



## Executive Summary

# «Data, the Future of Financial Information»

Data is considered the world's most valuable resource. How will data change investment behaviors? Who owns the data? What infrastructure is needed? The SIX white paper on «Data, the Future of Financial Information» provides guidance on these questions, and many more.

“90% of all data in the world was created in the prior two years.” This quote appears prominently in almost every presentation. However, what isn't highlighted is the fact that this finding from a Norwegian think tank is already six years old (2013).<sup>1</sup> Global data volume has since continued to grow exponentially. “Peak data” seems far from having been reached. The term “peak” originates from the extractive industry — The Economist already described data in a cover story in 2017 as the new oil, even noting that data had become the “world's most valuable resource”.<sup>2</sup>

This white paper examines the spectacular development of this new asset. The central questions are: On what data basis will investment decisions be made in the future? In what form will data exist and be used? What infrastructure will underlie it? These issues are discussed and analyzed in the context of the rapid development and spread of digital assets, data sovereignty shifting to data subject, increased demands for the protection of privacy, increasing consideration of sustainability and social impact, technological advances in privacy-preserving systems, fake data, powerful AI systems, increasing cybercrime, and a general decentralization of data. The report presents the future in five scenarios, sorted by probability of occurrence. The time horizon is 10+ years.

Data is the future of financial information — that may come as little surprise. But this report shows that there will be profound changes surrounding this constant. The conclusion of the authors: “Besides the centrality of data, it looks as if nothing will look like the past.”

The following summarizes the five scenarios for the year 2030. Further information as well as the detailed descriptions can be found under [six-group.com/whitepaper](https://six-group.com/whitepaper).

*Financial information describes all information that is used by financial entities or market participants for investment decision-making.*

### **Most Likely Scenario**

#### **Freedom to Generate, Right to Control, and Ability to Monetize**

People have greater freedom, rights, and ability in their capacity as asset owners, data owners, and investors.

Anyone can transform their assets into investable assets by creating rights to them (*digitally tradable rights to assets*): *The number of investable assets has exploded and ranges from seats at a restaurant, usage rights to a parking spot, rights to a share of a student's future income, rights to use a room in an apartment, and usage rights to your data. New types of assets may necessitate new types of data for valuation.*

<sup>1</sup> Eric Luellen, 2017, Big Data will First Slow, Not Accelerate, Discovery, Medium (17 January 2017).

<sup>2</sup> Economist, 2017, The world's most valuable resource: Data and the new rules of competition (6 May 2017) and Economist, 2017, Regulating the internet giants: The world's most valuable resource is no longer oil, but data (6 May 2017).

*Digitalization and automation* have simplified the process of defining/describing digital and non-digital assets, and of creating rights to these assets — thus reducing monetary and time costs of making an asset investable. *Digital platforms* have also permitted reaching a global market, thus rendering it substantially more attractive for asset owners to make their assets investable.

Anyone can control usage of their data and create rights to it (*digitally tradable rights to data*). *Data subjects have been granted sovereignty* over their data. Governments have taken substantial action to enforce property rights and competition in the digital sphere by reducing user lock-ins, unbundling services, breaking up vertical supply/value chains, requiring data mobility, and allocating rights to data. *The fraction of data that is accessible for processing by third parties has exploded*. Users of digital services can prevent service providers from processing their data and can provide third parties with access to their data — data which may not have been accessible to third parties before, as service providers may have kept it for themselves. The crowd has become an important data source.

*Explosion in volume and type of digital data. Everything we do produces digital data.* Social interactions take place in the virtual sphere (chat, VR). Real world experiences are augmented with a digital layer (voice interfaces and/or AR). Everyday objects let appliances know how to interact with them (e.g., clothes tell washing machines how to treat them). This has led to an explosion in *theme-related information*. There is data allowing investors to evaluate investable assets in any dimension, helping them to better tailor their investments to their preferences (e.g., sustainability, ESG, gender equality). *The majority of digital data is hidden/private* (e.g., encrypted, stored at the edge). Data owners and producers have placed high data privacy demands on service providers. Data privacy calls for the raw data to be decentrally stored where it is produced, always encrypted, and that the raw data never moves. *Secure and privacy-preserving systems are a foundational technology* of FI infrastructure. They give data owners the ability to monetize their data while still respecting their data privacy. These systems have increased data owners' willingness to even share access to their (sensitive) data, and have therewith further increased the data that is accessible for processing by third parties. *A large fraction of FI data sources stored decentrally*. The explosion in digital data makes central storage (i.e., duplication) at data distribution intermediaries or investors too costly and arguably infeasible.

Anyone can invest in perfect alignment with what matters to them (*investment tailoring*) due to the broad availability of theme-related information. Driven by the explosion in new (accessible) digital data, *alternative data* has established itself alongside traditional financial information as key input for investment decision. As new types of assets become investable, further data types and sources may become relevant inputs for investment decision-making. *Social impact and sustainability considerations* play an increasingly important role in investment decisions. Investors continue to take some decisions themselves, but *delegate most of their investment decisions* to professional asset managers (e.g., funds, collective or individual mandates). Tailored robo-funds, where algorithms automatically take investment decisions, have increased in popularity.

#### **Medium-Likelihood Scenario**

##### **Middle- and back-office consolidation in finance**

*Financial services providers outsource virtually all their middle- and back-office activities to utilities* in order to benefit from economies of scale on non-differentiating activities and to access rare skills/capabilities.

#### **Medium-Low-Likelihood Scenarios**

##### **Extreme Consolidation in FI Infrastructure**

Digitalization has turned most markets into *winner-takes-it-all*. The most likely path to this scenario is *lack of government action aimed at enforcing competition* in the digital sphere by reducing user lock-ins, unbundling services, breaking up vertical supply/value chains, and restricting exclusive access/usage of data. *All platforms in the FI space have global scale*. There is a single global digital marketplace in the FI-services space and a single global data-distribution and data-access intermediary. *(Niche) FI-service providers around these global platforms also have global scale wherever scale provides an advantage*.

##### **Extreme Protectionism**

Services/products face *import and export barriers and raw data is restricted from leaving the country (data protectionism)*. Anti-globalization sentiments, national security concerns, and weaponization of economic tools to further national interests have all been on the rise. Governments want a *locally operated FI infrastructure* to ensure a functioning local market that efficiently allocates capital. Privacy-preserving systems are necessary to allow cross-border access to data without the raw data ever leaving the country.

### **Low-Likelihood Scenarios**

#### **Crypto-Assets Everywhere**

*The world runs on permissionless distributed ledgers.* Crypto-assets are the dominant form of digital assets and of investable assets. Decentralized crypto-currencies have replaced central-bank-issued currency as the dominant medium of exchange. Commercial digital operations take the form of open-source code stored and executed on top of these permissionless distributed ledgers, known as 'decentralized applications' (DApps).

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