



Case Study: Taking A Look At SoftBank's Recent Venture Investments

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About Mergeflow

What We Do

Our innovation analytics platform helps global technology leaders create and prevent strategic surprise.

Large technology organizations and investors worldwide use Mergeflow to discover products, research, patents, start-ups, and experts associated with emerging, innovative technologies.

Our customers operate in and across diverse industry sectors.

Why Mergeflow

- Mergeflow enables automated, real-time, and continuous insight into innovations and technologies, across a range of different signals (patents, scientific publications, news, funding events, market news, etc.).
- Advanced analytics, machine learning algorithms, and visualizations let you focus on data interpretation rather than data collection and preparation.
- Mergeflow is a ready-to-use standard software product that can be extended to accommodate customer-specific use cases.
- We are independent. For example, we do not charge finder's fees or other intermediary business models, and our software platform does not track what you do.

Executive Summary

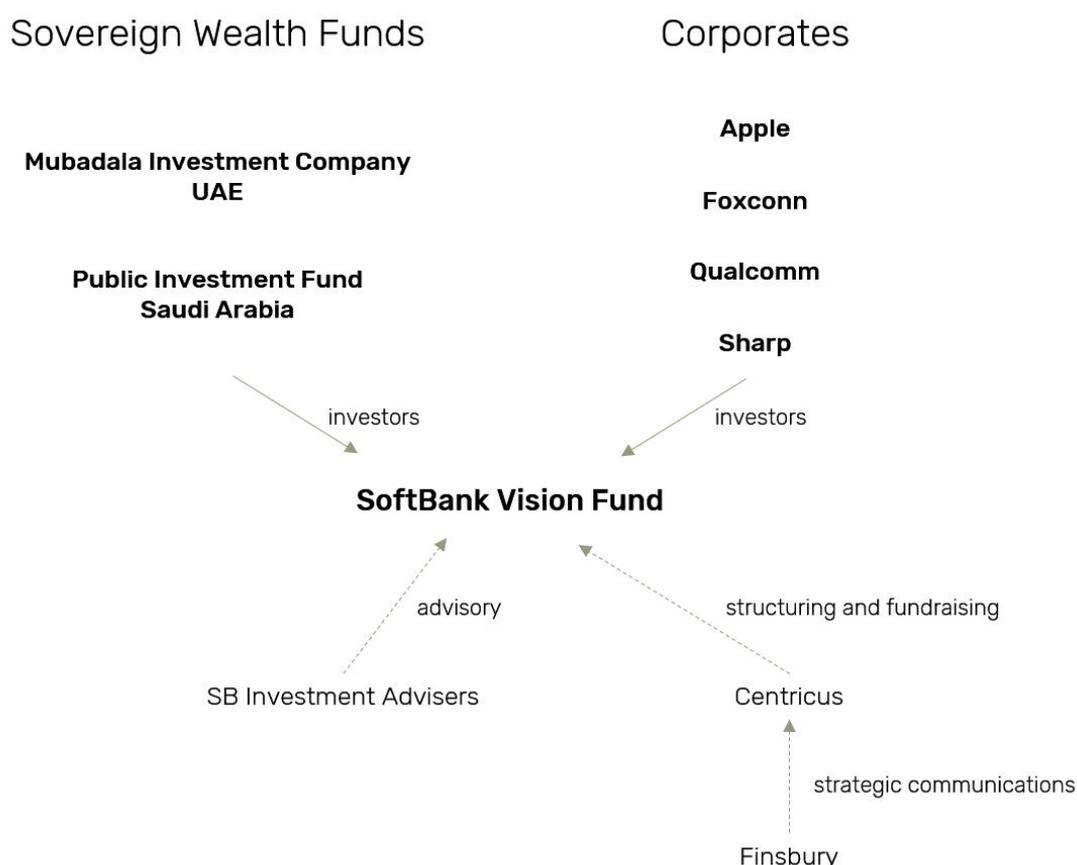
The Japanese telecommunications and internet corporation SoftBank makes many of its investments via the SoftBank Vision Fund. This fund counts several sovereign wealth funds and corporates among its investors. It is USD 93 billion strong, and targets a total volume of USD 100 billion. This makes it one of the, if not the, largest technology investment funds in the world.

We used our innovation analytics platform to identify venture investments in which SoftBank participated in 2017. We then grouped the investments into industry sectors.

In order to illustrate how human and machine capabilities can complement each other, we zoomed in on SoftBank's cybersecurity investments. We used Sounil Yu's Cyber Defense Matrix as an organizing principle, and used semantic models for classifying SoftBank's investments into the matrix. The results of this classification suggest an investment focus on network security, with respect to the number and the respective sizes of investments. This network-focused approach may be a central element of risk mitigation for SoftBank's other, network-reliant, investments.

SoftBank

Most but not all of the venture investments we consider in this case study are conducted via SoftBank Vision Fund. SoftBank Vision Fund¹ is a massive yet not widely known organization. It is an investment fund set up by the Japanese telecommunications and internet corporation SoftBank Group (<https://www.softbank.jp/en/corp/>). SoftBank Vision Fund is USD 93 billion strong, and targets a total volume of USD 100 billion (cf. <https://softbank-ia.com/vision-fund>). This makes it one of the, if not the, largest technology investment funds in the world. Here is our understanding of the fund's organizational structure. This includes (some) investors, advisors, and other service providers (the chart is based on publicly available information as of October 2017. This means that it is probably incomplete):



¹ In the remainder of this text, we will use the term "SoftBank" as a shorthand for "SoftBank Vision Fund". We will not differentiate between investments made by SoftBank Corp on the one hand, and SoftBank Vision Fund on the other hand.

We used Mergeflow to identify VC funding events from beginning of 2017 until now. We then compared VC funding events that involved SoftBank to events that did not involve SoftBank. You can see the result in Figure 1 below.

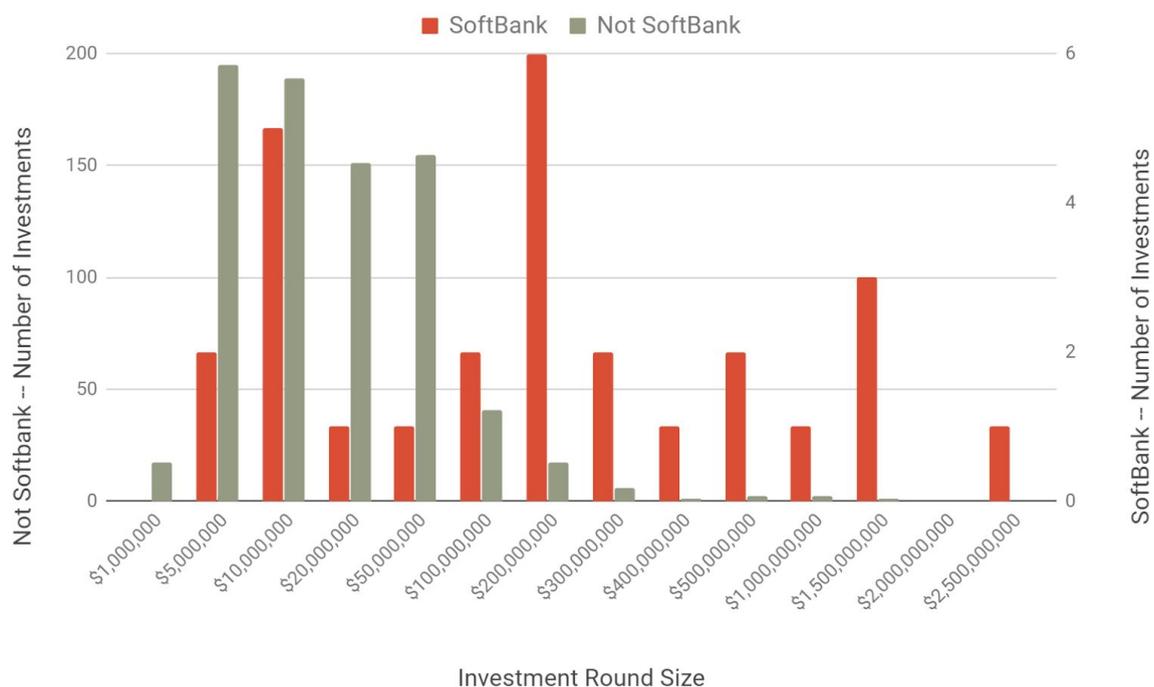


Figure 1: The sizes of investment rounds involving SoftBank vs. investment rounds not involving SoftBank.

Figure 1 shows that SoftBank tends to participate in bigger-size investment rounds, compared to investment rounds that did not involve SoftBank. In other words, the distribution of SoftBank's investment sizes is skewed toward bigger sizes.

Investments By Sector

Using Mergeflow, we first identified companies in which SoftBank invested since beginning of 2017. We then grouped the companies by sector, shown in the table below (please find short descriptions of each company in the Appendix). The sector definitions are ours, and they only consider the “outer appearance” of a company, not its underlying technology fingerprint (cf. below for an example of why this makes a difference):

Augmented / Virtual Reality Viro	Collaboration Slack WeWork	Computing Platform Petuum
Cybersecurity Cybereason Darktrace Dome9 SEWORKS Zimperium	Ecommerce Flipkart Yieldify	Farming Plenty Square Roots
FinTech Kabbage SoFi	Gaming Automaton Improbable	Healthcare Guardant Health Roivant Services Talkspace
Mobility Brain Corp Mapbox Nauto Ola	Online Content Radish Social Native	Payments Paytm

Table 1: SoftBank investments in 2017, grouped by sectors.

Note that these assignments of companies to sectors oversimplify things. For example, at first sight *Improbable* may be considered a gaming company. But *Improbable* is also the builder and provider of a distributed computing platform, *SpatialOS*. *SpatialOS* is a distributed computing platform for simulations, and it has many applications beyond gaming. They include simulating the structure of the internet or telecom networks, and modeling autonomous vehicle fleets (cf. <https://improbable.io/research> for more details on these examples). The Guardian recently featured an article that provides background on *Improbable* and *SpatialOS*:

<https://www.theguardian.com/technology/2017/may/12/improbable-virtual-world-startup-worth-502m-dollars-investment>

After assigning companies to sectors, we looked at how investment round sizes are distributed across these sectors. We oversimplified things here again, and merely added the overall sizes of the investment rounds per section, not SoftBank's exact shares in these investment rounds. This is because reliable information regarding SoftBank's exact share in each investment round was not available. Figure 2 below shows the results.

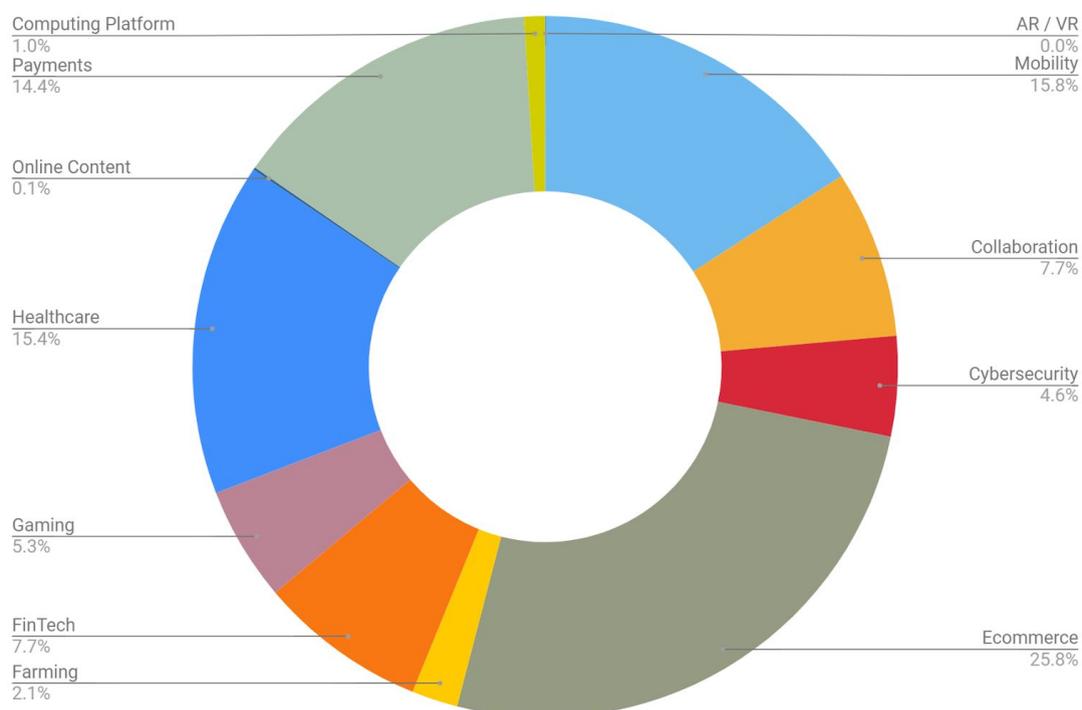


Figure 2: Sizes of investment rounds involving SoftBank, distributed over sectors².

² AR/VR has a share of 0.025%. Decimal rounding shows it at 0.0% in the chart.

Zooming In On Cybersecurity Investments

Next we zoomed in on SoftBank's cybersecurity investments. We think that this zooming-in may contribute to an understanding of the logic behind SoftBank's investments portfolio from a technology standpoint (cf. Section "SoftBank's Cybersecurity Investments In Context" below).

Based on the NIST Cybersecurity Framework³, Sounil Yu proposed a framework for classifying cybersecurity vendors, the *Cyber Defense Matrix*⁴. The Cyber Defense Matrix maps asset classes against operational functions. Here are Sounil Yu's descriptions of asset classes and operational functions, taken from his slides, "Understanding the Security Vendor Landscape Using the Cyber Defense Matrix" (cf. footnote (3)):

Asset Classes

Devices: Workstations, servers, VoIP phones, tablets, IoT, storage, network devices, infrastructure, etc.

Applications: Software, interactions, and application flows on the devices.

Networks: Connections and traffic flowing among devices and applications.

Data: Information residing on, traveling through, or processed by the resources above.

Users: People using the resources above.

Operational Functions

Identify: Inventorying assets and vulnerabilities, measuring attack surface, baselining normal, risk profiling.

Protect: Preventing or limiting impact, patching, containing, isolating, hardening, managing access, vulnerability mediation.

Detect: Discovering events, triggering on anomalies, hunting for intrusions, security analytics.

3

<https://www.nist.gov/sites/default/files/documents/cyberframework/cybersecurity-framework-021214.pdf>

4

<https://www.slideshare.net/sounilyu/understanding-the-security-vendor-landscape-using-the-cyber-defense-matrix-60562115>

Respond: Acting on events, eradicating intrusion footholds, assessing damage, coordinating, reconstructing events forensically.

Recover: Returning to normal operations, restoring devices, documenting lessons learned.

We used Mergeflow’s semantic analytics to map SoftBank’s cybersecurity investments into the Cyber Defense Matrix. In our mapping, we deviated from Sounil Yu’s rule of mapping each company into one cell of the matrix only, and instead allowed for multiple mappings of a company. Our mapping is shown in Table 2 below.

	Identify	Protect	Detect	Respond	Recover
Devices	Cybereason - - - -	Cybereason - - - Zimperium	Cybereason - - - Zimperium	Cybereason - - - -	
Applications		- - Dome9 SEWORKS Zimperium	- - Dome9 SEWORKS -		
Networks	- Darktrace - - -	Cybereason - Dome9 - -	Cybereason Darktrace Dome9 SEWORKS Zimperium		
Data					
Users					

Table 2: SoftBank investments in the cybersecurity space, mapped to Sounil Yu’s Cyber Defense Matrix.

Next, for each cell in the Cyber Defense Matrix, we summed up the funding round amounts. For example, since *Cybereason* raised USD 100 million and *Zimperium* raised USD 15 million, the cell for “Devices”/“Detect” gets an entry of USD 115 million. We also added each amount for each company to each cell in the matrix in which the company appeared. For example, since we put *Darktrace* into the “Networks”/“Identify” and into the “Networks”/“Detect” cell, we added their USD 159 million funding rounds to both cells. Of course, this procedure is yet another oversimplification but we did not have reliable information available that allowed us to do a more differentiated mapping. Table 3 below shows the results.

	Identify	Protect	Detect	Respond	Recover
Devices	100	115	115	100	
Applications		188,2	173,2		
Networks	159	265	339		
Data					
Users					

Table 3: Cybersecurity funding round sums (in million USD) mapped to the Cyber Defense Matrix. Font size is proportional to funding round sum.

The numbers of companies per cell in Table 2 and the funding round sums per cell in Table 3 suggest that SoftBank’s cybersecurity investments focus on detecting breaches of and attacks on networks.

SoftBank's Cybersecurity Investments In Context

SoftBank's investments in the cybersecurity area seem particularly interesting with respect to the overall investment portfolio structure (caveat: in the context of this case study, we only look at SoftBank's 2017 investments, not at their entire investment portfolio):

- SoftBank's cybersecurity investments show an emphasis of breach and attack detection in networks. This can be seen from mapping the companies to the Cyber Defense Matrix.
- SoftBank's investments in sectors other than cybersecurity all rely heavily on networks in one way or another. For example, some companies are platforms (e.g. *Improbable*), others are or require decentralized networks or data transfers through networks (e.g. the ecommerce and the healthcare investments). Interestingly, at least to our knowledge, there is no device maker among SoftBank's 2017 investments.

To us, this suggests that SoftBank's network-focused cybersecurity investments may be a central element of risk mitigation for the other, network-reliant, investments.

We used the Cyber Defense Matrix as an example of how human and machine analytics and interpretation capabilities complement each other. While the Cyber Defense Matrix was developed by a human (and it is hard to see how a computer could have developed it), we can use self-learning technologies to assign data such as company descriptions to the fields of the matrix. This form of machine augmentation enables scalable and continuous analyses.

Appendix: Company Descriptions By Sector

Below are short descriptions of each company in each sector.

Augmented / Virtual Reality

Viro

<https://viromedia.com>

Viro enables mobile app developers to add VR to their apps. Viro uses a custom rendering engine underneath React Native, a JavaScript-based framework that many mobile developers already know. SoftBank's investment is an investment in Viro's technology, not in VR content.

Collaboration

Slack

<https://slack.com>

Slack provides a workplace messaging software platform. On the one hand, the funding from SoftBank and others gives the company stability as they expand their footprint at existing large customers. On the other hand, the funding enables Slack to provide attractive offerings to prospective customers, where Slack faces competition e.g. from Facebook and Google.

WeWork

<https://www.wework.com>

WeWork offers shared working spaces in 155 locations, across 50 cities in 15 countries, including the U.S., Europe, Latin America, and Asia. The company's next step is to make its shared work spaces available to millions more people, specifically in the Chinese market. In order to expand into China, WeWork has partnered with SoftBank and Chinese private equity firm Hony Capital.

Computing Platform

Petuum

<http://www.petuum.com>

Petuum is a software platform that aims to enable non-experts to use artificial intelligence technologies. Petuum will use the funding from SoftBank and others to further develop their technologies, and to increase their market footprint.

Cybersecurity

Cybereason

<https://www.cybereason.com>

Cybereason provides behavioral analytics technologies that aim at early detection of malicious activity in the context of e.g. company networks. Cybereason will use the funding from SoftBank and others to further develop their technologies, and to expand internationally.

Darktrace

<https://www.darktrace.com>

Darktrace is a Cambridge, UK based cybersecurity company that provides network threat detection based on machine learning technologies.

Dome9

<https://dome9.com>

Dome9 provides cloud infrastructure security solutions, for public and multi-tenant cloud setups (e.g. Amazon AWS, Microsoft Azure, or Google Cloud Platform). SoftBank will be the leading distributor for Dome9 in the Japanese market.

SEWORKS

<https://se.works>

SEWORKS provides mobile security solutions, specifically, solutions for protecting mobile apps. They plan to use the funding to increase global sales and marketing activities.

Zimperium

<https://www.zimperium.com>

Zimperium provides a mobile threat management platform to deliver continuous and real-time cyber threat protection for mobile devices and applications. SoftBank and Zimperium together offer their solutions to the Japanese market.

Ecommerce

Flipkart

<https://www.flipkart.com>

Flipkart is an Indian company whose ecommerce platform competes e.g. with Amazon. With the funding, Flipkart aims e.g. to strengthen its foothold in and to further develop the Indian market.

Yieldify

<https://www.yieldify.com>

Yieldify provides digital marketing solutions to ecommerce companies. The aim of Yieldify's solutions is to help ecommerce companies to extract more sales from their site traffic.

Farming

Plenty

<https://www.plenty.ag>

Plenty aims to bring local produce to people and communities by growing fresh fruits and vegetables using less water, land, and none of the pesticides, synthetic fertilizers or GMOs of conventional agriculture. The funding will be used to build out and scale operations.

Square Roots

<https://squarerootsgrow.com>

Square Roots is a vertical farming startup cofounded by Kimbal Musk (Elon Musk's brother) and Tobias Peggs. The startup provides what they call an "urban farming campus", i.e. a hydroponic, climate-controlled farm inside of a shipping container. They also offer a 13-month program in which they teach aspiring farmers how to grow plants inside the Square Roots' container, while developing a business model to sell their crops.

FinTech

Kabbage

<https://www.kabbage.com>

Kabbage is a fully automated technology and data platform that provides small businesses with access to funding, and empowers lending for large global banks. The company currently operates in North America and Europe, and plans to expand to Asia.

SoFi

<https://www.sofi.com>

SoFi stands for Social Finance, and it is an online lending marketplace that provides student loan refinancing, mortgages and personal loans. The company is based in San Francisco, and it plans to expand service offerings to Australia and Canada.

Gaming

Automaton

<http://automaton.uk>

Automaton is a game studio in Cambridge (UK), which previously made a multiplayer stealth combat game. With the funding from SoftBank and others, they will build an online survival game built on simulation technology. In the game, up to 1,000 players will be able to fight in a combat arena.

Improbable

<https://improbable.io>

Improbable is a London, UK based company that uses distributed computing to enable the creation of virtual worlds for use in games and massive-scale simulations of the real world (e.g. the internet or logistics networks). The company's core technology, *SpatialOS*, is a distributed computing platform for simulations.

Healthcare

Guardant Health

<http://www.guardanthealth.com>

Guardant Health develops products for early stage cancer detection. The company first created Guardant360, a comprehensive liquid biopsy test. Guardant Health will use their funding e.g. for expanding to Asia, Middle East, and Africa.

Roivant Services

<http://roivant.com>

Roivant Services is a global healthcare company focused on biomedical research to systematically reduce the time and cost of the drug development process. The company intends to use the funds to accelerate the launch of new subsidiaries within and beyond the biopharmaceutical industry.

Talkspace

<https://www.talkspace.com>

Talkspace is an online mental health therapy platform that connects people with licensed therapists through its web and mobile apps. The company intends to use the funds to accelerate growth.

Mobility

Mapbox

<https://www.mapbox.com>

Mapbox is a location data platform for mobile and web application developers. Mapbox plans to expand to Southeast Asia, China, and Europe.

Nauto

<https://www.nauto.com>

Nauto is a driverless car company. They plan to use the investment for growth, further developing their camera technology, and for installing their technology into more cars worldwide.

Ola

<https://www.olacabs.com>

Ola is an Indian competitor to Uber. They plan to use the investment to fund further technology development, leasing program, and electric car strategy.

Brain Corp

<https://www.braincorp.com>

Brain Corp develops the technology platform BrainOS. BrainOS enables self-driving commercial and consumer robots.

Online Content

Social Native

<https://socialnative.com>

Social Native is a marketplace for user-created advertisements. The investment will enable them to further develop their technology, the Content Optimization Engine, and also to invest in sales and marketing.

Radish

<https://www.radishfiction.com>

Radish is an online storytelling and publishing platform. They provide a mobile app that enables users to buy and read bite-sized chunks of serialized fiction.

Payments

Paytm

<https://paytm.com>

Paytm, which stands for "Payment Through Mobile", is an Indian electronic payment and ecommerce company. They plan to use the investment to expand their user base, particularly through enabling Indians to use mobile payment.

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