

Digitalization of Finance: Effect or Cause of Programmed Chaos?

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Abstract

The actual "permacrisis" marks the five transitions that are unfolding simultaneously: a transition in the planet's climate regime, an energy transition, a geopolitical transition, a technological transition and a demographic transition. In this context, all the risks that are around show us that we are dealing with a programmed chaos that might affect the financial ecosystem, also. In this respect, such to avoid a collapse and to strengthen the banking and financial sector, the European entities appreciate that there it is necessary to strengthen the leadership of the EU in the digital domain by promoting inclusive and sustainable digital policies, serving citizens and businesses. Taking into account that the risks of increased exposure to potential cybercrime, operational resilience failures and data protection and privacy issues could have an important impact, the digital transformation must be in line with EU values - the 2030 policy program entitled "The Path to the Digital Decade" and "The Declaration on Digital Rights and Principles in the E.U."

Index terms: cybercrime, data protection and privacy issues, digitalization of the financial services sector, financial ecosystem, operational resilience

1. Introduction

The overlap, interdependence and the impact of the multiple crises that we are going through today, in this "*permacrisis*"¹, reflect the profound transformations that we are witnessing and participating in, in equal measure, and **mark the five transitions** [1] that are unfolding simultaneously: *a transition in the planet's climate regime, an energy transition, a geopolitical transition, a technological transition and a demographic transition.*

The existing and foreshadowed risks, the disturbances and turbulences manifested, as well as the surrounding vicissitudes indicate that we are dealing with a **programmed chaos**² and it is increasingly necessary to develop *catastrophic scenarios, for making prompt and optimal decisions*, based on **Decision Support Systems (DSS)**³.

¹ "*Permacrisis*" is one of the ten terms of the year 2022, declared by the Collins English Dictionary as a word denoting *an extended period of instability and insecurity* - marked by war, pandemic, inflation, flood, drought or fire, recession, hunger, protests and political instability etc. - and *which reflects the reality that will dominate economic, social and political life for more than a decade* and which reveals that the world we live in seems increasingly chaotic.

² **Chaos theory** was formulated by Edward Lorenz in 1960. The scientist said, "*A phenomenon that appears to unfold at random actually has an element of regularity that could be described mathematically.*" In simpler terms, there is a hidden order in any apparently chaotic evolution of any complex dynamic system, [Online]. Available: https://ro.wikipedia.org/wiki/Teoria_haosului.

³ The history of **Decision Support Systems - DSS** ("Sistem Suport de Decizie" - SSD) began around 1965, when building large IT systems was quite expensive, [Online]. Available: https://en.wikipedia.org/wiki/Decision_support_system.

2. The digital age of finance

Over the past three years, digital technologies have reshaped the financial services industry and paved the way for innovative consumer financial products and services. They have also transformed traditional value chains and have given birth to new business models and new actors or business models in the financial-banking market. Through digitization, funding has become more competitive, accessible and inclusive.

For the purpose of *financial inclusion*, however, a distinction should be made between the two concepts to reveal the revolutionary possibilities of *open finance*. With *open banking*, data accumulated about bank customers can also be accessed by external financial service providers. But, in order for these providers to offer more individualized and tailored IT solutions to the situations for which they need to be used, banks use this method to share data about their customers' transactions with other external parties, too. However, this method is considered quite limited as the data sharing would not go beyond the operations of the bank itself.

Open finance, on the other hand, has the potential to open new horizons for both consumers and businesses, being a concept of collecting all of a user's financial information in one location, including but not limited to banking transactions (also, includes purchases made with digital wallets, payments made with insurance and pension accounts, investments, money transfers, and cryptocurrency transactions).

So, challenges remain and providing more data to product providers, start-ups, scale-ups and SMEs could lead to the implementation of innovative services and products in the internal market of each EU member state. Subsequently, the expansion of data could bring an additional diversity of innovative products that better reflect the needs of customers.

From this perspective, the adoption in the European Parliament of the *Report on the legislative initiative in digital finance* [2], marked the main areas considered important to be legislated at the European level, to support the growing digitization in the financial sector, as a result of the initiatives proposed by the European Commission in 2020, namely *Regulation cryptocurrency markets*, the *Digital Operational Resilience Act* and the *Distributed Ledger Technology (DLT) Pilot Regime*. They address different areas - digital asset trading, cyber resilience in the financial sector and the further development of new technologies that could bring efficiency to the sector.

At the same time, the European Union foresaw and accepted the need to develop innovative political considerations, in the sense that it intends that the adopted measures allow sufficient flexibility to encourage innovation and global competitiveness, at the same time addressing the risks in the financial-banking sector, in order to regulate the specific activity in a technologically and consumer protective, neutral manner.

Thus, on **8 December 2022**, the Council of the European Union adopted the **2030 policy program** entitled *"The Path to the Digital Decade"* [3]⁴, which ensures that the EU meets its objectives for a digital transformation in line with EU values, with **the aim of strengthening the leadership of the EU in the digital domain** by promoting inclusive and sustainable digital policies, serving citizens and businesses.

With this aim in mind, on **December 15, 2022**, the President of the European Parliament, Roberta Metsola, the Council of the European Union - through the Prime Minister of the Czech Republic, Petr Fiala (whose country held the EU Presidency until the end of 2022) and the President of the EU Commission, Ursula von der Leyen - signed the *"Declaration on Digital Rights and Principles in the European Union"* [4], which presents the Union's commitment to a *safe,*

⁴ The *2030 Policy Program on the Digital Decade* (Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022), which establishes a monitoring and cooperation mechanism to achieve common objectives for Europe's digital transformation by 2030, entered into force on **9 January 2023**.

sustainable and durable digital transformation and which indicates to citizens that *European values, as well as their rights and freedoms must be respected in the online environment as well.*

The *Declaration* has 6 chapters with ***rights and principles*** which, in short, mean:

- affordable and high-speed digital connectivity everywhere and for everyone;
- well-equipped classrooms and digitally qualified teachers;
- problem-free access to online public services;
- a safe digital environment for children, disconnection after work and class hours;
- obtaining easy-to-understand information regarding the impact of digital products on the environment, and
- control over how personal data is used and to whom it is sent.

At the same time, this *Declaration* establishes ***the concrete digital objectives*** that the EU and its member states aim to achieve by the end of the decade **in four areas**, namely:

- strengthening digital **skills** and digital education;
- the development of secure and sustainable **digital infrastructures**;
- digital transformation of **enterprises**;
- digitization of **public services**.

The Policy Program:

- introduces a new form of governance based on **cooperation between Member States and the Commission, to pool in common the EU, national and private resources** and to make **progress in digital capabilities and technologies** that no Member State would otherwise not be able to make on its own;

- will facilitate **investments** in areas such as high-performance computing, shared data infrastructure and services, blockchain technology, low-power processors, pan-European development of 5G corridors, high-tech partnership for digital skills, secure quantum infrastructure and hub network of cyber security, digital public administration, test facilities and digital innovation centres.

In this sense, Member States will develop draft of **national trajectories** and **strategic roadmaps** to achieve these objectives until their ***expected revision in 2026***. Progress will be monitored based on the **Digital Economy and Society Index (DESI)** [5]⁵ and will be evaluated in ***the Commission's annual report*** on the progress of the digital decade.

This policy resides from the "**Compass for the Digital Dimension 2030: The European Model for the Digital Decade**" of **9 March 2021** and comes more than 2 years after that the financial organizations accelerated their ***digitization of the financial services sector*** by adopting "**Cloud Computing**" [6]⁶ which improved the ability to store data and record data, enabling better access and management of customer information. In this context, the **Cloud Computing technology has helped these organizations** through the global pandemic, economic crisis and other emerging challenges, with the aim of:

- expanding digital services in the financial services sector (such as online banking and instant and contactless payments);
- offering personalized, relevant and responsible solutions to consumers, to the requests made through electronic channels, so that the interaction with them is carried out without interruptions and,

⁵ Since 2014, the European Commission has monitored Member States' digital progress and published annual reports on the Digital Economy and Society Index (DESI). Romania ranks 27th out of the 27 EU member states and in the 2022 edition also.

⁶ The term "**cloud computing**" refers to the storage, processing and use over the Internet of data that resides on remotely located computers. Many people today use the cloud without even realizing it. Existing services such as Internet e-mail or social networks have their technological base stored in the cloud. "*Cloud computing*" offers professional IT users a high degree of flexibility in terms of computing power required. For example, if the use of a service increases, it is very simple to add additional capacity - an operation that would require increased additional costs and much more time if the company had to physically install a new computer in its own data center.

at the same time, to remain competitive on the market and to optimize the activity in the relationship with consumers.

In other words, the **Cloud offers increased agility** and the ability *to create resilient, real-time applications that are available and able to scale quickly on demand*, which is **an advantage for the digitalization of the financial sector**. At the same time, enterprises can achieve higher levels of security of the platforms used by *automating secure infrastructure and newer technologies*, such as for continuous monitoring of activities, *based on security and compliance controls, while reducing human configuration errors*.

This trend will help financial institutions maintain the confidentiality and integrity required by their customers, while ensuring *the timely and accurate reporting required* by financial services industry regulators and supervisors, as well as *managing operational risks* in their cloud environment and ensuring that they have identified sufficient security processes and measures *to support the encryption, authentication and reporting of collected data*.

This is also crucial, especially now at a time when **cyber threats are on the rise**, including from hostile states, **with potential implications for financial stability**. As the European regulatory framework evolves, *integrated network services* (e.g. *Amazon Web Services - AWS*) will continue to provide the financial services industry with the most advanced *data control, security and privacy capabilities*, empowering the EU financial sector with additional options to meet its needs, bringing *innovation, security and resilience benefits to the sector* and being *essential for growth, economic development and global competitiveness*.

Thus, the **era of digital finance**:

- offers, in turn, the opportunity to create *a competitive digital economy* of the European Union and an open society, *centered on innovative financial products and services* for consumers;
- transforms traditional value chains and gives rise to *new business models and new enterprises*;
- ensures more competitive, more accessible and more inclusive financing, facilitating the emergence of *new FinTechs* and *tempting applications* that offer consumers cheaper, simplified and faster access to financing;
- marks advances in *Artificial Intelligence (AI)* that increase the speed and ability to analyze and evaluate the multitude of data collected to improve human decision-making and reduce the risks arising from the increased use of digital finance;
- foreshadows a significant impact on payment services through *Distributed Ledger Technology (DLT)* which is a distributed technology, intended to decentralize the recording of transactions and reduce the need for expensive intermediate chains, and in its mode of operation and resilience is *similar to the technology of Internet file transfer torrent* [7]⁷. Thus, the same information is stored in multiple locations, and if one location is affected, the other locations separately certify active transactions/data. In this way, the technology is resilient to fraud and computer system malfunctions. At the same time, *blockchain technology ensures the confidentiality of transactions without human intervention to protect personal data and thus minimize possible legal consequences*.

⁷ *BitTorrent* is a peer-to-peer data transfer technology, one of the best known and most used technologies of this type. **Peer-to-peer (P2P)**, loosely translated from peer to peer, is a network architecture for distributed applications that divides tasks among multiple partners. Peer-to-peer networking allows computers to connect directly to each other for mutual file exchange (file sharing). There is no theoretical limit to the size of a peer-to-peer network, those can be consist of two or hundreds of computers. Examples of P2P networks: *BitTorrent, eDonkey, Gnutella, FastTrack, ANts, Kazaa, BearShare, Direct Connect or Limewire*.

3. Accelerating Digitalization of the Financial Services Sector: Trend or Opportunity?

The war, the energy crisis, the disinformation, the food crisis, the climate changes, the underestimation of the role of industry are the *main factors that completely undermine* the foundations of the democratic world and *the free market economy*.

To these is added **the impact of the informational warfare** (visible through the public outing and the mobilization made on social networks, *affecting democracy as a system*), as well as, resuming the idea from the first paragraph of this paper, **the impact of overlapping and interdependent crises** that is beginning to be seen, especially from *the perspective of daily costs*, which are increasingly high and *reflect the reduced resilience of consumers to shortages and to a harder life*.

In this context [8], innovation facilitates the emergence of *new products, processes or business models that are possible thanks to digital technologies*, while the **information technology systems**, combined with the corresponding software, have **become a central pillar of economic activities** for many enterprises. According to assessments carried out at the level of the European Union, this would be due to the fact that *digitization offers substantial new opportunities*, as *digital networks and data services generally facilitate economies of scale* [9]⁸, allowing *the provision of better quality services at a lower cost*.

Thus, **innovation cycles accelerate**, becoming more open and collaborative. At the same time, digital technologies and applications are increasingly being built in a modular manner, communicating between them through application programming interfaces (APIs) [10]⁹. Those allow *a better adaptation of services to the client's demand* and also offer *more opportunities for experimentation and collaboration* between various actors. This can have a number of consequences for the way that the financial services are provided.

On the other hand, it is equally important to pay increased attention to *the risks and challenges that digitization brings*, among which we mention:

- the risks of increased exposure to **potential cybercrime, operational resilience failures and data protection and privacy issues**;
- the challenges of addressing issues of **accountability and transparency**, as well as those of market concentration with **a potential over-reliance on third-party suppliers**;
- **the adoption/adaptation of the financial regulatory and supervisory framework** from the perspective of the digitalization of the financial sector and the development of EU public policy, in accordance with *the European Commission's 2020 Digital Finance Strategy* [11] and *the new key legislative initiatives on crypto-assets (MiCA)* [12] and the strengthening of standards of resilience of digital operations (DORA) [13], adopted in recent months at the level of the European Union.

The draft of *Regulation on crypto-asset markets and amending Directive (EU) 2019/1937 (MiCA)*, for which, on **October 5, 2022**, the Committee of Permanent Representatives (Coreper) approved the provisional agreement, thus **starting the formal adoption process** will regulate the conditions for authorization and operation of crypto-asset issuers and crypto-asset service providers on the EU single market and will be the first step towards updating the European legal framework in this area. In strict correlation with MiCA, should also be considered the proposal for a pilot regime for market infrastructures based on distributed ledger technology near the *Regulation (EU) 2022/858 of the European Parliament and of the Council on a pilot regime for market infrastructures based on*

⁸ **Economies of scale** is a term that describes what happens when the quantities of factors used in production increase. More specifically, an enterprise reduces its unit costs by producing more goods or services and, as production increases, average costs decrease by spreading fixed costs over a larger output.

⁹ An **application programming interface (API)** is a set of programming code that queries data, parses the answers, and sends instructions between one software platform to another. APIs are widely used in the provision of data services in a wide range of domains and contexts.

distributed ledger technology and as well amending the Regulations (EU) no.600/2014 and (EU) no. 909/2014 and Directive 2014/65/EU (referred to as **the DLT Regulation**) [14].

4. Digital Financial Legislation: Framework for Balancing Innovation and Consumer Protection - RegTech, SupTech and RiskTech

The new legislative proposals issued at the level of the European Union are part of *a set of future directions regarding the reformulation of public policy*, according to a new approach determined by the tendencies to "open" the public policy process. This tendency to open up this process is associated with *the new developments that are based on the emergence of blockchain technology*¹⁰, to increase the level of trust between the citizen and the public authorities.

The possible **causes of the unsatisfactory results of the reforms** regarding the formulation of public policies of the European Union, including in our country, can be associated with *the existence of a very low level of communication and collaboration* between different actors involved in the process of public policies, respectively *a low degree of trust given to the administrative center*, in terms of its ability to fulfill its role of managing the public policy process.

Taking these aspects into account, the question that persists today is: *what kind of change could this technology bring about*, especially in *the provision of public services* and *the development of public policies*?

This way of organization - *the distributive organization* - shows the relationship that is established between different actors in the process of services and public policies and the way in which the interaction between them **no longer depends on the involvement of a center with full power, nor on secondary local centers**. The distributive organization, thus, offers *the possibility of a horizontal collaboration between these actors*, respectively of the citizens/consumers between them, changing the role and objectives of any old type of center and, as a consequence, its attributions and functions.

Blockchain technology can offer **the possibility of forming links** of this type, by *developing a viable solution to the problem of trust* between the different parts of some collaborations carried out *in order to obtain policy results or public services*. In addition, this type of organization allows obtaining a high level of quality of these results, respectively of public services, so that centralized authorities (central or local level) could become less relevant, and their role could move towards *to providing/managing a platform in order to facilitate distributive organization*, rather than being more or less at the center of any initiative.

Without going into technical details, the assessments carried out by the World Bank's specialist analysts [15] reveal that **the regulatory approaches** observed in different jurisdictions can be broadly grouped into:

- *applying existing regulatory frameworks* to new business models, focusing on the core economic function (e.g. regulating digital currency exchanges as businesses or money service exchanges);

- *adjusting existing regulatory frameworks* to accommodate the redesign of existing processes and enable the adoption of new technologies (e.g. minor changes to allow banks to only operate

¹⁰ The technical concept of *blockchain* can be understood as a growing list of records (information) that form a block. The blocks are linked together forming a "chain" which actually represents accumulated information. Links between records are made using cryptography. According to it, each block contains a cryptographic hash (algorithm, model) of the previous block, a time stamp and the transaction data. The main advantage of this technology is that, thanks to the technical characteristics offered by the blocks and the links between the different records that form them, it becomes impossible to fraudulently change the security of the information once recorded. This advantage is essential, because it technically solves a problem similar to the one that underpinned the emergence of contracts, including the one that underpins the older perspective of the citizen-state relationship as one of client-supplier.

digitally - digital banks or neo-banks, use of digital forms of identification to open accounts and enable the adoption of cloud computing for outsourced banking services);

- **creating new regulations** to expand the regulatory perimeters and introduce specific requirements for the new class of players in the ecosystem (for example, creating a new class of regulated entities for electronic money and lending platforms, requiring bank providers to provide interfaces of application programming - API - to allow other institutions to directly access information and provide services to customers - open banking);

- **adopting new frameworks to promote innovation and experimentation** in areas where the regulatory framework is unclear or omitted. These frameworks include developments such as regulatory sandboxes, innovation hubs and accelerators. Regulatory sandboxes are structured to allow experimentation with restrictions imposed on a large scale, duration and scope, to reduce risk while enabling the deployment of new technologies and approaches. Experience gained from regulatory sandboxes can then be used to structure the regulatory framework.

Innovation hubs created around the world seek to expand on this latter practice, **allowing innovators to interact directly with regulators and the financial services industry** through experts **to help innovation** in general. Business accelerators also seek to direct funding funds **to help develop and systematize research-development-innovation (RDI)** activities and bring new innovations to market. Regulatory sandboxes have captured the attention of several jurisdictions, including income economies (e.g. Australia, Hong Kong, Japan, the UK and the US) and World Bank client countries (e.g. China, Colombia, India, Indonesia, Jordan, Mexico and Morocco).

4.1. Regulatory Technology (RegTech)

The World Economic Forum calls our current environment "**The Fourth Industrial Revolution**" [16]¹¹.

The new technologies emerge and evolve, creating **new challenges for regulatory structures** that strive **to protect customers while embracing innovation**.

The digital world still seems far away, and regulators are working hard and hard **to create agile legislation and effectively set the rules to follow**. Organizations are also working further to implement processes and systems that enable them to monitor and respond to these changes in the regulatory framework.

Thus, **regulatory technology (RegTech)** [17]¹² is **a technological solution designed to streamline the regulatory compliance process** within a bank, credit union or other financial institution. Financial institutions, and not only them, are often overwhelmed by the large volume of laws, rules and regulations (national and European) that they have to implement, comply with and supervise, given the complex spectrum of their own governance and business continuity, supplier management, fair lending and/or cyber security, etc.

RegTech solutions, depending on the complexity of processes and activities, take many forms, and can be **designed to render compliance and risk** to those in real time, while **compiling a specific rule targets a specific domain**.

It is well known that the regulations do not only provide "black and white" rules.

Financial supervisors give institutions the freedom **to develop risk management and compliance programs** that are appropriate for their size and complexity, but without these **programs being one-size-fits-all**.

¹¹ On **October 10, 2016**, the World Economic Forum (WEF) announced the opening of its new **Center for the Fourth Industrial Revolution** in San Francisco that will "**serve as a platform for interaction, insight and impact on the scientific and technological changes that are changing the way we live, work and relate**".

¹² **RegTech** is defined as "**the application of various new technology solutions that assist highly regulated industry stakeholders, including regulators, in establishing, performing and fulfilling governance, reporting, compliance and regulatory risk management obligations**".

From this perspective, **the best RegTech solutions:**

- combine automated, cloud-based software with the expertise and services of information and communication technology (ICT) experts, being an advantage if they also have years of experience in interpreting the nuances and subtleties of regulations and their implementation in internal processes, focusing on the "*overall picture*", identifying and examining the interaction of different types of risks throughout the institution, in order to increase institutional efficiency;
- allow an institution to better understand the challenges regarding the regulatory framework and organization of the basic activity, so that it can exercise the assigned powers and implement the necessary resources (human, material, financial) more efficiently, with predilection in critical areas, instead of use a dispersed approach, inconsistent and dissociated from the object of activity and the interests of the institution.

In this context, **regulatory technology (RegTech)** is an emerging technology that **involves the implementation of digital tools and processes** that improve the way organizations manage their growing regulatory compliance commitments. As it is a new technology area, its development embraces cutting-edge technology elements including big data analytics, machine learning, blockchain (distributed ledger technology), Internet of Things (IoT), artificial intelligence (AI) and more others, providing a wide range of capabilities such as:

- monitoring the regulatory framework;
- assessment of risks of (over)regulation and inconsistencies;
- compliance monitoring;
- knowing and monitoring clients;
- monitoring against money laundering;
- tracking and reporting;
- transaction aggregation and reporting.

The benefits of RegTech and the optimized results that can be obtained through this technology, aim at:

- reporting outsourcing;
- high data quality;
- operational resilience;
- privacy versus surveillance;
- prevention of money laundering.

The objectives that organizations must meet to implement RegTech are:

- increasing internal efficiency;
- effectiveness and applicability of regulations;
- reducing non-conformities by regulating processes and activities.

4.2. Surveillance Technology (SupTech)

Just as financial institutions are responsible for complying with thousands of rules and regulations, supervisors are tasked with ensuring that **all of these rules and regulations are followed** by financial institutions.

Supervisory Technology (SupTech) [18]¹³ is *the technological solution designed to help financial supervisory authorities* to ensure regulatory compliance and adequately manage risks identified in the financial system and regulatory enforcement by adopting some innovative

¹³ **SupTech** "refers to the use of technology to facilitate and improve supervisory processes from the perspective of supervisory authorities". **Regtech** and **Suptech** solutions are emerging for a wide range of regulatory areas including regulatory change tracking, fraud detection, know your customer (KYC), countering the financing of terrorism (CFT), conduct and prudential risk management, regulatory reporting and associated audit trail.

technologies (such as Artificial Intelligence - AI and Machine Learning – ML) by regulatory authorities, called supervisory agencies, to support supervision.

SupTech **helps regulators**, i.e. supervisors and representatives of other regulators of financial institutions and other industries (including financial services), become *more efficient, automated and reduce costs and errors*. Like RegTech solutions, SupTech focuses on **maximizing the efficiency of supervisors** by *automating* processes, *optimizing* operational and administrative operations and *digitizing* work tools and data, with the aim of **reducing the reporting burden of enterprises and promoting improved reporting, more prompt monitoring and overall compliance** with existing regulations and resources to oversee.

In the case of **data analysis**, SupTech solutions can minimize specific problems by *automating the process of collection and storage*, but only if they are transmitted in *defined reporting formats*, to facilitate the collection and evaluation of data and allow their *unified interpretation* (including aspects such as market surveillance, deviation analysis and macro and micro prudential supervision).

In the case of **automated reporting**, activities include *data push vs data pull* where entities being supervised push data through M2M APIs¹⁴ or regulators can programmatically pull data directly from supervised entities and also include *real-time monitoring*.

In the case of **virtual assistance**, AI ChatBots (chatbots using Artificial Intelligence) are used to *address consumer complaints* and *assist regulatory bodies* in reviewing and improving regulations.

While SupTech presents a set of new ways to make regulators' operations more accurate and faster, that doesn't mean that the technology does not come with its own set of challenges, namely: cyber risk, legal risk, operational risk, IT risk.

4.3. Risk Technology (RiskTech)

Bankers and credit union executives often **worry about not complying with regulatory requirements** and envision how regulators find specific violations of statutory rules, *worrying about the cost of non-compliance*. Thus, they want to solve the problem as simply (and cheaply) as possible.

In this sense, **RiskTech** [19], as a subset of **Insurance Technology (InsurTech)**¹⁵, constitutes another new technological innovation in insurance that is intended to support risk professionals to make better and more efficient decisions, based on data analysis.

RiskTech solutions focus on **the big picture**, identifying and examining *the interaction of different types of risk* across the entire enterprise. Those confirm that risk remains an integral part of all discussions, regardless of the segment/area of supervision. Those, also, enable an institution to **better understand and prioritize its risk management needs** so that it can more effectively *deploy resources in the most critical areas*, rather than using a scattered approach.

¹⁴ **M2M** (Machine 2 Machine) **API** (Application Programming Interface) refers to a **passive interface** for electronic communication between two remote devices or remote software. Unless otherwise specified (for example, in the cloud-facing MQTT protocol), the device waits until it receives a request for a value from an active element (a master system).

¹⁵ **RiskTech** consists of **InsurTech**-related tools that are specifically designed for risk management professionals. As risks continue to evolve and multiply, risk managers will come to rely on RiskTech tools and bigger data-driven insights to chart a risk's trajectory.

InsurTech refers to technological innovations that are created and implemented to improve the efficiency of the insurance industry and encourage the creation, distribution and administration of insurance business as the insurance industry is well poised to take advantage of disruptive and innovative technology. InsurTech helps large insurance companies explore new options outside of traditional human endeavours. This could include dynamically priced insurance policies, small business insurance and social insurance options. InsurTech also gives insurance companies access to data streams from IoT (Internet of Things) devices. This creates a dynamic pricing system based on market conditions and customer behavior.

5. Epilogue

While the "*technological transition*" improves the professional experience and confers undoubted benefits in terms of *accuracy and processing time of data and information collected and processed*, both for providers, regulators or supervisors and for consumers, there are still massive restraints in the industry domestic financial services that minimizes **the importance and consequences of a pro-active attitude towards the digitization of finances**.

Although the slowest process is manifested at the level of regulatory agencies and supervisory authorities, and even there are still conservative, *the technological solutions envisioned denote that automation, streamlining and increasing the efficiency of automation are increasingly necessary*. The sheer volume of regulations (some of which are unenforceable, out-of-date or inconsistent), remote working environments and the need for ongoing risk management add to **the challenge for supervisors and regulators** to exercise their powers and modernize and optimize their way of working.

On the other hand, in the spirit of the predictions of the executive director of the World Economic Forum, Klaus Schwab (creating the conditions for a "*stakeholder economy*", building in a more "*resilient, equitable and sustainable*" way, using environmental, social and of governance (ESG) parameters and "*harnessing the innovations of the fourth industrial revolution*") [20], **to reduce the time gap with economically and technologically advanced countries**, we appreciate that quick and *effective solutions should be implemented*, through specialized working groups, to outline *realistic measures to adapt the behavior of financial businesses and consumers* to the new conditions and to manage the evolving changes as much as possible.

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