

A HEALTHY LIVING AND WORKING ENVIRONMENT

Manufacturing
Cities and Communities
Health





























A HEALTHY LIVING AND **WORKING ENVIRONMENT**

Manufacturing Cities and Communities Health

Ljubljana, Slovenia, 2024



























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Foreword Innovation Day Ljubljana 2024

A warm welcome to Innovation Day Ljubljana 2024, where we will focus on one of the most pressing topics of our time – Healthy living and working environments. This is already the third traditional conference in a row. The central theme of this conference addresses today's critical challenges and explores the crucial role of advanced manufacturing technologies in shaping the future of factories and smart cities, all with the ultimate goal of improving the health and well-being of our communities.

As we face increasing pressures from rapid urbanization, environmental sustainability, and public health concerns, smart cities are emerging as pivotal forces in creating a future that is greener, more efficient and centered around human needs. However, it is important to recognize that these challenges cannot be met by any single sector alone. Collaboration across disciplines and sectors is essential to truly address the complexity of the issues ahead. This conference brings together a diverse range of experts from industry, academia, and the public sector to explore how innovative technologies can not only optimize production processes but also help build healthier, more sustainable, and connected communities.

The significance of interdisciplinary collaboration has never been more important. The complex challenges we face today span multiple fields, from healthcare and urban planning to manufacturing and environmental science. Each discipline offers unique insights and solutions, but it is only through their convergence that we can develop the comprehensive and

transformative solutions needed to shape the cities and industries of the future.

By breaking down traditional silos, we create opportunities for synergies that accelerate progress and innovation. For instance, advances in artificial intelligence, combined with insights from healthcare and environmental science, can lead to smarter, more responsive urban infrastructures that not only improve the quality of life but also improve public health outcomes. Similarly, automation and advanced materials, when integrated with sustainable practices, can revolutionize manufacturing processes making them more efficient, eco-friendly, and adaptable to the needs of smart cities.

Innovation Day Ljubljana highlights the power of cross-sector partnerships as we collectively explore how these technologies and disciplines can work together to drive sustainable urban growth while addressing critical issues in healthcare, production efficiency, and environmental protection. Such collaborations enable us to address global challenges holistically, combining cutting-edge technological advancements with human-centered design to create cities that support both people and the planet.

















At this year's conference, we place a special emphasis on breakthrough solutions that redefine how smart cities function by focusing on leveraging technologies to foster healthier and more resilient communities. These solutions are not the result of separate innovations, but of integrated thinking and collaborative efforts. Our aim is to demonstrate how interdisciplinary collaboration—between engineers, healthcare professionals, policymakers, environmental scientists, and urban planners - is essential to creating environments that prioritize well-being, sustainability, and long-term growth.

We believe that this event will inspire new ideas and innovative approaches, and further strengthen the bonds between technology, industry, and communities as we work together to build a better and more sustainable future. The convergence of disciplines allows for a more holistic understanding of the challenges ahead, and it is through these partnerships that we can create actionable strategies that transcend individual sectors and benefit society as a whole.

7.7

This year's conference is intentionally structured to promote collaborative, interdisciplinary exchanges. We are proud to have built a broad coalition of organizers and participants, bringing together key players from across the international landscape who are actively working on these critical issues. Our partners, including EIT Manufacturing, EIT Health, SRIP Factories of the Future, SRIP Health-Medicine, and SRIP Smart Cities and Communities, represent the diverse and interdisciplinary approach needed to address these global challenges with the support from the

SPIRIT agency and others. We have invited leading experts from Europe to the conference in the field of the healthier living and working environment, who will introduce you to the above-mentioned very attractive area in lectures and round table discussions. This demonstrates how everything we do influences others; we are all connected.

Let us embrace the power of collaboration, innovation, and shared knowledge to shape the healthier, smarter, and more sustainable cities of tomorrow. Together, we can achieve more than we ever could on our own, and it is through this spirit of cooperation that we will continue to pave the way for a brighter, more resilient future.

Be inspired by this conference!

Matjaž Logar

Director, SRIP Smart Cities and Communities



Dr. Alenka Rožaj Brvar *Director, SRIP Health – Medicine*



Asst. Prof. Dr. Igor Kovač Director, SRIP Factories of the Future

















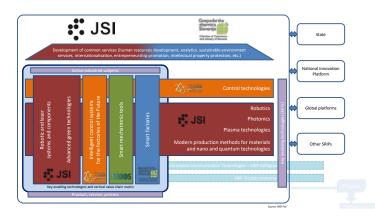


SRIP FoF - Strategic Research and Innovation Partnership Factories of the Future

The SRIP FoF is dedicated to fostering collaboration between Slovenian research, industry and government. Our main objective is to develop breakthrough products, services and technologies that align with the factories of the future, with a strong focus on the green transition and digital transformation. By targeting these key strategic goals, we aim to enhance local manufacturing capabilities and ensure competitiveness on a global scale.

We are creating an integrated environment that provides professional services to both industry and research institutions, equipping them to meet the workforce challenges of the future. This enables rapid knowledge transfer into industry and helps inform the development of new content within the education system.

SRIP FoF remains open to welcoming new members. We invite all interested organizations to actively participate in this partnership, which is designed to benefit both its members and wider stakeholders through its extensive horizontal networks. The diverse membership of SRIP FoF reflects the wide range of inter-





ests within the Factories of the Future sector, ensuring balanced management and cooperation with relevant partners. Our membership is primarily composed of businesses, closely followed by research institutions, which play an essential role in facilitating horizontal networks and leading key enabling technologies. Additionally, associations also have a significant presence, especially in the dissemination of technological and scientific knowledge to younger generations.

The structure of the SRIP FoF is organized in a two-dimensional matrix that connects Horizontal networks

















(HOM), which include key enabling technologies, with Vertical Value Chains (VVCs), ensuring cross-functional collaboration. Our innovative potential lies in the collective competencies and capacities of these vertical and horizontal key areas. To maximize this potential, we have appointed coordinators for HOMs and VVCs, who work closely with partners from research institutions and industry. Together, these coordinators and partners form the Programme Committee, which serves as the main strategic and innovation think tank for SRIP FoF.

HOMs are essential to the innovation efforts of SRIP FoF, as they provide research and innovation capacity not only for our sector but for all SRIPs in Slovenia. We ensure a balanced representation by appointing key players from SMEs, large companies and research institutions as HOM coordinators, thus ensuring comprehensive and equitable management.

Slovenia's industrial ecosystem is characterized by a high degree of specialization and a focus on niche, cutting-edge products, services and technologies. This uniqueness distinguishes us from other European countries and contributes to our competitiveness. At SRIP FoF, we are actively engaged at both national and international levels, particularly in the promotion and positioning of HOMs.

We are home to five core HOMs:

- Control Technologies,
- Robotics,
- Photonics,
- Plasma Technologies,
- Advanced Manufacturing Technologies for Materials, Nano, and Quantum Technologies.

By working closely with our established Vertical Value Chains (VVCs), we are developing innovative strategies that are transferred across entrepreneurial and national levels. The VVCs in SRIP FoF include:

- Robotic and laser systems and components,
- Advanced green technologies,
- Intelligent control systems for future factories,
- · Smart mechatronic tools, and
- Smart factories.

Through the strategic use of research and development, SRIP FoF contributes significantly to Slovenia's digital transformation and the green transition. These efforts are crucial to achieving the goals of the Slovenian Sustainable Smart Specialisation Strategy (S5), which aims for a greener, more energy-efficient economy. Our impact extends to almost all SRIPs, as we drive digitalization and sustainable practices forward.

To ensure that our members remain connected to global value chains, SRIP FoF is an active participant in numerous international initiatives and networks. Our involvement in organizations such as EIT Manufacturing, EFFRA & MIE, A.SPIRE & Process4Planet, Vanguard, WMF, Hydrogen Europe and S3CoP-SmartRegions has a profound positive impact on our activities and extends our global reach.

We invite you to visit our website to explore more about our initiatives!

www.ctop.ijs.si

Contact us! ctop@ijs.si





Asst. Prof. Dr. Igor Kovač Jožef Stefan Institute





















SRIP SC&C - Strategic Research and Innovation **Partnership Smart Cities** and Communities

Smart cities and communities are defined by the collaborative efforts of diverse stakeholders working on six core characteristics, as outlined by the European Smart Cities 3.0 initiative. These key characteristics include governance, economy, mobility, environment, people, and living. Together, they form the foundation for creating cities that are innovative, efficient, inclusive, and sustainable. Smart cities leverage these pillars to promote economic growth, social cohesion, and environmental sustainability, making them resilient and adaptable to future challenges.

At the heart of these efforts in Slovenia is the Strategic Research and Innovation Partnership for Smart Cities and Communities (SRIP SC&C). Established as part of the S5 Smart Specialization Strategy, SRIP SC&C brings together a diverse network of more than 60 companies, ranging from small businesses to large corporations, as well as associations, research institutes, and development organizations. This partnership has created a unified vision to build future-ready cities that prioritize the well-being of their citizens through sustainable development, innovation, and technological advancement. Partnership is led by three consortium partners namely the "Jožef Stefan" Institute (hereinafter: IJS), the Urban Institute of the Republic of Slovenia (hereinafter: UIRS) and the Chamber of Commerce of Slovenia (hereinafter: GZS) which have experience in the field of SRIP operations. Partners have more than seven years of experience in the field of monitoring, implementation and imple-



mentation of Smart Specialization Strategy into Slovenian space.

One of the major accomplishments of SRIP SC&C is its success in fostering cross-sector collaboration through five industry verticals, which are integral to the transformation of cities. These vserticals represent key areas crucial for the creation of smart cities, each one contributing to the overarching goal of improving the quality of life for residents.

















The verticals include:

- Public Safety ensuring a safe and resilient urban environment through advanced surveillance, emergency response, and community safety systems.
- Mobility and Transportation promoting sustainable, efficient, and accessible transportation options, including electric vehicles, smart public transportation, and shared mobility services.
- Energy and Utility Services advancing the delivery of clean energy, water, and waste management solutions to cities through smart grids, renewable energy, and resource-efficient systems.
- Healthcare integrating smart health technologies to improve public health services, telemedicine, and patient care, fostering a healthier urban population.
- 5. Urban Logistics optimizing the delivery and management of goods and services within cities, reducing congestion, and increasing efficiency through smart logistics solutions.

These five interconnected areas form the foundation of a smart urban ecosystem, where each element contributes to an overall improvement of urban living conditions. This holistic approach enables cities to become more adaptive and responsive to the needs of their citizens, creating an integrated system of services that drive both technological innovation and social progress.

The key to achieving this transformation lies in the key enabling technologies that support these verticals, which are drawn from cutting-edge research areas such as information and communication technologies (ICT), quantum computing, environmental sciences, and artificial intelligence (AI). By integrating these advanced technologies, SRIP SC&C is driving the development of smart solutions that can address complex urban challenges in innovative ways.

As we expand into new markets and opportunities, emerging research areas such as climate-neutral cities are becoming increasingly important. These fields are specifically focused on creating cities that operate with minimal environmental impact, incorporating sustainable energy solutions, green infrastructure, and eco-friendly urban planning. This shift towards carbon neutrality offers an open space for innovation, where new ideas, technologies, and approaches can be developed to ensure that cities are not only more livable, but also more environmentally responsible.

The companies and research organizations involved in SRIP SC&C are working to create globally competitive products and solutions that can thrive in both European and international markets. Our collective experience demonstrates that success in niche markets requires a commitment to excellence, creativity, and the development of cutting-edge products and services. Identifying these niche opportunities and crafting tailored, competitive solutions remains one of the biggest challenges—and opportunities—facing the smart city ecosystem.

Through collaboration and innovation, we are shaping sustainable smart cities that improve the quality of life for all residents while significantly reducing their environmental footprint. This dynamic approach to urban development ensures that smart cities not only meet the immediate needs of their citizens but also pave the way for a more resilient, sustainable, and inclusive future for generations to come.

We invite you to visit our website to explore more about our initiatives! pmis.ijs.si

Contact us! pmis@ijs.si

Matjaž Logar Jožef Stefan Institute



















SIH EEIG / SRIP Health - Medicine

Slovenian Innovation Hub, European Economic Interest Grouping (SIH EEIG), is a grouping of excellent and creative people from research, academia, business and civil society. Our networks create new opportunities for organizations/institutions that want to take advantage of the development opportunities of exponential technologies in their own development and as a part of the projects of the Smart Specialization Strategy of Slovenia. SIH EEIG is the national coordinator of the Slovenian Strategic Research Innovation Partnership (SRIP) Health - Medicine, with special focus on development of innovative methods and breakthrough technologies for cancer treatment, development of personalized medicine, biopharmaceutics, active healthy ageing, herbs and natural cosmetics. It strengthens innovation capabilities and the international competitiveness of the Slovenian economy and society.



The SIH EEIG acts as a catalyst, bringing together partners from multiple helixes to create and accelerate the translation of research results into practical applications. It seeks and develops the best breakthrough potentials for its members and the wider environment.

In addition to the implementation of S5 through SRIP Health Medicine, SIH EEIG is a member of the new European platform for Precision Medicine Medic Nest; SIH is involved in 2 pilot projects in the Smart Health of Vanguard initiative, and also coordinates the Reference Site Slovenia 3* for Active Healthy Ageing, promoting well-being and healthy lifestyles, as essential ingredients for the development of silver economy: all with the aim of enabling citizens to enjoy more years of healthy life. The products, services and technological processes to be developed in the coming years within the SRIP partnership will lead medicine and health in Slovenia into the next decade.

SIH is well established in the European landscape through its active collaboration with cluster networks, such as ECCP, ECHAlliance, SBRA, Vanguard Initiative, RSCN (=reference sites collaboration network) and as a founding member of the metacluster Twins Inter-

















national Multihelix - TIM. This meta-cluster is present on three continents: America (Canada, USA), Asia (Japan, South Korea and Hong Kong), and Europe (Sweden, Wales, Spain, Slovenia, Belgium, Finland). Through active participation in EU projects IN-4-AHA (H2020), Senior Eco Nect (HORIZON EIE) and I3 with HealthChain SIH has established numerous networks that provide valuable opportunities for participation and cooperation, co-creation and knowledge sharing of our members with knowledge institutions and/or economic collaboration in wider regions.

In close collaboration with other Slovenian SRIPs, such as Factories of the Future and Smart Cities and Communities we find additional added value, as by combining and cross-fertilising different scientific and technological disciplines, we can use our resources more wisely and create out-of-the-box solutions. We believe that the creation of new living environments for senior citizens, such as communities of people with similar interests, will contribute to safe and longer independent living. Such residents can still return to the society in terms of intergenerational

collaboration with mentoring, advising, co-creating new solutions with start-ups... Important lessons come from "Learning by doing" and exploring/creating new possibilities, as in our Innovation Day Ljubljana.

We invite you to visit our website to explore more about our initiatives! www.sripzdravje-medicina.si

Contact us! info@sis-egiz.eu

Dr. Alenka Rožaj Brvar SIH EEIG





















EIT Manufacturing RIS Hub Slovenia

EIT Manufacturing, an initiative of the European Institute of Innovation and Technology (EIT), promotes innovation and entrepreneurship by bringing together business, education and research in the manufacturing sector. Its mission is to create a more entrepreneurial and sustainable Europe by integrating the entire innovation ecosystem, known as the knowledge triangle.

Through its Regional Innovation Scheme (RIS), the EIT Manufacturing extends its reach to regions not yet fully involved in its Knowledge and Innovation Communities (KICs), supporting their innovation efforts and helping close the innovation gap in Europe. RIS Hubs, such as the one in Slovenia, are established to foster collaboration and promote innovation inspecific geographical areas.

In Slovenia, the EIT Manufacturing RIS Hub is jointly managed by the Jožef Stefan Institute (JSI) and the Faculty of Mechanical Engineering (ULFME) of the University of Ljubljana. The partnership between our Center for Research Innovation Partnership, which is part of the JSI and manages the Slovenian SRIP FoF cluster, and the EIT Manufacturing has grown into a strong, mutually enriching collaboration, delivering significant benefits to both sides. Together, we aim to elevate Slovenian innovative SMEs and mid-cap companies by engaging them in the knowledge triangle and supporting their activities.

The RIS Hub serves as a central platform, connecting local companies, universities, and research institutions with the broader EIT Manufacturing network. This helps



strengthen the Slovenian innovation ecosystem through knowledge sharing, collaboration and the implementation of advanced solutions. One of the Hub's primary goals is to raise the profile of EIT Manufacturing in the RIS countries, especially in the Eastern EU region and to foster support from national authorities.

Manufacturing is fundamental to Europe's economic, social and environmental sustainability. At the RIS Hub, we are committed to empowering local innovators and fostering cooperation among industry professionals, academic institutions and research centers. By connecting diverse stakeholders, we aim to create an environment where breakthroug ideas can thrive and transformative solutions can emerge.



















We actively organize events and workshops designed for SMEs and other key stakeholders in Slovenia. These activities focus on the green transition and digital transformation of the manufacturing industry, ensuring that participants stay ahead in terms of sustainable practices and technological advancements. One of our most prominent events, Innovation Day Ljubljana, has become a landmark annual occasion. It serves as a hub for innovators, businesses, researchers and policymakers, providing a platform for knowledge exchange, showcasing cutting-edge solutions, and fostering collaboration across sectors. Through Innovation Day Ljubljana, we aim to create an environment where ideas can flourish and partnerships are formed. The event plays an important role in strengthening the innovation ecosystem in Slovenia, as well as enhancing international collaboration through the participation of leading organizations from across Europe. In addition to driving dialogue on critical topics like digitalization and sustainability, it also celebrates the achievements of Slovenian companies and their contributions to the wider European innovation landscape.

Our commitment goes beyond events. We support our members' participation in various innovation programmes, provide expert consultations and facilitate networking opportunities within the European innovation community. Through our services, we provide guidance to the manufacturing sector and the entire innovation ecosystem, promoting new connections and driving forward innovation.

The RIS Hub is a dynamic facilitator of collaboration, helping local companies and institutions access the expertise, support and opportunities of the wider EIT Manufacturing network, empowering them to succeed and make a meaningful impact.

We invite you to join us in shaping the future of manufacturing together!
www.eitmanufacturing.eu/partner/jozef-stefan-institute/

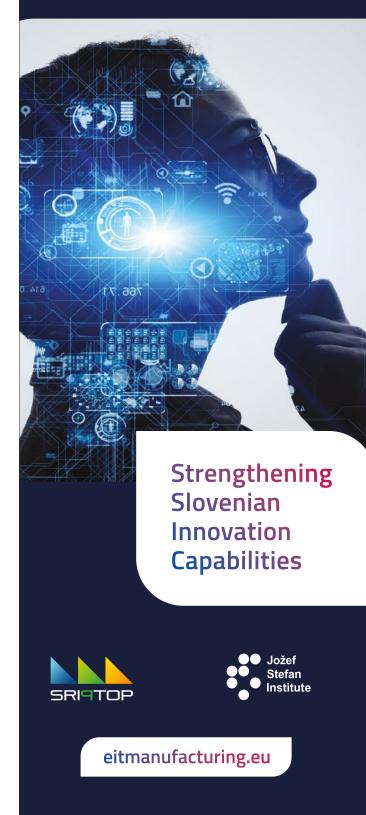
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Nataša Pibernik Jožef Stefan Institute





Co-funded by the European Union























Advanced Manufacturing Technologies in the Service of the Community and Humanity



EIT Manufacturing: Advancing Sustainable and Healthy Manufacturing

EIT Manufacturing is part of the European Institute of Innovation and Technology (EIT), a body of the European Union. It is a leading pan-European community dedicated to fostering innovation in manufacturing. Our mission is to connect industry players, promote talent, and accelerate sustainable innovation across Europe. With more than 170 partners, including industry leaders, startups, academics, and research institutions, we create an active ecosystem where collaboration drives cutting-edge advancements in manufacturing.

At EIT Manufacturing, we believe that the future of manufacturing lies in sustainability and human-centered

innovation. As the global manufacturing landscape undergoes a transformation driven by technological advances, climate change, and shifting geopolitical dynamics, the need for a circular economy has never been more urgent. Our efforts are focused on four key thematic areas: Flexible Production Systems, Low Environmental Footprint Systems & Circular Economy, Digital & Collaborative Solutions, and Human-Machine Co-Working. These areas are continuously refined in collaboration with our partners to address the most critical challenges in the industry.

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One of the core principles of EIT Manufacturing is to improve people's lives through sustainable manufacturing. We are committed to fostering healthier working environments by promoting sustainable practices and advanced technologies, such as Artificial Intelligence (AI) and digitalisation. These innovations not only enhance productivity and efficiency but also reduce the environmental footprint of manufacturing processes, contributing to a healthier planet and workforce.

In line with our focus on healthy living and working, we support initiatives that upskill and reskill the manufacturing workforce. Through education and training programmes, we ensure that both current and future workers are equipped to navigate the digital transformation of manufacturing. By empowering individuals with the knowledge and tools to leverage new technologies, we aim to create a resilient and adaptable workforce that thrives in sustainable, human-centered workplaces.

Moreover, EIT Manufacturing plays a crucial role in strengthening the competitiveness of European manu-

facturers. Our strategic objectives are to place people at the center of innovation, accelerate green manufacturing, and strengthen European sovereignty and competitiveness. We actively support startups developing deep technologies and sustainable solutions, ensuring that Europe leads in areas such as remanufacturing and green manufacturing. Our goal is to drive innovation while fostering a manufacturing ecosystem that prioritizes health, sustainability, and inclusivity. Together with our partners, we are committed to transforming the manufacturing industry to meet the demands of the future, ensuring that it remains sustainable, efficient, and focused on human well-being.

At EIT Manufacturing, we believe that collaboration is the key to success. Therefore, we offer a wide range of services to help manufacturing companies of all sizes to find the right partners for collaboration and co-innovation. Be part of the change and join the largest innovation network for manufacturing in Europe!

Making Innovation Happen!

EIT Manufacturing – The Largest Innovation Network for Manufacturing in Europe



Johannes Hunschofsky Managing Director EIT Manufacturing East

The manufacturing industry is the base for prosperity in Europe. More than 2 million companies create approx. 32 million jobs, making the sector a backbone

of Europe's prosperity and growth. However, the global manufacturing landscape is undergoing a transformative shift, driven by technological advances, sustainability imperatives, supply chain disruptions, increasing regulatory requirements and geopolitical changes. At the heart of this change is the transition to a circular economy, which presents not only challenges but also significant opportunities for European manufacturers.

EIT Manufacturing is at the forefront of driving innovation and sustainability across the European manufacturing landscape. Its mission is to help European manufacturers remain globally competitive by fostering cutting-edge technologies, sustainable practices, and collaborative solutions, as well as equipping the industry with the right workforce and the right skills needed to tackle these challenges.

EIT Manufacturing is committed to supporting manufacturers in their transition to a circular economy, where remanufacturing, resource efficiency, and sustainability are key drivers. By connecting industry leaders, startups, research institutions, and policymakers, EIT Manufacturing creates a collaborative ecosystem that accelerates innovation and fosters a resilient and sustainable future for European manufacturing.



















Jožef Stefan Institute, Department for Nanostructured Materials



Prof. Sašo Šturm Head of Department for Nanostructured Materials Jožef Stefan Institute

Research and development at the Department for Nanostructured Materials - K7, at the Jožef Stefan Institute, is focused on the leading areas of nanotechnology and advanced

materials to solve the most demanding social challenges that Europe and the world are currently facing. The latter includes the development of new and improved (nano)materials in support of modern technologies for sustainable development in the fields of energy, electronics, sensor technologies, ecology and biomedicine, such as for the efficient use of green energy and resources, critical raw materials, health and the environment. More specifically, the fundamental and applied research of the Department for Nanostructured Materials includes research and development in the field of magnets and intermetallic alloys, engineering and functional ceramics, sensors and catalysis, materials for sustainable and ecological built environment, experimental mineralogy and biomimetics and biomaterials.

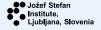
We are actively developing new technologies to improve healthy living and working environments, namely a) the development of portable and highly-sensitive electrochemical sensors for toxic organic compounds,

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b) the development and implementation of modern advanced oxidation processes for the degradation of persistent organic pollutants, such as pharmaceuticals or dyes, c) research and methodology development on the degradation of microplastics and their fate in our environment, d) the use of additive manufacturing techniques for the preparation of biocompatible ceramic implants and e) the development of safe-by-design drug delivery systems for cancer treatment in diagnostics.

The interdisciplinary team of scientists enables a relatively fast response to the specific needs of the development of new materials, whether by the European or global research community or by industry, where the synergy between researchers with different complementary expertise is the basis for achieving technological breakthroughs.

The research and development directions cover primarily basic research, but with a clearly articulated goal

towards a higher levels of technological development (TRL≥4) and the transfer of knowledge and technologies to industrially relevant environments. At the national level, our research directions are coordinated with the Smart Specialization Strategy, where we also follow the concept from development to market within several priority pillars in the priority areas of S4, Development of Materials as End Products, Health and Medicine, and partly within the Future Factory and Smart Cities and Communities. Importantly, we support the licensed transfer of knowledge and the establishment of spin-off companies, such as the recently established company Genuine Technologies d.o.o., which develops and markets bioactive fillers for endodontic dental fillings.

Finally, human well-being is crucial for us. Therefore, we take measures and pursue the path that leads to an inclusive work environment and gender equality, in order to break down the barriers and unleash the potential for research and innovation.

The Importance of Materials in the Service of the Community and Humanity – The Example of Cancer Therapy



Asst. prof. Nina Kostevšek
Pl of group Nanomedicine at
Department for Nanostructured
Materials, Jožef Stefan Institute

Despite many successes and new therapies, cancer remains one of the leading causes of death today. Therefore, only by joining interdisciplinary and intersec-

toral efforts can we better understand these complex diseases and bring new, safer and more effective therapies to the patients. To achieve this, cancer research at the Jožef Stefan Institute covers all aspects of cancer research, from the study of fundamental mechanisms at the cellular level, the development of safe drug delivery systems, therapies (real-time adaptive particle therapy, photothermal therapy), state-of-theart imaging facilities (NMR/MRI laboratory, biomedical

optics, positron tomography), to participation in cancer screening programmes and clinical trials. All the experimental data is perfectly complemented by expertise in learning cancer models, machine learning models on biomedical data, text mining, and data visualisation. Drug discovery is intensive, especially with the help of artificial intelligence. However, despite the discovery of many new drugs, efficient and safe drug delivery remains a critical issue. This is why our Nanomedicine group is tackling this challenge to make a significant breakthrough in this area, with the overall goal of making cancer treatments not only efficient but also safe for patients. Here is an example of the development of a new safe-by-design therapy using the body's own cells as a drug delivery vehicle. A preclinical study (TRL 4) demonstrated the efficacy of our platform for gene silencing therapy via therapeutic delivery of nucleic acids. We have developed a simple, cost-effective, therapeutic nucleic acid carrier that is also easily scalable. Most importantly, the patient's own blood could be used for truly personalized medicine, avoiding immune reactions.



















University of La Rioja, Spain

Founded in 1992, the University of La Rioja (UR) is a public institution located in Logroño, Spain, in the heart of the famous wine region of La Rioja. Despite being the smallest public university in Spain, with around 5,000 students and a faculty of around 400 professors and researchers, UR is renowned for its high quality education and dynamic research activity, playing a crucial role in the academic, social, and economic development of the region. UR's modern campus is equipped with state-of-the-art facilities, including specialised laboratories, libraries, and research centres that foster innovation and collaboration.

The faculty, composed of experienced educators and active researchers, is involved in numerous national

and international projects, contributing to the university's reputation as a hub of innovation and scientific progress. One of UR's key strengths is its close collaboration with the Biomedical Research Centre of La Rioja (CIBIR), a leading biomedical research institute. This partnership drives advances in medical research, including areas such as epidemiology, oncology, and clinical analysis. Together with CIBIR, UR has contributed to groundbreaking research that impacts public health not only in La Rioja but also throughout Spain.

The University has a strong commitment to interdisciplinary research, working closely with other universities, research institutes, and industry. These collaborations have led to innovative projects in areas such as sus-

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tainable agriculture, environmental science, and health technology. Despite its size, the University's research output continues to grow, with a strong focus on addressing real-world challenges and contributing to societal progress.

UR maintains a global outlook and participates in international exchange programmes and partnerships with universities across Europe, America and Asia. These collaborations provide students and researchers with opportunities to engage in international academic networks, enhancing the quality of the University's education and research.

UR is also deeply embedded in the local community, offering students a wide range of co-curricular activities, including cultural events, sports, and volunteering programmes.





Applications of Atmospheric Plasma in the Food and Medical Industry



Fernando Alba Elías University of La Rioja Mechanical Engineering Department

The P2ML Group (Projects, Plasma and Machine Learning, p2ml.org) of the Mechanical Engineering Department of the University of La Rioja (Spain) has been conducting projects related to atmos-

pheric cold plasma for more than 13 years. We started our work in the automotive sector and for the last 9 years we have been carrying out projects related to the food and medical industries.

We have four Atmospheric Pressure Plasma Jet devices with Dielectric Barrier Discharge (MPG, Luxembourg). One of them is installed in a collaborative robot and another in a semi-industrial prototype producing Plasma Activated Water (PAW). In the food industry, we

mainly apply disinfectant and ANTI-biofilm treatments using plasma in several ways: [a] Direct Plasma, [b] Plasma Activated Water (PAW), [c] Plasma-polymerized coatings, and [d] Plasma-modified atmosphere. In the medical industry, we have applied similar treatments in addition to [e] PRO-biofilm coatings. Some notable projects in the food sector include those carried out in the wine industry: the use of PAW for the disinfection of oak barrels and the removal of Trichloroanisoles (TCA) from wine bottle corks. In the food industry, we have used direct plasma for surface disinfection (cutting boards, knives, chain mail gloves, etc.). We have also used frozen PAW to extend the shelf life of fish. In the medical field, we have developed ANTI and PRO-biofilm coatings for the functionalisation of clinical analysis trays, anti-friction coatings for medical needles, and a process for the disinfection of face masks. We are currently working on scaling up these treatments, studying the durability of the coatings (ANTI-biofilm), potential surface degradation from direct plasma treatments (on plastic surfaces or fibres), potential toxicity of the applied coatings, etc.



















Technical University of Munich, **Chair for Cognitive Systems**

The Chair for Cognitive Systems was established in 2010 within the School of Computation, Information and Technology (CIT) at the Technical University of Munich under the leadership of Prof. Gordon Cheng. We focus on the fundamental understanding and construction of cognitive systems. As our research focus is based on the approach of "Understanding through Creating", the following aspects are central:

- Engineers can learn a lot by studying biological systems. This leads to new, groundbreaking ideas for developing sophisticated and robust artificial systems.
- In turn, constructing human-like machines and replicating human-like behavior can, in turn, help

- us understand how humans interact with their environment and the mechanisms involved.
- All these considerations ultimately help us to develop technical systems that provide real benefits to our society.

Our research focuses include:

- Dynamic movement for humanoid robots
- Artificial skin for robots
- Neuroengineering
- **NeuroRobotics**
- Purposive Learning
- Wearable robots

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Applications of Robotics/Exoskeletons in Working and Other Environments



Prof. Dr. Gordon ChengTechnical University of Munich
School of Computation, Information
and Technology

The field of robotics and exoskeletons is advancing rapidly and in unprecedented ways. These advancements are beginning to have a significant impact on our work

and daily lives. Humanoid robots are now being used in factories, which was previously unimaginable but has become a sustainable reality.

The presentation shows advances in humanoid robotics and the innovations that have emerged from the extensive development of state-of-theart humanoid robots over the years. For example, the creation of intelligent artificial skin for robots that can conform to any robot surface makes them more adaptable and safer for interactions. Such innovations can be applied to factory settings and healthcare.

Furthermore, transformative innovations from humanoid robotics to advanced robot exoskeletons, such as enabling paraplegic patients to walk again, are presented.























LOTRIČ Metrology

LOTRIČ Metrology, a family-owned multinational company with over 30 years of expertise in metrology, provides calibration, testing, verification, and certification services.

We develop innovative solutions such as the TRAMES system for industrial automation and EXACTUM for environmental monitoring.

With precise results, we build confidence in medicine, traffic safety, fair trade, and sustainable industries, ensuring that society always gets the right result.

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Monitoring Solutions for Improving Indoor Air Quality



Jure ThalerR&D Manager
LOTRIČ Metrology Ltd.

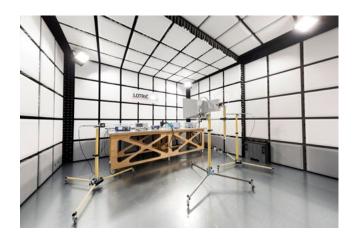
Indoor air quality has a significant impact on environments such as classrooms, offices, meeting rooms, hotel lobbies, and other large spaces, where high levels of

CO₂ are often present. Especially in areas without mechanical ventilation systems, monitoring CO₂ levels, temperature, and relative humidity is essential to ensure a healthy environment.

EXACTUM combines high-quality sensors with user-friendly software to monitor air quality in real-time. Accessible from any smart device – phone, tablet, or laptop – EXACTUM only requires an internet connection, making it an ideal solution for maintaining optimal indoor air quality. With easy setup and accurate data reporting, EXACTUM helps organizations ensure a safe, comfortable, and efficient environment for their occupants.





























UIV Urban Innovation Vienna

UIV Urban Innovation Vienna GmbH is the climate and innovation agency of the City of Vienna. As a Wien Holding company, it drives sustainable change processes in the city by designing innovative processes for decision-makers in politics and administration. In exchange with the economy and science, new ideas are developed and comprehensive decision bases for sustainable change are created. The interdisciplinary team of UIV has technical and methodological expertise in the fields of urban development and mobility, energy and climate, as well as digitalisation and innovation. UIV Urban Innovation Vienna creates platforms for its clients, provides strategic and conceptual advice, but also implements concrete events and pro-

jects that involve the public in the political and administrative process.

STRATEGY CONSULTING FOR THE CITY OF VIENNA: STRUCTURE AND PERSPECTIVES FOR SUSTAINABLE DEVELOPMENT

From climate change to digitalisation, from mobility and heat transition to sustainable urban development: the City of Vienna - like other cities and regions - is facing a multitude of challenges and major transformation processes. In order to meet these challenges comprehensively and with foresight, the city is developing strategies. UIV Urban Innovation Vienna regularly supports various departments in this process, from anal-

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ysis and conception to implementation. In dialogue with urban actors, stakeholders and experts, we analyse trends, identify development perspectives and evaluate the strategic planning framework. We supervise publications and organise accompanying events. Some of the strategies developed with our support include the Smart Climate City Vienna Strategy, the Vienna Climate Guide, the Vienna Urban Development Plan 2025 and the Vienna Heat Action Plan.

PARTICIPATION AND DEMOCRACY: CO-INNOVATION THROUGH CO-DESIGN

Transformation can only succeed if people have confidence: in each other, in social institutions and in political and administrative decision-makers. In a num-

ber of projects, we are working to strengthen social and political participation. With our project management, networking and mediation skills, we support the establishment of new formats and methods to further expand the opportunities for citizens to participate. We design participation processes and create opportunities for those who want to participate to do so. For example, we supported the City of Vienna in its multi-stage application process for the title of "European Capital of Democracy 2024/25", in which Vienna prevailed over other European cities. The "Vienna Year of Democracy 2025/2025" will start in autumn 2024 and we are supporting the programme. Our services include project management, network building and maintenance as well as event conception.

Ensuring a Healthy Ecosystem – Coexistence of Production, Community and Environment



Katharina Höftberger

Senior expert for urban development and smart cities UIV Urban Innovation Vienna GmbH

For the 11th year in a row, Vienna has been ranked as the world's most livable city in the annual Mercer study. This success is largely due to long-term investments made decades or even centuries

ago, highlighting the importance of today's decisions for the city's future. The sustainable transformation of the city is the guiding principle of our time. Three areas of action will be addressed in relation to production and health in the city.

The productive city is a concept that understands urban space as multifunctional and diverse. Quality of life is linked to the proximity of workplaces in order to reduce commuting times. This enables sustainable commuting, local production and the concentration of human excellence and creativity in cities. At the same time, production processes must be adapted to be compatible with the living environment.

The healthy city provides a physical and social environment that supports people in performing all the functions of life. In addition to the provision of medical infrastructure, this includes a transport system and public spaces that allow people to use urban space comfortably in all seasons. Tropical summers and urban heat are current challenges that need to be addressed in this regard, and the transformation of public space is a major task for cities today.

Finally, the inclusive city ensures that all these changes are developed for and with the community. Civic engagement is key to bringing people on board and incorporating their everyday knowledge and experiences into the design and implementation of transformative policies in the city. Vienna has taken many steps to ensure community participation and will use the coming year as European Capital of Democracy to further develop tools and mechanisms for more inclusive urban development.



















Jožef Stefan Institute, Department of Environmental Sciences

At the Department of Environmental Sciences, our mission is to advance the understanding of environmental processes and human impacts on ecosystems through interdisciplinary research, innovation, and collaboration. We are committed to developing sustainable solutions for global environmental challenges, ranging from pollution control and climate change adaptation to food safety and resource management.

Through cutting-edge research in environmental analytical chemistry, microbial ecology, environmental technologies, and monitoring, we aim to generate actionable knowledge that informs public policy, supports industry innovation, and fosters environmental stewardship. Our work emphasizes the development of advanced technologies and methodologies that improve the accuracy and effectiveness of environmental assessments, from pollutant detection to sustainable natural resource management.

We are also committed to enhancing participatory research, involving communities and stakeholders in the scientific process. By promoting citizen science and collaborative research initiatives, we actively contribute to the well-being, social dimension, and quality of life of individuals and communities. This approach

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ensures that our research not only addresses environmental challenges but also fosters inclusivity and empowers people to take part in shaping a sustainable and healthier future.

Our ultimate goal is to protect ecosystems, improve public health, and ensure food security while promoting environmental and social sustainability for present and future generations. Through our commitment to scientific excellence and community engagement, we strive to be leaders in creating a positive environmental and social impact.



Jožef Stefan Institute, photo: Arne Hodalič and Katja Bidovec

Challenges in Environmental Monitoring and Assessment for Securing Quality of Life



Prof. Dr. Milena Horvat
Head of the Department of
Environmental Sciences
Jožef Stefan Institute

Environmental monitoring and assessment are essential for protecting ecosystems, public health, and securing quality of life. As global challenges such as climate change, pollution, and resource

depletion intensify, the need for reliable and effective monitoring systems is increasing. The primary challenges in this field include the complexity of ecosystems, the need for real-time, accurate data, and the diverse range of environmental stressors affecting air, water, and soil quality.

Technological advancements in environmental sensors, remote sensing, and data modeling offer promising solutions, but there are still hurdles to overcome. One significant challenge is to ensure that these technologies are not only precise but also scalable and affordable, especially for regions with limited resources.

Developing methods to detect contaminants, monitor environmental changes, and assess risks to both ecosystems and human health is critical to improving environmental resilience.

An additional barrier is the translation of scientific findings into actionable public policy. While environmental monitoring can provide vital insights, these insights often fail to prompt timely, evidence-based interventions. To bridge this gap, stronger collaboration between scientists, policy-makers, and stakeholders is needed to ensure informed decision-making.

Citizen science and participatory research play an increasingly important role in addressing these challenges. By involving local communities in monitoring efforts, data collection becomes more robust, and awareness of environmental issues grows. This inclusive approach not only enhances monitoring capabilities but also empowers individuals to take an active role in shaping sustainable solutions for their environment.

Ultimately, the refinement of environmental monitoring and assessment strategies is crucial for fostering longterm resilience, ensuring food security and a better quality of life for future generations.



















University of Zagreb Faculty of Electrical Engineering and Computing

University of Zagreb Faculty of Electrical Engineering and Computing (UNIZGFER) is the largest technical faculty and the leading educational and R&D institution in the fields of electrical engineering, information and communication technology and computing in the Republic of Croatia.

UNIZGFER is a constituent of the University of Zagreb – the oldest and largest university in South-Eastern Europe, founded in 1669. It now consists of 29 faculties, three art academies and the Centre for Croatian Studies. With its comprehensive programmes and over

60,000 full-time undergraduate and postgraduate students the University is the strongest teaching institution in Croatia. It offers a wide range of academic degree courses leading to Bachelor's, Master's and Doctoral degrees in the following fields: Arts, Biomedicine, Biotechnology, Engineering, Humanities, Natural and Social Sciences. It is also a strongly research-oriented institution, contributing with over 50 percent of the country's total research output.

UNIZGFER has its roots in the Technical Faculty, which was founded in 1919. In 1956, the departments of the

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Technical Faculty grew into four new faculties, including the Faculty of Electrical Engineering, which was given its current name in 1994. With more than 35 research laboratories, the Faculty today covers all major fields in electrical engineering, information and communication technologies and computing.

Laboratory for Renewable Energy Systems (LARES) is the research laboratory of UNIZGFER involved since early 2000s in the state-of-the art R&D in the domain of energy and resources management in complex systems – buildings, microgrids, electricity and water distribution grids, rail transport, automotive. Key methodological approaches in its R&D are optimal control and estimation techniques for linear and hybrid systems as well as machine learning.





Optimization-based Design, Scheduling and Control of Buildings and Infrastructure Systems



Prof. Mario VašakUniversity of Zagreb Faculty of
Electrical Engineering and Computing

Buildings and infrastructure systems are key elements of cities. In order to ensure a smooth transition to future decarbonized cities, it is very important to smartly connect their (i) sizing, (ii) operation scheduling and (iii) real-time

control. The flexibility required to balance the intermittent production and consumption of energy in future buildings and infrastructure is essential. It is crucial for economic viability of the forthcoming smart investments and is therefore firmly built in all three

mentioned steps. Predictive control and its underlying optimization procedures seem to be the most promising framework to bring forward the flexibility of future energy systems in an economically sustainable way, if not even the only framework for that.

The talk will focus on the developments performed in predictive control and optimizations for sizing, operation scheduling and real-time control of buildings and infrastructure systems, with also flexibility included at specific points. The lecture will show different pieces of the smart city puzzle: buildings operation scheduling and real-time control with considered flexibility provision towards the energy grids, optimal sizing of photovoltaic and battery systems for a consumer, train-on-the-route operation scheduling, water distribution system operation scheduling and power-to-gas plant sizing.



















Chamber of Commerce and Industry of Slovenia – Institute for Business Education

The Chamber of Commerce and Industry of Slovenia (GZS) - Institute for Business Education is an independent legal entity integrated into the organizational structure of GZS, Slovenia's largest independent, voluntary, and non-profit business association. Founded in 1851, GZS has a long-standing history of representing the interests of more than 5,200 member companies, which encompass a broad spectrum of industries, sizes, and regions. GZS plays a key role in shaping Slovenia's economic and business environment by actively participating in eight of the nine Strategic Research and Innovation Partnerships (SRIPs), which are instrumental in implementing Slovenia's Smart Specialization Strategy (S4). The Chamber has been deeply involved in the formulation of S4 and its upgrade to S5, aiming to drive innovation and competitiveness across sectors. GZS's influence is further bolstered by its participation in various working groups and state bodies, working toward the development and maintenance of a robust and high-quality business support system in Slovenia.

Within this ecosystem, the CPU - Center for Business Training is recognized as one of the most established

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and respected adult education providers in Slovenia. With its rich tradition and decades of experience, CPU has developed a strong reputation for its ability to design, organize, and deliver professional and technical training tailored to the needs of the Slovenian economy. The center offers a wide range of educational programs, including professional seminars, long-term courses, short-term workshops, and customized training events. CPU's mission is to address the evolving educational needs of businesses, keeping pace with labor market demands and equipping Slovenia's workforce with the knowledge and skills required in a dynamic economic landscape.

What sets CPU apart from other educational institutions is its direct and close collaboration with the business sector, allowing it to align its educational offerings to the rapidly changing needs of the economy. With the longest tradition of providing adult business training in Slovenia, CPU is committed to fostering lifelong learning, career development, and practical skills acquisition for both managers and professionals in all industries.

CPU - Center for Business Training ensures that companies' educational needs are met through a comprehensive and diverse range of programs. The center offers more than 30 meticulously designed training courses, each tailored to different industries and target groups. These programmes cover key areas such as **civil engineering, computer science, informatics, and economics**, reflecting the center's focus on sectors that are critical to Slovenia's economic growth and innovation. The programmes include opportunities to gain professional qualifications, continuous professional development, and specific skill-enhancement courses, which are all structured to provide immediate practical benefits in the workplace.

In addition to its comprehensive training portfolio, CPU also offers shorter, highly focused sessions that address specific skill gaps or respond to emerging industry needs. These targeted courses enable businesses to quickly upskill their workforce and remain competitive in a fast-paced market. CPU's international partnerships further enhance its offerings, enabling it to draw on global best practices and deliver cutting-edge training programs. This international cooperation ensures that Slovenian businesses and professionals remain at the forefront of innovation and competitiveness on the global stage.

Through its long-standing commitment to quality education, strong industry ties, and international collaboration, CPU - Center for Business Training continues to be a key driver of workforce development, supporting companies in Slovenia in achieving greater productivity and sustainable growth.



























Together for Healthy Lives in Europe – EIT Health



Dr. Astrid Kaltenböck *Managing Director EIT Health Austria*

Europe faces numerous challenges which effective innovation in health could help to solve. Without action, these challenges place growing pressure on healthcare systems and affect health outcomes for citizens and patients.

To advance Europe's ambitions in this area, EIT Health was established in 2015 as a vibrant network of over

Dr. Ferenc PongraczDeputy Managing Director
EIT Health InnoStars

120 businesses, academic institutions and research organisations that aim to drive healthcare innovation, create positive societal impact in Europe, promote better health for citizens, strengthen healthcare sys-

tems, and contribute to a sustainable health economy.

Backed by the European Union, EIT Health helps European healthcare companies to develop solutions



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for some of the most pressing healthcare challenges: such as the transition to digital health and personalised medicine and the integration of value-based healthcare. Through local Partner Days, European Matchmakings and expert roundtable discussions the network provides a neutral platform for cross-border exchange in various formats and helps to make progress on complex topics such as the implementation of the European Health Data Space.

Through its innovation activities, EIT Health supports European consortia to implement innovation projects that aim to solve real industry problems, fill innovation gaps, and bring these new solutions to the market. In the area of Education, EIT Health offers Master and Doctoral Programmes together with its partner universities, as well as specialised training programmes for up-skilling and re-skilling the healthcare workforce. It is estimated that more than 120,000 new roles could be created in ten years' time, as around 50% of existing work activities become automated in the pharmaceutical and medical-manufacturing industry. To extend EIT Health's support in this area, the organisation has set up the WorkInHealth Foundation to address concerns surrounding a labour shortage over the next decade.

EIT Health also engages with and actively supports health start-ups and scale-ups in Europe to help them access new markets or find business partners. Through programmes such as EIT Health CATAPULT, they receive intensive training while building their credibility and visibility through pan-European exposure. In addition, EIT Health and the EIF jointly operate the Venture Centre of Excellence (VCoE), mobilising finance and expertise for European SMEs in health and life sciences. The VCoE connects investors with small businesses, offering support for fundraising and access to EIT Health services for Series A, B, and pre-IPO rounds. In its support activities, the VCoE regularly identifies the skills-related challenges faced by the beneficiary start-ups and investors within its

network, and assists them in tackling issues related to reskilling and upskilling teams, recruitment, and developing effective skills strategies.

While EIT Health is headquartered in Munich, Germany, eight innovation hubs across Europe directly support their partners and ecosystem stakeholders on a regional level. Their offices are located in Vienna, Rotterdam, Stockholm, Paris, Barcelona and Dublin. EIT Health InnoStars, headquartered in Budapest, covers Hungary, Italy, Poland and Portugal, as well as other countries included in the EIT Regional Innovation Scheme: Croatia, Czech Republic, Estonia, Greece, Latvia, Lithuania, Slovakia, Slovenia, and Romania.

Do you want to find out more about the EIT Health Community? Visit www.eithealth.eu today or get in touch with our local teams directly.























Leiden University Medical Center, Department of Public Health and Primary Care

The Master course 'Health, Ageing and Society' is one of the Master studies at Leiden University Medical Center. Leiden University is the oldest university in the Netherlands and has an excellent reputation worldwide, built up over more than four centuries. Since 1575, we have provided hundreds of thousands of students with a sound personal education.

Leiden University Medical Centre is a modern university medical centre for research, education and patient care with a high-quality profile, excellent research facilities and a strong scientific orientation. Its research practice, ranging from pure fundamental medical research to applied clinical research, places the Leiden University Medical Center among the world's best.

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The Health, Ageing and Society master's degree programme will prepare you for an important role in the innovation of the future of our healthcare system. This inspiring master's programme is rich of ideas for the future, co-creation, and health management. Medical care offers more and more options. But, ageing with dignity requires much more than healthcare alone. Quality of life, autonomy, independence, an active social life, and happiness are closely interrelated. Therefore, it is important to have a close network of dedicated professionals and volunteers (medical, nursing, social) who actively reach out to family, friends, informal caregivers, and/or neighbours.



Good Practice in the Development and Transfer of New Technologies to the Healthcare System



Prof. Dr. Nick Guldemond MD PhD Eng Leiden University Medical Center

The path from idea to health practice is rarely straightforward. Innovation is one thing; smoothly integrating the development, testing, approval, adoption and up-scaling of solutions into existing health systems and ensuring that new technologies actually improve patient

outcomes and reduce costs is another. The key issues mentioned are often bureaucratic red tape, data secu-

rity, engagement of patient and healthcare professionals, but are there other innovation and health system aspects that better explain the lack of success?

In my speech I reflect on these aspects and what scenarios might be possible to overcome these hurdles in order to stimulate both economic impact as well as sustainable healthcare.



















University Medical Centre Maribor

The University Medical Centre Maribor is a public healthcare institution that provides secondary and tertiary level healthcare services in northeastern Slovenia. It is a teaching hospital that encourages its employees to provide high-quality, innovative, and research-driven medical care. They carry out internal, national, and international research projects. There are currently 80 internal research projects. At the national level (ARIS), they are active in 11 projects and 7 programs, while internationally, they are involved in 8 projects.

As a public hospital, the University Medical Centre Maribor symbolizes health and patient care. It raises awareness of a healthy lifestyle on a national level. Departments, clinics, and staff strive to provide patients with comprehensive, high-quality, and multidisciplinary treatment.

We promote a healthy lifestyle through general health

information and health promotion for employees at the workplace and through various projects on healthy living, the introduction and testing of new treatment methods, diagnostics, and prevention. Since 2023, the FIT IN SIT project has focused on the implementation of nutritional planning and exercise to improve patients' eating habits and functional abilities.

The Health Promotion Working Group at UKC Maribor carries out activities to promote a healthy lifestyle among employees, focusing on both physical and mental health. The aim is to empower employees so they can transfer their knowledge to patients.

As part of the international EMPOWER FOR 21 project, they have raised awareness of lifelong learning and employee well-being while recognizing and preventing mental disorders.

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The hospital is also improving the working environment by participating in projects to test new technological equipment and tools. Innovations and technologies that show positive results may be proposed for changes at the national level in the future.

UKC Maribor has integrated the social robot Frida into the hospital environment (HOSMARTAI and CERTAIN project). The aim of the research was to relieve staff from administrative tasks, which has shown positive results.

The eCREAM project focuses on improving the traceability of health data in emergency medicine, with the aim of relieving the burden on staff and reducing overcrowding in emergency waiting rooms.

In international projects such as PRESIST, TARA, DIOPTRA, AI4HOPE, and BIO-STREAMS, patients will test mobile applications for different target groups, aiming at preventive treatment and reinforcing healthy daily habits.

The UKC Maribor is committed to networking and collaborating with various national and international organizations, which can lead to improvements in treatment methods and a reduction in the workload of healthcare staff.

An Example of Good Practice in the Implementation of Digitalisation in Medicine and Home Care



Dr Vojko Flis *University Medical Centre Maribor*

The HealthChain I3 project demonstrates a proactive approach to digitalisation in healthcare by offering a co-created, demand-driven model for technological solutions. By focusing on creating optimal value chains, the project ensures

that innovations are not developed in isolation but are driven by real healthcare needs, leading to more sustainable and impactful outcomes.

In this model, healthcare organisations (HOs) act as Challenge Identifiers, proposing specific needs and piloting solutions on their premises. IT companies (Solvers) bring their expertise in digital technology to address these challenges. Regional Ecosystem Supporters (ES) provide business support to IT companies and connect cross-border regions to ensure wider collaboration. Slovenian ecosystem partners in the project are Kirurški sanatorij Rožna Dolina, IT companies Parsek and Gospodar Zdravja, and the Slovenian Innovation Hub as ecosystem supporter.

An example of this co-created model are the solutions developed by the Slovenian partners within the project. The "HIPRO" solution focuses on improving patient safety and empowerment after fast-track hip surgery. Through digital tools such as real-time monitoring, self-assessment platforms and improved communication between patients and healthcare providers, HIPRO enables a smoother recovery process and reduces post-surgery complications.

The second solution, "MEPRO", addresses patient safety through the assessment and management of post-surgery psychological distress. This solution integrates digital self-assessment tools, gamified mental health approaches, and Al-powered chatbots to ensure timely intervention and better mental health outcomes for post-operative patients.

Both solutions reflect the HealthChain I3's vision of leveraging digital technologies, such as AI and remote monitoring, to improve healthcare outcomes and facilitate home care. This model aligns with broader smart city and community initiatives to deliver scalable, technology-enabled solutions that improve preventative care and remote patient management.

HealthChain I3 is an exemple how digitalisation can transform healthcare, making it more responsive, efficient, and patient-centred.



















Cosylab – Advancing Humanity. Engineering Remarkable.

ADVANCING HUMANITY THROUGH TECHNOLOGY FOR A HEALTHIER WORLD

At Cosylab, we have been dedicated to advancing humanity through technology for over two decades. Founded in 2001, our journey began with a vision to enable scientific breakthroughs and improve lives through complex software solutions. Today, we are a globally recognized leader in the development of advanced control systems and medical-grade software, pushing boundaries across diverse industries.

DRIVEN BY MISSION AND VALUES

Our mission is to provide cutting-edge expertise, software, and electronics for the world's most com-

plex devices through world-class talent and the ambition to make the world a better place. This mission aligns with our commitment to enhancing healthy living and working environments.

Our core values guide us in this endeavour: Thinking Bold, Being Humble, Working Smart, Enjoying Life and Doing Good.

These values foster innovation, collaboration, and a healthy work-life balance, contributing to create smart cities that support healthier lifestyles and work environments.

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ENABLING SMART CITIES FOR HEALTHIER LIVING

We are committed to improving healthy living and working environments through concrete actions and solutions. We actively contribute to the development of smart cities by integrating advanced technologies that promote health and well-being.

Our software solutions improve healthcare delivery by developing medical software integral to healthcare systems. Our radiation therapy systems enable precise and effective cancer treatment, improving patient outcomes and accessibility.

Artificial Intelligence and Big Data in Medicine



Dr Mark Pleško Chief Executive Officer Cosylab

We introduce the topic by arguing that data is of utmost importance if we want to do value-based healthcare. Then we look at the recent growth of importance of

Al and Big Data in Healthcare through the lens of market dynamics. Cancer is a natural candidate for Big Data and AI analysis, as we have so many cases that are systematically classified and studied worldwide. We present a use case from radiotherapy of cancer, illustrating the effective use of planning and ultimately recommending treatments with Al. An insight into the creation of AI models explains why it still takes a long time to create a usable tool, but the possibility of using AI itself to improve it is discussed. We conclude with our vision: A partnership based on AI, Big Data and Automation offers a range of opportunities that will enable Slovenian industry to compete in the high-growth markets for medical products and clinical services of the future.

With our expertise in large-scale distributed control systems, we are implementing smart grid technologies to enhance energy efficiency and reliability, reduce waste and lower carbon emissions. We also support clean energy initiatives such as fusion, contributing to sustainable energy sources that pave the way for pollution reduction and sustainable living.

GLOBAL REACH, LOCAL IMPACT

With a presence across Europe, North America, and Asia, we collaborate with leading organizations world-wide. Our work with significant Big Science projects like CERN and ITER reflects our commitment to pushing the boundaries of technology. Partnerships with medical device manufacturers and cancer centers ensure that our solutions have a tangible impact on communities around the world.

LOOKING TOWARDS A HEALTHIER FUTURE

Our vision is to be the preferred provider of technologies that power scientific and medical breakthroughs. By continuously exploring new technologies and fostering collaborations, we aim to meet the evolving needs of smart cities focused on healthier lifestyles and work environments.

JOINING HANDS FOR INNOVATION

We invite businesses, researchers, and policymakers to collaborate with us in developing technologies that make smart cities healthier and more efficient. Whether you're interested in innovative healthcare solutions, sustainable energy initiatives, or smart infrastructure development, we are eager to engage with you. Together, we can improve healthy living and working environments while advancing technology for the betterment of society.

With over 400 successful projects, 20+ years of experience, 300+ skilled engineers, and a 20% annual growth rate over 15 years, Cosylab is your trusted partner in innovation, a driver of technology, and a living embodiment of our mission and values. We look forward to collaborating with you to make the world a healthier and better place.



















Non-Tox Uni Kum: **Advancing Non-Toxic Environments**



Petra Marinko Chief Executive Officer Avenia-M d.o.o. - Non-Tox Uni Kum

We can't eliminate everything bad from our lives and start living a completely clean life, but we can certainly start by thinking of where we live and what impacts our environment has on our health. While

removing all toxins may be difficult, taking small steps toward a cleaner, healthier future through education is achievable and already affordable.

It's crucial to recognize that not all natural materials are non-toxic, nor are all sustainable practices free from harm. We deserve better. We deserve to know what's poisoning us and to demand safer alternatives. We care about ourselves, but do we really? We need all this information about toxic materials and products were available in one place, making it easier to be educated and informed.

Non-Tox Uni Kum is an innovative initiative aimed to transform the construction and design industry by promoting use of non-toxic building materials and viable sustainable practices. Its goal is to eliminate harm-

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NONTOXUNIKUM

















ful chemicals commonly used in construction, thereby creating healthier environments for both people and the planet. Through extensive research and interdisciplinary collaboration, Non-Tox Uni Kum seeks to establish new standards for sustainable and safe building practices. The foundation of this initiative is a strong partnership with experts from various fields, such as material science, architecture, chemistry, and medicine. Bringing together knowledge from diverse sources, even ancestral wisdom, combined with new technologies and techniques, the project addresses one of today's most significant issues: the widespread use of toxic substances in the environments in which we live and work. Harmful chemicals such as volatile organic compounds (VOCs), formaldehyde, heavy metals... pose serious health risks that we are not even aware of. The Non-Tox Uni Kum is committed to educating the public about these dangers and providing safer, people and environmentally friendly alternatives.

At the heart of the Non-Tox Uni Kum's philosophy is the belief that the spaces in which we live should enhance, rather than harm, our well-being. The initiative seeks to incorporate sustainability and health-conscious design into all aspects of construction, whether for residential homes or large buildings. By prioritizing natural, renewable materials and avoiding toxic substances, it aims to create aesthetically pleasing, sustainable environments that benefit future generations. Beyond advocating for safer materials, the Non-Tox Uni Kum is working to validate their effectiveness and help architects and builders adopt these practices. The ultimate goal is to develop scalable, non-toxic construction models that can be replicated around the world, setting new benchmarks for best practices in industry.

We believe that collaboration is key to the success. The initiative actively engages with industry leaders, scientists, environmental experts, and policy makers to create a comprehensive approach to sustainable building. By staying at the forefront of trends and innovations, Non-Tox Uni Kum ensures its practices re-

main effective and impactful. With a practical approach of promoting incremental yet impactful changes that make non-toxic construction more accessible and affordable, this scalability ensures that everyone, from individual homeowners to commercial developers, can benefit from safer, non-toxic environments.

Ultimately, Non-Tox Uni Kum is reshaping the way we think about building design and materials, prioritizing human health and environmental sustainability for a better future. The future should be non toxic.























Takeda Pharmaceutical Company



Milena Argirović Country Head Serbia, Montenegro, Albania, Macedonia, Kosovo Takeda d.o.o.

Takeda Pharmaceutical Company Limited, headquartered in Tokyo, Japan, is a global, values-driven, R&D-driven biopharmaceutical leader that is committed to bringing Better Health and a Brighter Future

for people around the world. With a history spanning more than 240 years, Takeda is focused on innovation and delivering transformative treatments.

INNOVATION AT THE CORE

Innovation is at the heart of Takeda's mission. The company invests heavily in research and development to create breakthrough therapies in areas of high unmet medical need. At the heart of Takeda's innovation strategy are its four therapeutic areas: Oncology, Rare Diseases, Neuroscience, and Gastroenterology, along with Plasma-Derived Therapies and Vaccines.

Takeda's innovation efforts foster collaboration with academic institutions, biotechnology companies, and other pharmaceutical companies to accelerate the

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development of novel treatments. By leveraging external partnerships along with its internal R&D capabilities, Takeda continuous to push the boundaries of medical science. In addition, Takeda is embracing digitalization to enhance its research capabilities, streamline operations, and improve patient outcomes through advanced data analytics and digital health solutions.

COMMITMENT TO HEALTHY LIVING

Takeda's commitment to health goes beyond the developing treatments. The company actively promotes healthy living both within its organization and in the communities it serves. Takeda's Healthy Living Program encourages employees to lead balanced lives through wellness initiatives such as fitness programs, mental health resources, and flexible working arrangements. This holistic approach to employee well-being not only improves productivity, but is also consistent with Takeda's values of integrity and fairness.

SUSTAINABLE WORK ENVIRONMENT

Takeda is also committed to creating a sustainable working environment. The company has implemented environmentally friendly practices throughout its operations, from reducing carbon emissions and waste to promoting the use of renewable energy sources. Takeda's Global Corporate Social Responsibility (CSR) initiatives reflect its commitment to environmental sustainability, ethical behavior and social responsibility.

In addition, Takeda's commitment to diversity and inclusion creates a vibrant, collaborative, and respectful workplace where employees can thrive. This inclusive culture fosters innovative thinking and ensures that diverse perspectives contribute to the company's success.

GLOBAL IMPACT

As a global company, Takeda is committed to making a positive impact on global health. The company's Access to Medicines strategy addresses barriers to healthcare in low- and middle-income countries, ensuring that life-saving treatments reach those who need them most, regardless of geography or economic status.

In summary, Takeda's blend of innovation, commitment to healthy living, and sustainable practices positions the company as a leader in the biopharmaceutical industry. Through its unwavering dedication to improving patient outcomes and promoting health, Takeda continues to work towards its vision of Better Health and a Brighter Future for people around the world.























SPIRIT Slovenia: Fostering Innovation for Healthier Living and Working Environments

SPIRIT Slovenia Business Development Agency is an implementing agency of the Ministry of the Economy, Tourism and Sport of the Republic of Slovenia and is entrusted with the regulatory, expert and development tasks that serve to increase the competitiveness of the Slovenian economy in the areas of investment, entrepreneurship and internationalisation. As such, the Agency plays a central role in enhancing Slovenia's innovation ecosystem. Our primary mission is to create a vibrant, sustainable environment in which entrepreneurship and innovation can thrive. We focus on sup-

porting the competitiveness and international growth of Slovenian companies, with a strong emphasis on health-conscious innovations and sustainable solutions for a better living and working environment.

SUPPORTING INNOVATION FOR HEALTHIER LIFE AND WORKPLACE

One of SPIRIT Slovenia's key priorities is to promote of innovative solutions that improve health and well-being in both personal and professional environments. Recognising that a healthy workforce is the foundation

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of a productive economy, and thus, we support startups and small and medium-sized enterprises (SMEs) that focus on creating solutions that improve public health, workplace safety, and overall quality of life.

Through various **financial support mechanisms**, such as grants and investment opportunities, as well as mentoring and access to networks of international investors and experts, we help innovative companies bring their products and services to the market by promotion. Many of these innovations are directly related to improving the working environment by reducing stress, improving ergonomics, or providing new technologies that enable workers to do their jobs more safely and efficiently.

STRATEGIC PARTNERSHIPS FOR A HEALTHIER FUTURE

Collaboration is at the heart of SPIRIT Slovenia's approach to promoting innovation. By working with key European initiatives such as EIT Health and EIT Manufacturing, as well as regional innovation platforms such as SRIP Zdravje Medicina and SRIP PMiS, we ensure that Slovenian companies are part of the larger European ecosystem that promotes the integration of cutting-edge health technologies and smart manufacturing processes.

These partnerships aim to develop solutions that benefit both the healthcare sector and industries focused on improving the workplace. Examples include innovations in medical technologies, wearable health monitoring devices, and digital health solutions, as well as tools and systems that enhance safety, sustainability, and overall efficiency in manufacturing environments.

PROMOTING SUSTAINABILITY AND HEALTH

At SPIRIT Slovenia, we understand that promoting healthier living and working environments also means encouraging businesses to adopt more sustainable practices. In line with Slovenia's national goals to reduce environmental impact and improve the quality of life, we actively support companies that prioritise

eco-friendly solutions and innovations that contribute to the well-being of people and the planet.

This includes facilitating the growth of businesses that focus on green technologies, renewable energy solutions, and circular economy principles that not only reduce the carbon footprints but also contribute to healthier and safer living environment. Sustainable innovation is essential for creating workplaces that prioritise the health of both employees and the wider community.

SPIRIT Slovenia remains committed to fostering a supportive environment for innovation, focusing on sustainable and health-conscious solutions that benefit individuals, businesses, and society as a whole. By providing businesses with the tools, resources, and networks they need to succeed, we are driving forward a future where both people and organisations can thrive in harmony with the environment, ensuring sustainability for both the planet and its inhabitants.























Regional Development Agency of Ljubljana Urban Region

The Regional Development Agency of Ljubljana Urban Region (RRA LUR) is a development agency that connects the 25 municipalities in the region, including the capital city Ljubljana. Through its connecting role, it also exerts a positive influence beyond the borders of the region. Through a variety of activities and projects, we facilitate a shift to a wider circle of local, regional, national and European stakeholders. Interdisciplinary skills and a committed team of experts enable us to transform the challenges of the future into development opportunities that will contribute to a better quality of life and a responsible and innovative society that works for the good of people and the environment.

The RDA's key objectives include the balanced economic development of the region; the prudent use of natural resources, energy and space; sustainable mobility; the exploitation of creative potential; and the accessibility of user-friendly public services.

Internationally, the RRA LUR is a synonym for expertise and innovative projects. It is a **respected partner of international institutions**, with which it cooperates on a wide range of development projects. It **promotes the region at both nationally and internationally**. It is responsible for the successful communication of development projects both at home and abroad and provides information on investment and employment opportunities throughout the region.

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Do not go where the path may lead, go instead where there is no path and leave a trail.

– Ralf Waldo Emerson





























