NEMO 2025

NEMO INNOVATION CAMP

Become a digital leader!

5.0 ORGANIZATIONS CODEMO www.codemo-project.eu

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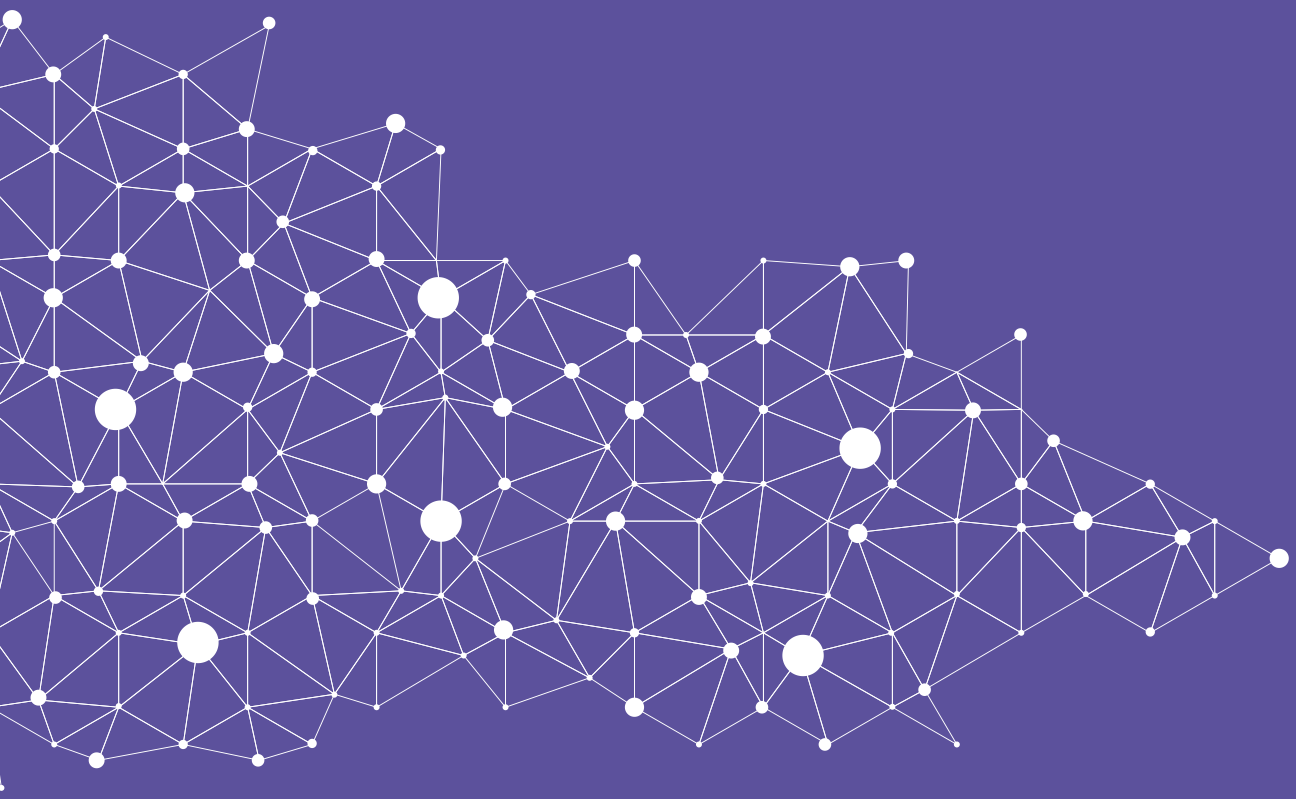
PROGRAMME

Learn 5.0 Digital Innovation: From Design Thinking to Digital Prototyping



Follow us and share your #NEMO2025 experience! omilabnpo | OMiLAB NPO | CoDEMO 5.0

BOC Group Design Your Enterprise | AESIO SANTÉ SOIGNER, ACCOMPAGNER, INNOVER | MedTech Lab | cnrs | LIMOS | cnrs GDR Groupement de recherche MACS Modélisation, Analyse et Conduite des Systèmes dynamiques | Erasmus+

General Information

Innovation Camp Venue
Ecole des Mines de Saint-Etienne
Main Historical Building
158 Cours Fauriel
42000 Saint-Etienne
France

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Table of Contents

Welcome!	**7**
NEMO Organizer & Host: EMSE	**8**
NEMO Organizer & Host: MedTechLab	**9**
NEMO Organizer: OMiLAB NPO	**10**
Social Events	**12**
NEMO Venue	**13**
Lecture Descriptions	**14**
Schedule Overview	**22**
Practical Sessions	**24**
Case Studies	**27**
CoDEMO 5.0 Certification	**32**
BOC Innovation Award	**33**

THANK YOU TO ALL

CoDEMO 5.0

CoDEMO 5.0 aims to enhance European innovation capacities in the field of value creation for 5.0 Organizations. Utilizing the framework of a 5.0 Society, the initiative seeks to foster alignment between Digital Innovation and Green Mindset, facilitating the evolution of businesses from a 4.0 paradigm, primarily centered on digitalization and technology, towards a 5.0 focus, emphasizing environmental sustainability, resilience, and human-centric approaches. The project aims to facilitate the seamless implementation of collaborative value-creation endeavors among socio-economic stakeholders, while also nurturing the development of novel innovative knowledge, skills, and competencies tailored for 5.0 decision-makers across diverse sectors. Industry, Healthcare and Agri-food are the economic sectors at the core of the innovation initiatives.

The CoDEMO Project Consortium receives funding from the European Union, Erasmus+ Programme, Project Number 101104819.

AÉSIO Santé

AÉSIO Santé is a non-profit private company from France that manages healthcare units: Medico-social, sanitary, goods and services.

BOC Group

BOC Group crafts and markets holistic and state-of-the-art Enterprise Modelling Software for effective and extensive business management in the digital era. It helps enterprises to transform towards an advanced digital age, stay on top of rising complexity in business architecture and manage increasing regulatory needs.

OF OUR SPONSORS!

Centre National de Recherche Scientifique

The Centre National de Recherche Scientifique encourages and supports the application of research results to transform them into concrete and long-lasting social and technological innovations that benefit both companies and society.

Groupement de recherche “MACS”

The research group “Modélisation, analyse et conduite des systèmes dynamiques” (Modeling, analysis and behaviour of dynamic systems) focuses on the design of decision-making systems that interact with dynamic processes.

LIMOS

The Laboratory of Informatics, Modelling and Optimization of the Systems (LIMOS) is a Mixed Unit of Research with a focus on the Computing, the Modelling and the Optimization of the Organizational and alive Systems.

MedTechLab

The MedTechLab is a Living Lab dedicated to field research and full-scale testing of products and services in the field of new healthcare technologies. This space for observing innovative practices is dedicated to industry pratictioners, startups, researchers, engineers, healthcare professionals etc. for thinking, testing, experimenting and developping cross-cutting projects.

Research Partners

www.adoxx.org

Erasmus+

Organizers

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Welcome!

The NEMO Innovation Camp welcomes you to its very first edition, hosted by the École des Mines de Saint-Etienne!

Following a decade of the NEMO Summer School, the NEMO Innovation Camp has emerged as the new educational experience of OMiLAB NPO. The motto for all participants is to "*Become a Digital Leader!*".

The Innovation Camp will bring together an international community of academics, students and industry practitioners for an intensive week focused on Digital Innovation, combining expert-led lectures on digital transformation with hands-on skill-building working sessions.

Throughout the week, every day is focused on a different key milestone in developing a concrete solution for digital challenges: namely Haptic Co-Creation, Digitalization and Physical Environments. Various activity sectors are highlighted, in particular Industry & Agrotechnology, Healthcare and Service & Telecom. As part of the Innovation Camp, a unique European Certification on 5.0 Innovation will be delivered.

Participants have the opportunity to acquire knowledge by hearing from renowned experts and subsequently gaining practical experience in dedicated hands-on sessions, where they will tackle real-world digitalization challenges through a comprehensive innovation project for a company. But to form a community, common experiences to bond are needed as well. Different cultural activities and social events will assure the start of a closely linked international community of young specialists.

We would like to express our gratitude to all the speakers and their teams for their insights and support in creating this event. Moreover, NEMO2025 could not have been realized without the work of the organisational team at EMSE and OMiLAB as well as the support of the Faculty .

We hope that you will profit from this experience both professionally and personally and wish you a fantastic time at the NEMO Innovation Camp!

Prof. Dr. Ing. Xavier Boucher
Ecole des Mines de Saint-Etienne
Scientific Director NEMO 2025

École des Mines de Saint-Etienne

Established in 1816, and part of the French « Grandes Ecoles » system the Ecole des Mines (EMSE) ensures 3 key missions: education, research, and dedication to economic development. Education is based on a well-balanced blend of scientific core subjects, engineering techniques, and economic and human sciences taught by professors closely related to the economic world. The graduates from EMSE have been at the forefront of technological progress in the whole industry, in France and abroad.

EMSE has opened its horizons to international partnerships with 35 countries in Europe, Asia, North and South America. Today, École des Mines has more than 80 academic partners worldwide, 19 double-diploma agreements as part of its Executive Engineering degree program, and research partnerships with the world's top universities.

- 2 campuses: Saint-Étienne near Lyon and Gardanne near Marseille
- 480 graduate students in 3 classes of the School's signature diploma
- 1,120 graduate students in 4 classes of the School's specialized engineering diplomas
- 180 doctoral students (40% from abroad)
- Students from more than 20 countries
- 300 scientific staff members

Through several national and international projects, EMSE is currently developing strong research expertise and strategy on Factory of the Future and develops integrated methodologies, modelling environment and decision-making supports for industry 4.0 in general and the transition towards PSS and industrial digitalization in particular.

Since 2020, EMSE has had an OMiLAB node, which focuses on Industrial Business Model Transformation. It constitutes a collaborative platform for industrial and academics to develop together education material, proofs of concepts, and applied for research advances on digitalization and servitization for the industry of the future.

MINES Saint-Étienne | Institut Mines-Télécom

OMiLAB node
www.omilab.org

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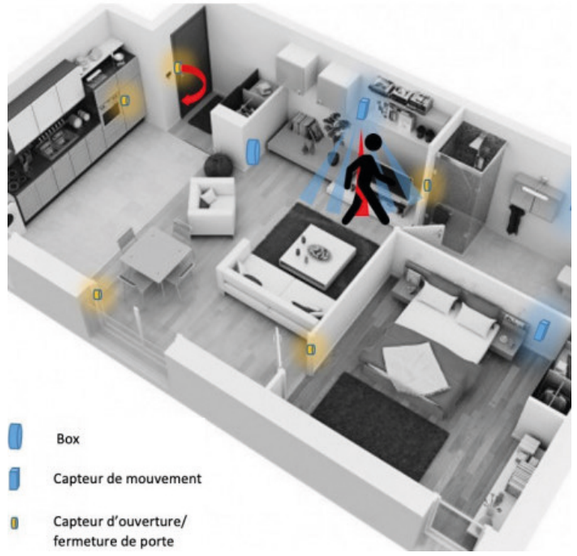
MedTechLab

The MedTechLab is a Living Lab dedicated to field experimentation and full-scale testing of products or services incorporating new healthcare technologies.

This space for observing innovative uses and practices is entirely dedicated to manufacturers, startups, researchers, engineers, healthcare professionals, users, local authorities, etc., to think, test, experiment and develop cross-disciplinary projects.

The Living Lab reproduces the intelligent apartment of the frail person, incorporating innovative furnishings such as an intelligent bed equipped with movement sensors. An adjoining space collects all the data observed by these sensors. It features a co-working space and collective intelligence sessions based on the Design Thinking method, enabling participants to work together to define and evaluate healthcare prototypes and services.



MedTech Lab

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Co-Director MedTechLab
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OMiLAB®
www.omilab.org
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Vision: we support an active global community for conceptual modelling that benefits from open artefacts.

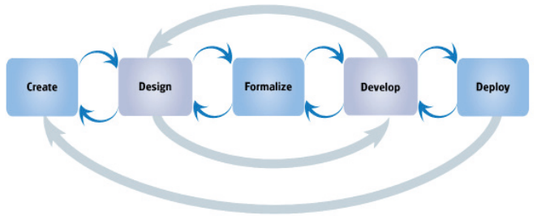
Community of Practice: supported by a non-profit organisation (NPO) headquartered in Berlin, Germany and governed by a Scientific Advisory Board (SAB).

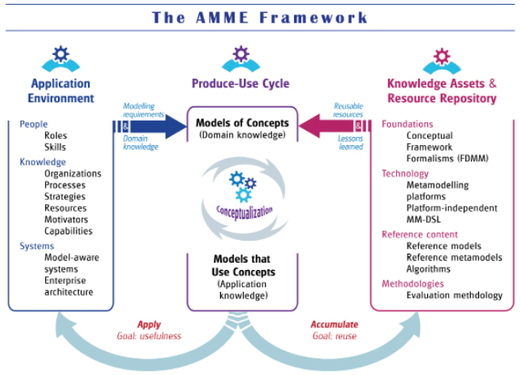
Digital Innovation Environment (DiEn): dedicated research and experimentation space for modelling method engineering equipped with tools to explore method creation and design, experiment with method engineering and deploy open-source software tools and services for modelling. OMiLAB acts as facilitator to the development and application of methods to communities who value models.

Network of Nodes: each node focuses on thier own core topic and expertise supported by the collaborative, innovative and explorative space driven by DiEn. Individual engineers, researchers and different stakeholders can work together and contribute to modelling method creation, implementation and model-driven value creation.

Openness: to all those interested, either as individuals or as institutions. It acts as a platform where participants can bring in ideas related to modelling and engage in the exploration process. OMiLAB follows a user-driven approach in its understanding of the term "model" thus users are not limited to a certain domain or functional area of organisations. There are useful models in widely different domains like information technology, medicine as well as various models for functional areas like procurement, marketing, logistics and engineering.

the AMME Lifecycle





OMiLAB Community of Practice Benefits:

- knowledge-transfer between scientists, educators and innovators,
- access to infrastructure and open-source services,
- collaborative network of members that are active in domain-specific issues,
- amplification instruments which leverage the impact of the activities performed,
- conferences, workshops, seminars,
- common projects,
- research and teaching stays, internships and traineeships, and
- publications.

Digital Innovation Environment Resources:

- **Knowledge and procedures**: the Agile Modelling Method Engineering Framework (AMME), the Conceptualization Lifecycle, trainings, methodologies.
- **Technology:** open source platforms (e.g. ADOxx, OLIVE) and open source software tools (e.g. Bee-Up, Scene2Model).
- **Community of Practice:** events, publications, exploitation opportunities in third-party funded projects, the NEMO Innovation Camp Series, the ADOxx Crash Courses, Innovation Workshops and Bee-Up Tutorials.

Come and join the community!

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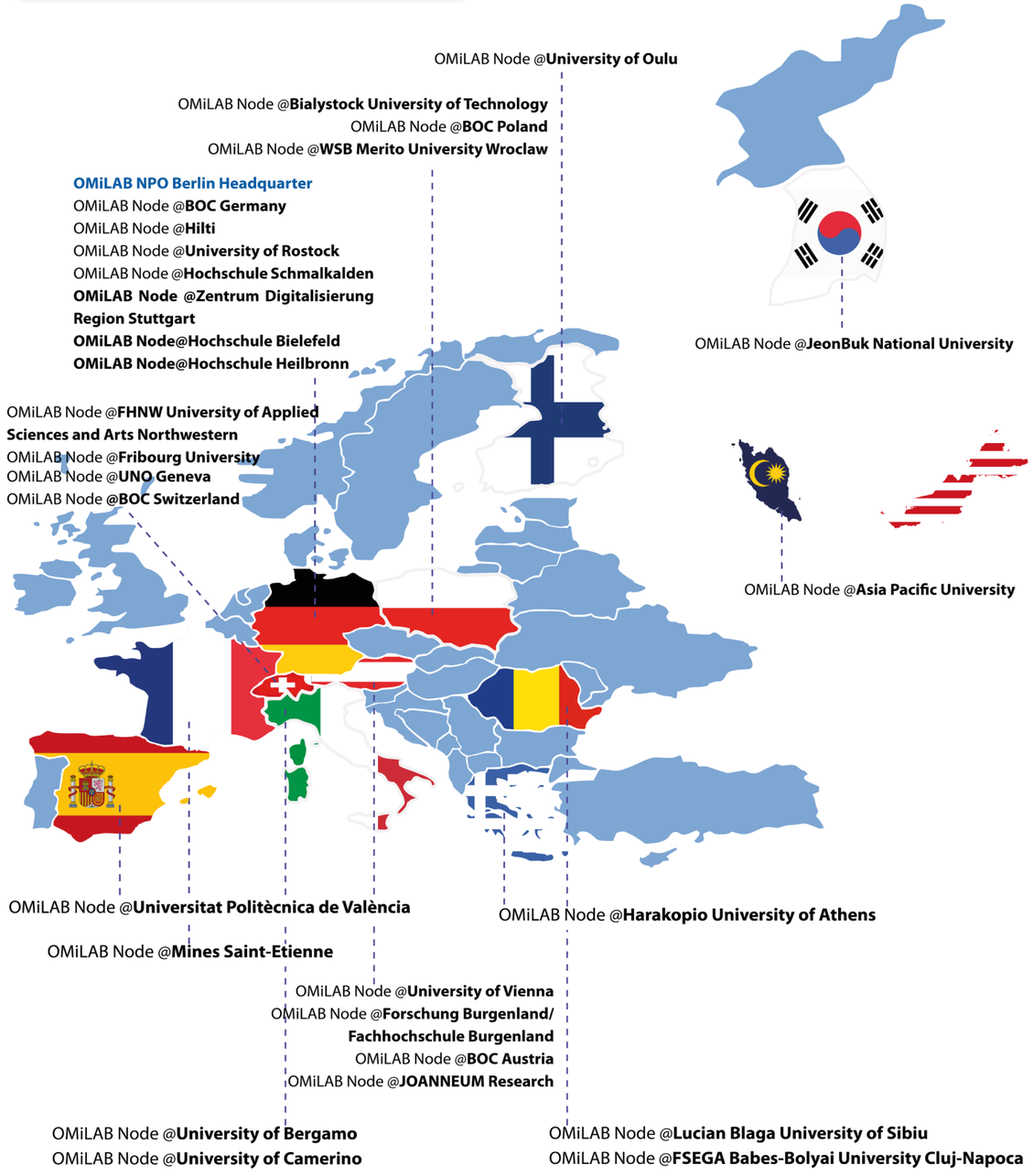
We are global ...

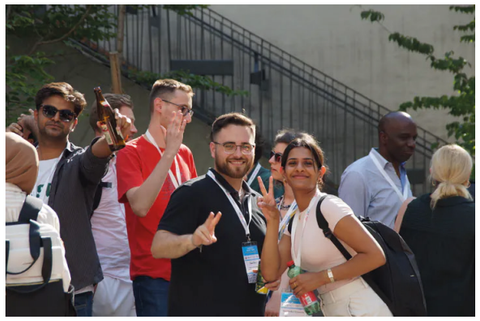
https://www.omilab.org/nodes

OMiLAB node
www.omilab.org



28 OMiLAB Nodes
12 Countries
2 Continents

Social Events

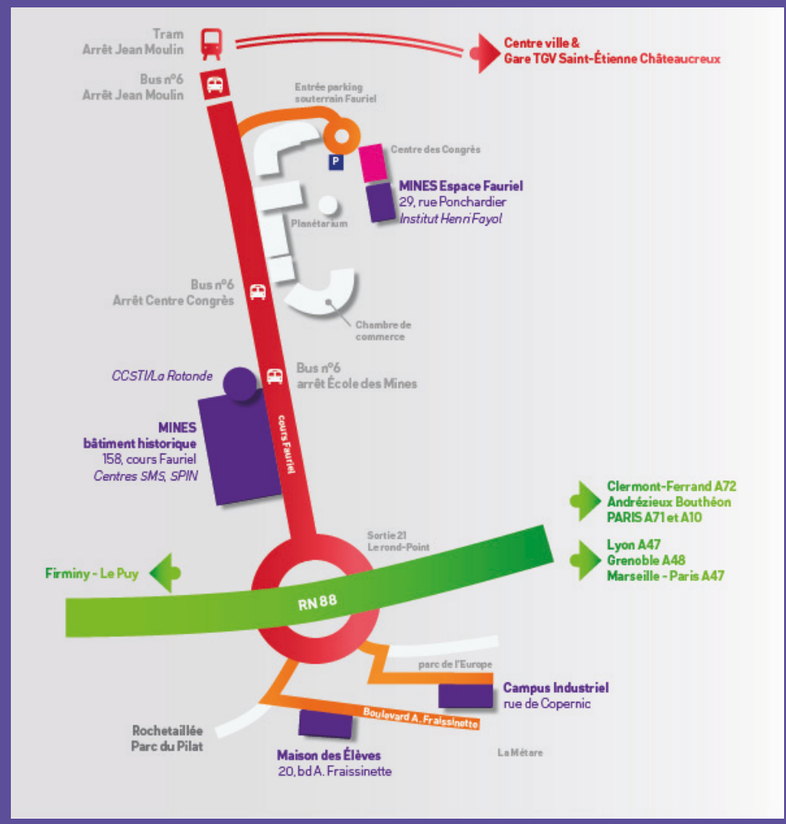


The NEMO Innovation Camp comes with a programme full of lectures and working group sessions: the participants, students and lecturers thus will experience an intensive week of insights into the current state of research, theory and practice of modelling.

However, this is only one side of the coin: the other side is the opportunity to meet student colleagues and renowned professors from all over the world, to discuss with them, to exchange ideas, to learn from each other, and to make new connections.

For Thursday, 17 July there will be a visit to the Musée d'Art et d'Industrie followed by a festive dinner. Moreover, on Saturday, June 19, a walk in the Pilat Regional Nature Park is planned. Thus, the participants have the oportunity to get to know each other better while experiencing the St-Etienne region.

NEMO Venue



Address:
Mines Saint-Etienne
Main Historical Building
158 Cours Fauriel
42000 Saint Etienne

Lecture location:
Main Historical Building
All NEMO lectures on the **4th floor**,
with indications onsite.

Lunch Location:
Maison du Parc
160 cours Fauriel
with collective access for the whole group.

LECTURE

DESCRIPTIONS

Overview

Lectures

Boucher: A Journey from Digital innovation to 5.0 Community of Practice	16
Röhsig López: Design thinking as a tool for sustainable innovation	17
Pezzotta: Digital Servization Strategies and Product-Service-Systems	18
Hinkelmann: Conceptual Modelling for Digital Innovation	19
Augusto: Digital Twins in Healthcare	20
Utz: Cyber Physical Systems for Innovation	21

Pragmatic Skills

OMiLAB Team: Co-Creation and Innovation with Design Thinking	25
OMiLAB Team: OMiLAB Conceptual Modelling Toolsets	25
Augusto, Huguet: Simulation and Digital Twins for Organizational Design	26
OMiLAB Team: The Use of Cyber Physical System Demonstrators	26

Case Studies

ABB Spa: Innovating Business Models to Reduce Asset Total Cost of Ownership and Enhance Sustainability	28
AESIO Santé: Design the 5.0 dental offices of the future	28
HILTI: IoT in the Construction Industry	29
MARQUARDT: 5.0 Solution for Manufacturing Automation	29
STUV: Designing a resilience-oriented work system	30

A JOURNEY FROM DIGITAL INNOVATION TO 5.0 COMMUNITY OF PRACTICE

Prof. Dr. Xavier Boucher, École des Mines de Saint-Étienne, France

ABSTRACT

This lecture will give a general introduction to NEMO 2025 Innovation Camp, created as one of the event contributing to the EU ERASMUS+ Project CoDEMO. The lecture will remind the ambition and plan of action of CoDEMO Project, dedicated to boost the European transition towards Society 5.0. Starting with key insights on the international vision of the transition towards Organizations 5.0, the lecture will first highlight the key elements of CoDEMO program, then emphasize the key action levers to innovate and transform organizations towards society 5.0 : the transition associates the digitalization process with the key dimensions of Human centricity, Resilience and Sustainability. The concrete transition path will be highlighted with concrete examples. This general introduction will then open the way to highlight the structure of the quick innovation process proposed for experimentation in NEMO Innovation Camp, including three main phases: Haptic Design Thinking for creativity, Conceptual Modelling for conceptual solution design and Cyberphysical systems for quick innovation prototyping. The lecture will end by introducing CoDEMO 5.0 community of practice, supported by OMILAB Innovation Community.

BIO

Xavier Boucher Professor in Industrial Management at Center for Biomedical and Healthcare Engineering – Mines Saint Etienne. His main research orientations are focusing on Territorial Healthcare Systems. Active member of several scientific societies in the field of Industrial Engineering (IFAC, IFIP, SAGIP, SOCOLNET), he has participated to several EU projects, with the role of Coordinator for CODEMO (2023-2026), scientific coordinator for Mines Saint-Etienne for FA 4.0, DIGIFoF, OMIKA2. Prof. Boucher serves as Associated Editor for Journal of Decision Systems and member of Editorial Board for International Journal on Information Technology Management. He has published more than 50 articles in international & national scientific journals or book chapters, as well as more than 110 communications in international conferences. He publishes notably in Medical Decision Making, Computers in Industry, CIRP Journal of Manufacturing Science and technology, International Journal of Computer Integrated Systems, Journal of Decision Systems

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DESIGN THINKING AS A TOOL FOR SUSTAINABLE INNOVATION

Prof. Nicole Sofia Röhsig López, École des Mines de Saint-Étienne, France

BIO

Nicole Sofia Röhsig López is an assistant professor at Mines Saint-Étienne, working at the intersection of design, sustainability, and material innovation. Her research explores how technical systems and human behavior co-evolve to support sustainable transitions, particularly through the lens of eco-design and circular economy. With practical experience in active learning, she has developed and led educational modules that integrate Design Thinking methodologies to foster systemic solutions. Passionate about cross-disciplinary collaboration, she facilitates projects where students engage critically and collectively with real-world innovation challenges, especially those linked to environmental and social sustainability.

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Prof. Nicole Sofia Röhsig López
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ABSTRACT

This presentation explores how Design Thinking and collective intelligence can support meaningful innovation in complex and uncertain contexts. Drawing from Nicole Sofia Röhsig López's experience in circular economy and eco-design, the talk highlights the importance of reframing problems, engaging diverse perspectives, and designing with both technical and human dimensions in mind. Rather than focusing solely on solutions, it emphasizes the role of design as a tool for questioning assumptions, navigating contradictions, and building sustainable futures. Through real-world cases, the session invites participants to see innovation not only as a process of creation, but as a space for critical reflection and action.

DIGITAL SERVIZATION STRATEGIES AND PRODUCT-SERVICE-SYSTEMS

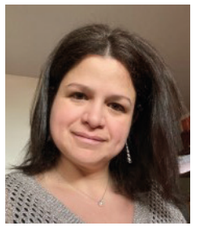
Prof. Dr. Giuditta Pezzotta, University of Bergamo, Italy

ABSTRACT

Despite their increasing relevance in both academia and industrial practice, Product-Service System (PSS) business models require further clarification and development to address the complexities and potential introduced by digital technologies. This lecture aims to provide foundational knowledge on servitization strategies, with a specific focus on digital servitization (e.i, the integration of advanced digital technologies into service-oriented business models). Through real-world case studies and practical examples, participants will gain a comprehensive understanding of how companies are rethinking value creation by shifting from product to service-oriented paradigms. A special emphasis will be placed on identifying barriers and opportunities in the digital transformation journey, including organizational, technological, and cultural challenges. Furthermore, the lecture will explore how an engineering approach, supported by appropriate tools and methods, can effectively support the conceptualization and delivery of PSS. This involves a systematic integration of product and service components to ensure value consistency throughout the lifecycle.

BIO

Giuditta Pezzotta is Associate Professor of Operations and Service Management at the University of Bergamo. She holds a PhD in Management, Economics and Industrial Engineering from Politecnico di Milano and has been a visiting researcher at institutions such as the University of Cambridge, Tokyo Metropolitan University, and Blekinge Institute of Technology. Her research focuses on Business Process Management, Product-Service Systems, servitization, and digital servitization. She has coordinated and participated in numerous national and international research projects related to Product-Service System engineering and the service transformation of manufacturing companies. She is a member of the NEMO Node in Bergamo and of the international academic community IFIP WG5.7 . She has authored over 120 scientific publications and actively collaborates with industrial partners to support their transition.



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CONCEPTUAL MODELLING FOR DIGITAL INNOVATION

Prof. Dr. Knut Hinkelmann, University of Applied Sciences and Arts Northwestern Switzerland FHNW, Switzerland

BIO

Knut Hinkelmann is Head of the Master of Science in Business Information Systems and Bachelor of Science in Artificial Intelligence at the FHNW University of Applied Sciences and Arts Northwestern Switzerland, where he leads the Intelligent Information Systems research group. He also a Managing Director of OMiLAB NGO, visiting professor at the University of Camerino, Italy, and research associate at the University of Pretoria, South Africa. In 1988 he obtained a diploma in Computer Science and in 1995 a PhD from the University of Kaiserslautern. After working for the Research Institute for Applied Knowledge Processing (FAW), the German Research Center for Artificial Intelligence (DFKI). and Insiders Information Management, he joined FHNW in 2000 as a professor for Information Systems. His research interests are in the integration of conceptual modelling and knowledge-based artificial intelligence.

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Prof. Dr. Knut Hinkelmann
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ABSTRACT

Conceptual modeling is a powerful approach for driving digital innovation by providing a structured framework to understand, communicate, and solve complex problems. Models are created using pre-defined concepts from a domain-specific modelling language. This lecture begins with an introduction to conceptual modeling, emphasizing the distinction between models and meta-models. A key distinction is made between models—representations of real-world systems—and meta-models, which define the rules and concepts of a domain-specific modeling language. Metamodeling enables stakeholders to agree on the meaning of the concepts fostering a shared understanding of what the model represents. Metamodeling is introduced with the ADOxx platform which can be used for developing the metamodel and graphical notation of a modelling language.Conceptual modeling is applied in design thinking, a user-centered approach to innovation. The scene2model approach transforms storyboards into digital assets, bridging the gap between creative ideation and technical implementation. Combining storyboarding, design thinking, and domain-specific modelling enables organizations to innovate effectively, aligning their innovative ideas with actionable, structured solutions and ensuring that all stakeholders share a common understanding of the solutions they design.

DIGITAL TWINS IN HEALTHCARE

Prof. Dr. Vincent Augusto, École des Mines de Saint-Étienne, France
Dr. Marius Huguet, École des Mines de Saint-Étienne, France

ABSTRACT

The concept of the Digital Twin (DT) was introduced by the NASA in the 1960s during the Apollo missions, using simulators and digital models to analyze and prevent spacecraft failures. In 2002, Michael Grieves formalized the idea as mirrored spaces modeling, laying the groundwork for modern DTs. The NASA popularized the term in 2010, linking it to cyber-physical systems. With the rise of IoT, AI, and big data, DTs were adpted in the industry first, especially for factory monitoring. According to ISO 23247 (2021), a DT is a dynamic virtual representation of a physical system, updated in real time via data flows. Key components include sensors, real-time communication, digital records, data architecture, and human-machine interfaces. In the healthcare sector, a digital twin refers to virtual replicas of a biological system, a medical process, or a piece of equipment. It enables the monitoring of health evolution, the simulation of treatments, and the optimization of care. Thanks to this technology, healthcare professionals can better understand and anticipate patient needs, improve the management of medical infrastructure, and provide more precise and effective care. In this lecture, I propose a formal definition of a digital twin and several case studies related to healthcare. A practical serious game illustrating the application of DT in a hospital is also presented.

BIO

Vincent Augusto is a professor and a permanent faculty member of Mines Saint-Étienne, Center for Biomedical and Healthcare Engineering. His areas of research are performance evaluation, engineering of healthcare systems, optimization and management of healthcare systems, health data and medical decision aid. He defended his thesis in 2008 related to the modeling, analysis and control of flows in healthcare systems using UML and Petri nets. He defended his "Habilitation à Diriger des Recherches" in 2016 on the topic of Health Territories Engineering. He was a visiting professor at CIRRELT, Laval University, Québec, Canada in 2009 and 2015. He is coresponsible of the living lab MedTechLab, where the approach design, experiments and innovation is combined with healthcare engineering. He is director of the Center for Biomedical and Healthcare Engineering of Mines Saint-Étienne since January 2020.

Marius Huguet is an associate professor and a permanent faculty member of Mines Saint-Étienne since september 2025, Center for Biomedical and Healthcare Engineering. His areas of research are health economics, performance evaluation, and engineering of healthcare systems. He defended his thesis in 2020 related to the centralization of care for breast and ovarian cancer procedures using applied econometrics modeling. He is director of the master Health Managment and Data Intelligence (HMDI) in collaboration with EM Lyon. He is methodologist for the DGOS (French Ministry of Health) in the jury for the PRME, PHRC-N and PHRIP, studies.

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Dr. Marius Huguet
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CYBER PHYSICAL SYSTEMS FOR INNOVATION

Dr. Wilfrid Utz, OMiLAB NPO, Germany

BIO

Wilfrid Utz received his PhD from the University of Vienna, Research Group Knowledge Engineering in the field of metamodel design and conceptual structures. He has been involved in international research and innovation projects and gained experience in the field of modeling method conceptualization, meta-model design, and implementation of modeling tools using ADOxx in various application domains. His research and professional interest relate to knowledge representation using metamodeling concepts and platforms. He is responsible for managing and organising the OMiLAB NPO activities.

Contact:
Dr. Wilfrid Utz
wilfrid.utz@omilab.org

ABSTRACT

Participants will examine how digital model artifacts—originating from business model design—guide the realization of cyber-physical experimentation platforms. Special focus is placed on integrating semantic technologies with IoT hardware, fostering a holistic understanding of both technological feasibility and stakeholder alignment. Through this exploration, the lecture addresses the capabilities needed in a model-driven innovation lab and outlines the interdisciplinary skills expected from future digital leaders. Participants will gain insight into how domain-specific modeling and semantic transformation can bridge human understanding and machine execution within evolving organizational ecosystems.

OMiLAB® Community of Practice

NEMO INNOVATION CAMP
Become a digital leader!

NEMO 2025 Innovation Camp
Programme Overview

MINES Saint-Étienne | Institut Mines-Télécom

15. - 19. July
St. Etienne, France

	Week Before	15 July Tuesday	16 July Wednesday	17 July Thursday	18 July Friday	19 July Saturday
08:30	INTRODUCTORY WEBINARS	**Welcome!**	**Keynote:** Digital Servization strategies and Product-Service-Systems G. Pezzotta	**Keynote:** Digital Twins Application to Healthcare V. Augusto	Digital Twins V. Augusto, M. Huguet	Presentation of the Innovation Award Jury
08:45		A Journey from Digital Innovation to 5.0 Community of Practice X. Boucher				
09:30		Design thinking as a tool for sustainable innovation S. Röhsig López	Conceptual Modelling for Digital Innovation K. Hinkelmann	Simulation and Digital Twins for Organizational Design V. Augusto	Cyber Physical Systems for Innovation W. Utz	Final Presentation Case Study 1 Case Study 2
10:30		BREAK	NETWORKING		BREAK	
11:00		30 min: Creativity via Design Thinking 1 h: Haptic Design Thinking OMiLAB Team	OMiLAB Conceptual Modelling Toolsets OMiLAB Team	Digital Twins V. Augusto, M. Huguet	The Use of Cyber Physical System Demonstrators OMiLAB Team	Final Presentation Case Study 3 Case Study 4
12:30		LUNCH		LUNCH	LUNCH	
14:00		Case Study STEP 0: Introduction of Company Case Studies STEP 1: Design Thinking and Creativity	Case Study STEP 2: Building Conceptual Solutions through Models	Case Study (13:30-15:00) STEP 2: Building Conceptual Solutions through Models STEP 3: Building Innovation Prototypes	Case Study STEP 3: Building Innovation Prototypes	Final Presentation Case Study 5
15:30		BREAK	NETWORKING		BREAK	
16:00		Case Study STEP 1: Design Thinking and Creativity	Case Study STEP 2: Building Conceptual Solutions through Models	Case Study (15:30-17:30) STEP 3: Building Innovation Prototypes	Case Study STEP 4: Prepare the Presentation: Convince the Managers!	Closing Session
18:00		Case Study Outputs of the Day	Case Study Outputs of the Day	Case Study (17:30-18:00) Outputs of the Day	Case Study Outputs of the Day	Social Event (17:00-22:00) Montain Walk and Montain Inn Dinner
18:30				Social Event (18:30-22:00) Musée d'Art et d'Industrie and festive dinner		

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PRACTICAL

SESSIONS

Co-Creation and Innovation with Design Thinking

OMiLAB Team

Innovation and transformation, as well as the emergence of disruptive business ecosystems have gained increasing significance. One approach to tackle this complex task is Design Thinking, which applies designer problem-solving techniques for agile, ideation, prototyping and testing in innovative processes through collaboration among stakeholders. The goal is to generate ideas by using different design thinking methods, based on tangible visualization of certain aspects of the problem within a developed solution space, where collaboration among stakeholders plays a central role. Through the Scene2Model tool, a transformation of the physical visualization into digital conceptual models is enabled, so that they can be processed and used within modelling tools, further decomposed, and combined with available enterprise assets. This approach enables a location and time-independent collaboration of globally distributed networks and stakeholders, implied by the digital transformation and globalization of businesses. The interplay of Conceptual Modelling and Design Thinking establishes a connection between unrestrained design artefacts and more formal abstractions (e.g., business process models).

OMiLAB Conceptual Modelling Toolset

OMiLAB Team

The digital era is shaped by increasingly complex business models, which are part of ecosystems, involve dependencies, integrate physical objects, and propose disruptive and innovative solutions. These business models place a strong emphasis on the interaction between humans and machines, as they require domain-specific knowledge and technical realization.

The Digital Innovation Environment of OMiLAB facilitates the composition of digital ecosystems, as it builds on the notion of digital business models and employs a Digital Twin as a conceptual representation of an intelligent offering.

Adequate devices and technologies will be provided for participants to experiment with, instantiate a selected modelling method and realize an experiment based on the application scenario chosen.

Simulation and Digital Twins for Organizational Design

Vincent Augusto and Marius Huguet

In recent years, there has been a growing emphasis on the use of modeling and simulation methods to support decision-making in public health, especially for managing complex systems. At the forefront of this movement is the development of digital twins—real-time virtual representations of physical systems. In the healthcare sector, digital twins can be broadly classified into two types: Individual Digital Twins, which model a single patient, and Organizational Digital Twins (ODTs), which focus on simulating and managing healthcare delivery processes.
This course focuses on Organizational Digital Twins. Participants will engage in a serious game, taking on the role of a surgical department manager. They will be challenged to respond to external events—such as sudden changes in demand—and make strategic decisions accordingly.

To support these activities, participants will be provided with a prototype of a synchronous ODT and will also have the opportunity to contribute to the development of an asynchronous ODT. This asynchronous version will enable predictive simulations, allowing users to evaluate the performance of alternative organizational strategies under different scenarios.

The Use of Cyber Physical System Demonstrators

OMiLAB Team

The conceptual output of the business models realized in the previous sessions, namely digitalized model artifacts serve as input for determining the physical and digital experiment environment.

Being aware of the semantic technologies at hand and understanding the capabilities and requirements of IoT hardware components will be the focus of this session.

INNOVATING BUSINESS MODELS TO REDUCE ASSET TOTAL COST OF OWNERSHIP AND ENHANCE SUSTAINABILITY

ABB Spa, Italy

In the industrial and infrastructure electrification sector, ABB Electrification Service addresses the challenge of helping customers reduce the Total Cost of Ownership (TCO) of electrical assets while improving operational sustainability through various combinations of services associated with their products.

This case study focuses on designing new combinations of services that accompany the asset throughout its lifecycle (preventive maintenance, retrofit, remote diagnostics, etc.) and consequently innovating the business models of the Electrification service to generate both economic and environmental value.

https://global.abb/group/en

DESIGN THE 5.0 DENTAL OFFICES OF THE FUTURE

AESIO Santé, France

SOIGNER, ACCOMPAGNER, INNOVER

Dental offices suffer of several organizational issues which could be improve to enhance the quality of patient care. Digitalization can be a good support to tackle some of these organizational issues.

The ambition is to identify, design and prototype key innovative actions to design the organization of the Dental Offices of the future, for a transition towards organization 5.0.

Learners will be in a situation to analyze the key organizational issues, then to design process improvements addressing distinct performance dimension tackling human-centricity and resilience. The use of a digital twin as demonstrator will support the assessement of performance improvement scenarios.

https://www.aesio-sante.fr/

IOT IN THE CONSTRUCTION INDUSTRY

Hilti, Liechtenstein

Construction companies rely heavily on vans to transport workers and construction tools to construction sites. Ensuring that these vans are fully loaded with all required tools is crucial for getting work done efficiently on construction sites. Forgotten tools lead to waiting times and may cause delays in work that may fall back on to the respective construction company. To address the need of always having required construction tools at the construction site, vans are equipped with Bluetooth gateways, and the construction tools are fitted with Bluetooth beacons, too. This technology allows van drivers to verify whether their van is fully loaded with the necessary tools for this construction site by checking the data on the mobile app.

However, when two vans each equipped with one Bluetooth gateway are parked close to each other, the Bluetooth beacons on the construction tools may be detected by both Bluetooth gateways of the two vans. This could potentially lead to confusion in identifying which tools belong to which van. A mobile app, which is used by van drivers to check if their van is fully loaded with construction tools, might show tools from both vans, making it difficult to determine the exact inventory of each van. Consequently, the data displayed on the mobile app might be misleading in this case.

https://www.hilti.group/

5.0 SOLUTION FOR MANUFACTURING AUTOMATION

MARQUARDT SCS Sibiu, Romania

In factory PCBs are programmed with the corresponding product firmware on dedicated flashing stations. Within this context, several actions are time consuming, like transporting PCBs from pick-up points to flashing stations and PCBs handling at flashing stations. Marquardt needs to explore automation solutions to increase overall process efficiency, to reduce the manual repetitive work of operators which can lead to fatigue, human errors, and to restore work-life balance for employees (if failures happen, internal targets and delivery deadlines still must be met resulting in extra-hours of work).

The ambition is to identify, design and prototype key innovative actions to increase the overall flashing process efficiency, to apply a human-centered approach for the industrial process and to reduce the waste of unconforming PCBs, therefore implementing an environmentally sustainable approach towards a 5.0 organization.

https://www.marquardt.com/

DESIGNING A RESILIENCE-ORIENTED WORK SYSTEM

STUV, Germany

Companies, especially small and medium-sized enterprises, are affected by various external and internal factors that disrupt business and production processes, potentially leading to corporate crises. Through a resilient response to the influencing factors at the work system level, companies can overcome or adapt to these crises.

The aim is to identify, develop, and evaluate a specific model of a digital twin at the work system level that supports distinct work systems with the appropriate capabilities to successfully respond to crisis and adapt resiliently to various influencing internal and external factors. So far, in research as well as in practice, the concept of resilience has not been applied to specific work systems.

https://stuv.de/en-GB

CoDEMO 5.0 Certification

One of the main objectives of the CoDEMO 5.0 project is to create a unique European Open Badge Certification for Decision-Makers for 5.0 Organization. The green, resilience and human factors will constitute structuring assets of the certification. It will be deployed, by the HEI partners, throughout six European countries, both for vocational training and academic studies.

This certification is based on a collaborative learning-path, known as the Learning Cube, which has beed designed by the project partners. It is structured to refer to the key knowledge elements necessary:

- to address 5.0 transition and
- to develop the competences required to solve 5.0 contradictions through innovation.

Badges recognize a full Certification path validated by the CoDEMO consortium. This recognition follows the 3 certification levels defined by CoDEMO: Beginner / Explorer / Decision-Maker.

Beginner - the Certification path at beginner level should attest:

- an effective level of sensibilisation on Generalities about 5.0 transition and
- an effective level of sensibilisation on at least 2 dimensions of Organizations 5.0 (Digitalisation/ Green-Sustainability/Human centricity/Resilience).

Explorer - the Certification path at explorer level should attest:

- an effective level of sensibilisation on Generalities about 5.0 transition and
- an effective level of sensibilisation on the 4 dimensions of Organizations 5.0 and
- a small practical case study work on innovation for Organizations 5.0.

Decision maker: the Certification path at Decision-Maker level is based on explorer level with an additional project in real world of designing or implementing an innovation project for an organization 5.0.

The NEMO Innovation Camp delivers the Explorer Level of the CoDEMO European Certification, together with 2 certified ECTS.

https://codemo.community.omilab.org/

5.0 ORGANIZATIONS
CODEMO
www.codemo-project.eu

BOC Innovation Award

OMiLAB and Mines Saint Etienne have the pleasure to announce the BOC-GROUP Innovation Award, assessed and delivered during the NEMO2025 Innovation Camp.

Thank you very much to our sponsor BOC-GROUP!

Very invested in innovation support for many sectors of activity, BOC-GROUP is an active international actor of Digital Transition.

BOC-GROUP is the direct sponsor of the Innovation Award organized among all the real-world innovation case studies developed during the summer camp.

Principle of the award:

- The five international teams constituted during NEMO2025 will compete collectively for the award, on the basis of the innovation project developed during the week on real-world case studies.
- A jury is constituted to assess the results developed by each team.
- The assessment of the project is based on the collective presentation and argumentation of each team, during the last day of the Innovation Camp.
- A trophy and a present will be delivered collectively to one winning team among the 5 competing teams. The awards will be announced and delivered during the closing ceremony of the innovation camp.

https://www.boc-group.com/en/

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THE NEXT EDITION

NEMO INNOVATION CAMP

NEMO Innovation Camp

Become a digital leader!

- *Hands-on experiences* for innovating, designing and engineering *Digital Ecosystems* !
- Explore how you can *bridge* the *physical and virtual worlds* through *conceptual modelling* !
- Participate in an international *Community of Practice* !

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