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UNICA RECTORS SEMINAR

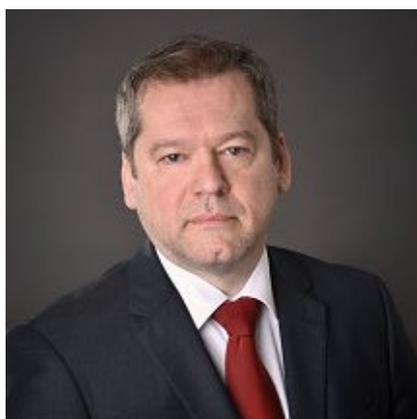
Interdisciplinary and intersectoral education
and research in modern universities

Part II

24 February 2021 | 10:00 – 12:00 (CET)

Welcome Address

IGOR PAPIČ | Rector, University of Ljubljana



Prof. Dr. Igor Papič is the Rector of the University of Ljubljana and a professor at the Faculty of Electrical Engineering at the same university. He is the Head of the Laboratory of Electricity Networks and Devices, and he was the Vice-Dean for Education from 2011 to 2013 and the Dean of the Faculty from 2013 to 2017. He received his bachelor's degree in 1992, his master's degree in 1995 and his doctorate in 1998 from the Faculty of Electrical Engineering at the University of Ljubljana. From 1994 to 1996, he trained at Siemens' Power

Transmission and Distribution department in Erlangen, Germany. In 2001, he taught as a guest professor at the University of Manitoba in Winnipeg, Canada. His research includes active compensators, FACTS (Flexible AC Transmission System) devices, power quality and smart grid concepts. Prof. Dr. Igor Papič has also led numerous domestic and international research and development projects. In 2009, he and his partners established

Reinhausen 2e, d.o.o., a spin-off company of the University of Ljubljana. The company's two main activities include engineering and the development of passive, hybrid and active compensators. He has been invited to hold lectures at the University of Manitoba, the University of Manchester, SmartGrids Austria, TNB Research Kuala Lumpur, the University of Alberta, Sichuan University, and elsewhere around the world.

His activity extends beyond the academic sphere as well, having served as Chairman of the Slovenian Smart Grids Technology Platform from 2006 to 2017. Prof. Dr. Igor Papič is also the Vice-Chair of the Slovenian CIGRÉ-CIRED Association, the editor of the international publication IEEE Transactions on Power Delivery, the convenor of the international working group Cigre Joint Working Group C4.42/CIRED Continuous Assessment of Low-order Harmonic Emissions from Customer Installations and the Vice-Chair of the international working group IEEE Harmonics Modelling and Simulation Task Force. (source: University of Ljubljana)

LUCIANO SASO | President, UNICA Network



Prof. Luciano Saso (Faculty of Pharmacy and Medicine, Sapienza University of Rome, Italy) received his PhD in Pharmaceutical Sciences from Sapienza University in 1992. He is author of more than 220 scientific articles published in peer reviewed international journals with impact factor (SASO-L in www.pubmed.com, total impact factor > 500, H-index Google Scholar 45, Scopus 37). He coordinated several research projects in the field of pharmacology and has been referee for many national and international funding agencies and international scientific journals in the last 30 years. Prof. Saso has extensive experience in international relations and he is currently Vice-Rector for European University Networks at Sapienza University of Rome. In the last 15 years, he participated in several projects including IMS2020, EGRACONS, IMOTION, BUCUM, UZDOC, TRAIN and has been speaker and chair at many international conferences organised by UNICA and other university networks. He coordinates the Sapienza team in the European University CIVIS (www.civis.eu). Prof. Saso has been Member of the Steering Committee of UNICA for two mandates (2011-2015) and in November 2019 he has been re-elected President of UNICA for the second mandate (2019-2023).

Session 1

The challenges of interdisciplinarity

IVANKA POPOVIĆ | Rector, University of Belgrade



Ivanka Popović is the Rector of the University of Belgrade and Full Professor at the Faculty of Technology and Metallurgy, University of Belgrade. She obtained all of her academic degrees in chemical engineering at the FTM. She served as the first female Dean of the FTM (2006 - 2012). She has coordinated the R&D strategy of the University since 2012 and previously to assuming the office of Rector, she was for many years Vice-Rector for International Relations. Her research interests are polymer science and sustainable development. She has headed several national projects and has been involved in several TEMPUS and ERASMUS, two FP7 projects and currently in one H2020 project. Ivanka Popović has authored or co-authored more than 70 papers in international scientific journals with a total citation of more than 2200 and h-index of 17. She was the first female President of the Serbian Chemical Society (2009 – 2013) and is the President of the Association of Italian and Serbian Scientists and Scholars since 2012. *(source: Text - UNICA | Photo: University of Belgrade)*

JANEZ STARE | Faculty of Medicine, University of Ljubljana



Janez Stare graduated from the Faculty of Mathematics, University of Ljubljana, then gained a Master's Degree and PhD in Biostatistics from the University of Ljubljana's Faculty of Medicine. He is currently full Professor of Biostatistics and Head of the Doctoral Programme in Statistics at University of Ljubljana. Until 2019 he was for almost 25 years Head of the Institute of Biostatistics and Medical Informatics, Faculty of Medicine, Ljubljana. His research interests are explained variation in survival analysis, predictive ability of regression models in survival analysis, frailties, random effects in survival models, relative survival, goodness of fit of regression models, and scientometrics.

ANA PLEMENITAŠ | Faculty of Medicine, University of Ljubljana



Ana Plemenitaš is Full Professor of Biochemistry and Molecular biology at the Faculty of Medicine of the University of Ljubljana.

She is Chair of the Council of Doctoral Programme Biomedicine and Coordinator of Biochemistry and Molecular Biology of the Doctoral Programme Biomedicine at the University of Ljubljana.

ANDREJA ŽGAJNAR GOTVAJN | (Faculty of Chemistry and Chemical Technology, University of Ljubljana



Andreja Žgajnar Gotvajn obtained her PhD in the field of Chemical Engineering. She is Professor of Environmental Engineering and Vice dean for doctoral study and research at Faculty of Chemistry and Chemical Technology of University of Ljubljana, Slovenia. She is also the head of the Programme Council of doctoral study on Environmental Protection at University of Ljubljana. Her research work is focused on management of solid wastes, biodegradability and ecotoxicity studies with chemicals and wastewaters in aquatic compartments, risk assessment and hazard identification of chemicals

as well as different aspects of wastewater treatment, recycling and reuse. She participated in 6 national research projects, she was a leader of 5 bilateral international projects, and she is currently involved in national research program Chemical Engineering ([more info](#)).

Embracing interdisciplinarity: good practices from the doctoral studies at University of Ljubljana

Ana Plemenitaš, Andreja Žgajnar Gotvajn, Janez Stare

Interdisciplinarity in science is commonly understood as endeavour which borrows knowledge from different fields, merges it, and produces new knowledge that no single field could have produced on its own. At University of Ljubljana (UL) there are several interdisciplinary studies involving majority of UL members. At the doctoral level Biomedicine, Environmental Protection and Statistics have a long tradition and attract students with various

backgrounds. All of them are four years doctoral programmes focused on research, interdisciplinarity and collaboration between the best local and foreign experts.

The basic goal of **Biomedicine** is to educate highly qualified experts in the scientific fields that constitute the area of biomedicine. It covers life and health sciences with the following scientific fields: biochemistry and molecular biology, genetics, pharmacy, clinical biochemistry and laboratory biomedicine, clinical and basic medicine, microbiology, neuroscience, public health, toxicology and veterinary medicine. The programme is run by five member faculties of the University of Ljubljana and three research institutes which participate with the experts in organized courses, mentors and research infrastructure. The number of students varies among 160 to 180 on a yearly basis. The problems of environmental protection are heterogeneous, integrated and interdisciplinary. Problem solving is a result of the combined knowledge arising from natural sciences, social sciences and humanities, technical sciences, medicine and others. The programme in **Environmental Protection** links together experts from 13 faculties and departments of UL. Students with various orientations obtain fundamental knowledge on environmental issues by taking two fundamental courses; additional knowledge can be obtained through the choice of elective theoretical and elective research courses consistent with their research interest. Additionally, they have to choose two mentors from different scientific areas. To attract international students, two international summer schools were organised using blended-learning approach resulting in web page with variety of video lectures available for independent on-line study.

The doctoral programme **Statistics** is run by seven member faculties and has seven modules. Statistics relies heavily on its mathematical foundations, while other fields work closely with statistics in developing analytical methods to solve problems specific to them. These collaborations are sometimes so strong that they almost stand alone and were given special names, like biostatistics, psychometrics, or econometrics. The number of students is small, 10 to 15 on a yearly basis, which is similar to such studies in other countries. The dissertations are diverse, ranging from very theoretical to very applied, thus perfectly reflecting the mission of statistics in science.

Interdisciplinary doctoral studies connect various scientific disciplines, thus contributing to the international transfer of knowledge, social skills, academic excellence and freedom as well as enhancing multicultural, interdisciplinary and multidisciplinary approach at all levels of university education and research.



Jens Kreisel is vice-rector for research of the University of Luxembourg (UL) and Professor for Physics and Materials Sciences. Jens is passionate about how different physical properties interact in functional materials and how such functionalities can be translated into technology. In addition to his career as a scientist, JK has acquired a large experience in the senior executive management of both academic institutions and research-driven departments, with a sound knowledge of different international research systems. As the Vice-rector for research, JK is responsible for UL's research vision, strategy, and agenda. Key responsibilities include doctoral education and the reinforcing of interdisciplinary and innovation initiatives. He represents UL in national and international committees and establishes relations to public and industry players. JK is fluent in German, French and English, thanks to an international education and career in Karlsruhe (D), Lyon & Grenoble (F), Oxford & Warwick (GB) and Luxembourg. *(Photo: University of Luxembourg)*

Enabling interdisciplinarity through the establishment of an IAS in Luxembourg

The University of Luxembourg (UL) is a research-oriented University in a country that nurtures and promotes its research and innovation ecosystem, aiming at a knowledge-based economy at the heart of Europe. After only 15 years of existence, UL has become an epicentre for creating new knowledge and technology and is already ranked among the best young universities.

UL considers that an increased interdisciplinarity is among the stakes of UL's and Luxembourg's next steps in its international research and innovation development. Within this strategy to overcome boundaries between disciplines and sectors, UL has recently established an [Institute for Advanced Studies \(IAS\)](#). The IAS - Luxembourg mirrors the concept of international examples of Institutes for Advanced Study, which are recognized benchmarks for combining excellence, interdisciplinarity and internationality, and as fora for sharing knowledge and experience. The IAS - Luxembourg has four main missions: 1) to leverage bold and interdisciplinary research at the very forefront of science, 2) to symbolize UL's values of excellence, interdisciplinarity and internationality, 3) to build bridges in-between the UL community, the international research community, international visitors and the society and 4) to contribute to the attraction and retention of international talent. Towards its missions, the IAS - Luxembourg implements four strategic funding instruments: (i) "Distinguished", (ii): "Audacity, (iii) "Young academics" and (iv) Brainstorm. In this seminar, we will present the set-up phase, benchmarking and concept of the IAS Luxembourg and report on first success stories.



François Bussy is professor of Geology at the University of Lausanne, Switzerland, where he studied Earth sciences and obtained his PhD degree in 1989. After post-docs at the University of Leeds (UK) and at the Royal Ontario Museum in Toronto (Canada), he went back to Lausanne where he specialized in microanalytical techniques. In 2012, he has been appointed Vice-dean for research in the Faculty of Geosciences and Environment at UNIL, which hosts researchers in a wide field ranging from the natural to the human and social sciences. He has been Dean of this faculty from 2013 to 2016, and is currently Vice-rector for research, international relations and continuous education.

The challenge of interdisciplinarity in a disciplinary-based research system, insight from every day life at UNIL

As most universities worldwide, the university of Lausanne (UNIL) is organized according to a disciplinary scheme, i.e., into seven faculties, each of them being further subdivided into departments, institutes, sections, and so on, again according to disciplinary schemes.... This kind of organization, which drives education programs and budget distribution, does not favor interdisciplinarity. In the same way, researchers are globally (still) evaluated, at the international level, according to their cutting-edge research, top-notch publications, and success in obtaining grants. As funding agencies are mostly organized in a disciplinary way as well (e.g., the Swiss NSF), researchers, especially in their early career stage, inevitably focus on their discipline to profile themselves.

In this unfavorable global context, UNIL has long been committed to the promotion of interdisciplinarity, but with mixed results so far. Education programs, mostly at the master level, include optional courses for a limited number of ECTS credits, either in complementary disciplines or truly interdisciplinary (e.g., the annual interfaculty seminar on environment).

Interdisciplinary research has been, and still is, more difficult to promote. Over the years, UNIL launched several internal calls with pluriannual funding for interdisciplinary projects, but the long-term seed effect has revealed disappointing. Two years ago, UNIL Rectorate decided to set up and finance several Interdisciplinary Research Centers focused on strategic topics like mountain environments, sport, life course and aging, ethics, sustainability. Truly interdisciplinary projects seem to be emerging with potential external funding, which is promising. At the same time, interest seems rather limited to a group of senior scientists, lecturers, or professors, committed for a

long time to the idea(l) of interdisciplinarity. As a matter of fact, the most publicized interdisciplinary research project currently conducted at UNIL (people's feelings and superstition towards the Barn Owl) has been launched independently by a natural scientist and a psychologist without institutional incentive.

Session 2

Collaboration with companies: sharing good practices

TANJA DMITROVIĆ | Vice-Rector for Knowledge Transfer, University of Ljubljana



Prof. Dr. Tanja Dmitrović is a full-time professor of marketing at the School of Economics and Business, University of Ljubljana (SEB LU). She is currently Vice-Rector of the University of Ljubljana for Knowledge Transfer and Chair of Supervisory Board of Ljubljana University Incubator.

Prior to her appointment as Vice-Rector, she held numerous positions at SEB LU. From 2016-2019, she served as National Coordinator for Slovenia at European Marketing Academy. Her research work covers various areas of marketing and she collaborates with companies on new product development, marketing strategies and market analysis.

KERRY KIRWAN | Deputy Pro-Vice Chancellor (Research), University of Warwick



Kerry Kirwan is Deputy Pro-Vice Chancellor (Research) for the University of Warwick, a Trustee of The Alan Turing Institute and Professor at WMG. He is Director of the £11m EPSRC Centre for Doctoral Training in Sustainable Materials and Manufacturing (EngD), Strategic Director of the £10m Industrial Doctorate Centre and Head of the Sustainable Materials and Manufacturing Research Group within WMG. Prof Kirwan leads the University of Warwick's Global Research Priority in Innovative Manufacturing and Future Materials

and recently co-chaired the UK's West Midlands Combined Authority Digital Roadmap refresh. Previously he was a member of EPSRC's Manufacturing the Future Strategic Advisory Team.

Researching with Industry

The UK is facing a number of emergent challenges in the research space and our industrial partners are key to its success. The talk will discuss the issues facing researchers and industrial partners looking to explain where universities can add value and build resilient partnerships that bring mutual benefit. Specific focus will be on the WMG approach which is globally recognised as successful.

MICHAEL ROVATSOS | Deputy Vice Principal of Research and Director of the Bayes Centre, University of Edinburgh



Michael Rovatsos is Deputy Vice Principal of Research and Professor of Artificial Intelligence at the University of Edinburgh, where he is also Director of the Bayes Centre, the University's innovation centre for Data Science and AI. He obtained his PhD in Informatics from the Technical University of Munich in 2004, after which he went straight into a full-time academic position at Edinburgh. He has a track record of over 90 publications in AI, and has been involved in externally funded projects worth over £17 million. His research interests are in Artificial Intelligence with a specific focus on multiagent systems and human-friendly and ethical algorithm design. Within this wider field, he has made contributions to a range of topics from multiagent communication, planning, and learning to the design of argumentation, trust and reputation, and normative systems. His most recent work has focused on designing smart orchestration platforms for human collaboration, developing diversity-aware coordination algorithms, and developing methods to elicit fairness criteria from human users to translate these to ethical resource allocation mechanisms. (*source: The Alan Turing Institute*).

The Bayes Centre – a case study in the University of Edinburgh's approach to interdisciplinary research and innovation

In 2017, the University of Edinburgh embarked on a 15-year Data-Driven Innovation programme to drive economic development through the use of data across ten key industry sectors in our region, with a total anticipated investment of €700 million from government, industry, and the University.

The Bayes Centre was the first of five cross-disciplinary and cross-sector innovation hubs to be established within this programme, and has demonstrated the value of innovative models for translational research and development by delivering substantial benefits in terms of industry-led research, entrepreneurship, and workforce upskilling. In

this talk, I will present the ambition and vision of the Centre, together with lessons learnt over the past three years while creating a new model for interdisciplinary research at the University.

VOLKER HOFMANN | Director of Humboldt-Innovation



Volker Hofmann has been managing Humboldt-Innovation GmbH since 2014. Previously, he was responsible for the university's start-up service and worked for a consulting firm. A native Berliner and alumnus of Humboldt-Universität zu Berlin, he is a member of various innovation support networks at the state and federal level and is a board member of the Innovation Network for Advanced Materials. In 2018, Humboldt Innovation was awarded the best innovation funding in Germany.

How to overcome barriers of collaboration

One main goal for any knowledge transfer unit is to overcome barriers of collaboration between industry and its own university. The barriers are manifold and range from lack of transparency to missing incentive systems for researchers. Volker Hofmann addresses those barriers and gives an overview on how the knowledge transfer unit of Humboldt-Universität zu Berlin tackles them.