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EU Supervisory Digital Finance Academy

CURRICULUM

EUI EUROPEAN UNIVERSITY INSTITUTE
European Commission
EBA EUROPEAN BANKING AUTHORITY
eiopa EUROPEAN INSURANCE
esma European Securities and Markets Authority
Funded by the European Union

EU Supervisory Digital Finance Academy (EU- SDFA)

Foundation modules

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Background and description

The first-year edition of the foundational course of the EU Supervisory Digital Finance Academy ("the Academy") provides participants with fundamental knowledge on the main areas of digital finance, as well as the essential practical skills to enable effective supervision of the application of digital technologies in finance by credit and financial institutions and supervisors' use of technology (SupTech). The course – the cornerstone of the Academy – aims to enhance the supervisory convergence across the internal market while supporting the transition toward a competitive, digital EU financial sector.

The structure of the foundational training course rests on three building blocks. First, the sessions focus on technological advances and the development of new business models driven by the uses of new technology in financial products and services. These sessions explore the main technologies in digital finance, including AI, Big Data, and Distributed Ledger Technology (DLT). They focus on the challenges and risks stemming from the use of these technologies in the markets, as well as on the new opportunities, in particular from a consumer perspective (choice and convenience), and their application in RegTech and SupTech solutions. Second, the sessions comprise the policy block, they follow the most recent regulatory response at the EU level, and introduce the new regulatory instruments implementing the European Digital Finance Strategy, including the regulation of markets in crypto-assets (MiCA) and digital operational resilience (DORA), as well as guidelines published by the ESAs and delegated acts. These sessions include the discussion on regulatory and supervisory responses and the implications of the evolving regulatory framework on supervision. Third, the practical block bridges and complements the knowledge and understanding of the new technology and regulatory and supervisory responses, to equip participants with a set of practical skills for supervision of digital finance in Europe by means of case studies and other practical exercises. The practical block will provide supervisors with the necessary skillset for operating within the new supervisory and oversight frameworks in digital finance.

The structure of the foundational training course follows a holistic and cross-sectoral approach covering financial institutions (including credit, insurance, and securities sectors) to ensure the learning journey is in line with the objectives of the Academy.

The programme is ideated and designed in cooperation with the European Supervisory Authorities (ESAs) and the European Commission (DG REFORM and DG FISMA).

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Learning objectives

The foundational course will provide participants with a fundamental knowledge of the economic and societal changes (including the changing needs and preferences of individual users) brought by technology-driven innovation in finance, enabling participants to confidently navigate the challenges and opportunities resulting from the digitalisation of finance, from a regulatory and supervisory perspective. This course will also help participants to enhance their practical skills to operate in the changing environment of digital finance, including the ability to identify, assess, and implement new regulatory instruments to complex cases of supervision, as well as to seize the opportunities that new technologies offer to consumers and financial supervisors.

Learning Outcomes

- Gain a fundamental understanding of the key notions and define the main actors and concepts in the shift from traditional to digital finance
- Be able to identify and understand the basic features and functioning of advanced technologies and their applications to finance
- Gain the basic understanding of the micro and macro risks underlying the digital transformation in finance
- Be able to understand and discuss main economic and societal implications of digital finance
- Identify the main regulatory and supervisory changes and challenges in the realm of digital finance, and navigate the key EU regulatory developments
- Become familiar with and learn to apply the supervisory toolbox and innovative techniques of supervision (e.g., SupTech applications, Digital Business Model Analysis, innovative market monitoring tools)
- Analyse and discuss concrete cases of supervision and application of supervisory approaches
- Be able to analyse and evaluate the challenges behind the transition to open finance
- Learn to identify and understand the implications of the key use cases for tokenisation and crypto-assets and regulatory approach in the EU
- Be able to analyse and evaluate the impact of AI and robo-advice in digital financial services
- Gain insights into the implementation of Big Data and advanced data analytics in finance
- Apply theoretical knowledge to practical scenarios in supervision
- Understand the risks and opportunities to leverage technology and data to support the fight against money laundering and terrorist financing (ML/FT)
- Build ICT skillset across the EU supervisory community

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Start of the Academy and Evening Programme with Ice-breaking Activities and Keynote Lecture on the State of Digital Finance in Europe

The training weeks will kick-off with an introduction to both programme and facilities. A course-themed ice-breaking exercise will be offered to participants divided into groups to facilitate interaction. The Evening Programme will be inaugurated by a keynote speech setting the scene for a discussion and exchanges throughout the week.

Introduction – concepts, actors, business models, macro trends – a global perspective

The session will present a global overview of the impact of the current technological waves on the financial market. Looking at the main emerging technologies, risks, benefits and actors behind financial innovation, the session will focus on the tension between market-driven and regulation-driven innovation. The participants will be offered a comparative outlook on the most recent developments (EU vs UK/USA vs Asia). In particular, the session will reflect on different social-economic contexts, regulatory frameworks, and market structures that follow different approaches to developing the FinTech market, facing varying regulatory and supervisory challenges.

- What is digital finance
- What is RegTech and Suptech
- Macro trends: emerging technology and new risks
- Actors: old and new
- Global developments in the field

Blockchain and DeFi

The session will offer a foundational level of technological knowledge of blockchain/DLT and DeFi as well as an overview of use cases and trends across the sectors, focusing on DeFi as an enabling technology (smart contracts, oracles, DAOs, Dapps). This session will provide an outlook of the economic underpinnings, opportunities, risks, and limitations of digital currencies (payment, investment, and utility tokens, including CDBCs). The session will equip participants with the required knowledge to discuss the supervisory challenges stemming from the wide-spread use of technology-enabled financial services.

- The technology – an introduction
- Industry applications: tools and services
- Implications for regulation and supervision

Big Data, Artificial Intelligence (AI), including Machine Learning (ML)

This session will provide a non-technical introduction and outlook on Big Data and artificial intelligence (including amongst others, machine learning) applications in financial markets. First, it will introduce the fundamental knowledge behind the technology applications. Second, it will look at the practical applications in different sectors and markets, such as credit scoring,

anti-money laundering and countering the financing of terrorism (AML/CFT), robo-advisors, insurance pricing and insurance claims management. The session will conclude with a discussion of the key implications for regulation and supervision.

- The technology – an introduction
- Industry applications
- Implications for regulation and supervision (incl. AI act)

Technology-driven change and finance: comparative case study (technology-driven innovation and business models)

The objective of this session will be to enhance the knowledge and understanding of the material learnt in session 1 and sessions 2 – 3 by deep diving into examples and illustrations of new business models and technological innovation in the financial sector (e.g. in the area of AML/CFT, Open Banking, use of crypto assets, robot-advisors etc.). The cases will explore specific risks and opportunities arising in different modes of application of digital technology in the financial sector from a macro and micro perspective, looking at horizontal risk factors, and using a sector lens of analysis for each case study to have a holistic view of the phenomena.

The output: the participants will be invited to answer a set of questions linking the theoretical knowledge with practical issues that may arise in the supervisory practice.

Cyber security and digital operational resilience

This session will provide a global overview of the challenges of cyber security and operational resilience in the context of digital finance. Key technological factors will be examined and complemented by examples from the recent cases of cyber-attacks and disruptions affecting business continuity both at the level of individual financial service providers and infrastructure level. Systemic risk implications will be briefly explored.

- Cyber risk as systemic risk
- Cyber threat landscape
- Cyber resilience strategy and frameworks development

Digital operational resilience (DORA)

The session will focus on the elements and implementation of DORA in the EU. The session will analyse the key elements, instruments, and potential implications of the new framework. The discussion in the session will focus on the challenges for the approach of financial institutions and supervisors, the required changes in supervisory approach and practice in the areas that include ICT risk management framework, ICT-related incident reporting, and oversight of critical ICT third-party providers.

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- DORA: key elements (e.g., Critical Third-Party Providers (CTPPs)) and instruments (e.g., Thread Led Penetration Testing (TLPTs))
- (Possible) Interactions with Network and Information Systems Directive 2 (NIS 2)

Markets in Crypto-assets (MiCA)

The session will focus on the new framework for markets in crypto-assets (MiCA Regulation) against the background of rapid technological development and diversification in crypto-asset use cases in the financial sector. The session will explore the objectives of MiCA (including investor and consumer protection) and its core elements (the issuer and crypto-asset service provider regimes) to enable participants to understand the framework and how it fits in with existing sectoral measures (e.g., issues of scope & categorization of crypto-assets).

- MiCA: a regulatory response in the EU (focus on key objectives under MiCA, including consumer/investor protection, links with AML/CFT Regulation, and financial stability)
- MiCA: Scope (intersection with MiFiD, CRD/CRR etc, CBDCs, NFTs)
- MiCA: Key aspects of the regime:
  - Issuers
  - Crypto-asset service providers

Regulatory and supervisory challenges in Digital Finance

The session will focus on the regulatory and supervisory challenges to financial innovation and possible technological applications in different areas. It will discuss the new policy tools that aim at balancing the inevitable trade-off between market competition, security, consumer protection, and innovation. The aim of this session is to discuss the existing and emerging regulatory and supervisory approaches to technological and financial innovation capable of addressing the risks stemming from technology and new market actors.

- Regulatory trade-offs in digital finance
- What is the role of regulators (and supervisors) as facilitators of innovation?
- Regulatory arbitrage in FinTech
- Technology-related risks (financial crime (AML/CFT); identity fraud etc)
- Risk approaches: Same risk, same rules vs entity-based regulation

Use cases and applications in supervisory practice

Case study/role-play: Supervision in the digital age

Building on the work on the comparative case study, the second group assignment will put participants in a real-life setting and task them with adopting supervisory decisions or identifying supervisory tools needed for such decisions, related to cyber risks and operational resilience or the framework for crypto assets under MiCA. The tasks and roles tailored to specific groups of participants, include situations of information asymmetry, forward-looking perspectives and conflicting interests.

The output: a motivated supervisory decision taken by each group of participants.

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Open Finance – The future of Fintech

The session will focus on future regulatory challenges in developing open finance. B2B data sharing amongst financial intermediaries, for which the EU PSD2 framework provided a pioneering policy framework, constitutes one of the key components of the Digital Finance Strategy. The session will discuss the opportunities and challenges of open finance and examine the most recent private and public sector initiatives, including the interaction between different private actors (BigTechs, Incumbents, and Fintechs) and regulatory bodies, the framing of the regulatory perimeter, and the design of a horizontal open finance framework.

- Open finance: from sector-specific to horizontal approach to data sharing (incl. interplay with the GDPR)
- The future development of the FinTech market – a market and regulatory view
- Towards a new regulatory and supervision perimeter

Group assignment | sandbox exercise

The third and final practical session will task participants with acting in the context of a regulatory sandbox. Participants will be discussing the design and implementation of the regulatory sandbox as means of engagement with RegTech and SupTech tools to enhance FinTech supervision while ensuring control over the risks behind the novel technological applications and reducing market entry barriers.

The session will be organized as follows: (i) First, with a brief introduction of the concept and implementation of regulatory sandboxes. (ii) Second, with a series of comparative case studies on success and failure of national experience to discuss risks of regulatory arbitrage and good practices on RegTech. (iii) Finally, the discussion will focus on cross-border testing framework for FinTech to tackle the points raised in the previous sections and focus on cross-national collaboration for supervision, looking at the EU Digital Finance Platforms as a case study.

The output: the participants will be invited to draft a brief proposal based on their group work.

Trends and priorities in digital finance – a cross-sectoral perspective

The concluding session of the foundational course module will draw on the key themes discussed throughout the course to provide participants with an expert outlook on future developments in digital finance. The session will focus on the issues of consumer protection and market integrity (including identity fraud and AML/CFT), the shifting role of supervisors in the context of fast-pacing technological change, and the evolving regulatory landscape.

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EU Supervisory Digital Finance Academy (EU- SDFA)

Advanced Thematic Blocks

Background and description

The advanced thematic blocks follow the foundational course of the EU Supervisory Digital Finance Academy ("the Academy"), which provides participants with fundamental knowledge of the main areas of digital finance, as well as the essential practical skills to enable effective supervision of the application of digital technologies in finance by credit and financial institutions and supervisors' use of technology (Suptech). The advanced blocks presented in this document delve deeper into the topics covered in the foundational course, using a holistic and cross-sectoral approach, covering credit, insurance, and securities, to ensure the learning journey is in line with the objectives of the foundational course of the Academy.

The blocks reflect the current supervisory needs of the European Supervisory Authorities (ESAs) and the European Commission (DG REFORM) and are categorised as:

> **Technical blocks cover** state-of-the-art tools in emerging fields. Depending on the subject, some prior background or skills are required in order to attend the course.
>
> **Regulatory blocks** cover the latest developments in the policy arena, particularly supervisory standards, practices, and frameworks.

Using participants' feedback from the Academy's foundational courses, these blocks will be fine-tuned and transformed into a particular curriculum for 2023 and subsequent years.

Planned Courses for 2023

Artificial Intelligence / Machine Learning (Technical)

This block aims to provide an overview and understanding of mainstream Machine Learning (ML) techniques and the opportunities and limitations of these techniques. It is designed to give practical rather than theoretical knowledge of ML/AI methods. The block includes both seminar-type lessons and hands-on exercises thus demystifying the black boxes and providing the tools for self-taught lessons.

- Introduction to ML
- The relevance of sampling
- Regressions versus Classifiers
- Fighting the curse of dimensionality
- Explainability and hyperparameters
- The governance challenges of ML

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- Improving weak learning
- Unsupervised learning and clustering
- Natural Language Processing (NLP)
- Regulatory and supervisory challenges
- Suptech applications of ML
- Industry-based break-out rooms focusing on banking, capital markets and insurance

Minimum Prerequisites

- Background in statistics, computer science, economics, finance, or related fields
- Basic knowledge of programming languages (Python, R, C++)

Machine Learning for Suptech (Technical)

This module aims to develop practical skills and knowledge for designing technological solutions for supervisory authorities. The approach of this module is a so-called “hackathon” where participants work to solve micro-prudential supervision challenges that NCAs regularly face when using Suptech data analytics (e.g., consumer protection, market conduct and AML/CFT).

In this block, participants will be able to apply a holistic perspective covering data structuring and collection, the lifecycle of Suptech applications, and designing policy support tools.

The practical exercise of developing tools for supporting policy decisions will consider qualitative data as an input, e.g., annual reports and quantitative such as capital and liquidity measures. Furthermore, participants will receive training on the technical design of specific techniques of NLP for text recognition, automated data collection and analysis, outlier detection, and risk scoring.

- Data structuring for Suptech
- Qualitative tools for data analytics
- Quantitative tools for data analytics
- Micro prudential and Macroprudential tools design

Minimum Prerequisites

- Background in statistics, computer science, and applied economics and finance or related fields
- Previous exposure to basic knowledge of programming languages (Python, R, C++)
- Previous exposure to basic knowledge of SQL or programming languages for database

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- Previous exposure to basic knowledge of AI and ML applications in Finance, including the AI/ML Advanced Block

DLT in the financial sector (Technical)

Participants in this course will gain a deeper understanding of the Distributed Ledger Technology (DLT) principles, mechanisms, and typical applications in the EU financial sector. Participants will gain insights into the potential opportunities of this new technology, the risks involved and the regulatory and supervisory challenges. In addition, participants will discuss regulatory issues, including the DLT Pilot Regime.

An essential part here is understanding the impact of different consensus mechanisms (e.g., Proof-of-Work, Proof-of-Stake or Practical Byzantine Fault Tolerance) on the costs and risks associated with DLT. A short overview of MiCA will also be provided as a complementary lesson to the main course on MiCA course as described below.

- Blockchain and DLT basics
- Consensus mechanisms
- DLT-based crypto assets: Types and features
- Understanding smart contracts and technical vulnerabilities, including cyber risks
- DLT applications in the EU financial sector
- DLT used by regtech solutions
- Overview of relevant regulation potentially applicable (incl. DLT Pilot Regime, MiCA, MiFID)
- Regulatory and Supervisory Challenges
- Industry-based break-out rooms focusing on banking, capital markets and insurance)

Minimum Prerequisites

- Background in applied economics, finance, or related quantitative fields
- Previous exposure to basic knowledge of blockchain and DeFi

Cyber Risk and DORA (Regulatory)

Following the foundational courses, this in-depth course covers cyber risk management and the upcoming Digital Operational Resilience Act (DORA). It focuses on supervising the strategies financial entities have in place to assess and mitigate cyber risk.

To diagnose the threats encountered by financial institutions and to assess the strategic solutions available to reduce cyber risk, participants will use case studies to choose and implement the right tools. Further, following the course, they should be able to understand supervisory techniques used to comprehend and assess cyber threats.

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This block also aims to strengthen operational resilience across the financial sector by standardising requirements for financial institutions. This advanced training will help participants understand the DORA requirements in ICT risk management (including cyber and ICT third-party risk) and provide them with an overview of the prospective EU-level oversight structure for Critical Third-Party Service Providers (CTPP)

- Overview of Cyber Risks and implications (including real cases)
- Regulation and supervision related to Cyber risk management - Role of Euro Cyber Resilience Board
- DORA key elements (phase 1): Requirements on ICT risk management, ICT-related incident reporting, digital operational resilience testing and ICT third-party risk management applicable to financial entities
- Supervisory approach and practice in the aforementioned areas (phase 1)
- Interaction between Cyber Risks and AML/FT
- Industry-based break-out rooms focusing on banking, capital markets and insurance

The Consumer Dimension (Regulatory)

The increasing digitalisation of financial services enhances convenience for users by facilitating seamless, 'real-time' 24/7 access to financial products and services. In this context, regulatory developments have played a significant role in fostering competition and innovation and the single market, as evidenced by the PSD2 in payments or the development of open finance. Notwithstanding the opportunities for users, the increased digitalisation of financial services also brings certain risks to consumers, such as insufficient disclosure of features and risks, risks linked to cross-misselling, focusing on tying/bundling of products, challenges related to complaints handling and redress procedures, risks of financial exclusion and risks relating to the of lack of digital financial literacy or risks regarding the access and use of customer data.

Participants in this course will gain a deeper understanding of the existing EU legislations and regulatory frameworks governing consumer protection in the context of digital financial services. The latter include EU legislations specific to the financial services for the three sectors (e.g., MCD, PAD, IDD, MiFID/MiFiR, PRIIPs, DMFSD) but also horizontal EU legislations (e.g., GDPR, ADR/ODR, UCPD, ePrivacy Directive, DMA) impacting financial services users and EU texts currently under review or negotiations by the EU legislators (e.g., CCD, PSD2, AI Act).

This course also provides practical examples of adequate supervision of emerging risks.

- Overview of EU legislation related to consumer protection for digital financial services users
- Interaction with other legislations (AML/CFT, GDPR etc.)
- Types of consumer detriments and how to mitigate them

- Regulatory and Supervisory challenges on consumer protection and conduct of business requirements
- Industry-based break-out rooms focusing on banking, capital markets and insurance

Minimum Prerequisite:

- Involvement in consumer protection for retail banking products and digital finance.
- Involvement in banking supervision and conduct.
- Supervising retail banking products and services.

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MICA and DeFi (Regulatory /Technical)

The Markets in Crypto Assets Regulation (MiCA) will establish a new, comprehensive regulatory framework to bring crypto assets that are not already covered by EU law (such as MiFID) their issuers and service providers within the perimeter of EU regulation and supervision. This advanced course will also extend to the DLT Pilot Regime for securities markets infrastructure. Hence, besides understanding the scope of the new rules and notions of multilateral trading facilities, financial instruments and trading and settlement systems using DLT, this course will include an extensive explanation of the scope of MiCA, supervision challenges, and market evolutions, including De(centralised) Fi(nance). Thus, this course also covers the main principles and functions of DeFi, its potential benefits and the challenges it currently poses. A vital aspect of the course is exposing participants to the difficulties of regulating and supervising DeFi applications and platforms.

- MiCA scope and intersection with MiFID, CRD/CRR, and other digital assets, e.g., CBDCs, NFTs
- Critical aspects of the regime: Issuers (including for so-called stablecoins, in the form of asset-referenced and e-money tokens) and crypto-asset service providers.
- Eligibility and application of the flagship DLT Pilot Regime for securities markets infrastructure
- AML/CFT requirements: application to crypto assets
- DeFi: Value proposition and use cases: Lending, Insurance, Derivatives, Trading, Asset Management, Banking
- Decentralized exchanges and automated market making
- DAOs and governance of DeFi
- Supervisory challenges (e.g., data, advertising of products and services via social media, arising from DeFi, etc.).
- Industry-based break out rooms focusing on banking, capital markets and insurance

Suptech tools for daily supervision (Regulatory)

Building on the prior knowledge acquired during the foundational course and linked to AI and ML applications; this block will provide an intermediate-advanced level of learning on the

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development and uses of Suptech solutions for adequate financial supervision, e.g., software for data collection and analysis, risk identification and market conduct supervision. Exploring many of the specific benefits of Suptech tools among various areas of supervision, this session will focus on case studies related to concrete applications of this innovative technology for macro and micro-prudential purposes, e.g., risk analysis, financial crime detection, climate risk analysis, and ESG reporting, among others. It will also reflect on the common challenges faced by supervisory authorities and offer critical takeaways for supervisors on using and developing Suptech tools based on global best practices.

Since supervisory authorities develop and use Suptech tools in different areas of activity such as reporting, monitoring, audits and early warning systems, this session will equip participants with a fundamental toolbox to define/strengthen Suptech strategies within their specific areas of work and identify specific supervisory needs. It will also provide participants with relevant inputs to identify and enhance cooperation channels between supervisors and technical experts to develop new solutions, efficiently carry out supervisory tasks, and effectively mitigate risks.

- Fundamentals of Suptech
- Suptech for market conduct supervision and consumer protection
- Financial crime detection
- Micro prudential supervision, e.g., credit risk, market risk analysis, AML/FT, and reporting.
- Best practices on the different uses of Suptech
- Onsite/offsite inspection: practical examples and case studies

Prerequisites:

- Background in economics, finance, computer science, statistics, or related fields.
- Previous exposure to basic knowledge of AI and ML applications in Finance (NOT CODING)

Potential Future Courses

Global regulatory overview and supervision collaboration (Regulatory)

Technological developments and the rapid digitisation of finance have brought significant changes in the functioning of the financial system, as well as new opportunities and risks for the financial sector, especially in terms of the provision of services and the functioning of markets. The digital finance trend has also been accompanied by emerging initiatives aimed at increasing risk management capacity, correcting market failures, and improving the governance practices of financial institutions at global, national, and regional levels. Considering the latter, this block will examine the international dimension of digital finance, focusing on recent efforts toward creating global guidelines, principles, and standards in the

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supervision of digital finance and will also reflect on current challenges facing supervisory authorities.

It will provide participants with relevant knowledge on global financial supervision initiatives, mainly focusing on recent efforts by international bodies such as the BIS, the FSB, and the IOSCO to establish global principles for crypto markets and assess their potential success. It will also explore possible channels to enhance transnational cooperation to improve supervisory practices and efforts to address existing regulatory gaps.

- Overview of current global supervisory initiatives
- Regulation and supervision of crypto assets
- Fintech regulation
- Big techs and policy challenges

Insurtech (Technical)

The course's main objective is for participants to understand how Insurance Technology (Insurtech) changes the landscape of the traditional insurance industry. Participants will dive deep into the relevance of big data for the insurance sector, discussing the potential benefits such as developing tailored products or more granular risk assessments. Access to non-financial data such as health care and driving data is becoming a priority for technological applications.

From Internet of Things (IoT) to digital identities are defining new access points, but the market still needs clear rules for sharing non-financial data under a customer protection approach. Indeed, one of the challenges for Insurtech markets is to define the right regulatory perimeter and interact with multiple regulatory bodies outside of financial market authorities.

Participants will also learn about regulatory and supervisory approaches that balance financial innovation in the Insurance Industry with preserving financial stability and a robust consumer protection framework. Finally, the session will focus on the NCAs' best practices for supporting a more organised approach to Insurtech licencing requirements.

- Fundamentals, significant challenges, and risks
- Relevance of big data and emerging technologies for Insurtech
- Identify new regulatory and supervisory perimeter with non-financial authorities
- Access and sharing of non-financial data: a customer protection perspective

Supervising Stablecoins (Technical)

Stablecoins are digital currencies that keep a fixed value relative to a traditional unit of account, such as the US Dollar. This course will first look at the different design approaches to creating stablecoins. These range from algorithmic ones that actively change the supply

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and demand of the coin to achieve a stable value to currencies fully backed by an asset, e.g., Tether or USDC. Stablecoins form the backbone for many applications in DeFi and thus will require specific regulation to ensure financial stability in a financial system that becomes more decentralised. This block will explain the unique nature of risk involved in such coins, for example, liquidity risk akin to the problem money market funds faced at the height of the financial crisis in 2008. This will help participants identify the design features of stablecoins and develop early warning systems to monitor such coins, which are crucial elements for a practical supervisory approach.

- Main design approaches to stablecoins
- Main applications, projects and use cases of stablecoins
- Risks and regulatory challenges and the potential of embedded supervision
- Financial stability implications

CBDCs (Technical)

This module will focus on how digital currencies transform our monetary system. Since the first cryptocurrency, Bitcoin, was introduced in 2009, many new developments have challenged the use of traditional payment instruments and financial contracts. These developments have not bypassed the attention of regulators, as more and more central banks are actively discussing the design of central bank digital currencies (CBDCs) as public infrastructure. CBDCs go way beyond the digitalisation of money, with the potential of reshaping the current underlined financial market architecture.

This block will discuss the possible motivation for adopting CBDCs, including potential risks and costs. First, looking at the designing of retail and wholesale CBDCs from a theoretical and practical perspective, analysis establishes pilot projects such as mBrigde, Helvetia, Project Hamilton, and Icebreaker.

Overall, the generation of data from the digitalisation of payment could be stored, used, and leveraged in a more secure environment, reducing cyber risk and the efficiency of current infrastructure, e.g., interoperability and cost of payment transactions. On the other hand, CBDCs infrastructure could become the future technological layer for supervision authorities when implementing policies not only for central banks in monetary policy and financial stability but also for access to financial intermediaries' data in implementing Suptech applications.

- CBDCs as an infrastructure
- Considerations in terms of operations, technology, data privacy and AML/CFT
- Design: Retail and Wholesale
- Interoperability challenges: Multiple CBDCs and cross-border payments
- Implications for securities markets/insurance/banking sector

- Policy tools: Financial stability and transmission of monetary policy
- Financial inclusion
- CBDCs pilot case study

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