

## The ecosystem imperative

Digital transformation of  
financial services and moving  
from Open Banking to Open Data

# Contents

Executive summary	3
Context and overview	5
Open Data ecosystem	8
Archetypes, main players, and responsibilities	11
Value	15
How might one measure success?	20
Success conditions and key capabilities	22
Potential implications for policymakers and market participants	28
Contacts	29
Endnotes	30

# Executive summary

The digital transformation of financial services is extending activities into broad ecosystems with new players and shifting roles. These ecosystems are co-evolving with dynamic value networks of diverse actors who create value through complex models of collaboration, competition, and innovation. Data policies have significant impacts on the roles, responsibilities, opportunities, and value chain position for different actors in these ecosystems.

The impacts of these data policies evidence the importance of broadening the scope from Open Banking to Open Data not just Open Finance. This shift has the potential to realize many of the promises industry-specific data-sharing frameworks have fallen short of delivering to-date. This report from the Institute of International Finance (IIF) and Deloitte studies Open Data and shares thought-provoking insights on the following fronts:

- **Roles and responsibilities:** In an interactive Open Data ecosystem, roles are not fixed. Rather, they are dependent on the specific flow of data for each operation. Key responsibilities are those focused on ensuring safe, transparent, and efficient data flow (e.g., secure authentication, model organization, data infrastructure, connectivity through application programming interfaces (APIs), etc.).
- **Common objectives of an Open Data ecosystem:** (i) Promoting innovation to increase consumer choice; (ii) creating more secure methods of data sharing; (iii) improving consumer data privacy and portability; and (iv) fostering cross-sectoral collaboration and interoperability.
- **Technological panorama and ecosystems:** The emergence of Open Data is occurring alongside and interacting with other critical forces—such as the increased adoption of cloud, AI, advanced analytics, and digital identity and it should be evaluated in this context (see previous series, [“Realizing the Digital Promise”](#)<sup>1</sup>).
- **Strategic role of consumer data:** As sets of customer data become increasingly available, the edge they provide erodes substantially. Therefore, differentiation generated by access to data may require players to curate, maintain, and analyze proprietary datasets (i.e., accessed via collaborations, through more intimate relationships with consumers, or via superior analytics).
- **Value generated:** Open Data carries opportunities and benefits for different stakeholders. For consumers, it can create more choices and a better user experience, and in some markets it may also increase financial inclusion and literacy. For financial institutions (FIs) and other industries, Open Data can open the door to new business models, business lines and, consequently, to new partnerships. In the end, organizations that capture the value of new data flows will likely unlock new sources of income and more.

- **Key factors for success in Open Data initiatives:**

- Open Data ecosystems that deliver sufficient value to each type of participant and commensurate with the cost they incur to participate, are most likely to drive broad-based benefits.
- Balanced and fair distribution of liability for what happens in the ecosystem (e.g., operational risks) amongst the stakeholders incentivizes participation.
- The potential of Open Data can only be realized when data from different industries is shared. Deep cross-sectoral collaboration would likely ensure the free flow of data through interoperable channels that maximize the potential benefits and opportunities in the ecosystem. Thus, the availability of interoperable data and APIs that work cross-industry could help maximize value in the ecosystem.
- To date, this cross-industry approach exists in earnest in a few countries. Most policies are limited to the sharing of either banking or financial data more broadly, still limited in focus to one-way provision of data out of the financial industry to other industries. A growing number of jurisdictions are beginning to propagate policies that could facilitate cross-industry sharing, though their voluntary nature could limit participation and calls into question consistency across sectors.
- The existence of flexible and principles-based frameworks is a key factor for Open Data.
- Achieving appropriate data quality (accuracy, completeness, reliability, relevance, and timeliness) cannot be disregarded. Additionally, how data is delivered can enhance the growth of Open Data ecosystems (e.g., with machine-readable formats).
- Clear regulation can prevent unintended conflicts and barriers. Data localization requirements and legal fragmentation amongst different geographies can generate unintended consequences that hinder innovation or drive it into less productive pathways, create bigger constraints to data transfers or data mobility, and generate bigger costs and lost benefits for individuals and businesses.

# Context and overview

The digital transformation of financial services has extended activities into broad ecosystems, shifted traditional roles, and given rise to new players. As the historic lines between sectors and services continue to blur, new trends in platformization have emerged, with consumers seeking a diverse set of offerings from a limited number of actors. For example, embedded finance, the topic of Deloitte Global & IIF's next report of this series—where the branded financial service provider sits behind the interface and transaction flow—is becoming the norm and a few major markets, such as China, have seen this manifest in a major way<sup>2</sup>. These dynamics are driving change in how different institutions come together, the roles they serve, and the relative positions they hold in pricing power and value extraction. The public and private sectors can benefit from a better understanding of the implications of these trends in the future of finance. Specifically, as evolutions in sectoral competitive dynamics, macroeconomic disruption, and the proliferation of emerging technologies are driving a renewed imperative to engage in ecosystem activities and assemble new capabilities/channels to interact better with consumers.

IIF and Deloitte have joined together to explore the future of ecosystems on four fronts that are evidencing an uptick in development and maturity across the globe:

- Open Finance and Open Data
- Embedded finance—customer relationships and value chain dynamics
- Platformization—new models of financial service development and distribution
- Policy-orchestrated ecosystems (e.g., digital banking licenses)

In this report, the first in a series Deloitte and IIF will publish throughout 2023, we focus on Open Finance and Open Data, and the importance of advancing the dialogue to achieve the latter rather than pausing mid-way at one-way information sharing out of the financial industry. This document builds on research from IIF, Deloitte, and insights from senior and C-suite executives. It explores how different data-sharing frameworks function as ecosystems with the potential to achieve goals for policymakers and market participants alike.

The report is divided into seven sections. This first section frames the discussion and explains how data-sharing frameworks are intrinsically linked to ecosystems. It also shares a brief overview of Open Data as a concept and its background as well as how it is manifesting in today's market. The second section outlines the Open Data ecosystem, its linkage to Open Banking, and Open Finance, and the centrality of consumers. Next, the document shares the drivers for strategic priorities in ecosystem engagement. This section ends with the benefits of Open Data. The third section lays out archetype models, the main players involved, and different roles and responsibilities. The fourth section is a study of the value that Open Data can create for consumers and FIs, the common objectives and impacts for participating institutions, and value capture by the various players involved. The fifth section outlines various metrics by which success metrics can be measured tangibly and quantitatively. The study concludes with a sixth section that provides analysis of the internal and external conditions for success and key capabilities of various players, and a final section that provides recommendations for policymakers and market participants.

Throughout the report, three sidebars complement the analysis with background on: ecosystems; digital identity; and lessons from leading jurisdictions.

## What is Open Data?

Open Banking, Open Finance and Open Data do not have legal definitions in most jurisdictions; however, the Organization for Economic Co-operation and Development (OECD) has recently described Open Data and Open Finance as extensions of their definition for Open Banking: Open Banking is “generally well understood as the practice of sharing banking data via standardized and secure interfaces at the request of clients”<sup>3</sup>; therefore, if Open Finance can be understood as the practice of sharing banking and other financial data (i.e., insurance, investment, etc.), then Open Data goes further to encompass non-financial information (i.e., social media, mobility, energy, utilities, etc.) at the request of clients through standardized and secure interfaces (see Figure 1). The Bank for International Settlements (BIS) has used the term Data-Sharing Initiatives instead of Open Data and has described them as combining data from diverse sources to help improve the “performance and value of services, enabling better decision making, delivering better products and empowering data ownership by citizens”.<sup>4</sup>

Today, the average global internet user generates about 150GB of data per day through their browsing, interaction with different sectors, and transacting behavior.<sup>5</sup> Much of this data is captured and stored by the limited number of organizations the consumer interacts with directly (for the purposes of this report, we will call these organizations Data Custodians). Often, consumers don't have access to this data or ‘digital footprint’ and have little control over how they may do so. Open Data seeks to make the most valuable of these datasets available to consumers, giving them the ability to control how those data are used and with whom they are shared.

Open Data can be viewed as an ecosystem that brings together Data Custodians, who capture, process, and store consumer information on their behalf, with a broader scope of third-party users of those data—all in service of improving data portability and consumer outcomes including greater choice, better user experiences, and lower cost services.

## How is it manifesting—Background and emerging models

In the context of financial services, moving toward an Open Data ecosystem began largely with a focus on retail banking data—providing consumers with the ability to share data about their banking transactions and other activity with third parties. This is commonly referred to as Open Banking and can be thought of as a sector-specific, siloed implementation of the objectives sought by Open Data, and one of the first implementations to gain widespread traction. The reasons behind the emergence of Open Banking and Open Data are numerous, including:

- Increased competitive activity in the data aggregation space for retail banking information, leading to a significant amount of consumer banking data being accessed through unsecure methods (e.g., ‘screen-scraping’) and prompting a push to reduce system-wide risks;
- Growth in policy efforts aimed at increasing competition, particularly in the United Kingdom and Europe; and
- The need to satisfy increased demands for a ‘consumer data right’ that improves data privacy and accessibility—with high-value, high-impact use cases.

As data aggregation methods become more sophisticated and Open Banking platforms have begun proliferating globally, we have increasingly witnessed a push to expand the scope of data sharing to a broader set of financial products and services (e.g., wealth management, insurance, and commercial banking)—a term known as Open Finance. For example, in the United States, large data aggregators have expanded their product set to include investment and liability (credit) data.<sup>6,7</sup> In the United Kingdom, the government’s Pension Dashboards Program will consolidate often-disparate pension data in one place for retirees.<sup>8</sup> In other jurisdictions such as South Korea, the upcoming MyData platform will also allow consumers to consolidate and share insurance data with third parties.<sup>9</sup>

Simultaneously, other sectors of the economy are feeling similar pressures (competitive, consumer, and regulatory) to provide consumers with more ownership over their data. Many social media companies offer members an option to download a copy of their information (e.g., posts, messages, and uploaded media). In Australia, the Consumer Data Right, which was stood up by the federal government in 2019 as a means of providing Australians with the ability to share data with accredited third parties, began with a focus on banking data, but as of November 2022, also allows consumers to share data held by energy providers (e.g., electricity, and gas), and is steadily moving to cover additional sectors, such as telecommunications.<sup>10</sup>

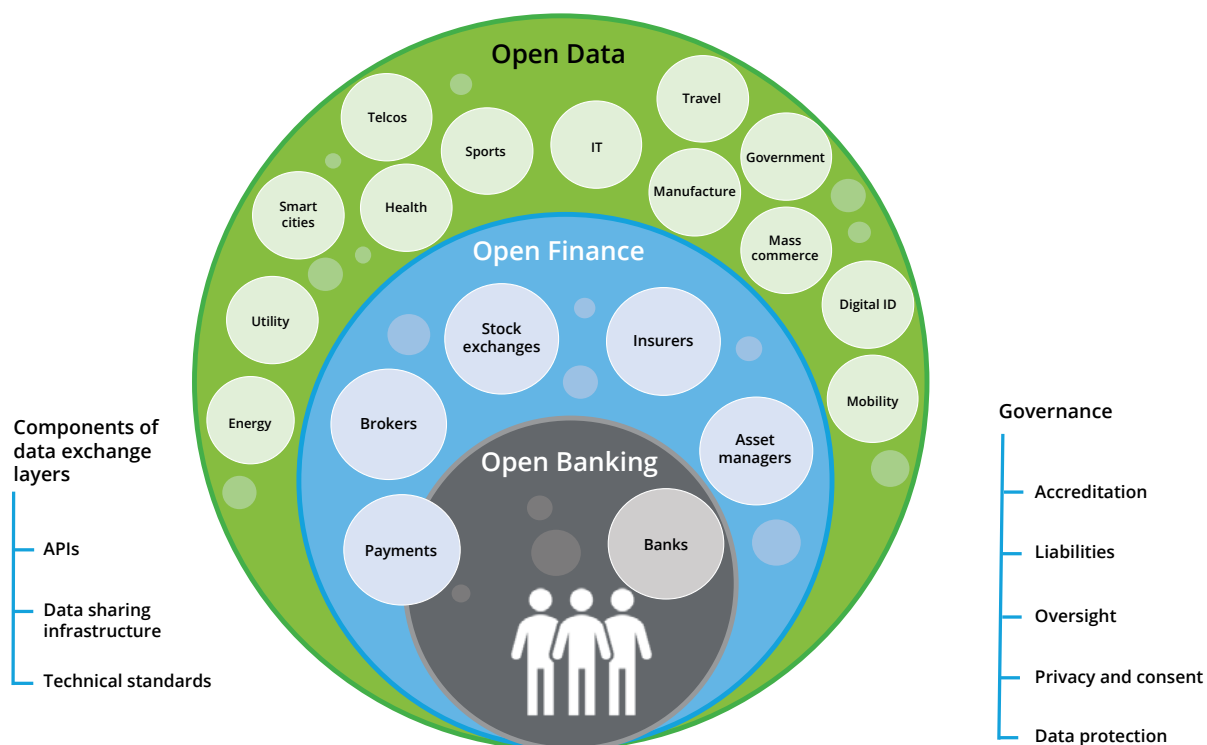
While Australia may be one of the clearest examples in the market thus far, the push to provide consumers with more portability and control over the information they generate when transacting with key service providers beyond the financial services industry is gaining momentum in other jurisdictions. One example is Colombia, where a new law included provisions that drive the public and private sectors to share consumers' information at their request aiming for "greater competition and innovation for financial inclusion".<sup>11</sup> To-date, however, a cross-industry approach exists in earnest in few countries. While a growing number of jurisdictions are beginning to propagate policies that would facilitate cross-industry sharing, their voluntary nature could limit participation and calls into question consistency across sectors.

# Open Data ecosystem

Data-sharing frameworks have been at the forefront of the interactions between FIs and authorities for years. In the words of one multilateral agency leader, these data-sharing frameworks are “an accelerator of doing partnerships in a different way.”

Since the United Kingdom implemented Open Banking in 2018,<sup>13</sup> the world has seen a growing number of jurisdictions studying and implementing their own data-sharing frameworks with important nuances. Some jurisdictions (e.g., India, South Korea) have opted for market-driven approaches, while others (e.g., Hong Kong, Australia) have pushed mandatory frameworks, and a few have selected a voluntary approach with authorities playing a key role in promoting the active participation of players in the ecosystem. Compensation, reciprocity, data quality, and availability have been at the heart of discussions, especially in cases where opening access to information was mandatory and business cases didn’t—or haven’t—flourished naturally. Standardization and governance have also been points of discussion. The scope of the information subject to these frameworks has expanded in recent years, with players advancing efforts to implement true Open Data schemes, which will be important to unlock some of the promises unrealized by Open Banking.


Figure 1. Landscape and state of play<sup>12</sup>






But what is driving the strategic imperative toward ecosystems in general, and Open Data in particular?


Figure 2. What is driving the strategic imperative?<sup>14</sup>

**Predicting the future is becoming more difficult**

We continue to live in an increasingly VUCA world, which favors adaptive, adoptive and resilient firms, who will need capabilities to watch for signals, diversify the workforce, and pursue new strategic options

**Traditional industry lines are blurring**

As embedded finance, open data, and other flashpoints of industry convergence proliferate, they will re-distribute where financial services are delivered, so FIs will need to play both offense and defense on disruption.

**Technology is now both table stakes and a differentiator**

Technology continues to be the foundation for transformation across society, industry and people. If organizations are not building it, they will need to buy it or partner for it to assemble the right stack.

## Emerging hypotheses

When looking at the key strategic decisions to be made by ecosystem participants, the following hypotheses are of particular interest:

- Ecosystems are built on symbiotic relationships and generate value in standard ways;
- Data sharing is (and will continue to be) critical to ecosystems, but client consent and permission are priorities;
- Interoperability will likely be key to increasing the value capture in ecosystems;
- Broadening the set of data used by FIs and non-FIs could realize significant benefits for consumers, authorities, and the private sector; and
- Cyber-security and operational resilience will likely play a key role in building trust in Open Data ecosystems.

## Benefits of Open Data

FIs—and primarily, the consumers they serve—can benefit substantially from a broadening of data-sharing frameworks. The products and services provided by FIs to retail consumers often serve as a means of facilitating some activity in the real economy, such as making everyday purchases (payments), financing a house (banking), securing an asset against loss (insurance), or saving for retirement (wealth management). FIs help consumers execute decisions that they make in the ‘real world’ by facilitating transactions, underwriting risks, transferring value across time, and extending credit.

Today, FIs have a limited view into the underlying economic activity generated by these services, and the underlying needs, wants, and decision-making processes, of their consumers. What FIs know today often comes from inferences made on imperfect data (e.g., inferring spending patterns based on payments data), information picked up during hard-to-scale conversations (e.g., when a consumer meets a mortgage advisor), forms/documents that consumers are asked to fill when applying for a product/service, or one-off data-sharing cooperations with third parties (e.g., a mortgage lender working with an online home-buying portal).

To quote an example, the Joint Regulatory Oversight Committee<sup>15</sup> (JROC) studied, along with 100+ industry actors, the state of Open Banking in the United Kingdom and what the path forward should look like. When addressing the current state of Open Banking, the JROC found that key objectives posed by the authorities when designing the Open Banking framework haven't been fully achieved. Additionally, the committee stated that “the evidence received suggested there may be a number of gaps between the current and a more optimal future state of the Open Banking ecosystem.”<sup>16</sup>

In particular, when addressing what was needed to achieve more competition—set up as one of the key objectives laid out by the United Kingdom and most of the authorities that have worked on Open Banking and Open Finance frameworks—the JROC highlighted the importance of accessing new data sets; and concluded that limiting the data-sharing frameworks to banking data is one of the main barriers to achieving the objectives posed by authorities years ago. To bridge this gap, the JROC proposes to prioritize, among other elements, the integration of Open Banking and Open Finance with non-financial data.<sup>17</sup> The ability to leverage these ‘adjacent’ datasets (e.g., energy, real property, telecommunications, social media, etc.) through an Open Data framework could provide both traditional FIs and new entrants the capabilities to:

- Deliver more tailored advice to help consumers improve their financial decision-making (e.g., leveraging property and energy data to help them trade off the all-in cost of home ownership against their cashflows);
- Automate routine transactions to save consumers time (e.g., automatically move money into a checking account to cover a utility bill);
- Improve risk modeling to deliver better pricing to consumers (e.g., leveraging driving data to create better risk profiles—and thus more precise pricing—for consumers looking for car insurance); or
- Better tailor products and offerings to customer preferences (e.g., using social media data to construct an investment portfolio aligned with the consumer’s values).

These are just some examples of how FIs can leverage Open Data to better serve consumers, which we will explore more in the Value section.

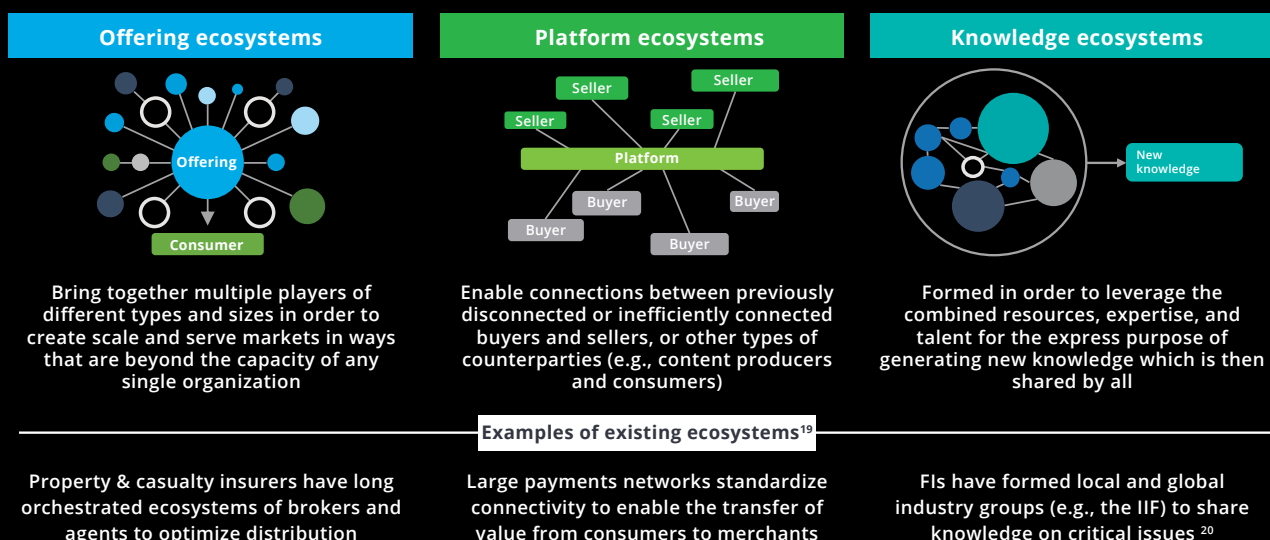
## What we know about ecosystems

Ecosystems are dynamic and co-evolving value webs of diverse actors who can create value through increasingly productive and sophisticated models of collaboration, competition, and oversight. They tend to have the following key characteristics:

- they have a common purpose
- they span traditional industry boundaries, and
- they are made up of multiple firms that each have a different but integral role to play.

Ecosystems are not necessarily a new concept in the context of financial services. Indeed, many of the products and services offered by FIs today serve as a means to achieving some ultimate end in the real economy: buying a home, protecting a valuable asset, or building a new manufacturing facility. Therefore, FIs are not strangers to collaborating vertically and/or horizontally across sectors to create value for their clients. We have observed ecosystems take three common forms in the context of financial services:

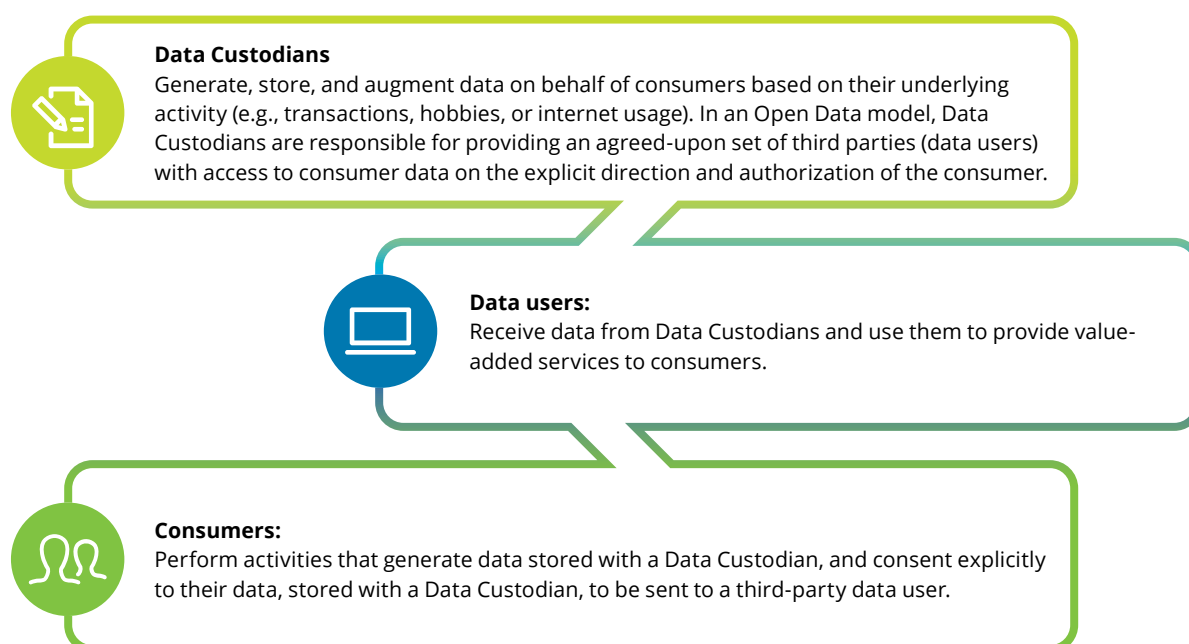
Figure 3. Three types of ecosystems<sup>18</sup>



# Archetypes, main players, and responsibilities

## Roles and responsibilities

The Open Data ecosystem is comprised of three main players:



In a balanced Open Data ecosystem, these roles are not fixed—an organization could be a Data Custodian for a specific set of consumer information, and a Data User for other information, dependent on the specific flow of data. For example, an insurer may be a Data Custodian in the case where a consumer consents to sharing policy data with a rental car agency, while the insurer might be a data user in the case where a consumer consents to sharing health data from their medical provider with the insurer.

The volume of firms producing data and becoming custodians continues to grow dramatically as fintechs, data aggregators, and other new entrants join the landscape alongside BigTech. Increased consumer use of digital interfaces and cloud computing have enabled this growth. Cloud service providers have extended the capability to generate and hold data at scale to firms that would not have had the platform to truly act as Data Custodians.

There are other responsibilities that are key to a well-functioning Open Data ecosystem, generally focused on ensuring safe, transparent, and efficient data flow. Across jurisdictions, these roles are played by various types of entities, including regulators, self-regulatory organizations/industry bodies, common utilities, private organizations, Data Custodians, Data users, etc.

These responsibilities include:

- **Secure authentication and consent gathering:** Ensuring that consumers who direct Data Custodians to share their data with data users are who they claim to be (to prevent fraud and identity theft) and have given explicit and informed consent around how their data will be used by the data user.<sup>21</sup>
- **Accreditation model organization:** Developing and enforcing a common framework for determining who qualifies as a Data User and who qualifies as a Data Custodian. Accreditation could be policy-driven (e.g., a regulatory/self-regulatory/utility body sets standards for who can be a Data User/Custodian and manages a whitelist of accredited parties) or market-driven (where individual Data Custodians, or a third-party aggregator, manage the ecosystem of data users with whom data is shared).
- **Participation model organization:** Developing and maintaining the standards for participation, including technical connectivity (e.g., APIs), liability and recourse models, and reciprocity. Similar to the accreditation model organization, this could be policy-driven (e.g., a regulatory/self-regulatory/utility body sets standards for participation) or market-driven (where individual Data Custodians, or third-party aggregators, set standards for participation). Also, participation standards are crucial to ensuring interoperability amongst players.
- **Policy development and enforcement:** Development and maintenance of regulations that support safe and secure data sharing, including data privacy, consent, portability, and consumer protection policies.
- **Data infrastructure provision:** Development and maintenance of technical infrastructure to support the free and secure flow of data, including token service providers, API gateways, centralized data exchanges, etc.

# Digital identity

## The role digital ID could play in ecosystems

### Digital identity is a key enabler for digital ecosystems.

Trust is one of the key foundations of almost every interaction in the modern world. Whether these interactions occur between people, businesses, or governments, trust plays a key role in permitting the exchange of ideas, products, and services across various actors.

In particular, 'digital trust' is increasingly required to enable interested parties to prove their identity or credentials securely and easily, to those with a need to know, while not over-sharing data. In previous decades—and even today in many jurisdictions—this trust is attained by the presentation of physical identity documents (i.e., state-issued IDs for people, registration documents for companies, etc.). But progressively, digital identity is being attained, using identifiers or digital tokens that link the identity of a person or a corporation to a set of reference data stored by agencies in the public or private sector.<sup>64</sup>

As a result, trust and identity provide the gateway to different sectors, including financial services. As the OECD stated in its draft recommendations on the governance of digital identity: "access to essential services across the public and private sectors and trust between individuals, businesses, and governments rely on being able to prove one's identity."<sup>65</sup>

With extensive AML and KYC procedures commonplace in financial services, and with suitability tests and credit risk applications based on data, FIs are now used to handle (digital) identity to guarantee the integrity of their operations, deliver better consumer experiences, and offer security for their consumers. As the OECD has recognized recently "identity underpins the entire financial system, and poor identity infrastructure opens the path for bad actors exposing consumers and businesses to important risks."<sup>66</sup>

As referenced in previous IIF-Deloitte research, "digital identity is a crucial enabler for integration into the digital economy and consumers' lives, to the areas where consumers want banking to take place."<sup>67</sup>

### What is digital ID? And why is it useful?

As there are various definitions of what comprises digital ID, and to seek consistency in our analysis, it is important to recall some of the elements and characteristics laid out by the IIF and the BIS in previous papers around the concept of digital ID. Digital ID can be described as a "means of identification of a user, issued by an authoritative source such as a registry, which may be composed of a set of credentials, with or without a unique identifier"<sup>68</sup> that provides electronic verification of their identity<sup>69</sup> and which could refer to a physical person or a corporation.<sup>70</sup>

Using digital IDs has a range of positive impacts for FIs, authorities, and consumers, including (1) better risk mitigation due to increased reliability of the information provided by the consumer; (2) decreased operational costs due to automation of KYC and AML processes; (3) improved market integrity; and (4) enhanced financial inclusion from both access and usage perspectives.

Apart from these benefits, it is possible that requiring the use of digital ID could put burdens on consumers, given potential technological and security considerations, which could demote its use. As has been previously found by Deloitte Global, "organizations should balance the need to authenticate customer identities with the need to deliver a positive customer experience."<sup>71</sup>



## Digital ID essentials.

Digital ID is a clear building block required by the digital economy, but the governmental and institutional foundation still varies across countries and regions. Below are some examples of different models:

- **Led by the state:**

**Estonia:** Around 97%, or ~1.3 million of Estonians have a state-issued digital identity called [eID](#) which constitutes the cornerstone of e-state (which sits on the xroad); a platform that connects citizens with the public (vote online, file tax claims, etc.) and private sectors (pay bills, travel, request financial services, shop, etc.) through their ID-card or mobile-ID, or the Smart-ID app.

**India:** [Aadhaar](#) was established by the state and currently has an adoption rate of over 99% of the Indian population. This biometric digital identity platform enables interaction with the public and private sectors. Key use cases include direct transfers of benefits to bank accounts, e-KYC, and digital document storage.

- **Led by the private sector:**

As we will show with some examples, FIs have played a key role in these models where the private sector has empowered consumers through Digital ID. This might be explained by the fact that due to the nature of sensitive financial data, investments in security and privacy have been substantial in the industry, which leaves FIs at the forefront of these innovations.<sup>72</sup>

**Sweden:** [BankID](#) was the digital ID solution launched in 2003 by FIs and it is now recognized by the government. Over 90% of people between 20-40 years in Sweden, and approximately 80% of the whole population now use this solution, which enables authentication and signature for use with public and private-sector institutions. In December 2022 BankID announced its involvement in the first phase of the EU digital identity wallet.

**Canada:** [Verified.Me](#) (recently renamed "[Interac](#)") is a solution designed to allow consumers from leading FIs to verify and securely identify themselves for accessing a range of interactions with the government, banks, investments, health providers and consumer retailers.

**European Union:** The EU is developing a new digital identity regulation eID that will entail a revision of the 2014 EU Regulation on Digital Identity. The new eID will allow citizens to identify and authenticate themselves online using the "European digital identity wallet", allowing users to have full control over their data, to store and use personal identification information and electronic certificates that can be used to access goods and public and private services (checking in at the airport, renting a car, opening a bank account, or logging in to their account on large online platforms). The regulation is expected to be in force approximately by the third or fourth quarter of 2024, and the way digital identity, payments, and a possible digital euro will interact is yet to be known.

**United Kingdom:** The United Kingdom is currently working on its guidance on "[enabling the use of digital identities](#)," which includes standards and a governance structure to promote the private's sector participation in offering digital ID solutions. To move toward this objective, the government introduced the [Data Protection and Digital Information \(no. 2\) Bill](#) in March 2023.

# Value

## Common objectives of an Open Data ecosystem

As we have explored already in this report, the global trend toward Open Data is a result of converging competitive, consumer, technological, and policy shifts. Across the many jurisdictions where these ecosystems have been established or are emerging, the relative importance of each of these shifts in ecosystem design and governance varies. Because of this, the ‘intent’ behind the push toward Open Data varies from region to region. For example, Europe has taken a centralized, policy-led approach. Data sharing in financial services is governed by the Payment Services Directive II (PSD2) legislation, which has been in force since 2016, with the stated aim of leveling the competitive playing field, improving systemic security and consumer protection, and driving better cross-continent integration. On the other hand, in the United States, the efforts of the Financial Data Exchange (FDX), an industry-led consortium to develop data-sharing standards, stem from the need to increase interoperability amongst Data Custodians, users, and aggregators in a fragmented, market-led model.<sup>22</sup>

Despite these nuances, there are a few common objectives that Open Data regimes set out to achieve:

- **Promoting innovation and competition to increase consumer choice:** In some jurisdictions, the emergence of Open Data has been accelerated by government inquiries into various sectors of the economy which allege stagnating product and service innovation and inadequate competitive activity. For example, in the United Kingdom, Open Banking was introduced because of a 2016 Competition & Markets Authority (CMA) investigation into retail banking which alleged that the sector was uncompetitive and that barriers to entry for new players were too high.<sup>23</sup> In Australia, the decision to extend the Consumer Data Right to the energy sector was driven in part by an inquiry into electricity affordability conducted by the country's competition bureau, the ACCC.<sup>24</sup> In other jurisdictions, latent consumer demand for more innovative products and services has allowed new entrants that take advantage of data sharing to flourish. In the United States, for example, nearly 60% of all banking logins are made by third parties on behalf of the consumer<sup>25</sup>, data aggregators like Plaid (200M+ consumers) have achieved unicorn status while others like Finicity have been acquired by major incumbents<sup>26</sup>, and the fintech venture funding has raised nearly US\$100 billion in 2021 and 2022.<sup>27</sup>
- **Creating more standardized and secure methods of data sharing:** Historically, data sharing between Data Custodians and users was facilitated via so-called “screen-scraping” or “credential sharing” methods. Consumers would share their login details with an end data user or aggregator, who would log into the Data Custodian's website or app on their behalf and collect data or transact in the name of the customer. However, “screen-scraping” has a number of challenges associated with it. Firstly, it's insecure; requiring consumers to share sensitive information (e.g., passwords) with a third party, creating vectors for credential theft and fraud. Secondly, it's inefficient; because the data is not accessed directly (and is simply ‘scraped’ from a webpage), Data Users must keep a schema of where critical information is located on the webpage of every Data Custodian they access. Every time a webpage is updated, the Data User has to update the scheme. Finally, it's resource intensive; using automation, data users can access a Data Custodian's website many more times than a human can, which can overload servers and cause disruption. As a result, most Open Data regimes are implementing secure APIs standards to facilitate data sharing, creating direct data links between data users (often large aggregators) and Data Custodians, and building on the lessons learned from the Open Banking frameworks that have been in place for the last years. With APIs, data is accessed directly without the need for credential sharing, improving security. At the same time, standardized APIs make it easy for Data Users to access data in a uniform way, no matter which Custodian they are accessing them from. As a lead specialist of a multilateral organization puts it “the needle that has put this together (accelerated movement) is APIs. You should build your capacities around APIs, opening your own APIs and consuming others’ APIs.”

- **Improving consumer data privacy and portability rights:** The emergence of Open Data has driven a substantial regulatory push to modernize data privacy and portability laws. Open Data ecosystems only function when consumers have control over their data and can easily direct them to trusted third parties of their choosing, and they trust that the information is only accessed by the specific parties, and for the specific use cases, they consent to. The hallmarks of modern data legislation, including Singapore's Personal Data Protection Act (PDPA) and the California Privacy Rights Act (CPRA) include requirements for explicit and informed consent, an enshrined right to data portability (regardless of sector-specific implementations), strict rules around third-party data sharing, and data minimization principles (i.e., limiting the collection of data by data users to only those necessary to satisfy the use case(s) that consumers have consented to).
- **Fostering cross-sectoral collaboration and interoperability:** Open Data is also a powerful tool for combating structural barriers to information sharing across sectors of the economy, and between public and private institutions. For example, Estonia's national data exchange infrastructure, the X-Road, connects FIs, national and municipal governments, healthcare providers, educational institutions, individuals, and other entities via a single, standard data-sharing platform. On it, Estonians are able to seamlessly and securely share health records or educational credentials between parties in an automated manner. In total, the system processes 1.5 billion transactions per year (in a nation of approx. 1.3 million) and is estimated to save nearly 1500 years of working time, every year.<sup>28</sup>

### Strategic impacts of Open Data on the financial services sector

While Open Data is an exciting source of opportunity and growth for financial services,<sup>29</sup> it is certainly playing a role in shifting some of the dominant competitive structures and operating models in the sector. While all players will play by these new 'rules of the road,' the impacts will be felt particularly by incumbent FIs, who will have to adapt quickly to the pace of change to realize the benefits of accessing new pools of information from different sectors to provide consumers with better and more efficient products.

It's important to note that the emergence of Open Data is not singlehandedly 'responsible' for these shifts—though it plays an important contributory role. Rather, it is occurring alongside and interacting with other critical forces such as the increased adoption of emerging technologies (e.g., cloud, AI, and advanced analytics), the rapid digitization of products and processes, financial infrastructure modularization, policy modernization, and sectoral convergence.

One key shift is the role Open Data is playing alongside new 'as-a-service' infrastructure models (e.g., Banking as a Service—BaaS) in lowering the barriers to entry into financial services. With 'as-a-service' access to all the necessary 'building blocks' of a FI (e.g., operating license, balance sheet, product shelf) and the ability to tap into rich sources of consumers' financial and non-financial data, new entrants are reducing the time to stand up compelling offerings from years to weeks. Among other things, this is intensifying competition for new consumers and commoditizing core product lines.

A second shift concerns the strategic role of consumer data. Historically, these data have served as a highly defensible source of differentiation. For FIs, transactions, product holding, and other financial data gave a consumer's primary FI advantage in making compelling offers, rewarding loyalty, and predicting moments of need for new products and services. Likewise, device, usage, and location data afforded telecommunications providers many of these same privileges. However, as these 'basic' sets of customer data become increasingly democratized, the usefulness of this moat erodes substantially. Therefore, differentiating through data will require players to curate, maintain, and analyze proprietary datasets—for example, accessed via exclusive partnerships with other service providers, through more intimate relationships with consumers, or via superior analytics.



Finally, Open Data will likely help drive the reallocation of traditional sources of profitability. For example, ‘anchor’ products (like a checking account) could become less lucrative as democratized access to data makes it easier for consumers to switch FIs and be multi-banked without much friction. Also, using extensive customer data to better automate money movement (e.g., from higher-yield to lower-yield products, and from checking to investing accounts) will likely make deposits less sticky, increasing the cost of funds. Finally, the commoditization of core product lines mentioned in the first shift is increasing returns to both scale and deep specialization simultaneously.

## Value generated by Open Data

Open Data presents tremendous opportunities to unlock value for consumers, incumbent FIs and new entrants (collectively, financial services providers), regulators, and other service providers. It has the potential to significantly lower the barriers to conducting financial transactions, drive meaningful financial innovation, and improve the safety and security of the financial system. When discussing the value generated by open ecosystems, an executive and a thought leader of a major payments company stated that “having connections to everybody else vastly increases the value of whatever it is that you build.”

### **Consumers can benefit from participation in an Open Data ecosystem in the following common ways:**

#### Augmented product and service choices

Open Data makes it easier for innovative new players to quickly develop and market new products and services, shaping consumer expectations and raising the competitive standard. At the same time, access to key financial and non-financial data allows FIs to better tailor products, advice, and recommendations to the specific needs of individual consumers. For example, a life insurer could use health and activity tracking data to help consumers save on premiums by rewarding healthy behaviors. At the same time, more standardized information sharing allows financial products and services to be embedded more seamlessly into non-traditional channels (e.g., embedding a one-click mortgage refinancing in a home buying aggregator, such as Domain in Australia), and non-financial products to be embedded more seamlessly into financial channels (e.g., DBS Bank’s Home Marketplace, which allows the bank’s clients to set up consultations with trusted contractors and use an in-built calculator to retrieve their holdings with DBS to ascertain the housing loan they can afford, among other services.).<sup>31</sup> Ultimately, this allows consumers to access key services in the channel of their choice and puts financial products right in the flow of decision-making. Finally, the potential for automated money movement that focuses on achieving the best outcomes based on an understanding of a consumer’s entire financial picture (e.g., moving deposits around when higher-interest offers become available, optimizing short-term savings/long-term investment mix, etc.) can have positive impacts on their overall wealth.

#### Better consumer experiences

Giving consumers the ability to seamlessly and digitally share their information can reduce a significant amount of transaction friction, both within and outside of financial services. One-click information sharing with a lender, for instance, could save consumers’ time often spent filling out forms manually. In the world of Open Data, information such as employment status, income, and asset/liability holdings can be analyzed, verified, and pre-filled automatically. Or, for example, providing trusted income, identity, and proof-of-insurance data to a property manager can make it easier for tenants to access housing. While “new-to-bank” consumers will realize a significant portion of the benefits, FIs can also leverage Open Data to better serve their existing clients. FIs can use knowledge about consumer behaviors/preferences to better provide servicing and support. For example, data from telecom providers can help banks build a picture of when their consumer is active on different devices during the day, helping them optimize support delivery. At the same time, access to a consumer’s complete financial picture can help organizations better determine the potential lifetime value of a consumer, and tailor more personalized and precise advice.

## Increased financial inclusion and literacy

As alluded to, greater access to information about a consumer would allow FIs to conduct more fine-grained risk analysis, using a wider array of information sources than previously available. Data—especially pertaining to identity and credit—has long been a barrier to inclusion: a report by the World Bank found that over 100 million people in sub-Saharan Africa who are unbanked also have no formal means of identification.<sup>32</sup> Leveraging financial and non-financial data to build a trusted and verifiable profile of an individual can help FIs serve more consumers while satisfying strict Know-Your-Customer (KYC) requirements. At the same time, it can increase rates of product ownership by using alternative sources of data to thicken credit files (e.g., using telecom bill payments) thereby increasing loan eligibility, or building more accurate risk profiles (e.g., using social media data to understand consumer activity), thereby potentially lowering premiums. When consumers get access to accounts and products, FIs can then use these channels as powerful tools to help consumers build healthy spending, saving, and protection habits, by providing helpful recommendations, access to articles/tools (e.g., retirement calculators), and rewarding sensible financial behavior.

### **FIs can benefit from participation in Open Data ecosystems in the following common ways:**

#### New business model development

Cross-sectoral data access can help FIs develop entirely new business models to diversify revenue mix, access new consumer segments and channels, and differentiate themselves from competitors. As we explored previously, alongside other key developments such as the proliferation of “as a service” frameworks, Open Data gives FIs the tools to stand up these new business models much quicker than previously possible. For example, Commerzbank is leveraging internet of things (IoT) sensor data from the warehouses of its manufacturing clients to initiate payments and trigger automatic provision of financing as goods move through the supply chain.<sup>33</sup> In the investment space, custom indexing solutions could one day leverage Open Data to make tailored portfolio recommendations that balance a consumer’s risk tolerance, financial goals, and beliefs.

#### Improved efficiency and cost reduction across the organization

There are myriad ways that increased access to data can help FIs improve efficiencies and reduce costs across the organization. Firstly, it can help conduct more targeted and precise acquisition, reducing cost-per-acquisition in the sales funnel. For example, Deloitte’s Acquisition.AI solution, which leverages data from dozens of sources to drive more sophisticated segmentation and targeting, helped one large Canadian-bank increase the conversion rate of low-engagement clients to primary relationship clients by over 50%.<sup>34</sup> Secondly, it can help better match cost-to-serve against consumer lifetime value. Better knowledge of a customer’s financial status and preferences can help FIs engage in right-sized interactions and help scale delivery. Thirdly, as alluded to above, instant access to a large pool of consumer financial and activity data can help lenders make quicker, straight-through credit adjudication decisions, by reducing the time spent manually collecting information. It could also one day drive predictive lending (e.g., a business lender could leverage store traffic and point-of-sale data to automatically pre-qualify a small retailer for working capital financing during periods of high customer demand). Finally, in combination with simultaneous advances in digital identity, building more robust profiles about consumers and their behaviors can help FIs root out identity and transaction fraud.

## Deeper relationship-building

As data and product shelves commoditize, and as-a-service capabilities make it easier for anyone to access best-in-breed financial infrastructure, the return on investment (ROI) on building intimate, relevant, and frequent customer relationships grows substantially. Intelligent analysis of a consumer's finances, lifestyle, goals, and activities builds a strong foundation for FIs to advise clients on more complex matters by delivering more timely, relevant, useful, and impactful interactions. This creates a flywheel effect—the better the relationship, the more consumers may be willing to opt-in to share additional, proprietary information that cannot be accessed through Open Data alone (e.g., nuanced details about their personal ambitions), and the better the advice and servicing, and thus the overall relationship, will become. In a sense, Open Data serves as a springboard to building deeper client relationships.

### **Data service providers benefit from participation in an Open Data ecosystem in the following common way:**

#### Building new infrastructure business models

As we will explore in more detail in the following sections, interoperability is a critical necessary condition for a well-functioning Open Data ecosystem. Facilitating interoperability requires the development and maintenance of data-sharing infrastructure. There is an opportunity for individual FIs (e.g., payments networks), industry consortia, or data service providers to provide revenue-generating services on behalf of the market, to support the safe, secure, and efficient flow of data. Some of these business models could include the provision of:

- Data gateway, exchange, and intermediation services (e.g., the National Payments Corporation of India's United Payments Interface or UPI)
- User accreditation and tokenization services (e.g., Token.io in Europe)
- Centralized utilities for fraud management and identity (e.g., Interac/SecureKey in Canada)
- Authentication and consent management services (e.g., PingID globally and SoyYo in Colombia)

# How might one measure success?

Open Data can drive quantifiable benefits across multiple levels of the economy. At the national or regional level (dependent on the breadth of the particular regime) unlocking data can drive economic growth and increase national and domestic competitiveness. At the institutional level, it can enhance revenue growth, cost savings, and consumer satisfaction scores. Finally, at the individual consumer level, it can help save time and increase wealth.

## National/Regional level

Open Data can be a strong contributor to positive economic growth. A 2018 study by the European Centre for International Political Economy found that stricter data policy regimes, which restrict domestic and cross-border data flows, could have a significant negative impact on productivity and economic performance.<sup>35</sup> As well, a 2021 study that Open Data ecosystems could boost economic growth by 1-5% by 2030, with developing nations having the highest growth potential.<sup>36</sup> But growth is not the only positive benefit from Open Data; it can also improve overall systemic competitiveness of institutions. This includes both improvements to the global competitiveness of domestic institutions (e.g., consider Klarna, a Swedish company, which has grown to over 34 million users in the United States since launching in 2018)<sup>37</sup> as well as increases to domestic sectoral competitiveness. On the latter point, a 2021 study by researchers from Columbia, Stanford, and the University of British Columbia found that the emergence of Open Banking policies leads to statistically significant increases in venture capital funding for fintechs, hinting that Open Data frameworks could exponentially exploit this trend. Finally, Open Data can help increase rates of financial inclusion and financial literacy within economies. In India, the introduction of the Aadhar digital identity scheme, which is linked to the broader Indian Open Data ecosystem, increased financial account ownership from 35% in 2011 to 80% in 2017.<sup>38</sup>

## Institutional level

Organizations that capture the benefits of new data flows could unlock new sources of income. One obvious way to measure success is profitability—either through enhanced revenue growth, cost savings due to improved operational efficiency/employee productivity gains/reduced fraud, or a combination of the two. For example, Bud, a leading UK-based provider of data aggregation products, has helped lenders reduce default rates by 40-75% vs. market estimates.<sup>39</sup> But not all of the potential positive impacts are as immediately tangible as profitability. Leveraging Open Data can also help improve customer satisfaction by providing institutions with the tools to develop more relevant and personalized experiences. For example, Plaid (a US-based Open Data provider) is currently working with Flexport (a global logistics organization) to improve access to supply chain financing. Plaid reports that Flexport clients who connect via Plaid are able to access annual interest rates that are 0.4% lower than their peers and have credit limits that are 32% higher.<sup>40</sup>

## Consumer level

Finally, at the consumer level, we can measure benefits in at least two ways:

- A. the improvement that new and upgraded financial services have on the overall consumer balance sheet (e.g., in the form of greater wealth); and
- B. in the time and effort saved when interacting with institutions.

We are already seeing examples of access to Open Data improving consumer financial outcomes. For example, data aggregator MX worked with one of the largest banks in the United States to implement a predictive cash flow tool that helped the bank's consumers increase their wealth by 4%.<sup>41</sup> On time savings, a report by DIACC, the Digital Identity & Authentication Council of Canada, found that the average consumer spends approximately eight hours per year creating or updating identity information and inputting data to prove who they are in order to transact, by automatically filling forms and providing additional attributes to help verify and validate a consumer's eligibility to transact (e.g., providing income verification), Open Data can help significantly on these efforts.

# Success conditions and key capabilities

## Ecosystem-level success conditions

Data is a key element to creating more valuable and personalized proposals for consumers, but also, for society in general. For the data economy and ecosystems to flourish, some conditions need to be met. Many of them are external conditions that have the potential to either enable firms to create new services and products based on data or, on the contrary, can suppose an undesirable hindrance.

In general, a well-functioning Open Data ecosystem facilitates secure and efficient data sharing at the behest of the consumer and ensures that the value created is distributed proportionately across players. Also, thoughtful regulation provides the necessary flexibility together with a fair and balanced approach. Creating incentives for all the parties within the data ecosystem is critical for the success of such ecosystems; liabilities should be clear, and the costs shared in a proportionate and fair manner; and, as data is the raw material that Open Finance and Open Data need to fuel services proposition and competitiveness, data quality is a necessary condition for the sharing of information to truly thrive; cybersecurity questions and other technical conditions such as those referring to standardization and interoperability also play an important role. The head of partnerships for a major European bank describes it as “when thinking about interoperability, standards are key, and they put everyone in a more competitive dynamic.”

At the ecosystem level, we believe that seven factors are necessary for success:

### Fair and proportionate exchange of value

It's critical for the momentum and growth of Open Data ecosystems that they deliver sufficient value to each type of participant, and commensurate with the cost they incur to participate.

Firstly, the products and services developed by data users should deliver sufficient value back to consumers. Obtaining the right to access a consumer's data requires explicit and informed consent, so consumers need to believe that they are benefiting from sharing these data, or else traction will be limited. Benefits could be monetary-based (i.e., helping them save or earn money, for example by finding a tax-efficient means of consolidating retirement income), efficiency-based (i.e., helping them save time), or experience-based (i.e., improving the way they interact with a product or service).

Secondly, there should be sufficient value available to Data Custodians. If participation in an Open Data ecosystem is merely a mandatory compliance exercise for Data Custodians, the ecosystem is likely to stagnate as these players are not incentivized to share more than what is required. Value can take a few forms. One way to coordinate value exchange is direct monetary compensation (either on a for-profit or cost-recovery basis) between the data user and Data Custodian. Another way to coordinate value exchange is to ensure reciprocity, which requires data users to also contribute relevant information back into the ecosystem. This can help ensure that there is not a one-way flow of information from traditional sources of consumer data (e.g., large FIs, telcos, ITs) to new entrants, and that Data Custodians can also share in access to consumer data that they don't have from other players in the ecosystem, in order to enhance existing propositions or develop new ones for their own consumers.

Thirdly, the data being shared in the ecosystem should be sufficient for data users to develop new commercial propositions. If the data is limited (e.g., limited scope, siloed approach, data that is already publicly available), there will likely be little incentive for data users to connect and develop innovative new products and services for consumers.

## Deep cross-sectoral collaboration to ensure the free flow of data

Open Data goes beyond specific sectors, it can not only positively impact banking and finance, but also health, energy, pharma, mobility, infrastructure, natural resources, and many other sectors, which allows consumers to have more control over more sets of information.

The potential of Open Data can be leveraged when merging data from different industries. Some approaches tend to be sector-specific, bringing together private entities, the public sector, and consumers to create common data spaces for certain industries. However, a sectorial focus on data-sharing frameworks leads to a partial and limited implementation and a partial and limited harnessing of its benefits, while a holistic approach to data would help develop more customer-centric solutions. In these efforts, avoiding asymmetries and contradictory regulation across sectors could play a key role in benefiting consumers and promoting interoperability.

## A flexible, principles-based framework

When analyzing the different trends in Open Data, some jurisdictions that have opted for a regulatory-driven approach, such as the EU<sup>42</sup>, United Kingdom, Australia<sup>43</sup>, Hong Kong<sup>44</sup>, and Brazil; others, like the United States, India, South Korea, and Japan have opted for a market-driven approach; and another group, with countries like Singapore, have chosen a scheme that is primarily market-driven, but where authorities play a key role in incentivizing participation and orchestrating different initiatives to promote the success of the ecosystem.

Rigid legal frameworks may lead to some adoption challenges, especially early on in the development cycle. For instance, the pioneer UK Open Banking initiative has brought many positive aspects and learnings, though take up has been slower than anticipated.<sup>45</sup> In this sense, according to a 2022 report from the trustee of the Open Banking Implementation Entity (OBIE)<sup>46</sup>, less than 3 out of each 20 digitally active UK adults use Open Banking-enabled services. And a similar outcome has been seen at the EU level. In the words of the head of partnerships at a leading European bank: “authorities should push the process (on opening information) but not to take the whole process in their hands.”

In the same line, a 2023 report from the European Commission (EC), DG FISMA, on the application and impact of Payment Services Directive 2 (PSD2)<sup>47</sup> estimated certain benefits brought by this regulation—such as a reduction in fraud—thanks to improved customer protection measures of €0.9 billion in 2020 and increased market access to third-party payment services providers (TPPs) of €1.6 billion in 2020. While in regards to other benefits (i.e., more competitive prices for services, new products based on PSD2-enabled APIs, and increased market access to credit institutions) it concludes that it is still early to have an estimation. The report also included a valuation of costs, amongst which the development of APIs for the credit institutions included in the report<sup>48</sup> amounted to €2.2 billion, and the strong customer authentication (SCA) implementation costs for credit institutions, TPPs and merchants are estimated at €5 billion. The assessment published by the EC concluded that:

1. while PSD2 has laid the foundations for Open Banking/Open Finance in the EU, many of the expected benefits and potential has not yet been realized due to issues relating to: (i) data access, (ii) data sharing, (iii) consent and data protection, (iv) and fragmentation of API standards; and
2. “the overwhelming majority of banks and banking associations consulted for the study suggested that the costs of the PSD2 largely outweigh the benefits to them. National authorities and TPPs established before PSD2 was introduced were more positive about the general impact, but they tended to agree with the overall negative assessment.”

More flexible frameworks can help the industry explore and put in place initiatives that are beneficial for all the players in the ecosystem. While prescriptive ones (seen in the United Kingdom and Mexico) may lead to situations in which the industries cannot adapt at the pace of technological developments and cannot learn from controlled trial and error exercises (when needed, as in all innovative processes).

These frameworks could be based on design and functioning principles in which effectiveness could be measured considering different variables, like the reach and benefits to consumers or the increase in innovation and better solutions; the proportionality among the cost to be incurred by the different stakeholders and the benefits they receive from participating in this ecosystem, etc.

### Common, cross-sector standards to maximize interoperability

In order to interconnect data in an Open Data ecosystem, it is important to have data standards<sup>49</sup> and API standards.<sup>50</sup> The standardization approaches can be multiple, ranging from those which are more prescriptive, to those more market-driven and flexible.

Regardless of the path to be chosen, cross-industry standards maximize the potential benefits and competitiveness of businesses that participate in the ecosystem. Though the implementation of those standards can entail a relevant cost, its benefits surpass its potential drawbacks. In that sense, building over the already built infrastructures and standards can serve to simplify processes, reduce costs and implementation times, and drive better interconnectivity and outcomes. For example, the financial sector has been a pioneer in opening part of its data to third parties, therefore, existing infrastructures and standards can be leveraged by authorities and corporations in other sectors that might consider adhering to certain standards for creating effective cross-sector data flows.

The definition and commercialization of specific solutions and services based on the availability of interoperable data and APIs would allow the market to offer new solutions and services, and for the customer to benefit from them.

### Balanced and fair distribution of liability

The question of who is liable for the use of data, the connectivity, and for damages that might be caused carries important weight. Whether an Open Data ecosystem is being driven by regulatory activity (e.g., a centralized data exchange framework like Australia's Consumer Data Right (CDR), which is written into government policy and overseen by regulators) or market activity (e.g., in the United States, where data sharing is largely done through competitive data aggregators like Plaid and MX), it needs proper risk controls and liability governance.<sup>51</sup>

These issues can be addressed in different manners. For example, through private agreements and market dynamics, and in some cases through certain regulations. An ideal scenario would make each provider responsible for the services they render and the use they give to data and infrastructures.

For consumers, Data Custodians, and data users alike, it should be very clear how risk and liability flow in concordance with the flow of data, and who is liable when things go wrong (e.g., data breaches, fraud, data sent to the wrong party). When a clear and well-understood set of rules is not in place, participants' trust decays, affecting the outcomes sought by the ecosystem.

### Robustness and quality of data

Data is the raw material that nurtures the whole system, thus, the better the quality of data, the better the results. There are various attributes that come with data quality, such as accuracy, completeness, reliability, relevance, and timeliness, all of which are necessary for a successful data-sharing ecosystem.

A relevant point on this front is whether not only humans can understand the data, but also machines. By creating more data that is served in a machine-readable format, more automation could be embedded in the systems, as the machines would be able to communicate and analyze data themselves, initiating new steps in the value chain.



## Coherent regulation

The quality, but also the quantity of data is relevant for data business models. The existence of networks that capture data in an agile and automatic fashion (e.g., IoT), is crucial in order to scale the Open Data ecosystem.

Some relevant questions regarding privacy should be taken into account (e.g., anonymity and pseudonymization of data). However, there are still many different regulatory approaches in regards to data privacy, and this fragmentation can make it more complex to implement cross-border and sometimes cross-sectoral solutions that serve clients and companies.

When possible, the options to implement Open Data should be technologically neutral to adapt to the different solutions needed by consumers. Also, data sovereignty and data localization requirements, together with legal fragmentation amongst different geographies, can generate unintended consequences in terms of innovation, bigger constraints to data transfers or data mobility, as well as bigger costs.

## Organization-level required capabilities

For both Data Custodians and data users, winners will likely share a common set of operational, technical, and strategic capabilities, including:

### Technology

- Modern and modular data architecture (e.g., based on APIs) to facilitate easy internal retrieval, sharing, and ingestion of data from multiple sources.
- Advanced data processing and analytics capabilities to translate data received via the ecosystem into actionable insights, either on its own or by linking it to existing data.

### Governance and risk management

- A sophisticated partnership management function responsible for creating trusted relationships with third parties by aligning interests, flexibly managing SLAs, efficiently and fairly managing conflicts, and adhering to ecosystem rules and norms.
- Robust third-party risk management and cybersecurity protocols, in order to understand, monitor, and safeguard against threats (e.g., API security).

### Organizational and process design

- An agile, customer-focused culture that allows the organization to react to new types of data being shared in the ecosystem, and quickly incorporate them into product and service development.
- Flexible teaming mechanisms that cut across traditional product and service siloes; with access to data from various sectors, a FI might be able to develop entirely new offerings that don't fit into their traditional lines of business (e.g., a bank using open real estate data to offer a home-comparison service)—this requires a new approach to teaming that focuses on achieving key customer outcomes.

### Strategy

- A strong base of proprietary data generated via frequent and meaningful customer interactions and/or exclusive collaborations
  - Given that Open Data serves to level the playing field across participants in terms of access to secure consumer data, a significant source of strategic differentiation will come from being able to keep the mindshare of consumers and generate proprietary data with particular insights.
- Permission to provide clients with insights and advice that goes beyond the organization's traditional scope of services in a way that will not be perceived as 'overstepping boundaries' by the customer.

## Lessons from leading jurisdictions

The various points identified above are derived from research on jurisdictions that are leading discussions on data-sharing frameworks, some of which are listed below:

- **Singapore, SGfindex<sup>52</sup>:** The Singapore Financial Data Exchange (SGFinDex) was launched in 2020.<sup>53</sup> The Monetary Authority of Singapore (MAS) and the Smart Nation and Digital Government Group (SNDGG) conceived the Open Finance initiative to empower consumers so that they can use their financial data smarter. This initiative was executed in four different phases covering different financial services and products, such as money management, investment, retirement, and protection (insurance). It is built on Singpass Singapore's national digital identity, and it has been developed through public and private collaboration, including the Association of Banks in Singapore, as well as various major entities. The system has been designed to embed privacy and consent requirements.
- **Hong Kong, Commercial Data Interchange:** The Hong Kong Monetary Authority (HKMA) launched a financial data structure known as Commercial Data Interchange in 2022<sup>54</sup> after a pilot that started in 2021. Twenty three banks with relevant SMEs business and ten data providers have joined the initiative upon its commencement. The project is based on consumers' consent and API standardization and is built over a blockchain architecture to ensure data and consent traceability. All the participants in the ecosystem are identifiable. HKMA intends to explore new business use cases based on data by broadening the scope of the project and the type of data it comprises. It is still too soon to evaluate the success of this initiative, which is ambitious in its scope and has the potential to cover much more than Open Finance if it develops as expected. Though, as per the success cases so far, among others, the platform seems to simplify the complexity that many SMEs face in order to finance their operations.
- **Data Act and Financial Data Access proposals, European Union:** After the relevant experience gained with the regulation on Open Banking (Payments Services Directive 2<sup>55</sup> or PSD2<sup>56</sup>, now also under revision) the EU is currently working on the Data Act<sup>57</sup> initiative as well as in an open finance initiative (called Financial Data Access). It will allow users of connected devices to gain access to data generated by them and to share such data with third parties. The draft proposal includes compensation<sup>58</sup> mechanisms and other incentives for the manufacturers and those making data accessible.

The Financial Data Access proposal foresees that data sharing will be done with the user's consent, and that data holders (e.g., FIs) are entitled to reasonable compensation for sharing data, and such compensation shall be defined by the governance schemes to be put in place. The proposal's scope covers credit, loans, savings, investments, cryptos, real estate, pensions, insurance (e.g., non-life) information, as well as certain data from creditworthiness assessments, and it affects not only banks, but also other institutions such as insurance companies, payment institutions, asset managers, etc.

It foresees switching rights for the consumers, so they can switch between different cloud data-processing service providers. The Act also includes provisions for the public sector to access and use data held by the private sector in case of exceptional circumstances such as public emergencies (e.g., floods and wildfires); The act reflects a shift from Open Banking to Open Data, as it promotes the creation and functioning of interoperability standards for data to be used across different sectors.

- **Australia, Consumer Data Right:** In Australia, the Consumer Data Right (CDR)<sup>59</sup> empowers consumers to access and share their data among accredited third parties. The CDR is operated by providers that have been previously accredited by the Australian Competition and Consumer Commission and it is overseen by the Australian government. Its approach is regulation based and it currently covers the financial and energy sectors, and it will foreseeably expand to a new different sector each year, the next one in the pipeline is the telecommunications sector.

The Australian CDR allows consumers to easily compare services and products from different providers and to switch amongst them. This solution is also based on consumers' consent, and it allows them to manage their consent in an easy way through a dashboard. Their consent can be provided for a specific time frame, with certain limits. It is also based on APIs and the data format has been set up by the Australian Data Standards Body.<sup>60</sup> User's identity is verified by a third provider using a One Time Password (OTP). The CDR is undergoing revision, and the new legal text may include new possibilities like payment initiation on behalf of consumers (similar to what is already in place in the United Kingdom and the EU) as well as the inclusion under the umbrella of Open Banking of other services such as non-bank lending, general insurance, superannuation, and merchant acquiring.

- **United Kingdom, from Open Banking to Smart Data (Open Data):** After becoming the first jurisdiction to implement Open Banking frameworks, a recent report by the Joint Regulatory Oversight Committee<sup>61</sup> identified some gaps and bridges in the implementation of those frameworks; among the gaps identified are:

1. insufficient ecosystem reliability-especially regarding APIs availability and performance;
2. appropriate protections from fraudulent practices; and
3. the narrow scope of the regulation. On the other hand, some of the bridges and priorities identified were: (A) detailed evidence collection to appropriately measure the ecosystem reliability; (B) use of data sharing to prevent fraud and exclusion; and (C) integration with Open Finance, smart data frameworks, and alignment with digital identity infrastructure.

The UK government also introduced (March 2023) a new bill on Data Protection and Digital Information. The bill is expected to (1) reduce burdens on businesses and researchers, and (2) boost the economy by £4.7 billion over the next decade. It also addresses cross-sectoral data sharing (known as Open Data, or Smart Data in the United Kingdom), and includes a chapter on digital identity verification services, which would enable public authorities to disclose information to registered organizations 'providing trust-marked services for the purposes of identity or eligibility verification'.<sup>62</sup>

- **Brazil, Open Finance:** Brazil launched its Open Finance initiative in 2021<sup>63</sup> with the aim to allow the exchange of data in the financial sector and increase competitiveness and new business models. Joining the Open Finance initiative is mandatory for banks, payments institutions, and other authorized entities under the supervision of the Central Bank of Brazil (BACEN) that represent a more relevant portion of the total assets or those with significant international activity, and voluntary for the rest of the entities. Privacy and client consent requirements have been embedded in the design and digital channel experience. Its scope is wider than a mere Open Banking initiative, it's named Open Finance as it covers many kinds of financial data and products (e.g., domestic information, credit limits, banking transactions, pension funds, investment funds, insurance, etc.), and thus open insurance and open investment are embedded under the same umbrella. The Open Finance initiative is still evolving in country and under development as it encompasses different implementation phases.
- **United States, Financial Data Exchange (FDE):** The United States has had a predominantly market-driven approach to Open Banking and Open Finance. This environment has allowed for consumer-led services and private initiatives such as Financial Data Exchange (FDX) to grow. FDX is a consortium that provides an open standard for exchanging financial data and performing financial transactions between FIs and applications and operates in the United States and Canada. Its members include FIs, data aggregators, fintechs, amongst others.

# Potential implications for policymakers and market participants

The public sector is an active ecosystem player in many jurisdictions (e.g., EU, United Kingdom, Australia, Singapore, and Hong Kong, amongst others). Policy decisions are shaping the data market, not only in finance but also in other industries. In this sense, and in order to ensure a competitive, fair and balanced market, the following is apparent:

- **There is widespread support for an expansion of Open Banking beyond Open Finance and on to Open Data, effectively 'broadening the scope' of accessible data.** The benefits promised by Open Banking haven't been realized for various reasons, not least of which is the restriction of one-way data sharing out of retail banking. The goals of improving competition, empowering consumers, and offering tailored products will struggle to be realized when limited only to financial products and financial data; rather, they require all aspects of a customer's life, such as information related to utilities, mobility, taxes, digital identity, health, social media, travel, commerce retailers, etc. A unidirectional lop-sided approach to data sharing will not achieve the objectives put forward by policymakers.
- **Regulatory fragmentation can lead to fewer benefits, as well as hindrances for the global innovations that are yet to come.** Fragmentation can occur among jurisdictions, but it can also be inter-sectoral. A holistic cross-industry approach to data-sharing frameworks is better suited than a single-sector approach to achieve policymakers' objectives. Fragmentation appears in the form of differing obligations, governance rules, and standards such as sectorial voluntary participation in data-sharing frameworks.
- **Principles-based frameworks with sufficient incentives benefit market adoption and consumer empowerment.** Principles-based rules provide the flexibility needed to develop workable business models and partnerships in dynamic ecosystems like Open Finance and Open Data. This can help to avoid unnecessary burdens on participants and facilitates the proliferation of private initiatives.
- **An appropriate distribution of costs and benefits would incentivize all parties to participate, creating a better and more dynamic ecosystem going forward.** Compensation structures and reciprocity have proven to be key components in Open Banking and Open Finance frameworks as they promote data quality and availability, which subsequently enriches the exchange among participants of the ecosystem. These considerations are equally applicable to Open Data, where other sectors would also benefit from them.
- **Fair and balanced liability frameworks that set clear rules to identify liabilities and settle disputes with certainty can help the data economy to grow.** Legal certainty together with the existence of quick, trusted, and dynamic dispute settlement systems, are growth drivers to be considered.
- **Data quality (accuracy, completeness, reliability, relevance, and timeliness) is essential.** Among the questions that can be considered to improve data quality, we find data quality assessments, as well as the use of machine-readable formats to improve automatization and help eliminate manual tasks and thus, reduce operational risk. Data standardization facilitates data sharing and interoperability.
- **Existing Open Banking and Open Finance frameworks should be considered when building Open Data standards, governance, responsibilities, and infrastructure.** The financial industry has learned valuable lessons from Open Banking and Open Finance efforts to-date. Developing entirely new rules for data sharing without consideration for those that already exist would likely incur costs for market participants, regulators, and supervisors of these ecosystems, while wasting relevant knowledge learned from experience.

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# Endnotes

1. Realizing the Digital Promise series encompasses several reports that are built on research and the insights the IIF and Deloitte have received from more than 200 senior and C-suite executives, transformation leaders, thought leaders, investors, regulators and government officials that have been interviewed over the past 3 years. The full list of reports of this series is available on [Deloitte.com](https://www.iif.com).
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