
Management team	Benedikt Schuppli, Stephan Dominik Meyer, Daniel Killenberger, Philipp von Randow
Key partners	Earlybird, SIX Ventures

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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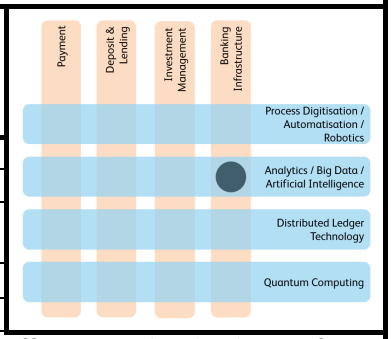
Futurae Technologies AG
https://www.futurae.com/

Build trust, not inconvenience with Futurae's future-proof customer authentication. Futurae develops and manages an authentication platform extremely easy to deploy and use. Futurae empowers any web-based and app-based customer interaction to be authenticated easily and securely.

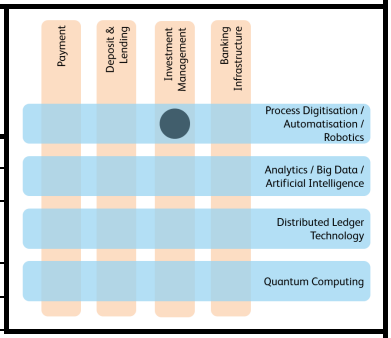


Year of foundation	2016
Domicile (canton)	ZH
Employees … of which in CH	30 24
Valuation	
Total funding	CHF 7,000,000
Board members	Michael Stanley Shipton, François Robinet, Thomas Hilgendorff-Trampusch, Claudio Marforio, Nikolaos Karapanos, Sandra Tobler
Management team	Claudio Marforio, Nikolaos Karapanos, Sandro Tobler, Ilias Rinis, Linda Brunner
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

GenTwo AG
https://www.g2fp.com/

Expanding the investment universe, together. All assets bankable, investable and manageable.



Year of foundation	2018
Domicile (canton)	ZH
Employees … of which in CH	52
Valuation	
Total funding	CHF 4,000,000
Board members	Patrick Rudolf Loepfe, Philippe André Nägeli
Management team	Patrick Rudolf Loepfe, Philippe André Nägeli
Key partners	GenTwo Digital, AssetRush

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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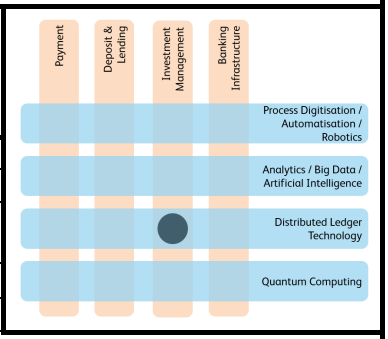
GenTwo Digital AG
https://digital.g2fp.com/

We make any ICO, token, crypto asset and portfolio investable, fully bankable and fungible in a Swiss Security (Swiss ISIN). At a minimal price.

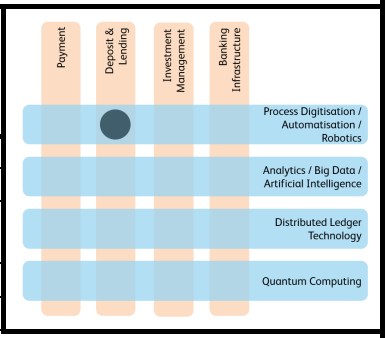


Year of foundation	2018
Domicile (canton)	ZG
Employees … of which in CH	5
Valuation	
Total funding	
Board members	Patrick Rudolf Loepfe, Marco Bumbacher, Philippe André Nägeli, Ralf Hans Glabischnig
Management team	Philippe André Nägeli, Patrick Rudolf Loepfe
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Hypodossier AG
https://www.hypodossier.ch/

HypoDossier is a document processing software, designed uniquely to meet the requirements of Swiss mortgage lenders by categorizing mortgage documents and extraction data from selected documents.



Year of foundation	2020
Domicile (canton)	ZH
Employees … of which in CH	6 4
Valuation	
Total funding	
Board members	Andreas Dominik Wapf, Silvan Alexander Kaufmann, Manuel Antonius Thiemann
Management team	Andreas Dominik Wapf, Silvan Alexander Kaufmann, Manuel Antonius Thiemann
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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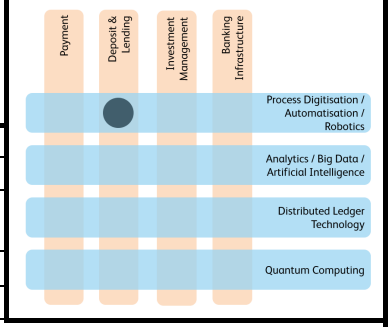
HYPOTHEKE.CH - GTF Gesellschaft für technologiebasierte Finanzdienstleistungen AG

https://www.hypotheke.ch/

HYPOTHEKE.CH networks real estate owners with banks, insurance companies and pension funds. HYPOTHEKE.CH is a 100 % digital mortgage broker. The Software can be used as SaaS-Solution by other mortgage brokers.



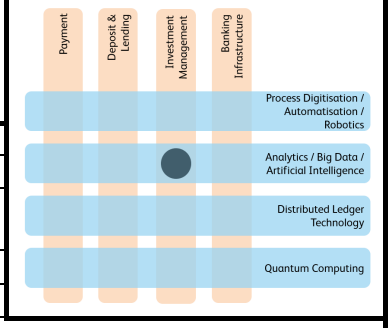
Year of foundation	2019
Domicile (canton)	ZH
Employees … of which in CH	3 3
Valuation	
Total funding	
Board members	Florian Schubiger, Damian Gliott, Lars-Christian Schultz
Management team	Florian Schubiger, Damian Gliott, Lars-Christian Schultz
Key partners	VermögensPartner AG

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

i2i Logic (Switzerland) AG

https://i2ilogic.com/

i2i Logic combines the best available corporate financial data with your company spreads to generate insight and drive the market activity of your front line.



Year of foundation	2009
Domicile (canton)	ZH
Employees … of which in CH	12 1
Valuation	
Total funding	
Board members	Timothy Maddock
Management team	Nick Barrett, Timothy Maddock
Key partners	

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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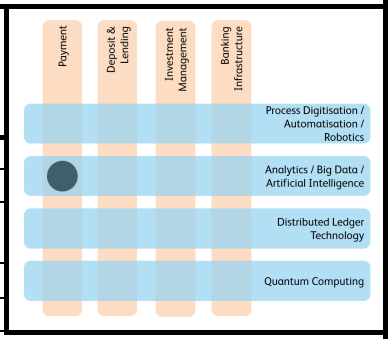
iLoy Solutions SA
https://www.iloy-group.com/

iLoy creates next-generation platform technology for loyalty, crm and payment systems using advanced rule-based methodologies and AI/predictive analytics.

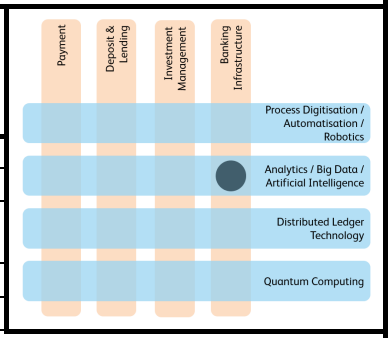


Year of foundation	2019
Domicile (canton)	TI
Employees … of which in CH	25 15
Valuation	> CHF 10,000,000
Total funding	CHF 0
Board members	Simon Grenacher, Alexander Raoul Schmid, Tony Weber, Daniel Canzani, Thomas Wagner
Management team	Tony Weber, Thomas Wagner, Simon Grenacher, Daniel Canzani
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

INPHER Sàrl
https://www.inpher.io/

Inpher has pioneered cryptographic Secret Computing® that enables advanced analytics and machine learning models while keeping data private, secure, and distributed.



Year of foundation	2015
Domicile (canton)	VD
Employees … of which in CH	29 15
Valuation	
Total funding	CHF 14,000,000
Board members	
Management team	Jordan Brandt, Dimitar Jetchev, Nicolas Gama
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
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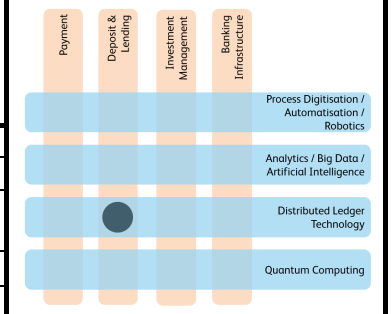
Instimatch Global AG
https://www.instimatch.com/

Instimatch Global offers an interconnected cash management platform, covering unsecured cash deposits, repos, forex and promissory notes for treasuries across the world. Instimatch operates out of Zurich, Edinburgh and Doha, and currently has 200 institutional clients across 26 jurisdictions.

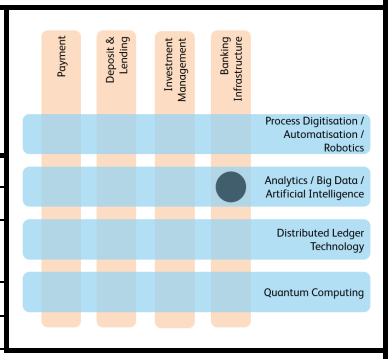


Year of foundation	2017
Domicile (canton)	ZG
Employees … of which in CH	20 5
Valuation	
Total funding	
Board members	Fahad Falah Al-Thani, Adrian Edelmann, Reto Merazzi, Hugh Neil MacMillen
Management team	Hassan Al-Lawati, Daniel Sandmeier, Hugh Neil MacMillen, Nitin Gupta, Kevin Thompson
Key partners	Algorand, Fides, Futurae, R3 Corda

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Integration Alpha GmbH
https://integrationalpha.com/

We built our data science platform "ferris.ai" a kind of "Swiss army pocket knife" stitching all relevant open source data science tools into one "enterprise-ready" platform. On this ecosystem we built our AI-use cases such as ‘scalable advice, next best product recommendation, AML/KYC and all sorts of regulatory optimizations and AI-based ESG data extractions.



Year of foundation	2014
Domicile (canton)	ZG
Employees … of which in CH	60 50
Valuation	
Total funding	Self-funded
Board members	Frank Kaminsky, Marco Selva, Thomas Debus
Management team	Frank Kaminsky, Marco Selva, Thomas Debus
Key partners	Google Cloud, Azure, Exoscale, UpCloud, DXC Cloud, AxiomSL

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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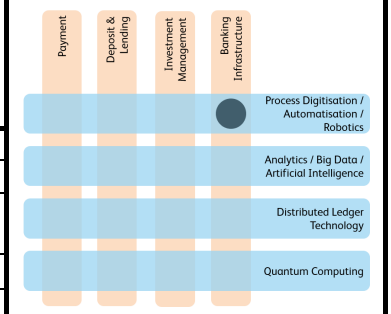
Inventx AG
https://inventx.ch/

Inventx is the Swiss IT partner for leading financial institutions and insurance companies. The basis for our business activities are our values: innovation, interaction and Swissness.

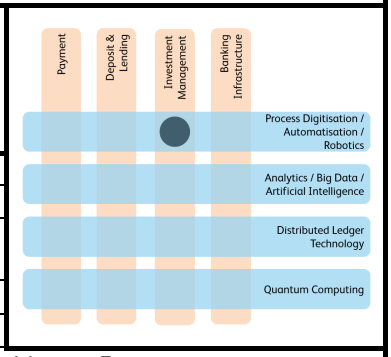


Year of foundation	2010
Domicile (canton)	GR
Employees … of which in CH	310 310
Valuation	
Total funding	
Board members	Gregor Alexander Stücheli, Hans Nagel, Ivo Furrer-Buholzer, Urs Saxer, Manuel Antonius Thiemann
Management team	Pascal Keller, Patrick Hagen, Christoph Züger, Fabio Cortesi, Pascal Wild, Daniel Wenger
Key partners	Arcplace, Avaloq, Citrix, Crealogix, IBM, ivanti, Finnova, Oracle

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Investment Navigator AG
https://www.investmentnavigator.com/

We are the product distribution experts for financial institutions. Our modular eco-system-like infrastructure of tech-driven solutions allows financial institutions to make the most out of their product capabilities. Core themes include Suitability Enablement, Cross-Border Servicing, Offering Management, and Asset Management Distribution Support.



Year of foundation	2014
Domicile (canton)	ZH
Employees … of which in CH	17 17
Valuation	
Total funding	
Board members	Jochen Gutbrod, Philipp Portmann, Julian Köhler, Alberto Rama, Maurus Fries
Management team	Alberto Rama, Maurus Fries, Julian Köhler
Key partners	FE Fundinfo, SIX, KPMG, Lipper, Clearstream Fund Centre

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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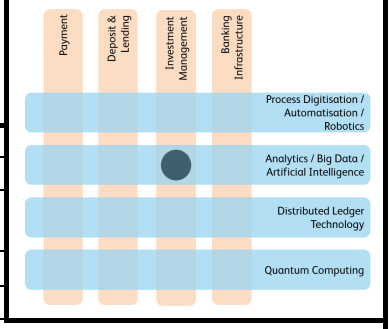
iquant GmbH
https://www.iquant.ch/

We develop rule-based investment strategies that outperform the market in the long term. We apply exclusively scientific models whose success has been documented in numerous studies.

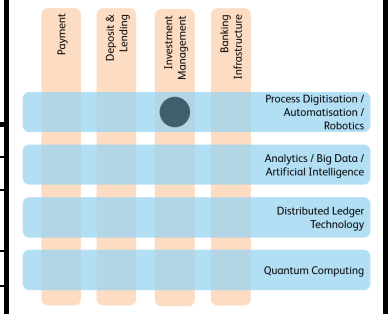


Year of foundation	2016
Domicile (canton)	ZG
Employees … of which in CH	3 3
Valuation	
Total funding	CHF 50,000
Board members	
Management team	Leonardo Staffiero
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Kasparund AG
https://www.kasparund.ch/

We create access to professional financial services and offer you a new level of financial wellness. Starting with investing.



Year of foundation	2020
Domicile (canton)	SG
Employees … of which in CH	8 8
Valuation	
Total funding	CHF 1,500,000
Board members	Thierry Kneissler, Jan-Philip Schade, Lukas Plachel, Lauro Böni, Sebastian Büchler
Management team	Jan-Philip Schade, Lukas Plachel, Lauro Böni, Sebastian Büchler
Key partners	Hypothekarbank Lenzburg

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
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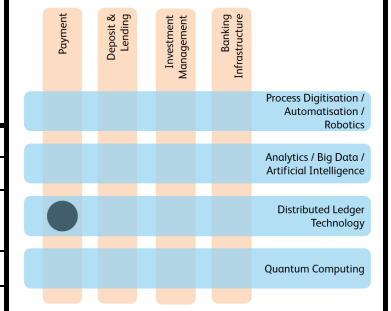
Klarpay

Klarpay AG
https://klarpay.ch/

Banking for the underbanked online merchants.



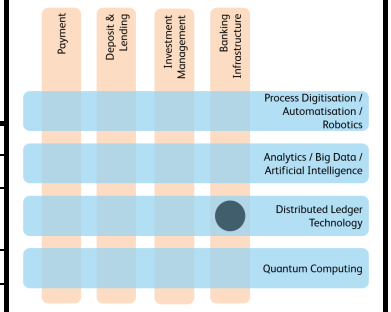
Year of foundation	2019
Domicile (canton)	ZG
Employees … of which in CH	>10
Valuation	
Total funding	CHF 4,000,000
Board members	Beatrice Kern, Alena Yvonne Nicolai, Mihkel Vitsur
Management team	Martynas Bieliauskas, Jeff Richard Angehrn
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

KORE TECHNOLOGIES

Kore Technologies AG
https://www.kore-technologies.ch/

Leader in high-performance digital asset systems.



Year of foundation	2019
Domicile (canton)	ZG
Employees … of which in CH	12 10
Valuation	
Total funding	CHF 100,000
Board members	Michael Guzik, Thomas Taroni, Carla Alexandra Bünger, Robert Rogenmoser
Management team	Carla Alexandra Bünger, Thomas Taroni, Michael Guzik
Key partners	IBM, Securosys, Phoenix Systems

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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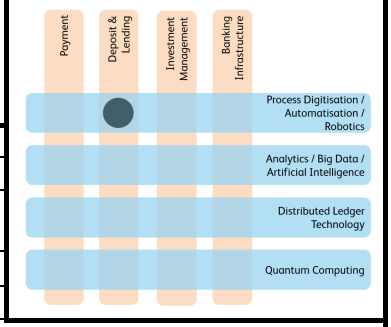
Kreditfabrik AG
https://kreditfabrik.ch/

Kreditfabrik offers ambitious clients a comprehensive service for the settlement, management and risk assessment of mortgages.

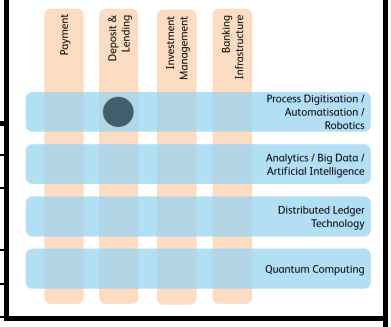


Year of foundation	2016
Domicile (canton)	ZH
Employees … of which in CH	6 6
Valuation	
Total funding	CHF 2,900,000
Board members	Stephan Hermann, Manuel Christian Salvisberg
Management team	Emil Meier, Gerhard Kurt Gfeller
Key partners	Base-Net, IAZI CIFI, SIX, CRIF

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Lendity AG
https://lendity.com/

Lendity is a Swiss-based firm specializing in niche private debt opportunities.



Year of foundation	2018
Domicile (canton)	ZH
Employees … of which in CH	
Valuation	
Total funding	
Board members	Rafael Karamanian
Management team	Rafael Karamanian
Key partners	SIX, PwC, Julius Bär, F10

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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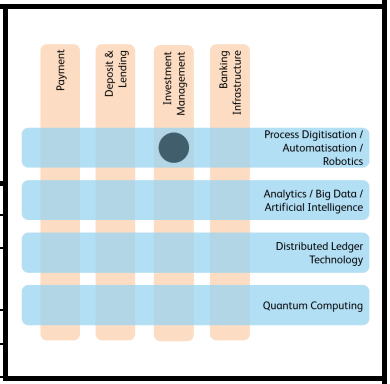
Leonteq AG
https://www.leonteq.com/

Leonteq is a Swiss fintech company with a leading marketplace for structured investment solutions. Based on proprietary modern technology, the company offers derivative investment products and services. Leonteq acts as both a direct issuer of its own products and as a partner to other financial institutions. Leonteq further enables life insurance companies and banks to produce capital-efficient, unit-linked pension products with guarantees.

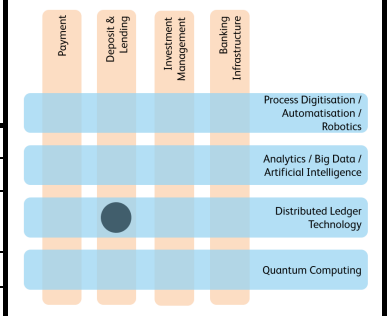


Year of foundation	2007
Domicile (canton)	ZH
Employees … of which in CH	517 324
Valuation	
Total funding	CHF 436,000,000
Board members	Philippe Le Baquer, Sylvie Davidson, Philippe Weber, Dominik Schärer, Susana Morgado Gomez Smith, Richard Laxer, Christopher Michael Chambers, Thomas Roland Meier
Management team	Lukas Ruflin, Marco Amato, Manish Patnaik, Reto Quadroni, Alessandro Ricci, Markus Schmid, Ingrid Silveri
Key partners	Aargauische Kantonalbank, Banque Internationale à Luxembourg, Basler Kantonalbank, Cornèr Bank, EFG International, PostFinance, Raiffeisen Switzerland, Rand Merchant Bank, Standard Chartered Bank, Helvetia, Swiss Mobiliar

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Liquity AG
https://www.liquity.org/

Liquity is a decentralized borrowing protocol that allows you to draw 0 % interest loans against Ether used as collateral.



Year of foundation	2020
Domicile (canton)	ZG
Employees … of which in CH	10 2
Valuation	
Total funding	CHF 8,400,000
Board members	Robert Lauko, Cédric Thomas Waldburger
Management team	Robert Lauko, Rick Pardoe, Michael Svoboda
Key partners	Polychain, Tomahawk.vc, Pantera, IOSG, Trail of Bits, Gauntlet Network

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest (for users)	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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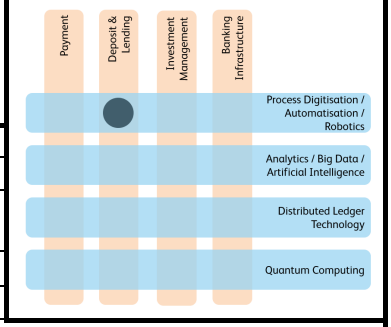
Loanboox - Swiss FinTech AG
https://loanboox.com/

Loanboox is the independent debt capital market platform, connecting big ticket borrowers and investors. We offer an easy process, personal support and competitive rates to borrowers while providing investors with a large dealflow, automation tools and market data to enable an efficient deployment of their capital.

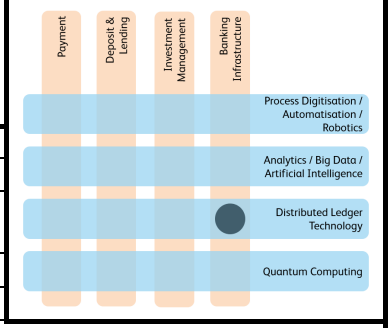


Year of foundation	2015
Domicile (canton)	ZH
Employees … of which in CH	40 25
Valuation	
Total funding	CHF 30,000,000
Board members	Felix Rudolf Ehrat, Andreas Burri, Dario M. S. Zogg, Stefan Mühlemann
Management team	Philippe Cayrol, Dario M. S. Zogg, Dominique Hügli, Martina Bühler
Key partners	I-CV, Deutsche Bank, IFBC, Kepler Cheuvreux, Incore, Société Générale, Bridport & Co., PwC, First

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Lykke Corp
https://www.lykke.com/

Lykke is a Fintech company bridging the gap between traditional finance and Blockchain. We operate a crypto exchange and offer tools and services for blockchain based applications.



Year of foundation	2013
Domicile (canton)	ZG
Employees … of which in CH	23 23
Valuation	
Total funding	CHF 29,000,000
Board members	Iulian Circo, Richard Björn Olsen
Management team	Richard Björn Olsen, Niklaus Mettler, Marco Strimer
Key partners	

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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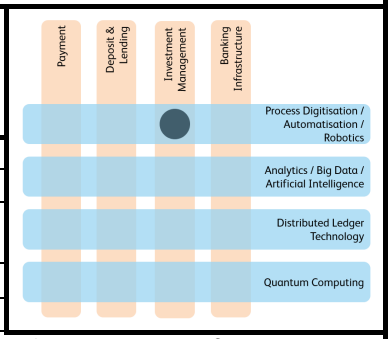
MoneyPark AG
https://moneypark.ch/

MoneyPark is a financial advisory company focusing on mortgage, retirement planning and real estate advice.

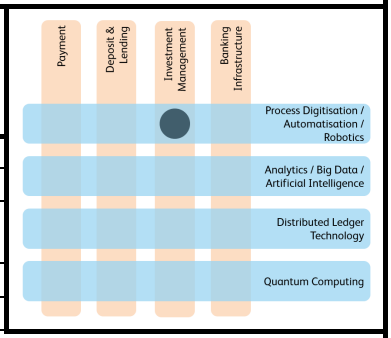


Year of foundation	2011
Domicile (canton)	SZ
Employees … of which in CH	300+ 300+
Valuation	
Total funding	
Board members	Jens Schleuniger, Martin Robert Tschopp, André Keller, Ralph Alex Jeitziner, Stefan Heitmann, Martin Jara
Management team	Stefan Heitmann, Sebastian Adam, Benjamin Tacquet, Viola Kirsch, Jasser Kassab, Stéphan Mischler, Sharam Shad, Lukas Vogt
Key partners	More than 150 partners (banks, insurances and pension funds) in Switzerland. Partnerships among others with Helvetia and Credit Suisse.

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

moribono AG
https://www.moribono.com/

Management of inheritage. Web Application to calculate the distribution of inheritance, to calculate the estate and to formulate a will.



Year of foundation	2012
Domicile (canton)	LU
Employees … of which in CH	
Valuation	
Total funding	
Board members	Nicole Strausak, Urs Schmidig
Management team	Nicole Strausak
Key partners	

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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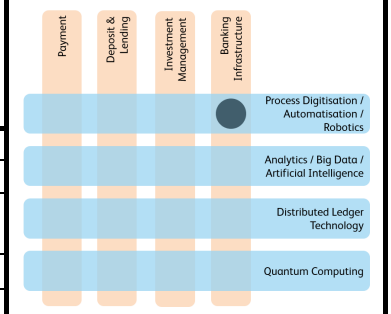
neon Switzerland AG
https://www.neon-free.ch/

neon is an independent smartphone account.

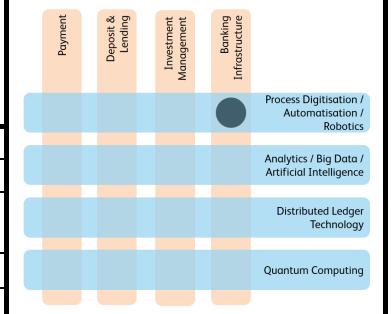


Year of foundation	2017
Domicile (canton)	ZH
Employees … of which in CH	35 25
Valuation	
Total funding	CHF 25,000,000
Board members	Krzysztof Bialkowski, Julius Kirscheneder, Miklos Stanek, Jörg Sandrock, Markus Oswald, Simon Youssef
Management team	Jörg Sandrock, Julius Kirscheneder, Patric Ammann, Simon Youssef
Key partners	Hypothekarbank Lenzburg, Wise, Smile, Mastercard, Inyova, Findependent, Selma, frankly (ZKB), Helvetic Warranty, ERV, Moneypark, QoQo, Brack, EdenProject, …

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

Netcetera Group AG
https://www.netcetera.com/

Netcetera is a global software company with cutting-edge IT products and individual digital solutions in the areas of secure digital payment, financial technologies and insurance.



Year of foundation	1996
Domicile (canton)	ZH
Employees … of which in CH	800 250
Valuation	
Total funding	
Board members	Ralf Wintergerst, Philipp Schulte, Ronald Brunner, Ulrich Michael Franz, Thomas Christian Flatt, Johann Rudolf Vonder Mühll, Andrej Vckovski
Management team	Andrej Vckovski, Mark Faris, Dominique Ramelet, Micaëla Raschle Grand, Peter Frick, Gabriele Brechbühl, Kiril Milev, Michael Brantschen, Vlado Galevski, Aleksandar Nikov, Corsin Decurtins, Peter Kohler, Martin Jäger, Roger Wettstein, Martin Meier
Key partners	Giesecke+Devrient, Blindflug Studios, Blockverse, Braingroup, Cognism, Done, proCentric, Rhumbnet, Unitek Engineering, Securities Grid

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

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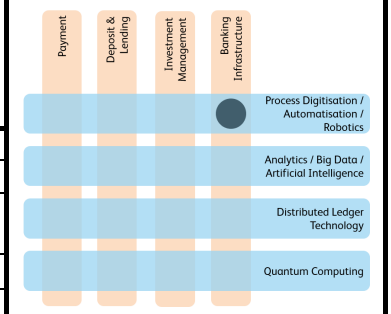
New Access Holding SA
https://www.newaccess.ch/

New Access is a Core to Digital modular Banking software provider. We offer a complete suite of solutions to adress the full value chain of Private Banks and Wealth Management companies from the Core Banking to the Digital Cockpit all the way through the PMS and EDMS.

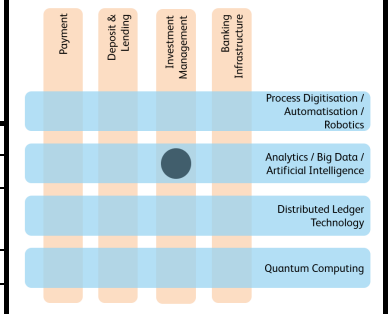


Year of foundation	2000
Domicile (canton)	GE
Employees … of which in CH	215 100
Valuation	
Total funding	
Board members	Eric May and Daniel Cohen-Sabban via Blackfin Capital Partners
Management team	Vincent Jeunet, Emmanuel de Tonquedec, Emmanuel Zabey, Olivier Litras, Manuel Gonzalez, Linda Hachouf, Hubert Couteau, Mohamed Chaari
Key partners	Unblu, Indigita, Finologee, Apiax, Sysmosoft, Sinpex, SIX, swissQuant

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Norsia SA
https://norsia.ch

Norsia develops tools to help financial advisors integrate their clients' personal values into the investment process. The platform is a unique solution to provide a tailored approach to sustainable finance: from clients profiling to personalized portfolio sustainability reports.



Year of foundation	2021
Domicile (canton)	GE
Employees … of which in CH	
Valuation	
Total funding	
Board members	Patrick Schirmann
Management team	
Key partners	F10, Innosuisse, Pulse, Genilem, Venturelab, HEG, EPITA

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

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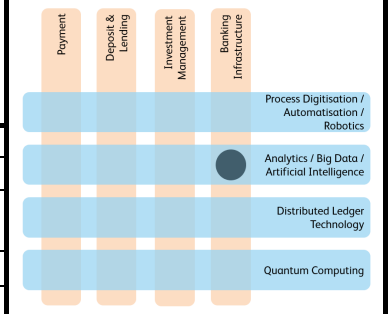
numas sa
https://www.numas.ch/

We are a young FinTech company in the heart of Zurich that combines expertise and pioneering spirit around the topic of "data".

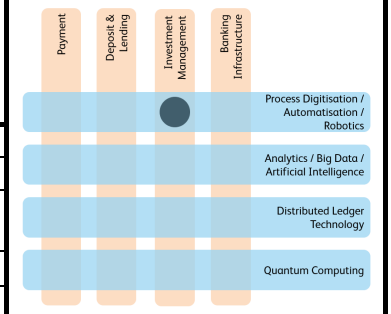


Year of foundation	2016
Domicile (canton)	ZH
Employees … of which in CH	8 8
Valuation	
Total funding	CHF 250,000
Board members	René Charrière, Jakob Kamm, Patrick Schellenberg, Peter Robert Staub
Management team	Patrick Schellenberger
Key partners	Allocare AG

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

One PM AG
https://www.one-pm.com/

ONE PM enables open banking beyond cash and offers cloud-based, API-driven financial data management services by excelling existing bank-interfacing capabilities and overcoming missing standards with self-learning mechanisms. We norm, aggregate, process and transfer financial data.



Year of foundation	2015
Domicile (canton)	ZH
Employees … of which in CH	19 19
Valuation	
Total funding	
Board members	Darko Butina, Fabio Giuri, Giulio Giuseppe Rosamilia
Management team	Fabio Giuri, Marcel Meili, Michel Lussenburg, Ali Madani, Myrto Zehnder
Key partners	SWIFT, ebics, Sitrox, ergon, Opensystems, Openbanking Project, Swiss Finance Startups, Microsoft for Start-ups, First Advisory Group

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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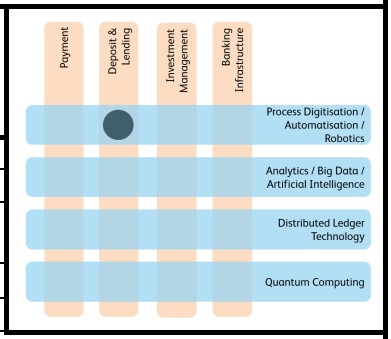
Oper Credits AG
https://www.opercredits.com/

Enabling lenders to create world-class credit experiences.

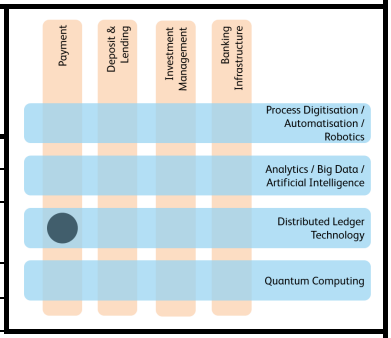


Year of foundation	2021
Domicile (canton)	ZH
Employees … of which in CH	28 5
Valuation	
Total funding	CHF 3,000,000
Board members	Nick Van Berckelaer, Geert Van Kerckhoven, Gian Nay
Management team	Geert Van Kerckhoven, Nick Van Berckelaer, Wouter Lachat
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Payment 21.com - Moving Media GmbH
https://payment21.com/

Payment21.com is an innovation-intermediary, moving forward with the concept of encouraging digital currency as a global medium of exchange.



Year of foundation	2002
Domicile (canton)	SG
Employees … of which in CH	
Valuation	
Total funding	
Board members	
Management team	Bernhard Kaufmann
Key partners	ACI Worldwide

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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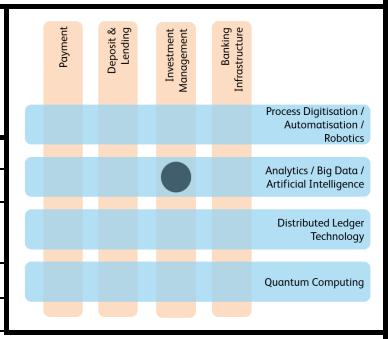
Performance Watcher - INVESTMENT BY OBJECTIVES (IBO) SA

https://www.performance-watcher.ch/

Performance Watcher is a community initiated by the company IBO. It allows all participating investors to evaluate and monitor the performance of their portfolios by comparing them with other portfolios with the same risk budget.



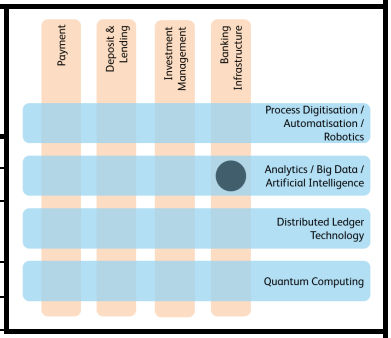
Year of foundation	2009
Domicile (canton)	VD
Employees … of which in CH	4 4
Valuation	CHF 1,500,000
Total funding	CHF 990,000
Board members	Klaus Dieter Stark, Eric Nicholas Hochstädter
Management team	Eric Nicholas Hochstädter, Marguier Florian
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Polixis Sàrl

http://www.polixis.com/

Polixis is among this handful of companies globally owning and operating terabytes of refined PEP, Sanctions, UBO & KYC datasets. Given our data's deep interlinks and powerful NLP we are able to offer truly automated analysis of AML, KYC, Sanctions & Beneficial Ownership.



Year of foundation	2012
Domicile (canton)	GE
Employees … of which in CH	75 20
Valuation	In tens of millions
Total funding	Self-funded
Board members	
Management team	Gagik Sargsyan, Jean-Philippe Carvaillo, Oleksandr Andreyev
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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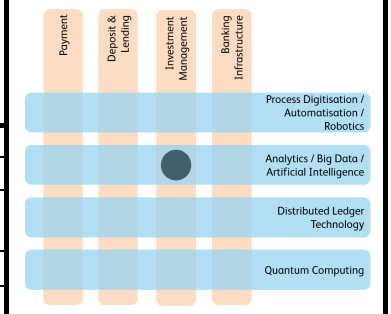
Private Alpha Switzerland AG
https://www.privatealpha.de/

Private Alpha enhances existing investment strategies with artificial intelligence technology.

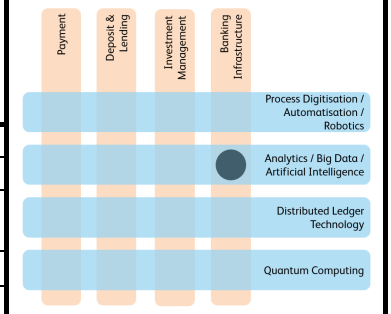


Year of foundation	2017
Domicile (canton)	LU
Employees … of which in CH	12 6
Valuation	CHF 16,500,000
Total funding	CHF 1,500,000
Board members	Beat Spühler, Christoph Züllig, Andreas Perreiter, Christoph Josef Gum
Management team	Christoph Josef Gum, Christoph Züllig
Key partners	Vontobel, Universal Investment, nvidia, Donner & Reuschel

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

PRODAFT Sàrl
https://www.prodaft.com/

PRODAFT provides cyber intelligence and cyber security services for many organizations from different sectors such as public institutions, banking and finance, insurance, telecommunication, aviation, and e-commerce.



Year of foundation	2016
Domicile (canton)	VD
Employees … of which in CH	55 (All FTE but mostly in MEA region) 5
Valuation	CHF 90,000,000
Total funding	CHF 0
Board members	
Management team	Can Yildizli, Koryak Uzan, Mehmet Ince, Onur Eski, Halit Alptekin
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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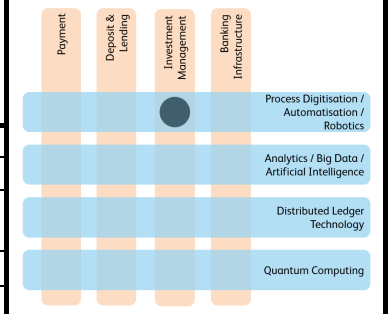
PSS AG
https://www.pssplattform.ch

PSS enables investors to invest with the strategy of leading Swiss investment experts. Including individual investment objectives, digital onboarding and investment cockpit, and institutional level costs.

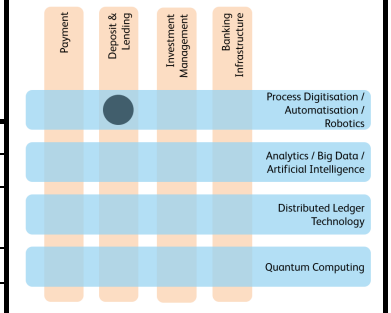


Year of foundation	2018
Domicile (canton)	SG
Employees … of which in CH	5 5
Valuation	
Total funding	
Board members	Ralf Seiz, Julius Agnesens, Simon Taro Müller
Management team	Alain Beyeler, Jöri Gujan, Alexander Lehmann
Key partners	UBS, Credit Suisse, Hypothekarbank Lenzburg, Asga Pensionskasse, PAT-BVG Personalvorsorgestiftung, SPIDA Personalvorsorgestiftung

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Raizers SA
https://www.raizers.com/

Raizers is an online investment platform that allows every person or company to lend to real estate developers, thus providing access to investment opportunities, selected by our team of analysts, previously limited to institutional investors.



Year of foundation	2014
Domicile (canton)	GE
Employees … of which in CH	15 1
Valuation	
Total funding	CHF 8,600,000
Board members	Maxime Pallain, Grégoire Linder
Management team	Maxime Pallain, Grégoire Linder
Key partners	

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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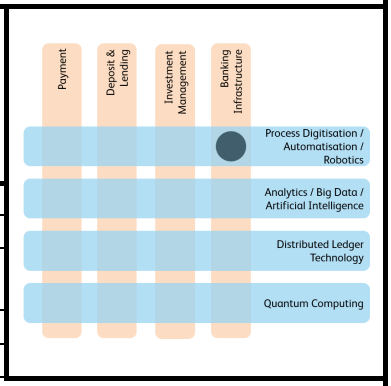
Ratyng - Onloan GmbH
https://www.ratyng.ch/

We provide the financial industry and other industries the opportunity to benefit from highly efficient & accessible SME risk assessment through our innovative rating model. Our risk assessment automates & digitizes the manual risk evaluation in banks, significantly reducing costs & time required. At the same time, this increase in efficiency allows us to bring proper credit risk evaluation to other companies through our newly launched CoRa-Certificate.

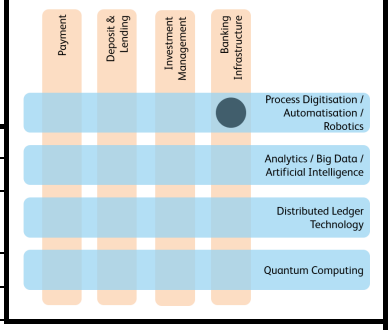


Year of foundation	2020
Domicile (canton)	ZH
Employees … of which in CH	2 2
Valuation	
Total funding	CHF 0
Board members	
Management team	Matthias Schaller, Volker Haushalter
Key partners	Migros Bank, Intrum

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Relio AG
https://relio.ch/

Digital Swiss bank account for SMEs.



Year of foundation	2020
Domicile (canton)	ZH
Employees … of which in CH	6 2
Valuation	
Total funding	CHF 700,000
Board members	Gian Reto à Porta, Denisse Rudich, Christian Maeder
Management team	Lav Odorovic, Zarko Vukadinovic, Milos Stokic
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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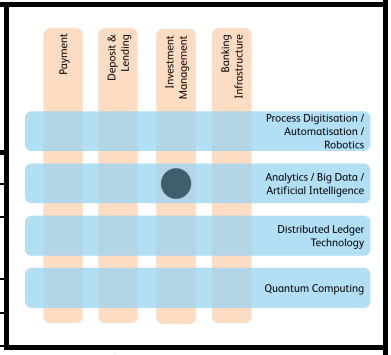
RepRisk AG
https://www.reprisk.com/

RepRisk sells daily-updated, human-curated ESG risk data and metrics based on machine learning. This enables clients to identify and assess ESG issues and risk incidents, controversial activities, and business conduct risks for due diligence, third-party vetting and screening, compliance, and risk management in banking, underwriting, and investment management.

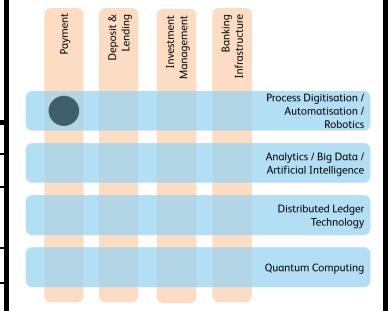


Year of foundation	1998
Domicile (canton)	ZH
Employees … of which in CH	238 69
Valuation	
Total funding	CHF 0
Board members	Kurt Anderson Lambert, Daniela Bosshardt-Hengartner, Philipp Gregor Aeby
Management team	Alexandra Mihailescu Cichon, Antonio Fuentes, Benjamin Haltinner, Britta Margraf, Dan Santos, Elizabeth Teige, Gina Walser, Giulia Misino, Heiko Bailer, Hope Vega, Jenny Mathilde Nordby, Karoly Guba, Kathrin Weston Walsh, Luba Protopopova, Mariana Pote, Misty San Juan, Nicole Streuli-Fürst, Sergio Dias
Key partners	BlackRock eFront, CDP, CHRB, FTSE Rusell, ICE Data Services, Apex, J.P. Morgan, Sustainability Accounting Standards Board (SASB), S&P DJI, S&P Sustainable 1, wbcsd, WWF

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

Rivero AG
https://rivero.tech/

Rivero offers SaaS products to banks, card issuers, acquirers and processors to gain efficiency and improve customer experience by end-to-end digitalization of (card)payment processes.



Year of foundation	2018
Domicile (canton)	SH
Employees … of which in CH	13 13
Valuation	
Total funding	
Board members	Thomas Müller, Daniel Bürchler, Flurin Müller, Fatemeh Alsadat Nikayin
Management team	Fatemeh Alsadat Nikayin, Thomas Müller, Thomas Weber
Key partners	Mastercard, Visa, several card issuers

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

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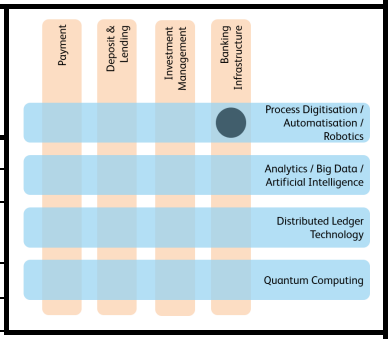
ROCKON Digital Evolution AG
https://rockondigital.ch/

We specialize in digital client onboarding, digital lifecycle management, and digital payment transactions.

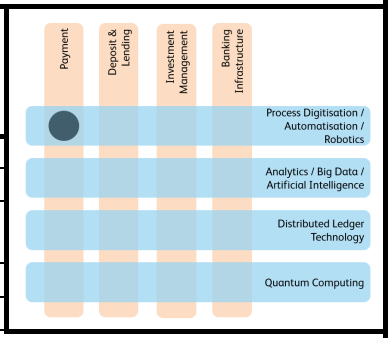


Year of foundation	2010
Domicile (canton)	ZH
Employees … of which in CH	12 12
Valuation	
Total funding	
Board members	Dieter Beat Fröhlich, Felix Wenger, Roland Georg Rüttimann
Management team	R. Rüttimann, M. Chételat, F. Steigberger, R. Lugli
Key partners	Swisscom, Quo Vadis, Inventx

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Run my Accounts AG
https://www.runmyaccounts.ch/

Accounting made simple. Run my Accounts has invented the automated accounting process for SME. We offer an end-to-end solution with personal services and support, enabling SMEs and startups to focus on their business.



Year of foundation	2008
Domicile (canton)	ZH
Employees … of which in CH	65 65
Valuation	
Total funding	CHF 800,000
Board members	Léon Vergnes, Martin De Grooth, Mark Nieuwendijk, Thomas Brändle
Management team	Thomas Brändle
Key partners	Infoniqa, stepping stone

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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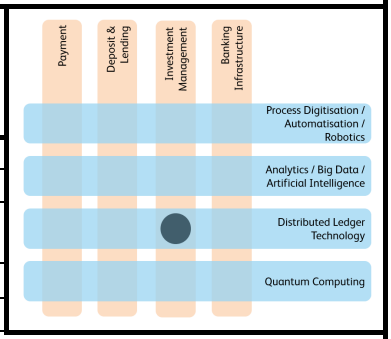
Santiment GmbH

https://www.santiment.net/

Santiment is one of the most extensive platforms for cryptocurrency analysis, parsing and contextualizing on-chain, social media and development information on 1000+ coins.



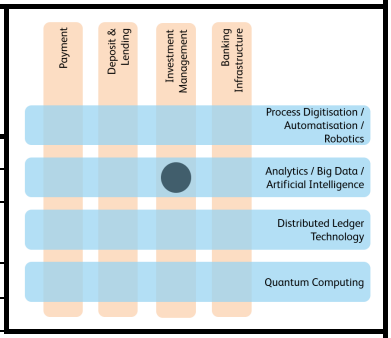
Year of foundation	2017
Domicile (canton)	ZG
Employees … of which in CH	30 2
Valuation	
Total funding	CHF 9,700,000
Board members	
Management team	Maksim Balashevich, Yura Zatsepin, Tzanko Matev
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Schlossberg&Co Technologies AG

https://schlossberg.co/

Schlossberg&Co is a quantitative investment management company trading in global financial markets, dedicated to producing exceptional returns for its investors by combining the most sophisticated scientific methods of quantitative finance, machine learning and behavioral finance.



Year of foundation	2013
Domicile (canton)	ZG
Employees … of which in CH	6 6
Valuation	
Total funding	
Board members	David Dino Bühlmann, Andy Jean-Bernard Heilmann
Management team	David Dino Bühlmann, Boris Kuznetsov
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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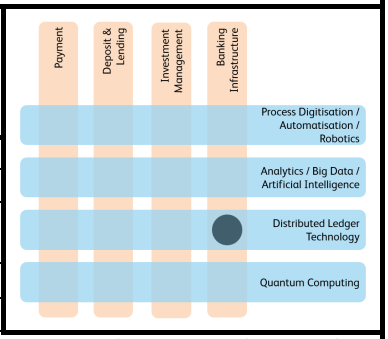
SEBA Bank AG
https://www.seba.swiss/

SEBA is a Finma licenced and supervised Swiss bank providing the most comprehensive, secure, and easy-to-use bridge between digital and traditional assets. Store, trade, and manage your crypto currencies, digital and traditional assets all in one place.

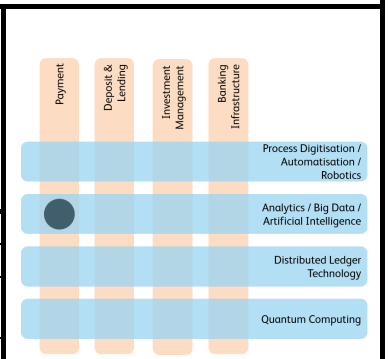


Year of foundation	2018
Domicile (canton)	ZG
Employees … of which in CH	100 95
Valuation	
Total funding	CHF 231,500,000
Board members	Päivi Elina Rekonen-Fleischer, Hans Kuhn, Sébastien Mérillat, Choon Wee Chee, Evangelia Kostakis, Pak To Leung, Guy Vivian Ernst Schwarzenbach, Sanjeev Karkhanis
Management team	Guido Bühler, Mathias Schütz, Urs Bernegger, Ritesh Dutta, Alistair Heggie, Oliver Deak, Alena Nicolai Gwerder, Markus Blattman, Matthew Alexander, Nina Gartmann
Key partners	Julius Bär, Finstar, smartTrade Technologies, Geissbühler Weber & Partner (GWP), Taurus Group SA. Fireblocks, ED&F MAN, Chainalysis, Flowable, Defi Technologies, Tokensoft, ebankit, InfoGuard

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

SecurionPay - Online Payments Group AG
https://securionpay.com/

Web and mobile payment platform with the highest level of security, advanced technology and competitive solutions that give merchants an edge. The company's approach combines fintech agility with traditional banking transparency, stability, years of experience, and security.By providing one of the world's best fintech APIs and harnessing the power of AWS to give merchants additional benefits and simplify their data management, SecurionPay gives its clients more time to focus on the things that really matter



Year of foundation	2014
Domicile (canton)	SZ
Employees … of which in CH	29 5
Valuation	
Total funding	
Board members	Lukas Dominik Jankowiak
Management team	Lucas Dominik Jankowiak, Daniel Ronzani
Key partners	

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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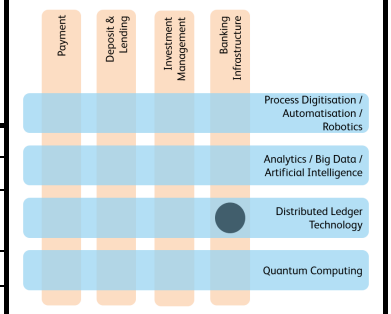
Securosys SA
https://www.securosys.com/

We develop, produce, and distribute hardware, software and services that protect and verify data and their transmission.

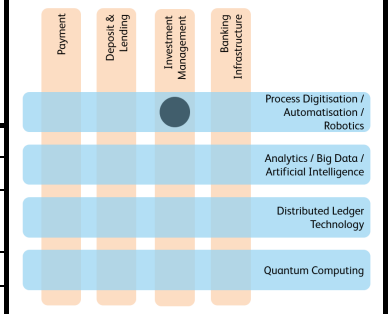


Year of foundation	2014
Domicile (canton)	ZH
Employees … of which in CH	22 20
Valuation	CHF 25,000,000
Total funding	CHF 1,350,000
Board members	Hans Jörg Bärtschi, Boris Andrea Schlapbach Käppeli, Andreas Viktor Curiger, Robert Rogenmoser
Management team	Robert Rogenmoser, Andreas Viktor Curiger, Marcel Dasen, Christian Willemin, Geraldine Critchley, Reto Stäuble, Hans Kutter, Gebhard Scherrer
Key partners	Electronic Manufacturing Services Enics AG and GPV Switzerland SA

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Selma Finance AG
https://www.selmafinance.ch/

Selma is a digital financial advisor that helps you to do the right things with your money, like a private banker in your pocket.



Year of foundation	2016
Domicile (canton)	ZH
Employees … of which in CH	20 10
Valuation	
Total funding	CHF 5 to 10 million
Board members	Kevin Alexander Linser, Stefan Andri Jaecklin, Patrik Oliver Schär
Management team	Mikael Roos, Patrick Oliver Schär, Valeria Gasik
Key partners	Saxo Bank (Schweiz) AG, VZ VermögensZentrum

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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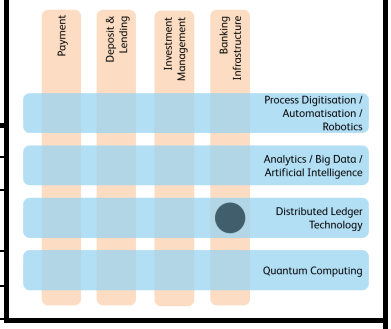
Shift Crypto AG
https://shiftcrypto.ch/

Swiss made hardware wallet BitBox02.

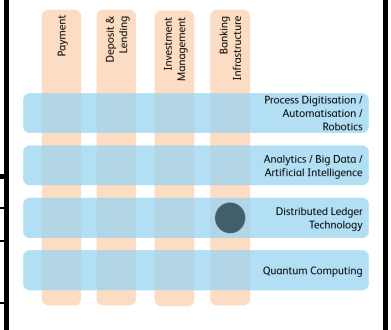


Year of foundation	2020
Domicile (canton)	ZH
Employees … of which in CH	12 10
Valuation	
Total funding	CHF 4,500,000
Board members	Douglas Bakkum
Management team	Douglas Bakkum
Key partners	Nuri, Relai, Coin Tracking, HITS, Bitcoin Association Switzerland

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

SIX Digital Exchange AG
https://www.sdx.com/

SIX Digital Exchange Ltd and with her fully owned subsidiary SDX Trading AG is the first regulated market infrastructure in the world to offer a fully integrated end to end trading, settlement and custody service for digital assets. The Service provides a safe environment for issuing and trading digital assets and enable the tokenization of existing securities and non-bankable assets to make previously untradeable assets tradeable. SIX Digital Exchange Ltd core business activity is based on the the atomic settlement capability that is defined as the instant exchange of two assets whereby the transfer of one asset occurs if and only if the transfer of the other asset also occurs.



Year of foundation	2018
Domicile (canton)	ZH
Employees … of which in CH	128 117
Valuation	
Total funding	
Board members	Christoph Johannes Landis, Daniel Schmucki, Jochen Bernd Dürr, Thomas Richard Bernd Zeeb
Management team	David Newns, Peter T. Golder, Mathias Studach, Pete Stephens, David Hatton, Thomas Richard Bernd Zeeb
Key partners	R3

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

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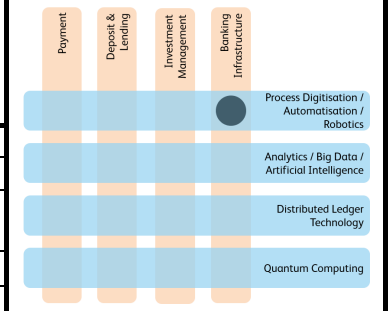
SIX Group AG
https://www.six-group.com/

SIX operates the infrastructure for the Swiss and Spanish financial centre. The company provides services relating to securities transactions, the processing of financial information, payment transactions and runs a digital infrastructure.

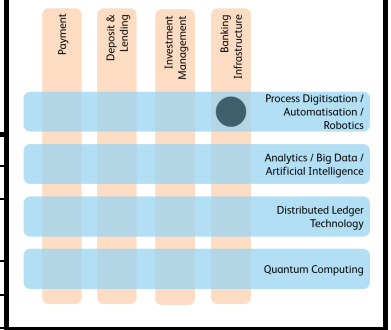


Year of foundation	2002
Domicile (canton)	ZH
Employees … of which in CH	3,500 3,500
Valuation	
Total funding	
Board members	Thomas Wellauer, Herbert Scheidt, Andreas Kollegger, André Marc Helfenstein, David Jimenez-Blanco Carrillo de Albornoz, Romana García Belen, Jürg Gutzwiller, Jürg Bühlmann, Lorenz Erzherzog von Habsburg-Lothringen, Soeren Mose
Management team	Jos Dijsselhof, Daniel Schmucki, Jochen Dürr, Thomas Zeeb, Marco Menotti, Marion Leslie, Christoph Landis, Javier Hernani Burzaco
Key partners	

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Spitch AG
https://www.spitch.ai/

Spitch helps enterprises to identify, understand and serve their customers better by using conversational AI. We are an established Swiss company with more than 40 running customers mainly from financial sector. We developed our own core technology and offer virtual assistants, voice biometrics, and speech analytics as part of the Spitch omnichannel conversational platform.



Year of foundation	2014
Domicile (canton)	ZH
Employees … of which in CH	58 26
Valuation	
Total funding	CHF 5,200,000
Board members	Neil MacDonald, Kirill Tatarinov, Alexey Popov, Georgii Kravchenko, Igor Nozhov, Josef Novak, Vadim Shchepinov
Management team	Alexey Popov, Francisco Campillo, Javier Dieguez, Saglara Dzhavkaeva, Stephan Fehlmann, Shoin Hatano, Giovanni Mannarino, David Font Marin, Bernd Martin, Josef Novak, Igor Nozhov, Mikhail Shamanin, Vadim Shchepinov, Juerg Schleier, Piergiorgio Vittori, Gary Willilams
Key partners	Avaloq, Swisscom, TCS, QuandaGo, Crealogix, ti&m, Genesys, Netcetera, Acapela, Bucher + Suter, AdNovum, Comapp, System EVO, Oracle, Nexteria, Creative Virtual and others

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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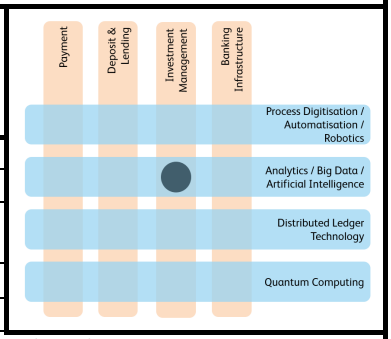
Squirro AG
https://squirro.com/

Squirro is a cognitive insights engine that enables companies to turn meaningless data into actionable insights.

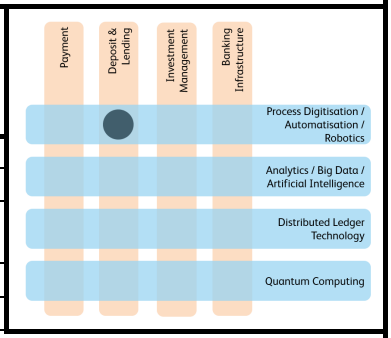


Year of foundation	2012
Domicile (canton)	ZH
Employees … of which in CH	52 30
Valuation	
Total funding	
Board members	Albert Lanham Napier, Carmen Schlatter Broger, Nityen Ranjan Lal, Andrew James Honess, Patrice Marcel Neff, Ariel Frank Lüdi, Dorian Selz
Management team	Dorian Selz, Toni Birrer, Patrice Marcel Neff, Bernd Schopp, Nicolas Berney, Fredrik Rydius
Key partners	Synpulse, Refinitiv, Dow Jones, Accenture, DXC, Wipro, CMCI, Salesforce, ServiceNow

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

SwissLending SA
https://www.swisslending.com/

The Swiss real estate crowdlending specialist. SwissLending is the first crowdlending platform in Switzerland specialising in loans for real estate professionals. Club deals, Land banking are now part of the platform.



Year of foundation	2015
Domicile (canton)	GE
Employees … of which in CH	1 1
Valuation	
Total funding	
Board members	Christophe Capelli, Dominique Goy
Management team	Dominique Goy
Key partners	Groupe Capelli

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

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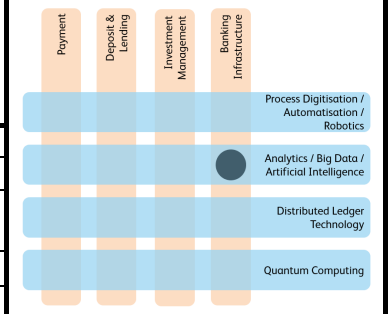
SwissMetrics GmbH
https://www.swissmetrics.com/

The all-in-one platform for counterparty onboarding, compliance, credit risk monitoring and ESG scoring.

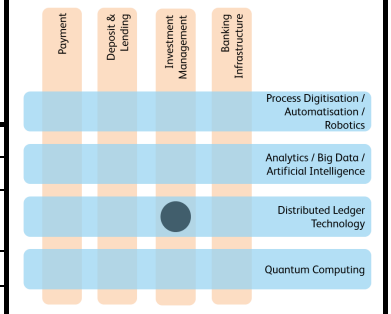


Year of foundation	2014
Domicile (canton)	ZH
Employees … of which in CH	3 3
Valuation	
Total funding	CHF 250,000
Board members	
Management team	Piotr Zmidzinski
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

SwissOne Capital AG
https://www.swissone.capital/

SwissOne Capital is a niche asset manager with a focus on institutional grade crypto and blockchain investment funds.



Year of foundation	2018
Domicile (canton)	ZG
Employees … of which in CH	10 10
Valuation	
Total funding	
Board members	Cornelis Jan Quirijns, Antony Turner, Hugo van Veen, Steffen Heinrich Leo Bassler
Management team	Michael Pawlowski, Steffen Heinrich Leo Bassler, Anthony Turner, Hugo Van Veen
Key partners	AKJ Jenson, APEX Fund Management

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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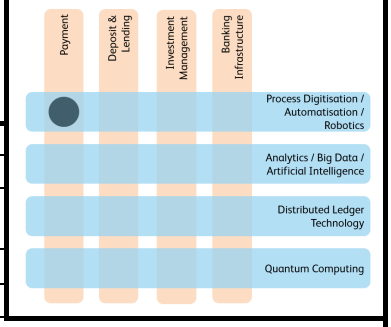
Swisspay - superdev gmbh
https://swisspay.superdev.ch/

SwissPay allows you to pay your bills with ESR payment slips using your own credit card and therefore retain your liquidity, enjoy additional days of cash float as well as simplify and speed up the bill payment process.

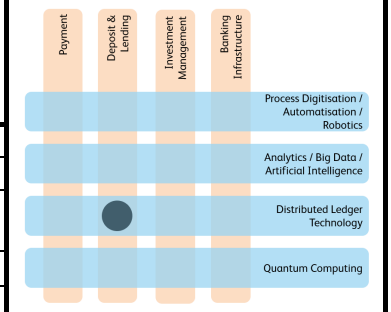


Year of foundation	2019
Domicile (canton)	ZG
Employees … of which in CH	2 2
Valuation	
Total funding	CHF 0
Board members	Thomas Galliker, Florian Amstutz
Management team	Thomas Galliker, Florian Amstutz
Key partners	Credit Card Payment Processors

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

swisspeers AG
https://www.swisspeers.ch/

swisspeers is an independent online platform that enables SMEs to raise funds financed directly by investors.



Year of foundation	2015
Domicile (canton)	ZH
Employees … of which in CH	12 12
Valuation	
Total funding	
Board members	Jürg Hunziker, Urs Hofer, Christoph Ammann, Karin Rhomberg Hug, Peter Sami, Beat Röthlisberger
Management team	Alwin Meyer, Andreas Hug, Stefan Nägeli
Key partners	Basellandschaftliche Kantonalbank, Futurae, Amnis Treasury Services, Swico, ZID, Crowdify, asio, IG Leasing

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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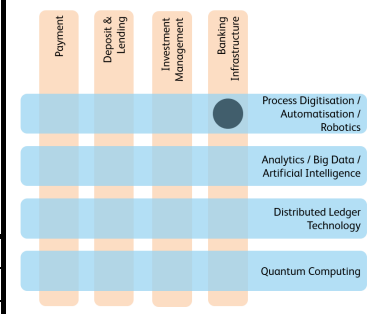
Swissquote Group Holding SA
https://www.swissquote.com/

Swissquote is Switzerland's market leader in online banking. Over three million financial products can be traded on its innovative platforms. Swissquote's core competencies include global stock market trading, trading and custody of crypto assets, Forex trading and the Robo-Advisor solution. In addition, Swissquote is active in the payment card, mortgage and leasing markets. As at the end of June 2021, Swissquote held over 50 billion Swiss francs in assets for more than 400,000 private and institutional clients. In addition to its headquarters in Gland, Switzerland, Swissquote has offices in Zurich, Luxembourg, London, Dubai, Hong Kong, Singapore and Malta. Swissquote holds banking licenses both in Switzerland (FINMA) and Luxembourg (CSSF). Its parent company, Swissquote Group Holding SA, is listed on the SIX Swiss Exchange (symbol: SQN). The Swissquote Group and PostFinance each own 50 % of the fintech app Yuh AG.

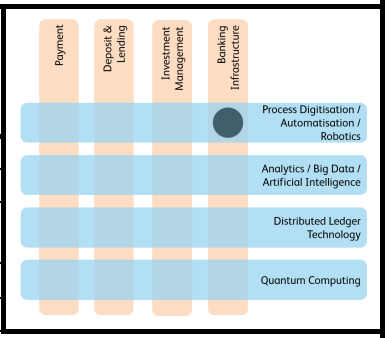


Year of foundation	1999
Domicile (canton)	VD
Employees … of which in CH	904 (30.06.2021) 803 (30.06.2021)
Valuation	
Total funding	
Board members	Michael Heinrich Ploog, Markus Dennler, Monica Dell'Anna, Beat Oberlin, Jean-Christophe Pernollet, Martin Naville
Management team	Marc Bürki, Paolo Buzzi, Alexandru Craciun, Yvan Cardenas, Morgan Lavanchy, Gilles Chantrier, Lino Finini, Jan De Schepper
Key partners	PostFinance, Luzerner KB (as of 1.1.2022), Tesla

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

SYSMOSOFT SA
http://www.sysmosoft.com/

Sysmosoft SA is a provider of trusted and regulated solutions for digital processes.



Year of foundation	2010
Domicile (canton)	VD
Employees … of which in CH	14 12
Valuation	
Total funding	
Board members	Victoria Voyteshonok, Moustafa Nagi, Julien Probst, Mark Vincent
Management team	Frédéric Mauger, Mark Vincent
Key partners	Swisscom, SwissSign, Entrust, New Access, Signatys, libC Technologies, Temenos, Cycec, Appway, SWITCH

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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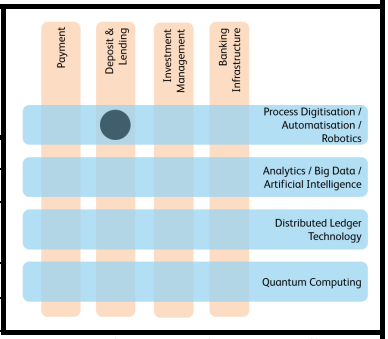
Systemcredit AG
https://www.systemcredit.com/

Systemcredit's digital credit platform matches small and medium businesses with a choice of credit offers from many lenders. We offer entrepreneurs looking for financing the highest efficiency, best customer experience and most attractive conditions in Switzerland. Systemcredit stands for healthy financing.

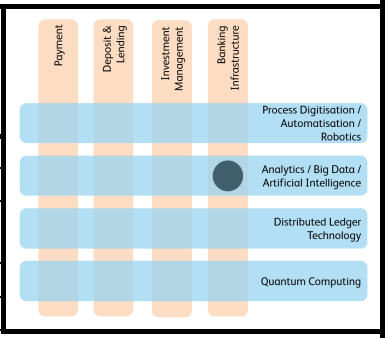


Year of foundation	2018
Domicile (canton)	ZH
Employees … of which in CH	4 4
Valuation	
Total funding	
Board members	Anouk Nathalie Sévérine Marazzi-Augsburger, Andreas R. Herzog, Daniel Bont, Thomas Billeter, Daniel V. Christen
Management team	Daniel V. Christen, José Rodriguez
Key partners	Systemcredit co-operates with 40 lenders such as banks, crowdlenders and speciality financeers to provide the best credit offers to small and medium businesses.

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Systemorph AG
https://systemorph.com/

Systemorph is your trusted partner for powerful data management solutions that break away from traditional high-cost, slow-development finance software projects.



Year of foundation	2011
Domicile (canton)	ZH
Employees … of which in CH	50 20
Valuation	
Total funding	
Board members	Roland Philipp Bürgi
Management team	Roland Philipp Bürgi, Markus Kleiner, Andreas Zdrenyk, Daniel Trzeniak
Key partners	Synpulse, Microsoft

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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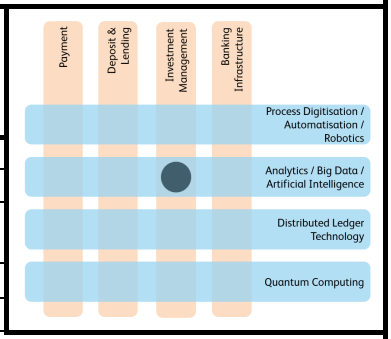
Tensor Technologies

Tensor Technologies AG
http://www.tensor.tech/

Tensor Technologies is a proprietary algorithmic trading company. We develop software and algorithms to trade in financial markets. We use the latest technologies to allow our small team to efficiently scale across many markets globally.



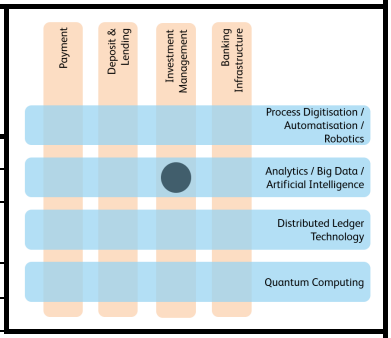
Year of foundation	2018
Domicile (canton)	ZG
Employees … of which in CH	18 18
Valuation	
Total funding	
Board members	Leonard Yves Rüst, Andreas Meyer De Voltaire, Gerhard Michael Pfister
Management team	Andreas Meyer de Voltaire, Leonard Yves Rüst, Andreas Razen, Martin Marciniszyn, Otto ten Bosch
Key partners	

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

theScreener
Empowering Investors

theScreener Investor Services AG
http://www.thescreener.com/

We assist leading financial institutions to optimise advice and performance.



Year of foundation	2004
Domicile (canton)	ZG
Employees … of which in CH	30 30
Valuation	
Total funding	
Board members	Andreas Milan Lusser
Management team	Farwagi Alain, Andreas Milan Lusser
Key partners	WebFG, Alpasys, Infront, SIX, Refinitiv, Factset, gd inside, Avaloq, Yukka Lab, FIS, Interactive Brokers, Morningstar, Guide Capital, Inrate

Customer segments		**Channels**	**Key activities**	**Revenue streams**	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

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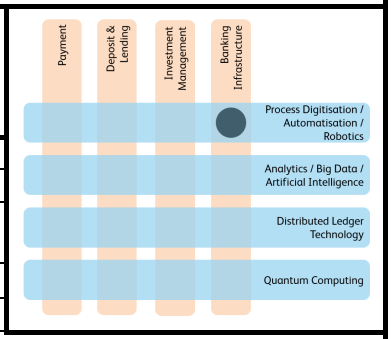
ti&m AG
https://www.ti8m.com/

ti&m is a Swiss leader in digitisation, security, as well as innovation projects and products.

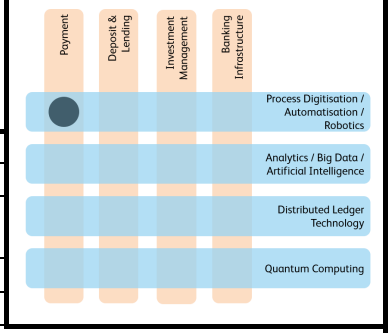


Year of foundation	2005
Domicile (canton)	ZH
Employees … of which in CH	478 400+
Valuation	
Total funding	CHF 100,000
Board members	Luisa Domenica Sartori, Urs Buner, Markus Nigg, Thomas Wüst
Management team	Thomas Wüst, Markus Nigg, Marius Matter, Björn Sörensen, Holger Rommel, Philip Dieringer, Samuel Scheidegger, Karsten Burger, Daniel Walther
Key partners	Microsoft, Jive, IBM, Contovista, edorasware, Finnova, Liferay, Magnolia, MeaWallet, Oracle, Qumram, Quo Vadis, Red Hat, Shopware, Swisscom, USP, aws, Google, Azure

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Tilbago AG
https://tilbago.ch/

The software of Tilbago AG enables companies to process debt collection proceedings and loss certificates online. The intelligence of the software leads creditors straight forward to collect the money. In addition CredRep allows end consumers to collect tamper proof digital credit reports. CredRep is an easy to implement end-to-end service for portal operators and providers of software solutions.



Year of foundation	2016
Domicile (canton)	LU
Employees … of which in CH	
Valuation	
Total funding	
Board members	Oliver Wolf, Mathias Strazza, Harley Ernst Alexander Krohmer, David Fuss
Management team	
Key partners	PostFinance

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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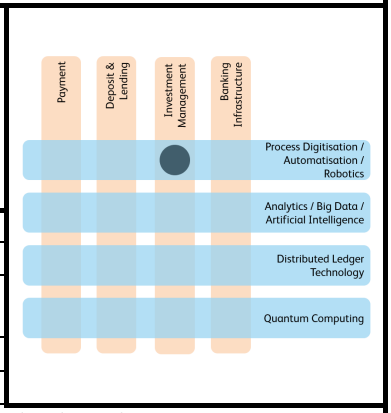
Tindeco Financial Services AG
https://www.tindecofs.com/

Tindeco VISION is an award-winning front to back investment management platform. It offers investment management software to asset and wealth managers including modules from portfolio management, risk management, order management, client relationship management to fully automated implementation of investment strategies. At Tindeco we are focused on helping asset and wealth managers by reducing complexity and increasing automation to enable to provide better asset management solutions to their clients.



Year of foundation	2010
Domicile (canton)	ZG
Employees … of which in CH	17 3
Valuation	
Total funding	approx. CHF 6 million
Board members	Michael Kaimakliotis, Neil McLachlan, Moritz von der Linden, Michael Pearl
Management team	Michael Kaimakliotis, Neil McLachlan
Key partners	Microsoft, Bloomberg, Refinitiv

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
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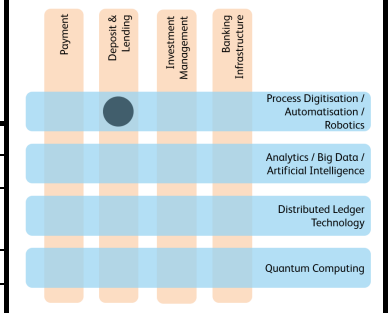
Tradeplus24 AG
https://www.tradeplus24.ch/

An innovative financing solutions designed for SME's helping them to optimise their working capital through taking up liquidity against domestic and international receivables.



Year of foundation	2016
Domicile (canton)	ZH
Employees … of which in CH	47 15
Valuation	
Total funding	
Board members	Ilya Yushvaev, Andreas Iten, Andreas Laule, Martijn Corbée, Benjamin James, Stephen John Pike
Management team	Benjamin James, Martijn Corbée, Matthias Kribbel, Stephen John Pike
Key partners	Credit Suisse, BDO, SIX, Berliner Volksbank Ventures, Euler Hermes

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
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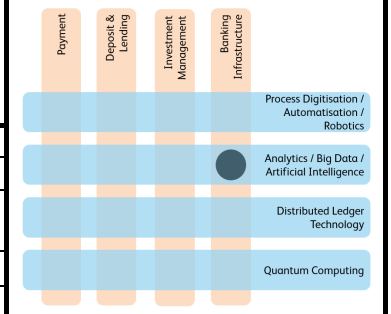
Tresio GmbH
https://www.tresio.ch/

Digital CFO tool that faciliates the cash flow management and financial planning of small- and mid-sized companies.



Year of foundation	2020
Domicile (canton)	ZH
Employees … of which in CH	7 1
Valuation	
Total funding	
Board members	
Management team	Tobias Angehrn, Roman Levchenko
Key partners	Bexio, Run my Accounts, Stripe, Smallinvoice, Amnis Treasury Services AG

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
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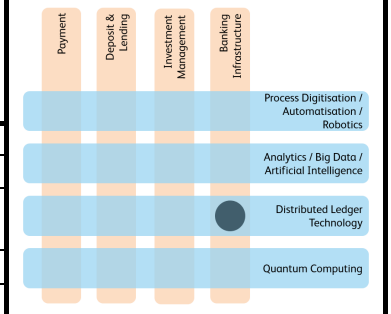
trustwise.io ag
https://www.trustwise.io/

Trustwise is providing economically viable blockchain solutions that decrease international business transaction cost.



Year of foundation	2017
Domicile (canton)	BL
Employees … of which in CH	9 5
Valuation	
Total funding	CHF 2,000,000
Board members	Adrian Markus Hutzli, Christoph Niemann, Emanuel Dettwiler, Hans-Peter Gier, Rolf Ramseier
Management team	Hans-Peter Gier, Michal Florian
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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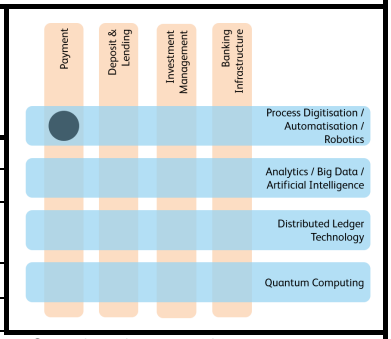
TWINT AG
https://www.twint.ch/

TWINT is Switzerland's leading digital payment service. People use TWINT to pay and get paid from person to person (P2P), online and at POS, for donations, parking, at clubs and restaurants and many other use cases.



Year of foundation	2014
Domicile (canton)	ZH
Employees … of which in CH	150 Ca. 150
Valuation	
Total funding	
Board members	Sandra Lienhart-Cozzio, Marc-Henri Desportes, Hans Martin Graf, Roland Jürg Altwegg, Soeren Holm Mose, Andreas Kubli, Daniel Robert Previdoli, José François Sierdo
Management team	Markus Kilb, Thomas Wicki, Simon Wehrli
Key partners	SIX, BCV, Credit Suisse, PostFinance, Raiffeisen, UBS, ZKB

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
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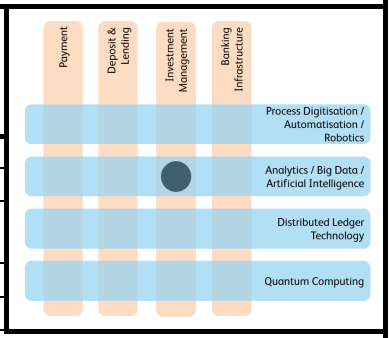
Utluna Solutions SA
https://utluna.com/

Utluna - Monitor all your financial assets in one place. Understand what drives your performance and risks. Perfect your investment decisions.



Year of foundation	2018
Domicile (canton)	VS
Employees … of which in CH	3 3
Valuation	
Total funding	
Board members	Laurent Bruchez
Management team	Laurent Bruchez, Florian Zermatten, Pablo Pfister
Key partners	

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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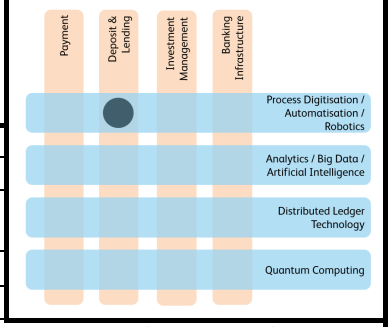
Valyo AG
https://www.valyo.com/

Valyo operates a financial market plattform enabling issuers to raise funds in the bond markets without the intermediation of banks. The fully digitalized process adds flexibility and transparency to issuers and investors. Valyo also provides services around the issuance of a bond, such as pre-deal advice or soft sounding.

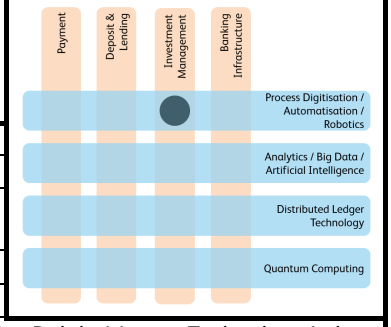


Year of foundation	2019
Domicile (canton)	AG
Employees … of which in CH	9 9
Valuation	
Total funding	
Board members	Roger Martin Reist, Kaspar Werner Kelterborn, André Walter Ullmann, Manuel Antonius Thiemann, Werner Leuthard
Management team	Andreas Paredi, Daniel Schwab, Roger Wehrli, Stefan Linder
Key partners	Raiffeisen

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Verve Ventures - Verve Capital Partners AG
https://www.verve.vc/

Verve Ventures offers qualified private and institutional investors access to start-up investment opportunities across Europe.



Year of foundation	2007
Domicile (canton)	ZG
Employees … of which in CH	46 40
Valuation	
Total funding	
Board members	Heinz Christian Kunz, Michel Kaufmann, Peter Werner Quadri, Ralph Martin Zurkinden, Lukas Weber
Management team	Steffen Wagner, Sergej Kalaschnikow, Lukas Weber, Mike Hobmeier
Key partners	Zürcher Kantonalbank, nest, Die Post

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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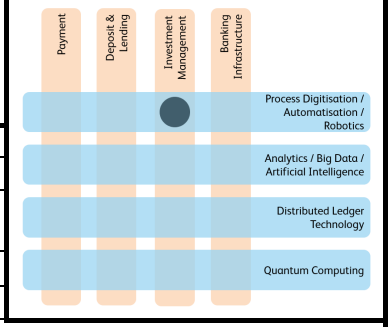
VIAC AG
https://viac.ch/

VIAC initially started a fully digital 3rd pillar offered by the Terzo Vorsorgestiftung der WIR Bank. In 2020 VIAC added a vested benefits account offered through the Freizügigkeitsstiftung der WIR Bank.



Year of foundation	2017
Domicile (canton)	BS
Employees … of which in CH	9 9
Valuation	
Total funding	
Board members	Bruno Stiegeler, Max Peter, Heinz Zimmermann
Management team	Daniel Peter, Christian Mathis, Jonas Gusset
Key partners	Terzo Vorsorgestiftung, Freizügigkeitsstifung der WIR Bank, WIR Bank, Credit Suisse, Helvetia Versicherungen

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
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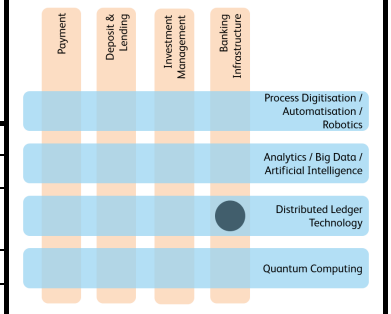
WeCanGroup SA
https://www.wecangroup.ch/

We build decentralized software solutions for governments, financial and state services. We want to create the digital trust infrastructure of tomorrow.



Year of foundation	2015
Domicile (canton)	GE
Employees … of which in CH	15 15
Valuation	CHF 25,000,000
Total funding	CHF 3,600,000
Board members	Nicolas Dondolini, Vincent Pignon, Dominique Goy
Management team	Vincent Pignon, Alexander Dembitz, Guirec Le Bars
Key partners	GSCGI, Blockchain Association for Finance, 13 Swiss private banks, Capelli, Geneva Management Group, CREA - INSEEC, Request, Buxum

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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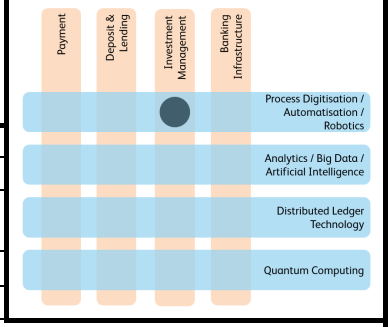
WIZE - TEAMWORK MANAGEMENT S.A.

https://wize.net/

WIZE by TeamWork is an all-in-one wealth and asset management solution.



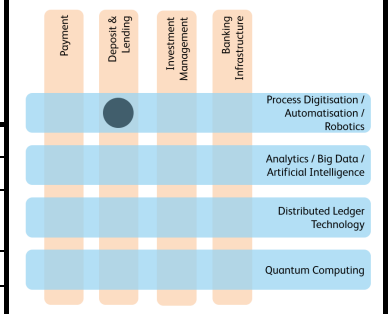
Year of foundation	1999
Domicile (canton)	GE
Employees … of which in CH	950
Valuation	
Total funding	
Board members	Ivan Kocijancic, Cédric Baiker, Philippe Rey-Gorrez, Alain Magro
Management team	Philippe Rey-Gorrez
Key partners	Cédric Baiker (founding managing partner), Pierre Dupont (managing partner)

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Yeldo SA

https://www.yeldo.com/

Yeldo grants direct digital access to institutional grade real estate investments.



Year of foundation	2017
Domicile (canton)	TI
Employees … of which in CH	8 8
Valuation	
Total funding	
Board members	Alberto Montorfani, Antonio Borgonovo
Management team	Antonio Borgonovo, Matteo Pitton, Paolo Tamburini
Key partners	Fidinam SA

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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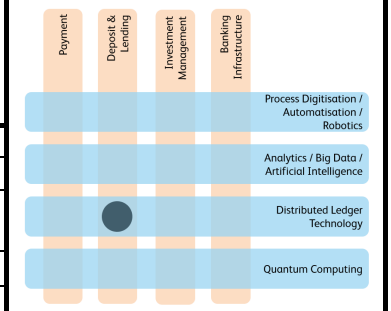
YouHodler SA
https://www.youhodler-swiss.com/

YouHoder SA is a FinTech platform focused on crypto-backed lending, crypto and fiat conversions.

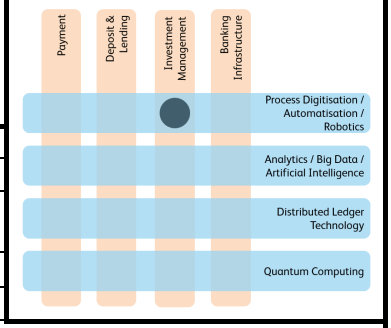


Year of foundation	2019
Domicile (canton)	VD
Employees … of which in CH	48 7
Valuation	
Total funding	
Board members	Ilya Volkov
Management team	Ilya Volkov
Key partners	Ledger, Elliptic, Ciphertrace, Acuant, Ondato

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

Yova AG
https://inyova.ch/

Inyova stands for “invest in your values”. We’re on a mission to turn millions of people into impact investors. Through our digital investment platform, our customers invest in companies helping to solve the big global issues of our time. Personalised with financial return and traceable impact.



Year of foundation	2017
Domicile (canton)	ZH
Employees … of which in CH	52 30
Valuation	
Total funding	
Board members	Tillmann Lang, Erik Gloerfeld, Helmut Fink, Alois Flatz
Management team	Tillmann Lang, Erik Gloerfeld, Angela Altvater, Christian von Angerer, Tobias Bodmann
Key partners	Baader Bank, Saxo Bank, Liberty

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital	Operat. business & serving clients	Trading	Data
					Advertising

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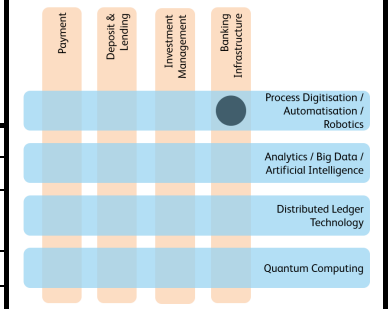
Yuh SA
https://www.yuh.com/

One app to pay, save and invest.



Year of foundation	2021
Domicile (canton)	VD
Employees … of which in CH	10 10
Valuation	
Total funding	
Board members	Marc Bürki, Hans-Rudolf Köng
Management team	Markus Schwab
Key partners	PostFinance, Swissquote

Customer segments		Channels	Key activities	Revenue streams	
B2B	National	Personal	Programming & engineering	Interest	Licence fee
			Marketing & finding clients	Commission	SaaS
B2C	International (incl. CH)	Digital			Data
			Operat. business & serving clients	Trading	Advertising

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Appendix

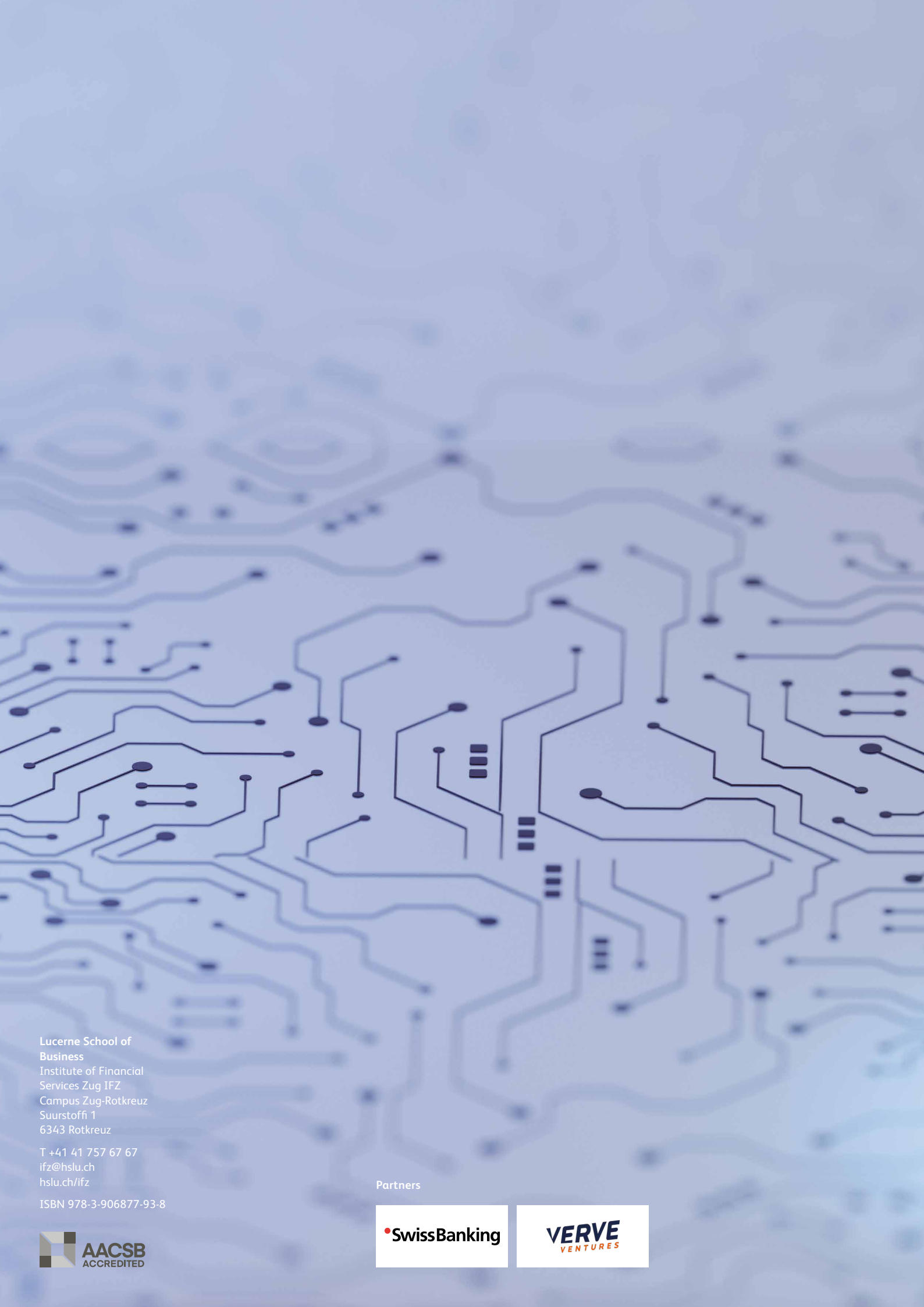
Publisher	Factor	Source	Dimension
2THINKNOW	Innovation Cities	Innovation Cities Index	Technological
App Annie Intelligence, International Monetary Fund	Mobile App Creation	World Economic Outlook Database October	Technological
AT Kearney	Global Cities Report	Global Cities Report	Social
Clarivante Analytics	Scientific and Technical Publications	World Economic Outlook Database October	Technological
Economist Intelligence Unit	Cities Competitiveness	Hot spots 2025 - Benchmarking the future competitiveness of cities	Economic
Ernst & Young	FinTech Adoption	EY FinTech Adoption Index	Economic
Hays	Global Skills	The Hays Global Skills Index	Social
Henley & Partners	Passport Acceptance	Henley & Partners Passport Index	Political/legal
IHS Markit	Political and Operational Stability Software Spendings	Country Risk Scores Information and Communication Technology Database	Political/legal Technological
IMD	Digital Competitiveness Smart City Talent Competitiveness	IMD World Digital Competitivess Ranking Smart City Index IMD World Talent Ranking	Technological Technological Social
InterNations	Expat Ranking	Expat Insider Survey	Social
Insead, The Adecco Group, Google	Global Talent Competitiveness	Global Talent Competitiveness Index	Social
Institute for Economics and Peace	Global Peace	Vision of Humanity Global Peace Index	Political/legal
International Labour Organization	Female Employment Advanced Degree Knowledge-Intense Employment	ILOSTAT Annual Indicators ILOSTAT Database of Labour Statistics	Social Social

Indicator sources of the FinTech hub ranking:

Publisher	Factor	Source	Dimension
International Monetary Fund	Foreign Direct Investments	International Financial Statistics and Balance of Payments databases	Economic
	Domestic Credit to Private Sector	International Financial Statistics and Balance of Payments databases	Economic
International Telecommunication Union	Mobile Cellular Subscriptions	International Telcommunication Union, World Telecommunication/ICT Development Report and database	Technological
	ICT Access	World Telecommunication/ICT Indicators Database	Technological
	ICT Use	World Telecommunication/ICT Indicators Database	Technological
	Cybersecurity	Global Cybersecurity Index	Technological
Mercer	Cost of Living	Mercer's Cost of Living Ranking	Social
Mesopartner & Analyticar	Infrastructure Quality	Global Quality Infrastructure Index Report	Political/Social
NUMBEO	Prices by City of Average Monthly Net Salary	Average Monthly Net Salary Index (After Tax) (Salaries And Financing) by City	Economic
	Purchasing Power	Local Purchasing Power Index by City	Economic
	Quality of Life	Quality of Life Index by City	Social
OECD	PISA Ranking	PISA Results	Social
PwC	Ease of Paying Taxes	PwC Database	Political/legal
QS Quacquarelli Symonds Ltd	University Ranking	QS World Universtiy Ranking, Top Universities	Social
Reporters without Borders	Press Freedom	World Press Freedom Index	Political/legal
Tax Justics Network Limited	Financial Secrecy	Financial Secrecy Index	Economic
The Global Entrepreneurship and Development Institute	Entrepreneurship Activity	Global Entrepreneurship Index	Economic

Publisher	Factor	Source	Dimension
The Heritage Foundation	Investment Restriction	Index of Economic Freedom	Political/legal
	Financial Restriction	Index of Economic Freedom	Political/legal
The World Bank	Value of Stocks Traded	World Federation of Exchanges Database	Economic
	Domestic Market Scale	World Economic Outlook Database	Economic
	Cost of Redundancy Dismissal	Doing Business Report	Political/legal
	Ease of Getting Credit	Doing Business Report	Economic
	Ease of Protecting Minority Investors	Doing Business Report	Economic
	Ease of Resolving Insolvency	Doing Business Report	Economic
	Starting a Business	Doing Business Report	Economic
	Applied Tariff Rates	World Development Indicators Database	Economic
	Gov. Effectiveness	Worldwide Governance Indicators	Political/legal
	Regulatory Quality	Worldwide Governance Indicators	Political/legal
	Human Capital	Human Capital Index and Components	Social
The World Bank and Turku School of Economics	Logistics Performance	Logistics Performance Index	Social
Thomson Reuters	Joint Venture Deals	Thomson One Banker Private Equity, SDC Platinum Database	Economic
	Venture Capital Deals	Thomson One Banker Private Equity, SDC Platinum Database	Economic
Trading Economics	Corporate Tax Rates	List of Countries by Corporate Tax Rate	Political/legal
Transparency International	Corruption Perception	Corruption Perceptions Index	Political/legal
UNESCO Institute for Statistics	Expenditure on Education	UIS Online Database	Social
	R&D Expenditure	UIS Online Database Eurostat, Eurostat Database	Technological
	Government Funding per Secondary Student	UIS Online Database	Social

Publisher	Factor	Source	Dimension
UNESCO Institute for Statistics	Graduates in Science and Engineering	UIS Online Database	Social
	Tertiary Inbound Mobility	UIS Online Database	Social
	Pupil-Teacher Ratio	UIS Online Database	Social
	Research Talents in Businesses	UIS Online Database Eurostat, Eurostat Database	Technological
	Researchers	UIS Online Database Eurostat, Eurostat Database	Technological
	School Life Expectancy	UIS Online Database	Social
	Tertiary Enrolment	UIS Online Database	Social
United Nations Public Administration Network	E-Participation	e-Government Survey	Technological
	Gov. Online Services	e-Government Survey	Technological
World Economic Forum	Cluster Development	Executive Opinon Survey	Social
	University-Industry Collaboration	Executive Opinon Survey	Technological
	ICTS and New Organisational Model Creation	Executive Opinion Survey	Technological
World Federation of Exchanges	Market Capitalisation	World Bank's World Development Indicators Database	Economic
World Intellectual Property Organization	Patents in at Least Two Offices	World Economic Outlook Database	Technological
World Trade Organization	ICT Services Imports	Trade in Commercial Services Database	Technological
	IP Payments	Trade in Commercial Services Database	Technological
World Trade Organization and United Nations	High-Tech Imports	Comtrade Database	Technological
Z/Yen Group, China Development Institute	Global Financial Centres	Global Financial Centers Index	Economic



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