

- *Title of the tutorial:* **Blockchain and Emerging Standards**

- *Abstract, objectives, and motivation*

Blockchain standardisation is a critical aspect of the evolving blockchain landscape, aiming to establish uniformity, interoperability, and security across diverse blockchain networks. This tutorial explores the fundamental concepts and key objectives of blockchain standardisation, providing a comprehensive overview of the standards that underpin this revolutionary technology. Participants will gain insights into the significance of standardisation for fostering trust, promoting innovation, and facilitating widespread adoption in various industries. Moreover, the participants will benefit from an insider's perspective on the very recently published **ISO/TR 6277:2024 Data flow models for DLT use cases**, co-edited by the instructor Fiona Delaney. Fiona will provide a step-by-step tutorial on how to submit a new use case to the **ISO 24878 new and emerging blockchain use cases**. Other opportunities and ways to get involved in the realm of Blockchain standardisation will be discussed as well.

The tutorial contents draws from the results and experiences gained within the SEEBLOCKS project (<https://seeblocks.eu/>), a Digital Europe Programme project that aims at delivering a targeted, democratic, industry-driven initiative to support European interests in standardisation within the Blockchain/DLT domain, bringing together EU researchers and open standards specialists, along with industry and policy experts.

- *Timeline and intended audience*

The tutorial content is planned to be delivered within 2h and is targeted to a large audience: researchers, educators, industry representatives. The tutorial content would benefit absolute beginners in the standardisation field, but also the more advanced ones, as they will be presented with new tangible opportunities in this field and unique insights from what is coming next.

- *Name, affiliation, and a short biography of each tutorial speaker*

Fiona Delaney Software engineer and systems architect. Founder @ Origin Chain Networks and Blockchain Strategy Lead @ SEEBLOCKS.eu with leadership roles in multiple blockchain consortia projects @ EIT, NGI-Horizon, Horizon Europe including TRUBLO, StandICT ONTOCHAIN and others.

Recognised as 'one to watch' in European technical innovation winning both the EU Standards and Innovation Award in 2020 (individual) and the National Innovation Award 2020 (company) for contributions to the field of agriculture and technology; Author of numerous papers, standards and open-source resources in blockchain, DLT and sustainable practice. Current: Project Lead ISO 24878 new and emerging blockchain use cases.

Recent Publications:

- Smart farming and climate action: knowledge transfer and stakeholder reputation in multi-disciplinary innovation ecosystems. (2023) [NGI/TRUBLO]

Prior contributions to emerging technical standards include:

- ISO/DTR6277:2024 Data flow model for DLT systems (co-editor) (2024)
- ISO6039:2023 Identifiers of subjects and objects for the design of blockchain systems (editor agri-food section) (2023)

Dr. Irina Tal is an Assistant Professor and Academic Lead MSc in Blockchain at Dublin City University (DCU). She is the DCU PI of Digital Europe Programme SEEBLOCKS project (seeblocks.eu), the DCU PI of the Erasmus+ NEXT project (nextstudy.eu), collaborator on DigiAdvance project (<https://digiadvance.eu/>) and SFI BLOCKCHAINED project (<https://www.sfi.ie/challenges/sustainable-communities-challenge/Block-Chained/>). Prior to joining DCU as an Assistant Professor, Irina was a Lecturer with National College of Ireland and Programme Director MSc Cybersecurity (part-time) and BSc in Computing and Business Information Systems (3rd and 4th years). She was also a Postdoctoral Researcher at DCU working on a H2020 EU project in the area of technology-enhanced learning. Her research interests are in the following areas: cyber security, applications of blockchain, technology enhanced learning, vehicular communications and smart cities.

- *A description of the technical issues that the tutorial will address, emphasising its timeliness*

There is a general consensus on the fact that the continuous adoption of Blockchain and its potential of enabling new business use cases is tightly coupled to regulation, policies and standardisation efforts. This tutorial will address practical technicalities in relation to how to contribute to standardisation efforts (specifically to the **ISO 24878 new and emerging blockchain use cases**). Moreover, the tutorial will provide insights into the latest technical developments, current trends and priority areas from a European perspective in relation to the Blockchain technology and corresponding standardisation efforts such as: identity management, data provenance, data governance, token and asset creation and exchange, cybersecurity, use cases. Some of the information presented here is based on the findings of SEEBLOCKS' public consultation on Future Blockchain and DLT Standardisation topics.

Hence, this tutorial is a timely resource for researchers, professionals and organisations seeking to stay at the forefront of Blockchain technology.

- *An outline of the tutorial content*

The tutorial will be divided into 2 parts described below.

Part 1: Blockchain Standards in a Nutshell - a tutorial on Blockchain standards, current landscape and what's coming next with an emphasis on the pivotal role played by Blockchain and DLT standards in enhancing transparency, trust, and interoperability across industries, contributing to the growth of the digital economy. Some of the key aspects covered are:

→ How are Open Standards Made? - explaining the collaborative process behind creating open standards for blockchain and DLT. The creation of open standards is a collaborative process involving cooperation, consensus, and industry participation. Research excellence, and the involvement of Standards Development Organisations (SDOs) and industry representative bodies are key components of this process.

→ Blockchain and DLT Standards: Published standards and upcoming work items are crucial for ensuring interoperability and alignment across different sectors, this section of the tutorial will present some key standards both published and in the pipeline that accelerate impact. The workshop introduces how standards reference and build upon each other e.g. how the data flow models in ISO6277:2024 might be incorporated into ISO24878.

Part 2: How to get involved? Making effective contributions to the Blockchain and DLT standardisation field. Some of the key aspects covered here are:

→ A step-by-step tutorial on submitting a new use case to the **ISO 24878 new and emerging blockchain use cases**

→ Concrete opportunities including funding opportunities allowing the attendees to get actual support for their standardisation endeavours.

- *A description of the past/relevant experience of the speaker(s) on the topic of the tutorial/ A description of any previous tutorial experience of the speaker(s), and past versions of the tutorial*

This is a newly proposed tutorial that draws from Fiona's extensive experience in Blockchain standardisation that includes the leadership of **ISO 24878 new and emerging blockchain use case** and from the activities performed in the context of SEEBLOCKS project.

Fiona Delaney is an internationally renowned speaker on topics related to Blockchain and DLT in general and the standardisation of these technologies in particular. She also guest lectured at various universities (e.g. Atlantic Technological University, Dublin City University), especially at the postgraduate level on some of the topics presented in the tutorial. The hands-on part of the tutorial (see Part 2 of the tutorial content) is drawn from her extensive experience in the Blockchain and DLT standardisation field as the project lead of **ISO 24878 new and emerging blockchain use case** and co-editor of the very recently published **ISO/TR 6277:2024 Data flow models for DLT use cases**.

Irina Tal is teaching several modules on Blockchain and Blockchain related topics on the MSc in Blockchain @ Dublin City University. Some of the tutorial content presented here was delivered in the context of these modules.

- *State if a similar tutorial has been offered in other conferences (last two years) and how your tutorial differs*

To the best of our knowledge, no such tutorial was presented in other conferences or international events before.