

EFIF taxonomy of Financial Innovation

Classification of Financial Innovation

1. The classification of Financial Innovation is done considering the three dimensions (sectors, services and activities, and enabling technology(-ies) as follows:
 - **SECTOR:** Financial innovation can be of a **cross-sectorial (CS)** nature linked to all three sectors, or related to one of three specific sectors, namely **banking and payments (B)**, **insurance and occupational pensions (I)** or **securities and markets (S)**. References to the sector in which the innovation are mostly exploited are included in the table below.
 - **SERVICES AND ACTIVITIES:** This relates to high-level categories of traditional services and activities in each of the respective sector. Certain activities/services can be of cross-sectorial nature.
 - **ENABLING TECHNOLOGY:** Each Financial Innovation is enabled by one or more technologies.
2. The 'matrix' below will help users categorise Financial Innovations by sectors, services and activities, and enabling technologies. Each service or activity is linked to a number, while each enabling technology is linked to a letter. The combination of number(s) and letter(s) is expected to further help the categorisation of Financial Innovations and foster the understanding of market trends.
3. Although the residual categories (e.g. 'Other cross-sectoral activities and services' and 'Other technologies') should be able to capture new business models, the list of services and activities and the list of enabling technologies can be expanded where necessary, to cater for the evolution of the market.
4. To further help EFIF members in categorising Financial Innovation, some of the terms included in the 'matrix' are defined in a Glossary, which is divided into two sections (one for services and activities and one for the enabling technologies). Given the diverse and multiple sources of financial innovation as well as their dynamic and shifting nature, sometimes no unique and static definition can be reached. However, where possible, legal definitions from existing EU legal acts have been used as a basis.

EFIF Taxonomy of Financial Innovation

Sector	Services and Activities	Enabling technologies														
		Application Programming Interface (API)	Biometrics	Big Data and Artificial Intelligence (including ML, NLP, LLM, generative AI, etc)	Cloud computing	Digital and online platforms	DLT (including Blockchain) and smart contracts	Edge computing and Internet of Things (IoT)	Encryption and Privacy Enhancing Technologies (PET)	Extended reality (e.g. augmented, virtual)	Mobile applications	Quantum computing	Robotic Process Automation (RPA)	Tokenisation	Web3 and Metaverse	Other technologies (please, specify)
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Cross Sectorial (CS)	Authentication	1														
	Clearing and settlement	2														
	Cross-selling	3														
	Crowdfunding	4														
	Crypto asset issuance and offering services and activities	5														
	Customer Due Diligence / Onboarding	6														
	Customer Relationship Management	7														
	Customer support and advice	8														
	Data sharing	9														
	Internal processes optimisation and automation	10														
	Electronic wallet	11														
	Marketing, sales and distribution	12														

	Next-generation FMIs	13															
	Open Finance	14															
	Rehypotheication	15															
	RegTech	16															
	Risk management	17															
	Standardisation	18															
	SupTech	19															
	Underwriting	20															
	Other cross sectoral activities and services	21															
Banking / payments (B)	Creditworthiness assessment	22															
	Lending	23															
	Issuing electronic money	24															
	Payment Services	25															
	Payment-related technical services	26															
	Taking deposits and other repayable funds	27															
	Other banking / payments activities and services	28															
Insurance and occupational pensions (I)	Claims management	29															
	Insurance pricing	30															
	On-demand and just-in-time insurance	31															
	Parametric insurance	32															
	Peer-to-peer insurance	33															
	Pension tracking system	34															
	Telematics-based insurance	35															
	Other insurance and occupational pensions activities and services	36															
Securities and markets (S)	Derivatives-related services and products	37															
	Investment services and activities	38															
	Public offerings and issuance services	39															
	Other securities and markets activities and services	40															

Glossary

Section 1. Activities and services

A

Authentication: means a procedure which allows the service provider to verify the identity of a service user or the validity of the use of a specific service or activity, including the use of the user's personalised security credentials

Source: Elaborated from Directive (EU) 2015/2366 (PSD2), Article 4 (29)

C

Claims management: refers to the process of handling and settling insurance claims filed by policyholders. Insurance claim means an amount which is owed by an insurance undertaking to insured persons, policy holders, beneficiaries or to any injured party having direct right of action against the insurance undertaking and which arises from an insurance contract or from any operation provided for in Article 2(3)(b) and (c) in direct insurance business, including an amount set aside for those persons, when some elements of the debt are not yet known.

Source: Directive 2009/138/EC, Article 268(1)(g)

Clearing and settlement: the set of operations aimed to establish the final net positions and the subsequent completion of a transaction or of processing with the aim of discharging participants' obligations through the transfer of funds and/or securities.

Source: ECB [Payments and markets glossary](#)

Creditworthiness assessment: means the evaluation of the prospect for the debt obligation resulting from the credit agreement to be met.

Source: Directive 2014/17/EU (Mortgage Credit Directive) Article 4(17)

Cross-selling: means the offering of an investment service together with another service or product as part of a package or as a condition for the same agreement or package

Source: Directive 2014/65/EU (MiFID 2) Article 4(42)

Crowdfunding: The provision of crowdfunding services generally involves three types of actors: the project owner that proposes the project to be funded, investors who fund the proposed project,

and an intermediating organisation in the form of a crowdfunding service provider that brings together project owners and investors through an online platform.

Source: Regulation (EU) 2020/1503

Crypto asset: a digital representation of a value or of a right that is able to be transferred and stored electronically using distributed ledger technology or similar technology.

Source: Regulation (EU) 2023/1114 (MiCAR) Article 3(5)

Customer Due Diligence: Customer Due Diligence means identifying the customer and verifying the customer's identity on the basis of documents, data or information obtained from a reliable and independent source; identifying the customer's beneficial owner and taking reasonable measures to verify their identity so that the obliged entity is satisfied that it knows who the beneficial owner is; assessing and, as appropriate, obtaining information on the purpose and intended nature of the business relationship; and conducting ongoing monitoring of the business relationship. This includes transaction monitoring and keeping the underlying information up to date.

Source: EBA [The Risk Factors Guidelines under Articles 17 and 18\(4\) of Directive \(EU\)](#)

Customer Relationship Management (CRM): From a sales and distribution perspective, the development of CRM systems incorporating all the information from consumers into one single platform allows firms to develop increasingly personalised and targeted marketing campaigns.

Source: EIOPA [Big Data Analytics in motor and health insurance: a thematic review \(europa.eu\)](#)

D

Data sharing: the provision of data by a data subject or a data holder to a data user for the purpose of the joint or individual use of such data, based on voluntary agreements or Union or national law, directly or through an intermediary, for example under open or commercial licences subject to a fee or free of charge.

Source: Regulation (EU) 2022/868 (Data Governance Act) Article 2(10)

Deposit taking: means the activity of taking a sum of money from third parties which is unconditionally repayable on demand or at a contractually agreed point in time, with or without granting interest or a premium.

Source: EBA [Opinion on elements of the definition of credit institution](#)

Derivative: A derivative is a financial contract linked to the fluctuation in the price of an underlying asset or a basket of assets. Common examples of assets on which a derivative contract can be written are interest rates instruments, equities or commodities. An over-the-counter (OTC) derivative is one that is privately negotiated and not traded on an exchange.

Source: Regulation (EU) No 648/2012 (EMIR)

E

Electronic Money: means electronically, including magnetically, stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions.

Source: Directive 2009/110/EC (EMD2) Article 2(2)

Electronic Wallet: in the forthcoming EU framework for a pan-European digital identity, a new EU wallet is foreseen to allow citizens to identify and authenticate themselves online without having to resort to commercial providers - a practice that raises trust, security and privacy concerns. However, electronic wallets can also be used to store payment information, private keys and passwords in a safe and accessible way.

Source: Elaborated from [European Digital Identity \(europa.eu\)](#)

Equity crowdfunding: Equity crowdfunding consists of selling a stake in a business to a number of investors in return for investment. The main difference between equity crowdfunding and these traditional models is that, rather than establishing a one-to-one relationship, it is offered to a wide range of potential investors, some of whom may also be current or future customers. Equity crowdfunding does this by matching companies with would-be angels via an internet-based platform.

Source: Guide on crowdfunding, European Commission ([europa.eu](#))

I

Insurance pricing: Pricing is then a key part in the whole underwriting process. Climate change poses several challenges to the insurability of climate-related risks. It should be stressed however that innovation can also impact claims management, customer support, onboarding, digital signature, reinsurance, etc.

Source: EIOPA [Report on non-life underwriting and pricing in light of climate change \(europa.eu\)](#)

J

Just-in-time insurance: Consumers are offered the possibility to purchase tailored insurance policies only for the period without being obliged to subscribe to longer term.

Source: EIOPA [How technology and data are reshaping the insurance landscape \(europa.eu\)](#)

N

Next generation Financial Market Infrastructures (FMIs): Financial market infrastructures include the payment systems used every day, as well as more specialised systems that move money, shares, bonds and other financial assets between banks and financial institutions. Some of these systems are provided by central banks as public goods, while others are provided by non-profit groups supervised by central banks to ensure their safety and resilience.

Source: [BIS Innovation Hub work on next-generation FMIs](#)

O

Onboarding: See 'Customer Due Diligence'

On demand insurance: means an insurance cover tied to the actual time spent 'on risk' (e.g. kilometres driven) rather than the policy being 'live' for an extended period of time (e.g. 1 year). It allows consumers to purchase insurance coverage e.g. via their smartphone or computer without directly interacting with an intermediary or an undertaking, usually when the asset requiring coverage is in use and at risk. Its current development could be seen as being enabled by technological innovation, reducing the cost of monitoring policyholder activity (e.g. IoT devices, telematics).

Source: EIOPA [Discussion paper on \(re\)insurance value chain and new business models arising from digitalisation](#)

Open finance: In the context of banking, open data has translated into "open banking" regulation, empowering customers to authorise banking institutions to share their personal data with third parties for the purpose of obtaining greater access to finance in a more open and competitive market. Witnessing the evolution of technology-driven business models that make finance more accessible, inclusive and competitive through connecting and analysing data, the concept of open banking is evolving into "open finance". To reach optimal adoption, open finance in turn

calls for the continued evolution of new infrastructures, such as individual and corporate digital identity.

Source: BIS [BIS Innovation Hub work on open finance](#)

P

Parametric insurance: means a type of insurance covering the occurrence of a pre-defined external event, instead of indemnifying the actual losses incurred by the policyholder. Parametric claim triggers allow in principle for a quicker distribution of funds and may be more suitable for immediate pandemic relief.

Source: EIOPA [Report on Outsourcing to the Cloud](#)

Payment-related technical services: services provided by technical service providers, which support the provision of payment services, without them entering at any time into possession of the funds to be transferred, including processing and storage of data, trust and privacy protection services, data and entity authentication, information technology (IT) and communication network provision, provision and maintenance of terminals and devices used for payment services, with the exclusion of payment initiation services and account information services.

Source: Directive (EU) 2015/2366 (PSD2), Article 3(j)

Payment services: include (i) services enabling cash to be placed on a payment account as well as all the operations required for operating a payment account; (ii) services enabling cash withdrawals; (iii) the execution of payment transactions; (iv) the issuance of payment instruments and/or acquiring of payment transactions; (v) money remittance; (vi) payment initiation services; and (vii) account information services.

Source: Directive (EU) 2015/2366 (PSD2), Annex I

Peer-to-peer insurance: P2P insurance implies a pooling of peer groups. The size of the group depends on the type of insurance and the expected benefits to be generated. Individuals gathered within groups in P2P insurance models usually share common interests, habits and/or behaviours, and have a sense of belonging to the group that fosters responsible behaviour vis-à-vis the other members of the group. Benefits are also traditionally redistributed between the members of the group, if the pool of money (administration costs deducted) is not consumed by claims.

Source: EIOPA [How technology and data are reshaping the insurance landscape](#)

Pension tracking system (PTS): provides an aggregated view of all pension sources and can be used to aggregate multiple different pension plans. A PTS designed for an average user, should consider their cognitive and behavioural biases (information overload, status quo, present bias, limited rationality, inertia, etc.) and present the basic information in a simple and understandable way, with a smooth user experience tailored to their needs.

Source: EIOPA [How technology and data are reshaping the insurance landscape](#)

Public offering: offer of securities to the public means a communication to persons in any form and by any means, presenting sufficient information on the terms of the offer and the securities to be offered, so as to enable an investor to decide to purchase or subscribe for those securities. This definition also applies to the placing of securities through financial intermediaries.

Source: Regulation (EU) 2017/1129 Article 2(2)

R

Re-hypothecation: means the use by a receiving counterparty of financial instruments received as collateral in its own name and for its own account or for the account of another counterparty.

Source: ECB [Opinion](#)

RegTech: any range of applications of technology-enabled innovation for regulatory, compliance and reporting requirements implemented by a regulated institution.

Source: [EBA analysis of RegTech in the EU financial sector \(europa.eu\)](#)

Risk management: refers to the identification, evaluation, and prioritisation of risks followed by coordinated and economical application of resources to minimise them. In general terms, operational risk is defined in the capital framework as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events.

Source: BIS [Revisions to the Principles for the Sound Management of Operational Risk](#)

Robo-advice: refers to the provision of investment advice or portfolio management services (in whole or in part) through an automated or semi-automated system used as a client-facing tool.

Source: Directive 2014/65/EU (MiFID II) - Guidelines on suitability ([ESMA35-43-3172](#))

S

Standardisation: a standard is a voluntary technical or quality specification, adopted by a recognised standardisation body, for repeated or continuous application, with which compliance is not compulsory. Standardisation can cover a product, a process, a service or a system.

Source: Elaborated from Regulation (EU) No 1025/2012 Article 2

SupTech: the use of technology-enabled innovation by competent authorities to facilitate and enhance the effectiveness and efficiency of their work.

Source: EBA [Annual Report 2022 \(europa.eu\)](#)

T

Telematics-based insurance: Emergence of products linked to the telematics / connected devices, in particular in motor insurance, but also in household and health insurance. Big Data and telematics allow the development of more personalized products and services adapted to the customers' needs and characteristics (e.g. on-demand / just-in-time insurance products).

Source: EIOPA [How technology and data are reshaping the insurance landscape \(europa.eu\)](#)

U

Underwriting: Underwriting is the act of accepting liability up to a specified amount.

Source: EIOPA [Report on non-life underwriting and pricing in light of climate change \(europa.eu\)](#)

Section 2. Enabling technology

A

Application Programming Interface (API): means a set of routines, protocols and tools for building software applications or facilitate interaction between distinct systems. It allows direct database-to-database data transmission enabling granular, real-time reporting and automated validation.

Source: EBA [website](#), ICMA [FinTech jargon](#), and BIS [The suptech generations \(bis.org\)](#)

Artificial Intelligence (AI): a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment.

Source: [OECD](#)

B

Big Data: refers to large amounts of data produced very quickly by a high number of diverse sources. Data can either be created by people or generated by machines, such as sensors gathering climate information, satellite imagery, digital pictures and videos, purchase transaction records, GPS signals, and more.

Source: [Big data | Shaping Europe's digital future \(europa.eu\)](#)

Biometrics: Personal data resulting from specific technical processing relating to the physical, physiological or behavioural characteristics of a natural person, which allow or confirm the unique identification of that natural person, such as facial images or dactyloscopic data.

Source: *Regulation (EU) 2016/679 (GDPR) Article 4(14)*

Blockchain: is a public ledger consisting of all transactions taken place across a peer-to-peer network. It is a data structure consisting of linked blocks of data, e.g. confirmed financial transactions with each block pointing/referring to the previous one forming a chain in linear and chronological order. This decentralised technology enables the participants of a peer-to-peer network to make transactions without the need of a trusted central authority and at the same time relying on cryptography to ensure the integrity of transactions.

Source: ENISA [Glossary](#)

C

Cloud computing: means accessing computer capacity and programming facilities online or "in the cloud.

Source: [Cloud computing \(europa.eu\)](https://ec.europa.eu/economy_finance/cloud-computing_en)

D

Digital platform: a technical infrastructure that enables at least one financial institution directly (or indirectly using a regulated or unregulated intermediary) to market to customers, and/or conclude with customers' contracts for financial products and services, with the exception of the following, which are excluded from scope: mobile banking apps or online banking tools; platforms used only by (and for) 'crowdfunding service providers'; platforms used only by (and for) P2P lending.

Source: EBA [Digital Platforms Report](https://www.eba.europa.eu/en/digital-platforms-report)

Distributed Ledger Technology (DLT): a type of technology that supports the distributed recording of encrypted data. A distributed ledger is an information repository that keeps records of transactions and that is shared across, and synchronised between, a set of DLT network nodes using a consensus mechanism.

Source: Regulation (EU) 2023/1114 (MiCAR) Article 3(1)

E

Edge computing: whereas conventional cloud computing takes place in centralised data centres, edge computing data is processed in connected objects closer to the users. This allows for faster operations and gives users more control over their data.

Source: [Shaping Europe's digital future \(europa.eu\)](https://ec.europa.eu/economy_finance/shaping-europes-digital-future_en)

Encryption: the encoding of messages in such a way that only intended recipients can understand them. Encryption therefore ensures high levels of data protection.

Source: EDPS [Encryption | European Data Protection Supervisor \(europa.eu\)](https://edps.europa.eu/data-protection/our-work/encryption_en)

Extended reality: refers to technologies that combine advanced computing systems (hardware and software) that can change how people connect with each other and their surroundings and influence or manipulate human actions through interactions with virtual environments.

Source: [Enhancing EU legal frameworks for Digital Extended Reality - TechEthos](#)

I

Internet of Things (IoT): refers to a distributed network connecting physical objects that are capable of sensing or acting on their environment and able to communicate with each other, other machines or computers. The data these devices report can be collected and analysed in order to reveal insights and suggest actions that will produce cost savings, increase efficiency or improve products and services.

Source: [The Internet of Things \(europa.eu\)](#)

M

Metaverse: an immersive and constant virtual 3D world where people interact through an avatar to enjoy entertainment, make purchases and carry out transactions with crypto-assets, or work without leaving their seat.

Source: European Parliament Research Services [Metaverse \(europa.eu\)](#)

Mobile application: means an application software designed and developed for use on mobile devices such as smartphones and tablets.

Source: *Elaborated from Directive (EU) 2016/2102 (Web Accessibility Directive) Article 2*

O

Online platform: means a hosting service that, at the request of a recipient of the service, stores and disseminates information to the public. Online platforms use information and communication technologies to facilitate interactions between users, collect and use of data about such interactions, and leverage network effects. These network effects make the use of the platforms with most users most valuable to other users.

Source: *Regulation (EU) 2022/2065 (Digital Services Act) Article 3(i)*

P

Privacy Enhancing Technologies (PET): refers to a collection of digital technologies, approaches and tools that permit data processing and analysis while protecting the confidentiality, and in some cases also the integrity and availability, of the data and thus the privacy of the data subjects and commercial interests of data controllers.

Source: OECD [Emerging PET: Current regulatory and policy approaches](#)

Q

Quantum computing: Quantum computing is an area of computing focused on developing computer technology based on the principles of quantum theory, which explains the behaviour of energy and material on the atomic and subatomic levels.

Source: EU Parliament [Definition \(europa.eu\)](#)

R

Robotic Process Automation (RPA): refers to a computer software or a 'robot' that can emulate and integrate humans' actions to capture data and execute a digital system process. In other words, these software robots can mimic many repetitive activities performed by human users, such as logging into applications, moving files and folders, copy-pasting data, filling in forms, reading emails, copying and pasting data, making calculations, among others.

Source: European AI Alliance [Futurium \(europa.eu\)](#)

S

Smart contracts: An automated mechanism involving two or more parties where digital assets are put in and redistributed, at a later date, based on some pre-set formula and triggering event. The contract can run as programmed without any downtime, censorship, fraud or third-party interference. computerised transaction protocol that executes the terms of a contract

Source: ICMA [FinTech jargon and](#) EBA [Glossary for Financial Innovation \(europa.eu\)](#)

T

Tokenisation: refers to the creation of digital tokens representing real assets issued on the blockchain.

Source: OECD [The Tokenisation of Assets and Potential Implications for Financial Markets](#)

W

Web3: Web3 is a new paradigm where users control their data and choose who to share it with, and when. By putting data back in the users' hands, Web3 avoids the hoarding of data by just a few platforms. A fundamental change brought about by Web3, when compared to the Web 2.0 model based on BigTech platforms, is the use of technology to achieve automated verification of data which in turn enables the decentralisation of services and the removal of intermediaries. Although Decentralised Finance (DeFi) and other token-based initiatives have been among the first sectors to embrace Web3, the implementation of these principles is becoming a much larger and wider movement that has the potential to transform eCommerce, eGovernment, eHealth, etc.

Source: [What is Web3? - EU Verify - \(europa.eu\)](#)