



Digital Finance

Reaching New Frontiers

MSCA Doctoral Network • Horizon Europe

Grant Agreement No. 101119635

This project has received funding from the European Union's Horizon Europe research and innovation programme under the Marie Skłodowska-Curie grant agreement No 101119635



Foreword from the Coordinator

“Two years in — and the journey has only become more exciting.”

When we submitted the DIGITAL proposal in 2022, we envisioned a network that would bring together Europe’s strongest minds in digital finance research. Today, halfway through our four-year programme, I am proud to say we have exceeded those ambitions.

Our 17 Early Stage Researchers, drawn from across Europe and beyond, have settled into their host institutions and are producing research of genuine impact. From federated learning across financial data silos to explainable AI for credit decisions, from blockchain risk indices to green computing for finance — the breadth and depth of their work reflects the complexity of modern financial systems.

But DIGITAL is more than a collection of PhD projects. We have built a community. Our training weeks in Cluj-Napoca, Kaunas, and Naples have brought together doctoral candidates, senior researchers, and industry practitioners in ways that spark new collaborations. The Research Seminar Series, running monthly since 2024, has become a forum where our ESRs present work-in-progress to constructive, interdisciplinary audiences. Our first Datathon, held in February 2026, challenged participants to tackle real-world financial data problems under time pressure — and the solutions were remarkably creative.

Industry engagement has been central from the start. Our associated partners — Deutsche Bank, Deutsche Börse, Swedbank, Raiffeisenbank International, and many others — are not passive observers. They host secondments, co-supervise research, and bring problems from the trading floor and the compliance desk directly into our academic discussions. The European Central Bank provides a regulatory perspective that grounds our technical work in institutional reality.

I want to acknowledge our academic partners: WU Vienna, the University of Naples Federico II, Kaunas University of Technology, the Bucharest Academy of Economic Studies, Babeş-Bolyai University, Poznań University of Economics, and Cardo AI. Each institution contributes unique expertise, and our network is stronger for their commitment.

As we enter the second half of the programme, our focus shifts to consolidation: completing PhD dissertations, publishing in leading journals and conferences, and ensuring our ESRs are positioned for impactful careers in academia or industry.

This booklet offers a snapshot of where we stand. I hope it conveys the energy and ambition that drive this network every day.

Prof. Dr. Joerg R. Osterrieder
Coordinator, MSCA DIGITAL Network
University of Twente, Netherlands

The Network at a Glance



Mission

DIGITAL trains the next generation of researchers in digital finance, equipping them with cutting-edge skills in artificial intelligence, blockchain, explainable AI, and sustainable finance. Through a structured doctoral programme combining academic research, industry secondments, and network-wide training, our Early Stage Researchers tackle the most pressing challenges facing European financial markets.

Thematic Pillars

- **Financial Data Spaces** — federated and privacy-preserving approaches
- **AI for Financial Markets** — reinforcement learning, NLP, deep learning
- **Explainable & Fair AI** — transparency, audience-dependent explanations
- **Blockchain Applications** — standards, risk measurement, DeFi
- **Sustainable Digital Finance** — green scoring, ESG, low-carbon computing

Research Programme

The DIGITAL network organises 17 doctoral projects across five interconnected Work Packages, spanning the full spectrum of digital finance research.

WP1: Towards a European Financial Data Space

Financial institutions hold vast data reserves but face regulatory, competitive, and privacy barriers to sharing. WP1 develops federated and privacy-preserving techniques that enable collaborative analysis without exposing raw data.

ESR Projects:

- Collaborative learning across data silos — developing federated learning frameworks for multi-institutional financial datasets
- Detecting anomalies in high-dimensional, high-frequency financial data — scalable methods for surveillance across fragmented European markets

WP2: Artificial Intelligence for Financial Markets

WP2 pushes the boundary of what AI can achieve in trading, forecasting, and textual analysis of financial information. Projects range from reinforcement learning agents that adapt to market regimes to NLP systems that extract signals from news and reports.

ESR Projects:

- Strengthening European financial service providers through reinforcement learning
- Developing industry-ready automated trading systems using deep learning
- Predicting financial trends using text mining and natural language processing

WP3: Towards Explainable and Fair AI-Generated Decisions

As AI increasingly drives financial decisions, stakeholders demand transparency and fairness. WP3 investigates how to make AI outputs interpretable to different audiences — regulators, consumers, portfolio managers — and ensures algorithmic fairness in credit scoring and portfolio design.

ESR Projects:

- Audience-dependent explanations for AI-generated financial decisions
- Investigating classical XAI methods for financial time series analysis
- Fair algorithmic design and portfolio optimization under sustainability concerns

WP4: Driving Digital Innovation with Blockchain Applications

Blockchain technology promises to reshape clearing, settlement, and asset tokenisation. WP4 examines how industry standards can emerge in a fragmented landscape and develops systematic risk measurement for crypto assets.

ESR Projects:

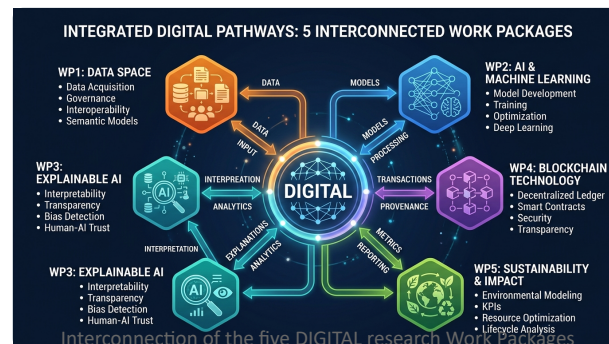
- Developing an industry standard for blockchain in financial services
- Construction of a comprehensive risk index for crypto assets

WP5: Sustainability of Digital Finance

WP5 addresses the environmental and social dimensions of digital finance, from modelling green credit scores to building recommender systems for sustainable investments. It also tackles the computational carbon footprint of AI itself.

ESR Projects:

- Modelling green credit scores for sustainable lending
- Recommender system for sustainable investments
- Fraud detection in financial networks using graph-based methods
- Green AI for low-carbon computing in financial applications
- Agent-based models for sustainable finance and market simulation
- Challenges for technological development uptake in financial institutions
- Deep generation of financial time series for stress testing and scenario analysis



Partner Network

Our consortium spans 10 countries, uniting 8 beneficiary organisations with over 20 associated partners from academia, industry, and public institutions.

Beneficiary Partners

University of Twente (Coordinator)	Netherlands
WU Vienna	Austria
University of Naples Federico II	Italy
Kaunas University of Technology	Lithuania
Bucharest Academy of Economic Studies	Romania
Babeş-Bolyai University	Romania
Cardo AI S.R.L. (SME)	Italy
Poznań University of Economics	Poland

Academic Associated Partners

- BFH Bern University of Applied Sciences (Switzerland)
- HU Berlin / RPTU (Germany)
- University of Pavia (Italy)
- American University of Sharjah (UAE)

Research & Public Sector

- Fraunhofer Institute (Germany)
- EIT Digital (EU)
- ARC Greece (Greece)
- European Central Bank

Industry Partners

Banking & Financial Services

- Deutsche Bank (Germany)
- Swedbank (Sweden/Baltics)
- Raiffeisenbank International (Romania)

Market Infrastructure

- Deutsche Börse Group (Germany)

Asset Management

- Quoniam Asset Management (Germany)
- Royalton Partners



European partner network across 12+ countries

Training & Activities

Network-wide training events combine technical skill development, soft skill workshops, and cross-cultural exchange. Each week is hosted by a different partner institution.

Training Week Cluj-Napoca

Babeş-Bolyai University (UBBFSEGA), Romania

The first major training event brought all ESRs together at Babeş-Bolyai University for an intensive week covering data science foundations, project management, and academic writing. Hosted at the FSEGA faculty, sessions included hands-on workshops on Python for financial data, statistical modelling, and research methodology. Evening social events helped build the personal connections that sustain a distributed network.



Training Week Kaunas

Kaunas University of Technology, Lithuania • June–

July 2025

Focused on Green Digital Finance, the Kaunas training week explored the intersection of sustainability and financial technology. Lectures covered ESG data pipelines, carbon footprint measurement of ML models, and green bond markets. Industry speakers from Swedbank discussed practical sustainability reporting challenges.



Training & Activities (continued)

Training Week Naples

University of Naples Federico II, Italy • December 2025

The Naples training week addressed environmental dimensions of digital finance alongside a historical perspective on financial innovation. Sessions covered climate risk modelling, sustainable portfolio construction, and the evolution of financial technology from early electronic trading to modern AI-driven systems.



Specialist Training Weeks

XAI Training Week (October 2025) provided deep technical training on interpretability methods: SHAP, LIME, counterfactual explanations, and attention visualisation for transformer models in financial applications.

Blockchain Training Week (November 2025) covered distributed ledger fundamentals, smart contract development, tokenisation of financial assets, and regulatory frameworks for crypto assets in the EU (MiCA).

Research Workshop Bucharest

Bucharest Academy of Economic Studies • January 2026

Themed “Practice of Digital Finance,” this workshop paired academic presentations with industry panels. ESRs presented their research progress to an audience of practitioners, receiving feedback that sharpened the practical relevance of their work.



Datathon & Events

DIGITAL Datathon 2026

February 2026

The inaugural DIGITAL Datathon challenged ESRs and invited participants to solve real-world financial data problems within a concentrated timeframe. Teams worked with datasets spanning high-frequency trading data, ESG ratings, and transaction networks. The event fostered cross-WP collaboration, as researchers with expertise in NLP, time series analysis, and graph methods combined their skills to build integrated solutions.

Jury members from Deutsche Börse and Quoniam Asset Management evaluated submissions on technical rigour, business relevance, and presentation quality.



Paris Adopt AI Conference

Grand Palais, Paris • November 2025

DIGITAL researchers participated in the Adopt AI Conference at the Grand Palais in Paris, one of Europe's premier events on artificial intelligence adoption across industries. Network members presented posters and participated in panels on AI in financial regulation, connecting with practitioners and policymakers from across the continent.



Research Seminar Series

The monthly Research Seminar Series, running since early 2024, provides a regular forum for ESRs to present work-in-progress and receive structured feedback from supervisors and peers across the network. Sessions are held online to accommodate the distributed consortium, with recordings archived for asynchronous access.

WP3 Blog Series

“Responsible AI in Finance” — Substack, March 2026

Researchers in WP3 launched a public-facing blog series exploring topics in explainability, fairness, and accountability of AI systems in finance, making academic insights accessible to a broader audience of practitioners and regulators.

Our Researchers

Early Stage Researchers

Our 17 doctoral candidates come from diverse academic backgrounds — computer science, mathematics, economics, and engineering — united by a commitment to advancing digital finance research. Each ESR is embedded in a host institution while participating in network-wide training, secondments, and collaborative projects.

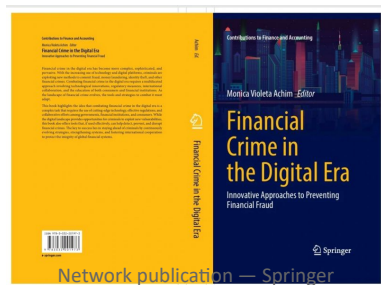
The DIGITAL Research Cohort

17 doctoral researchers drawn from across Europe and beyond, with academic backgrounds spanning **finance**, **computer science**, **mathematics**, **statistics**, and **economics**. Each researcher is jointly supervised by at least two senior academics, typically across different institutions, and benefits from structured industry partnerships embedded in their doctoral programme.



Publications & Impact

Book Publication



Financial Crime in the Digital Era, edited by Monica Violeta Achim and published by Springer, brings together contributions from DIGITAL network researchers on fraud detection, money laundering, and financial crime in an increasingly digital landscape. The volume combines theoretical frameworks with empirical studies using machine learning and network analysis.

Systematic Literature Review

A comprehensive systematic literature review on Reinforcement Learning in Finance, published in November 2025, surveys the state of the art across portfolio management, market making, and execution optimisation — providing a reference point for WP2 research.

Blog & Public Engagement

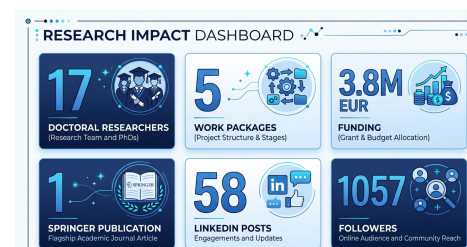
The WP3 “Responsible AI in Finance” blog series on Substack (launched March 2026) makes DIGITAL research accessible to non-specialist audiences, covering topics such as fairness in credit scoring algorithms and the limitations of post-hoc explanation methods.

LinkedIn Presence

The DIGITAL network maintains an active LinkedIn presence with over **1,057 followers**, sharing research updates, event announcements, ESR achievements, and commentary on digital finance developments.

linkedin.com/company/msca-digital-finance

Research Impact



Research Impact Dashboard — DIGITAL network outputs and reach

The DIGITAL network is committed to gender balance and inclusivity across all activities. Our recruitment, supervision, and event organisation actively promote equal participation and representation, in line with the Horizon Europe gender equality requirements.

Conference Contributions

Network members have presented at major conferences including ICAIF (ACM International Conference on AI in Finance), the European Finance Association annual meeting, and various workshops on computational finance, machine learning, and blockchain technology.

Secondments & Industry Collaboration

Secondment Model

Every DIGITAL ESR completes structured secondments that combine academic depth with industry exposure:

Research Centre Placement

Academic Secondment

ESRs complete a placement at an academic partner or research institution outside their home university. This cross-pollination of methods and perspectives broadens their research and builds lasting academic networks across the consortium.

Extended Industry Secondment

Industry Immersion

Each ESR undertakes a substantial placement with an industry partner, ensuring that doctoral research stays grounded in real-world problems. ESRs work alongside practitioners in banks, asset managers, and technology firms, gaining professional experience that enhances both their research and employability.

Value for Industry Partners

Industry partners gain early access to cutting-edge research, the opportunity to shape doctoral projects toward commercially relevant questions, and a pipeline of highly trained graduates with deep domain expertise. Co-supervision arrangements ensure that academic rigour and practical applicability reinforce one another.

Industry Engagement in Practice



Industry guest speaker at a DIGITAL event

Industry Collaboration Highlights

- **Deutsche Bank** — co-supervision of NLP and trading systems research
- **Deutsche Börse Group** — high-frequency data provision, datathon jury
- **Swedbank** — green finance and sustainability reporting
- **Raiffeisenbank International** — credit scoring and risk modelling
- **Quoniam Asset Management** — quantitative portfolio research
- **Royalton Partners** — alternative investment strategies
- **European Central Bank** — regulatory and policy perspectives

The combination of extended industry placements and regular interaction with practitioners at training events ensures that DIGITAL produces graduates who can bridge the gap between academic research and financial practice.

Looking Ahead

The Road Ahead

The DIGITAL network runs until **December 2027**. Doctoral researchers across all 14 partner institutions are progressing through their individual research programmes, combining thesis work with the structured training and mobility activities the network provides.

Research Seminars

Network-wide research seminars continue on a monthly basis, giving doctoral researchers a regular forum to present work and receive feedback from peers and supervisors.

Training Weeks

Residential training weeks are planned for the remaining period of the grant, bringing the full cohort together for intensive, theme-focused training.

Secondments

Researcher secondments with industry and academic partners are underway, providing hands-on exposure to professional and cross-disciplinary environments.

Stay Connected

The DIGITAL network welcomes interest from researchers, institutions, and industry partners working in digital finance.

Follow on LinkedIn

Updates on research outputs, network events, and doctoral researcher achievements are shared regularly on the DIGITAL MSCA LinkedIn page.

Network Website

Visit digital-finance-msca.com for news, publications, and information about the network and its doctoral researchers.

Collaboration Enquiries

Researchers and organisations interested in collaborating with the DIGITAL network are welcome to contact the network coordinator through the website.

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Selected Associated Partners

BFH Bern • HU Berlin / RPTU • University of Pavia • American University of Sharjah
Deutsche Bank • Deutsche Börse Group • Swedbank
• Raiffeisenbank International
Quoniam • Royalton Partners
Fraunhofer • EIT Digital • ARC Greece
European Central Bank

Contact & Information

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This project has received funding from the European Union's Horizon Europe research and innovation programme under the Marie Skłodowska-Curie grant agreement No 101119635.

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors. The Commission cannot be held responsible for any use which may be made of the information contained therein.

Grant Agreement No. 101119635

Budget: EUR 3,792,542.40 • Duration: January 2024 – December 2027

Published: March 2026

