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FinTech – Financial Innovation Facilitators

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Abstract: This research identifies the ecosystem that facilitates technological innovations, especially in the financial field, beyond the new technologies themselves. In order to make the most of FinTech's potential, the system of institutional facilitators is analyzed, the need for the authorities to be involved in the development of innovation centers or sandbox structures. Beyond these institutional facilitators, we identify the need for a vision, a digital transformation strategy, architectures and integration components without which technological innovations are not sustainable, on the basis of which new business models are developed. The research is based on international reports and analyzes of prestigious authorities or companies, the approach starting from public studies and surveys. The conclusions prove the need for a managerial, integrated approach, starting from risks and not necessarily from technologies, identifying the need for public policies to support innovation to which one should add the effort of companies to structure integrated, agile, customer-oriented platforms, a framework oriented towards continuous change.

Keywords: regulation; evolution; surveillance; business models; proportionality

JEL Classification: M38; O21; O33; O33

1. Introduction

Technology is evolving rapidly, bringing new opportunities, new social changes and creating new expectations for beneficiaries. In response, both technology providers and financial banking companies continue to develop and revise their business models, often in increased cooperation with third parties (e.g. BigTech companies or

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start-ups), introducing both beneficial innovations, as well as a new set of emerging risks to be considered.

Technological innovation facilitators are generally covered by the FinTech concept - innovation in the financial-banking field that results in new business models, applications, processes or products with a material effect on the provision of financial products and services (FSB, 2018).

According to the International Organization of Securities Commissions (IOSCO, 2017), the term financial technology or FinTech is used to describe a variety of innovative business models and emerging technologies that have the potential to transform the financial services industry:

- Innovative FinTech business models typically offer one or more specific financial products or services automatically through the use of the Internet. By doing so, there is a separation between the various financial services traditionally provided by service providers - banks, insurers, brokers or investment managers. For example, crowd-funding platforms are a new model of stock brokerage, peer-to-peer lending / insurance platforms that act as intermediaries or distributors of loans or insurance, robo-advisors offer automated investment or insurance advice, and social trading platforms offer brokerage and investment services.
- Emerging technologies, such as cognitive computing, machine learning, artificial intelligence, distributed registry technologies (DLT), can have the potential to materially change the financial services industry and are exploited by both new FinTech challengers and traditional players.

Pursuant to Expand, Figure 1 identifies eight areas in which FinTech can be applied: payments, insurance, planning, lending and crowdfunding, blockchain, trading and investing, data / analysis, and security.

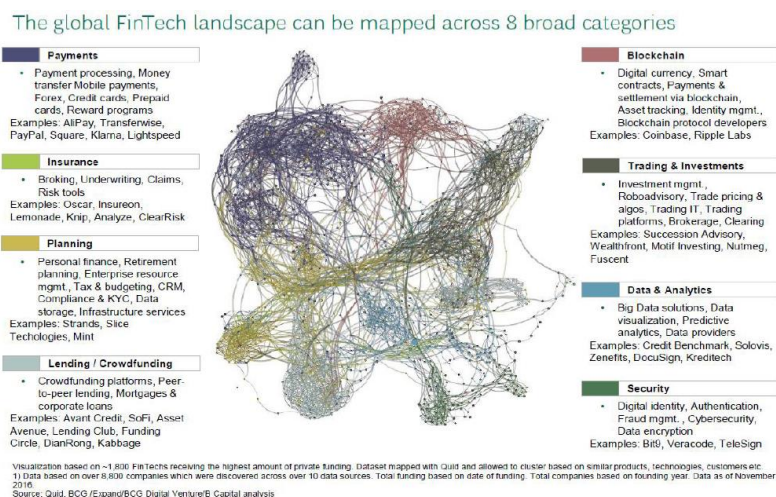


Figure 1. Mapping FinTech application areas (Expand, 2016)

Technologies are essential and the main facilitator of innovation. In order to develop trust and benefit for consumers, to protect their interests and to ensure stability and compliance with specific rules of the financial market, supervising authorities support the development of institutional facilitators (hubs, sandboxes) structured within or in addition to the authorities.

According to a study requested by the ECON committee of the European Parliament (Parenti, R., 2020), there is a wide variety of entities providing FinTech services or products, as can be seen in Figure 2. These include well-known players (banks, insurers, investment firms), infrastructure players, new firms (financial or non-financial) and large non-financial companies such as telecommunications operators, BigTech, trading platforms, etc. (ROFIEG, 2019).

Some of them - entities that already provide financial services - are familiar with the specific regulatory requirements and related supervisory expectations. Others are completely new in the multidimensional world of financial sector regulations. New entrants, most outside the supervisory framework, do not necessarily have a deep understanding of the sophisticated regulatory requirements and standards applicable in the financial sector.

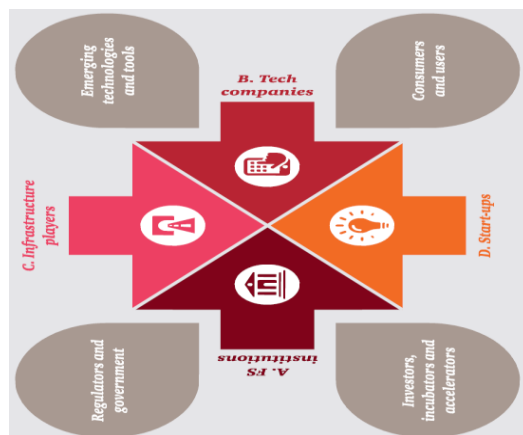


Figure 2. FinTech eco-system (PwC, 2016)

As the industry has identified many barriers to innovation, also reflected in Figure 3, networks of institutional facilitators, trained and generally approved by the financial authorities, are being built at national and European level.

Regulatory cooperation is essential, even outside the financial sector, as companies explore innovative business models, products or services that require consideration of several business policy areas. According to the European Banking Authority, coordination on issues such as competition, fraud, the fight against money laundering, cyber security, consumer and data protection may be particularly relevant in the FinTech area (EBA, 2019).

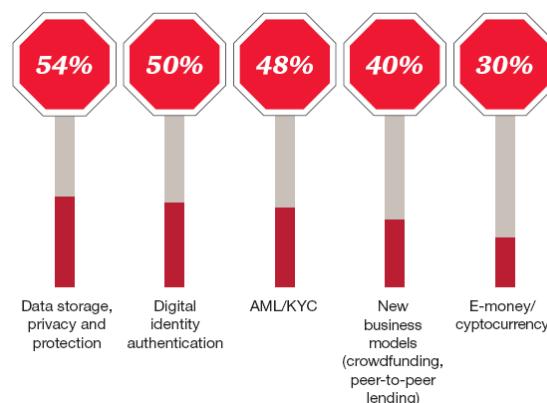


Figure 3. Legal Barriers in the Wave of Innovation (PwC, 2017)

Innovative technologies that have been the subject of widespread debate in recent years are those related to Artificial Intelligence, Big Data / analytical systems, Blockchain / DLT, robotics / IoT and many more. To be effective, policies, strategies must be developed, companies must have a vision of digital transformation, a target

architecture and an agile integration platform, leaving and being directed to the needs of customers.

2. Institutional Facilitators

Financial authorities identify two major types of innovation facilitators as organizational structures: innovation hubs (centers) and sandboxes (development and testing spaces).

The UK defines the sandbox as a safe space where companies can test innovative products, services, business models and delivery mechanisms with real customers, while ensuring that they are adequately protected. Authorities closely monitor projects using a personalized regulatory environment for each pilot - including guarantees for financial consumers (FCA, 2015).

The Dutch sandbox offers companies the advantage of a principles-based arrangement (AFM, 2016).

Regulatory sandboxes allow for a direct testing environment for innovative products, services, or business models, in accordance with a specific testing plan, which typically includes some degree of permissiveness toward regulatory requirements, combined with certain safeguards.

According to a study requested by the ECON committee of the European Parliament (Parenti, R., 2020), innovation centers are often a convincing first step in the journey of innovative regulation and, in the meantime, have become essentially the norm. Although sandboxes are less common, recent trends show a growing interest in them.

The hubs aim to encourage innovation while maintaining a high level of consumer protection, helping innovators to better understand the regulatory framework. Firms are usually given guidance on the applicable rules and the license they may need, depending on the type of innovation they are developing, assistance is provided in preparing and applying for an authorization.

In order to be accepted in a hub, a company must meet certain eligibility criteria, which require that the processes, products or services that companies develop be innovative, the most important being found in Table 1, in which the bold underlining refers to the sandboxes in those countries.

States have different specific rules:

- The UK analyzes four main criteria, namely genuine innovation, consumer benefits, substantive research, the need for support.
- For Spain, the project must be innovative, beneficial to consumers and have reached a certain level of maturity.

- Belgium excludes companies that seek legal advice or those that have not sufficiently analyzed the business model. They also advise companies to make prior efforts for a basic understanding of the rules.

Table 1. Important Acceptance Criteria for European Innovation Facilitators (Parenti, R., 2020).

Criterion	Description	Examples
Genuine innovation	The FinTech product or service is truly innovative and/or significantly different from those currently available	BG, CY, DK(i) , EE, EL(i), ES, HR, HU , IE, LT , LV , NL , MT , PT(i), RO, SK
Benefits to consumers and the financial system	The FinTech product or service has the potential to provide a better outcome for investors and consumers, for financial stability, or for market integrity	BG, DK , EE, EL, ES, HR, HU , LT , LV , NL , MT , PT, SK
Background research	The provider has sought to understand the regulatory framework before approaching the innovation facilitator	BG, CY, EE, EL, HR, NL, RO, SK
Project maturity / Test Readiness	The project has reached a sufficiently mature stage, considering the resources invested and the development stage of the product or service	DK , ES, HU , IE, LT , NL , MT , PT
Need for support / testing	The FinTech product or service has a genuine need for support, i.e. the innovation doesn't easily fit the existing regulatory framework and cannot be handled through the usual supervisory channels	BG, DK , HR, LT , NL , MT , PT, SK
Risk mitigation(ii)	The provider has ensured that potential risks arising from the proposed product or service are assessed and mitigated, including to consumers and the market	EE, EL, NL
Commitment to investor protection and compliance	A commitment by the applicant entity to investor protection and culture of compliance	CY, EL
Serve domestic market-	The provider intends to offer the proposed product or service to the domestic market	LT , HU

Innovation hubs are important because they facilitate interactions between innovators and supervising authorities. They are an important source of information for supervising authorities, giving them an overview of market developments and potential new risks. They are also useful for assessing the adequacy of existing rules and adaptations that may be needed and for helping to dispel misconceptions. Last but not least, they help to attract new business in the regulated space.

From the perspective of innovators, innovation hubs help companies understand the regulatory framework and how it can be applied, taking into account their innovative services, activities or business models, which in turn facilitate compliance.

Figure 4 shows the history and situation of the establishment of national sandboxes according to the European Forum for Innovation Facilitators (EFIF), which are developing rapidly year after year, while the hubs are operational in almost all European countries according to Figure 5.

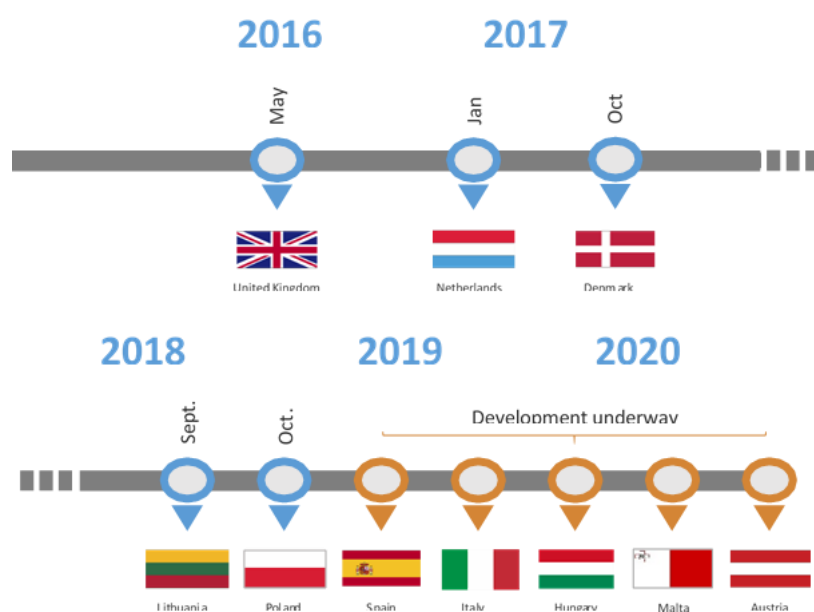


Figure 4. The Evolution of the Establishment of Sandbox Structures at European Level (EFIF, 2019)

These facilitators generate a number of risks, some of which are broader in the context of the general strategies pursued by certain jurisdictions to increase their attractiveness as a FinTech center, such as the choice of an innovation center to benefit from potential regulatory or supervisory arbitration, institutional avoidance of financial standards, regulations or guarantees. Other risks are specific to innovation facilitators, such as competition and ensuring fair competition, related to the preferential treatment of entities within an innovation facilitator. According

(Parenti, R., 2020), in the context of the single market, innovation facilitators run the risk of market fragmentation if their functioning leads to divergent supervisory practices, which may prevent the expansion of innovative services or products across the EU. For this reason, clear and transparent objectives must be set, including criteria for access, supervision and market operation for equity, both between participants and towards traditional actors providing traditional services.

To customize the applicable requirements, EU operational sandboxes use the exercise of legally established proportionality levers, which allow consideration of certain factors, such as the risk profile or the size, complexity and interconnection of firms. In a sandbox, the flexible application of certain requirements is combined with specific test parameters, which are determined on a case-by-case basis and adapted to the nature of the test activity.

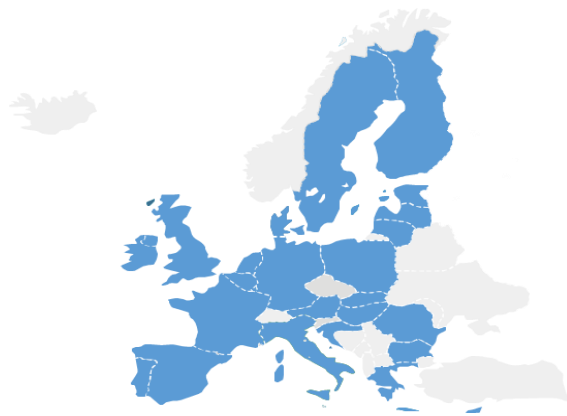


Figure 5. Operational Innovation Hubs at EU level (EFIF, 2019)

In general, institutionalized facilitators participate in the creation of scientific and practical communities because knowledge sharing with FinTech is vital to bridging the knowledge gaps that arise between facilitator and external entities. In addition, the active involvement of a wider range of stakeholders and the proactive pursuit of consumer input can help mitigate the potential risk of "catching the industry". Appropriate channels are needed for the internal transfer of supervisory knowledge to ensure a coherent approach to supervision. Where a regulatory body, in a single financial sector, operates an innovation facilitator, it is important to ensure an adequate and necessary flow of information to the other sectorial financial authorities. For this reason, a European Forum for Innovation Facilitators (EFIF) has been set up at European level, a joint committee of all national supervisory authorities, with the aim of creating a single platform, both for collecting information and for testing products and services in a cross-border manner.

In Romania, a financial technological innovation hub was set up in Romania within the Financial Supervision Authority, at www.insurtech-hub.asfromania.ro, in the

form of an accelerator with over 30 members, insurance companies, intermediaries, specific associations, companies and IT associations. The hub also has a platform for exchanging project ideas. In 2020 this hub was integrated into a FinTech Hub for all three markets overseen by the A.S.F. (insurance, financial instruments and investments, and private pension systems).

3. Facilitating Technologies

New products and services based on innovative technologies differ significantly in terms of role, size, scope and nature. These range from "core" FinTech activities in different sectors of financial services (e.g. digital payment or banking services, platform-based financing, robotic counseling, InsurTech - as a specific FinTech branch of insurance (EIOPA, 2019)), to facilitation technologies (e.g. blockchain technology / distributed registers (DLT), API interfaces, smart contracts, artificial intelligence and machine learning, quantum computing, etc.), according to Figure 6. These technologies find application in any other industry.

Some of them fall within the traditionally regulated space of the financial sector, while others are applicable in all sectors, as shown in Figure 7. As we mentioned throughout this article, the application of technologies in the financial sector results in products, practices and processes, which generate new risks (e.g. automation of decisions, allocation of responsibility and liability, etc.). These new risks are generated in addition to the traditional risks inherent in the financial sector (e.g. systemic risk, operational risk, market integrity, principal agent risk, etc.). Moreover, as a result of technological applications, such traditional risks in the financial sector can be modified - some mitigated and others amplified (ROFIEG, 2019).



Figure 6. The FinTech Technological Ecosystem (ROFIEG, 2019, diagram by T. Butler)

Disruptive technology companies appear (such as those from the GAFAs group - Google, Apple, Facebook, Amazon). These companies together with other facilitators are mainly developing a culture of digital transformation, which is spreading in society and in companies. New professions appear as data scientists or digital architects.

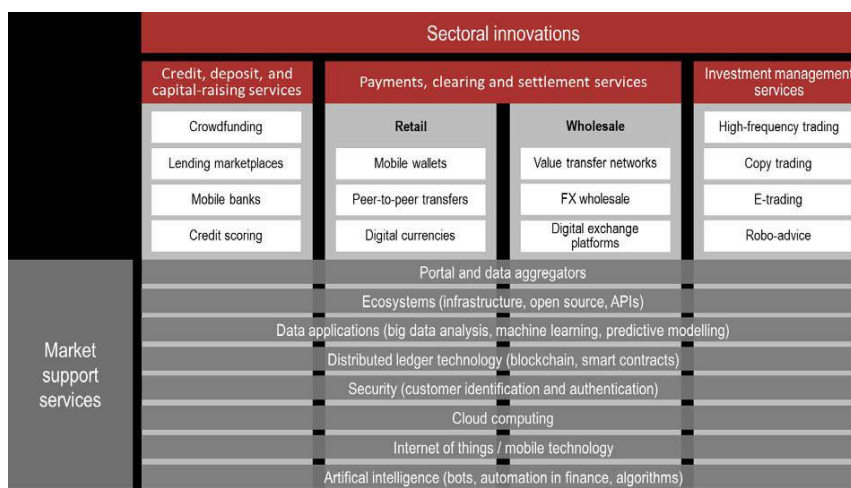


Figure 7. Examples of Sectorial Innovations (BCBS, 2018)

Innovative technologies are facilitated and can be developed if new IT architectures are taken into account, which according to (Gera, P., 2016) must be:

- Liquid - the components should be decoupled as much as possible, made of granular components to be created or adapted in an agile manner.
- Intelligent - should incorporate robotics and quantum computing to speed up the digitization process.
- Connected - architectures must contain APIs to easily integrate third parties and technology partners.
- Distributed - by using distributed registry technologies, smart contracts that allow real-time transactions without intermediaries and with low costs.

In this manner, end-to-end processes will be integrated and not just the digitization of front-end processes as is generally the case.

This integration is essential to create a new consumer experience, which is in fact the main goal of digital transformations in the financial-banking field.

According to the study (Creatio, 2019), 82% of companies consider improving the consumer experience through digital transformation as a competitive advantage, and 62% consider this approach as the biggest factor for change.

Artificial Intelligence (AI) and Machine-Learning (ML) can ensure a close relationship with customers. These technologies, together with block-chain, reshape the financial industry. The best value-added services will be offered, adapted to the needs and complexity of customers, while increasing operational efficiency, by evaluating and processing a huge amount of data. In addition, the risk analysis will be more accurately performed by protecting both customers and suppliers. According to the same report, 63% of Chief Executive Officers consider Internet-of-Things (IoT) to be of strategic importance to their companies.

AI relies in these analyzes on Big-Data (BD) technologies, on the analytical analyzes of these data, in order to correctly identify customer behaviors and to be able to build a prediction of future needs.

Customer service will focus on robotics, intelligent chat bots, virtual assistants who can continuously process analytical data to provide the necessary recommendations to customers, with adaptations to the context of the questions.

An important role of robotics is expected to be in the field of process management in a company, which must convey these large amounts of data in a rules-based system, steadily and efficiently. 81% of decision makers consider robotic processes as an important digital transformation for their companies.

This process automation is based according to (Berg, R., 2019), on eight technologies that facilitate digital transformation, four of them with short-term value:

- Collection - data collection for use in business processes.
- Digitization - the ability to turn paper-based environments into data.
- Intelligent processing - replication of human thinking.
- Automation - the ability to replace human interaction for low value activities.

In addition to there, four other technologies have long-term value:

- Integration - gaining flexibility and the ability to quickly integrate systems.
- Data management - storage, cleaning, management and access to business data.
- Analytical analysis - the analytical capacity developed to identify new opportunities and optimize activities.
- Self-improvement - automatic improvement / learning of systems with as little human intervention as possible.

If we analyze the technologies themselves, we can identify several components that support the design of innovations and that are its facilitators. We could list according to (GS1., 2019):

- Sensors, biometrics, under the concept of Internet-of-Things (IoT) - can establish behaviors that ensure the delivery of predictive analytical data, allow automation, intelligent objects, support autonomous robots, identify problems and propose real-time solutions.
- Open, structured or interconnected data - provides the necessary information from several sources for B2B and B2C applications, whose integration is very difficult especially if it is unstructured data. Assist in ensuring interoperability, traceability and automation.
- Autonomous systems, from autonomous cars to autonomous logistics systems - which support the trend of on demand services and products, when needed, for a limited time.
- Block-chain and distributed data - to share data between a very large number of participants, ensuring transactional security, traceability and determining new trends such as edge-computing or distributed data warehouses.
- Computer vision - extends to facial recognition, environmental observation and decision-making, with applicability in production quality control, automation and on-demand services.
- Voice recognition and language processing - with an essential role in the development of digital personal assistants, conversational commerce, which affects brands, markets, companies, etc. This ensures the connection of consumers to products and services, market research, offers simplified purchases, etc.
- Robotics - takes many forms, autonomous or semi-autonomous, connected or not with humans or other robots, with a tendency towards collaborative robots (cobots, or co-robots) in which robots work with humans.
- Virtual / augmented reality - with the ability to overlay digital images and information in the real world, using mobile phones or other devices.

Having these aspects as basis, according to the Report (GS1. B., 2019) we can identify business trends and their importance according to Figure 8, regarding on demand data security and confidentiality, traceability, sustainability, services and logistics, automation and smart objects, consumer control and the possibility of large-scale adaptation.



Figure 8. Business Trends, Added Value and Relevance (GS1. b., 2019)

In order to implement these business trends, to improve the value of the business proposal, the digital transformation must be approached in a structured way, starting from the vision, values, choice of technologies and their proper integration. There is a need for a strategy that changes the culture of the organization in order to be able to support the changes brought by innovations, digital transformation, etc. Technology itself is a facilitator, but it can facilitate in real terms only part of a proper strategy and leadership.

MIT and Deloitte (Kane, C.G. & All., 2015) note that digital success is not just about technology. The technologies are in fact secondary to the management area. Digital maturity is about the proper integration of social media, mobility, analytical systems and the cloud. It is not about the timely resolving of certain issues through digitization. For this reason, a digital transformation strategy, supported by leaders, must be defined, based on a culture of change in which risk-taking through technological innovation becomes the norm. MIT and Deloitte have identified four key ideas:

- Digital strategy determines digital maturity;

- The power of the digital transformation strategy is based on defining the purpose and objectives;
- Skills must be developed to support the digital strategy;
- Employees want to work for leaders who support digital transformation.

According to (Illa, P.K., 2018), in addition to the role of social environment, mobility, cloud and analytical systems, currently the facilitators that ensure the acceleration of digital transformation are: IoT, Big Data, Virtual Reality and Artificial Intelligence. These technologies need to be integrated into a scalable, robust platform with elements specific to agile and customer-oriented development.

The technological components essential to implement an agile integration platform are highlighted in Figure 9.

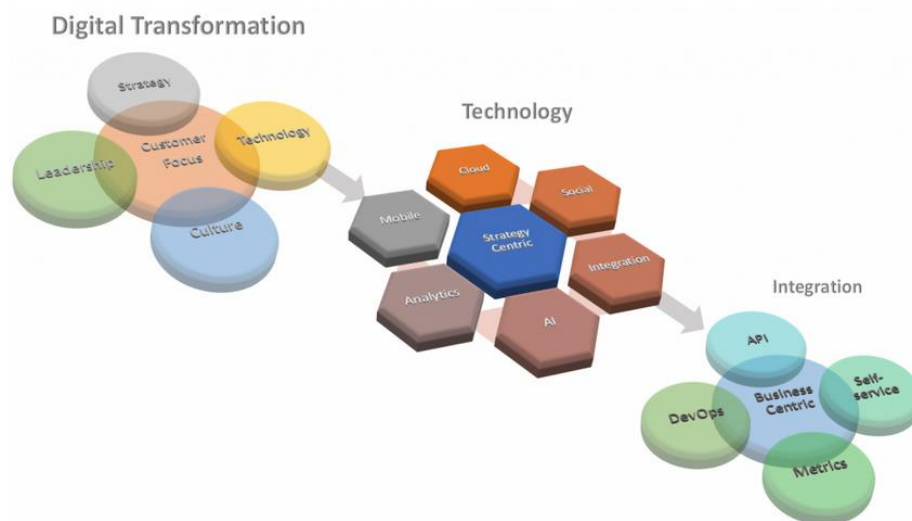


Figure 9. The Key Components of an Agile Integration Platform (Illa, 2018)

Connectivity components are important for the implementation of technologies and which are a facilitator of innovation:

- APIs (Programmable Interfaces for Applications) are the building blocks of digital transformation. They should not be seen as an IT component, but as a strategic product that generates new business opportunities.
- Self-service cloud computing services allow the construction of business flows when needed, allowing connectivity to different applications when needed, either locally or towards its services (SaaS), preferably as iPaaS Integration Platform -as-a- Service).

- DevOps ensures the introduction into production of the components of the digital strategy developed with APIs or cloud services, ensuring the rapid launch of new versions of applications / services part of a continuous development, in order to experiment and innovate quickly.
- Metrics or performance indicators (KPIs) are essential to measure the processes within the digital organization that makes decisions based on data and analytics.

All the above are part of a whole that is a new paradigm of reality.

4. Conclusions

Institutional facilitators and facilitating technologies are just two of the key components absolutely needed in business transformation processes, in the evolving trends of commercial markets and of human society in general. In order to eliminate disruptive elements and avoid economic imbalance, a uniformity of internationally accepted regulations is required. The perception of space and time undergoes mutations caused by new realities. Value systems are repositioned for investors, providers and consumers. An alignment of implementations and best practices in the field is required, within a period of oversight from under the supervision of the competent institutions which ensures the creation of good governance. National and European policies are needed to support innovation facilitators, to eliminate legislative barriers and ensure development in the interest of consumers. Such adopted measures will lead to an increase in the quality of life of customers and to an accurate perception of the phenomenon.

References

- *** European Forum for Innovation Facilitators. <https://esas-joint-committee.europa.eu/Pages/Activities/EFIF/European-Forum-for-Innovation-Facilitators.aspx>.
- Accenture, Piercarlo Gera (2016). *Four Digital Enablers Needed for Financial Services Institutions' Transformation*. <https://financialservicesblog.accenture.com/four-digital-enablers-needed-for-successful-transformation>.
- Bank for International Settlements, Basel Committee on Banking Supervision. (2018). *Sound practices, Implications of FinTech developments for banks and bank supervisors*.
- Boston Consulting Group (2016). *Fintech Control Tower, Expand Research LLP*. <https://www.expandresearch.com/product/fintech-control-tower/>.
- Creatio (2019). <https://www.creatio.com/page/fundamental-enablers-digital-transformation-banks-financial-firms>.
- Dataversity Digital, LLC. & Illa, P. K. (2018). *Integrations: Key Technology Enablers in Digital Transformation*. <https://www.dataversity.net/integrations-key-technology-enablers-digital-transformation/>.

Dutch Authority for the Financial Markets (2016). *Regulatory Sandbox*. <https://www.afm.nl/en/professionals/onderwerpen/innovationhub-maatw>.

European Banking Authority. (2019). *Report on potential impediments to the cross-border provision of banking and payment services*. <https://eba.europa.eu/eba-calls-european-commission-take-action-facilitate-scaling-cross-border-activity>.

European Commission, ROFIEG (2019). Expert Group on Regulatory Obstacles to Financial Innovation. *Final report of the Expert Group on Regulatory Obstacles to Financial Innovation: 30 recommendations on regulation, innovation and finance*, https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/191113-report-expert-group-regulatory-obstacles-financial-innovation_en.pdf.

European Insurance and Occupational Pensions Authority (2019). *Report on Best Practises on Licencing Requirements, Peer-to-Peer Insurance and the Principle of Proportionality in an InsurTech Context*,

https://www.eiopa.europa.eu/sites/default/files/publications/pdfs/eiopa_best_practices_on_licencing_march_2019.pdf.

Financial Conduct Authority (2015). *Regulatory Sandbox*. https://www.fca.org.uk/firms/innovation/regulatory-sandbox_

Financial Stability Board (2018). *Implementation Monitoring, Financial innovation and structural change, FinTech*. <https://www.fsb.org/work-of-the-fsb/financial-innovation-and-structural-change/fintech/>.

GS1. b. (2019). *Trend Research 2018-2019*. <https://www.gs1.org/docs/innovation/GS1-Trend-Research-Paper-070219.pdf>.

GS1.a. (2019). <https://www.gs1.org/articles/9-top-enabling-technologies-support-emerging-business-trends>.

International Organization of Securities Commissions (2017). *IOSCO Research Report on Financial Technologies (F.intech)*.

Massachusetts Institute of Technology, Kane, C. G. & All. (2015). *Strategy, not Technology, Drives Digital Transformation*. <https://sloanreview.mit.edu/projects/strategy-drives-digital-transformation/>.

Parenti, R. (2020). *Regulatory Sandboxes and Innovation Hubs for FinTech, Impact on innovation, financial stability and supervisory convergence*. Study for the committee on Economic and Monetary Affairs, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg, [https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652752/IPOL_STU\(2020\)652752_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652752/IPOL_STU(2020)652752_EN.pdf).

PricewaterhouseCoopers International Limited (2016). *Global FinTech Report 2016, Blurred lines: How FinTech is shaping Financial Services*, https://www.pwc.com/il/en/home/assets/pwc_fintech_global_report.pdf.

PricewaterhouseCoopers International Limited (2017). *Global FinTech Report 2017. Redrawing the lines: FinTech's growing influence on Financial Services*. <https://www.pwc.com/gx/en/industries/financial-services/assets/pwc-global-fintech-report-2017.pdf>.

Quanton, Russel Berg (2019). *8 Technology Enablers for Digital Transformation*. <https://content.quanton.co.nz/blog/8-technology-enablers-for-digital-transformation>.