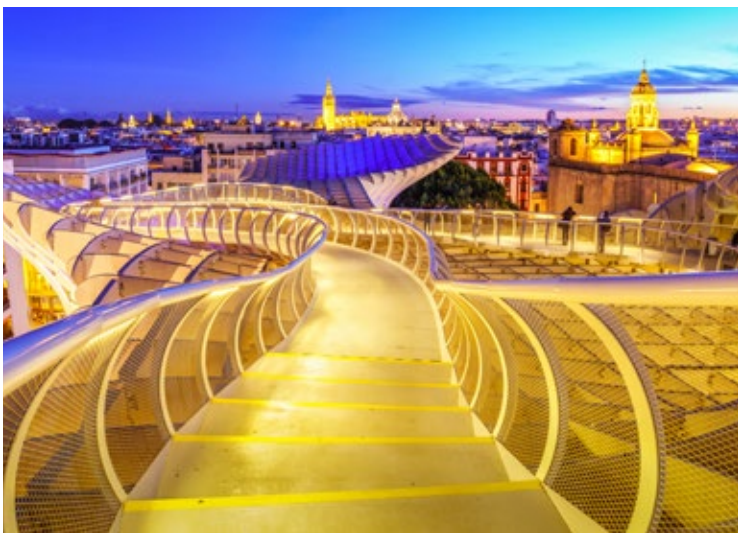# ANNUAL REPORT 2020

ERCIS

European
Research
Center for
Information
Systems

AUSTRALIA **AUSTRIA** BELGIUM **BRAZIL** CZECH REPUBLIC **DENMARK** ESTONIA **FINLAND**
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www.ercis.org

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ERCIS – the European Research Center for Information Systems – is an international network of scientists conducting cooperative research in the field of Information Systems (IS). The Network was founded in 2004 at the University of Münster and is funded by the German State of North Rhine-Westphalia and the University of Münster.

The Network provides new ways of thinking and multi-disciplinary approaches for finding solutions to the problems arising from an ongoing transformation of society and organisations due to the growing impact of IT. ERCIS has dedicated itself to dealing with these challenges through collaboration and exchange of information between research and practice.

ERCIS is notable for excellent communication and uncomplicated initiation of research cooperation and research projects. Among ERCIS' associated major strengths are the personal contacts between researchers, which make it a vibrant network. ERCIS covers a wide range of disciplines associated with IS and perspectives on IS research.

The Network is headed by the *Board of Directors* in Münster, which is composed of one academic director, namely Prof. Dr. Jörg Becker, and eight additional professors all active in the IS research field. Moreover, ERCIS involves numerous internationally renowned researchers from more than 20 *Associated Research Institutions, Personal Members,* as well as members of the *Advisory Board* coming from diverse industry companies.

All ERCIS research partners are experts in a wide variety of disciplines related to IS. Research conducted by ERCIS ranges from fundamental research to application-oriented research. Besides individual research activities of ERCIS members, the Network brings together and supports selected research aspects of IS in *Competence Centres* aimed at strengthening research in specific areas. The Advisory Board members come from various industry sectors, which guarantees that the research conducted at ERCIS is relevant for practice. Regular meetings of the Board of Directors with the Advisory Board members, as well as annual workshops of ERCIS' associated research institutions, ensure continuous, direct and productive exchange of knowledge.

Finally, students and young researchers also benefit from collaboration at ERCIS, as many ERCIS research partners offer exchange programs that last one or two semesters, which gives students an opportunity to acquire international experience. Joint lectures and guest talks organised by several ERCIS members contribute to the internationalisation of teaching.

If you are interested in connecting with the Network, please feel free to contact us! For further information please visit

www.ercis.org

DEAR FELLOW ERCIS PARTNERS AND INTERESTED READERS OF THIS REPORT,

Last year, my editorial was mainly about celebrations: the 15th anniversary of the network, new partner institutions, and great joint projects. This year, well, everything was completely different. The pandemic hit us hard and changed our private life as well as our professional life almost from one day to another. We stayed at home for months and could not meet family and friends. However, as opposed to many others, we as "knowledge workers" were *(and still are)* in a comfortable position being able to stay at home and work from home. Nobody knows how long this situation will last or when we will be back to our "normal, before Covid-19, lives", so we better get used to the "new normal".

Speaking of which, the "new normal" was also the topic of one of the virtual ERCIS round tables, which we set up this year to discuss with our advisory board members how Covid-19 influenced our work routines and how companies can react to that. As we could not meet personally this year, we switched to this virtual format, and the colleagues from the competence center "Smarter Work" gave valuable input to stimulate fruitful discussions. This format of the virtual round tables proved to be a very good possibility to stay in touch and we will continue to invite to those meetings on different topics next year as well.

Normally, I would at this point have thanked our hosts in Wroclaw for hosting this year's annual workshop. As so many other events, where we would have met this year, the annual workshop could not take place as planned. I hope that we will all meet again in Wroclaw next year! However, instead of cancelling the annual workshop, we held a compacted half-day virtual annual workshop. With 104 participants, it was the best-visited annual workshop so far! It was great seeing so many of my dear colleagues and friends from around the world at least on the screen for a couple of hours! We discussed current topics and projects within the competence centers, had new partners from the University of Koblenz *(welcome "back" Patrick Delfmann)* and the CBS *(welcome "again" Till Winkler and Torkil Clemmensen)* introducing themselves, and also presented our strategic considerations for the network's future. All in all, a very productive virtual meeting.

Normally, we would have chosen two pictures from beautiful Wroclaw for the cover of the Annual Report this year. As this will *(hopefully)* be the case next year, we decided to, again, welcome our newest members from Spain by chosing pictures from Seville and Madrid for the cover.

Nobody knows what the future holds in store for us. This saying was never so true as today. However, we as a network in the area of Information Systems have all the knowledge and tools to still be able to work together virtually. Even if we cannot meet physically, we can still collaborate. Or, as Henry Ford puts it nicely: "Coming together is a beginning, staying together is progress, and working together is success." Let's keep on being successful as, as I always say, ERCIS – it's what we make of it!

All the best and stay healthy,

Jörg

TABLE OF CONTENTS

11ᵀᴴ ANNUAL ERCIS WORKSHOP
(VIRTUAL)

Participants of the ERCIS Annual Workshop (Virtual)

SAVE THE DATE
The 2021 Annual Workshop is *(again)* planned to take place in Wrocław, Poland.

ERCIS TOPIC CLUSTERING
The network wants to provide a home for every Information Systems researcher interested in collaborating in a friendly and motivated manner. This includes research topics that cover the most remote areas of the Information Systems discipline, which by itself is not entirely well-defined. However, as an endeavor for the next years, the network works on identifying a set of research clusters, spanning topics where the network members can offer a large set of expertise. This should sharpen our external profile, but also bring the members closer together by providing certain umbrellas. To achieve this, a task force consisting of Jörg Becker, Katrin Bergener, Heike Trautmann, Armin Stein, and Jan vom Brocke first collected around 500 research topics of all partner institutions and personal members, and tried to cluster them into a meaningful set of high homogeneity among the topics inside a cluster, but enough heterogeneity between the clusters. The set of clusters that is currently being worked with consists of Data Science, Process Science, Knowledge and Learning, Supply Chain Management, and Digital Public Services. The presentation by the task force closed the workshop, and although there is still some need for discussions, the feedback of the participants was overwhelmingly positive. For the next year, it is planned to clearly define these clusters, assign responsibilities to network members as speakers for them, and hopefully release them as final during the 2021 Annual Workshop

11ᵀᴴ ANNUAL ERCIS WORKSHOP
(VIRTUAL)
2020 marked the year with the all-time high of attendance numbers for any ERCIS Annual Workshop! Following locations such as Vaduz *(Liechtenstein)*, Bordeaux *(France)*, Kaunas *(Lithuania)*, Turku *(Finland)*, Rome *(Italy)*, Guimarães *(Portugal)*, Kristiansand *(Norway)*, Leiden *(Netherlands)*, Luleå (Sweden), and Loughborough *(United Kingdom)*, this year's workshop took place using Zoom *(Internet)*.

PARTICIPATION
94 representatives of our international partner institutions, personal members and their institutions, and competence centers were present during the half-day workshop. They joined from 29 different research institutions, spanning 23 different countries. For the first time, we also had a good attendance of our Advisory Board Members. Even though the Annual Workshop usually focusses on research topics, whereas the Advisory Board Meetings and Round Tables have a stronger emphasis

on practical issues, twelve attendees joined from Arvato Supply Chain Solutions, CLAAS, cronos Unternehmensberatung, Hilti Corporation, Provinzial, and Schwarz IT KG. This resulted in a total number of 106 participants.

ACTIVITIES
Naturally, the workshop was rather informative than interactive in nature, given the 3h time slot and the rather high number of attendees. After a welcome by Jörg, Armin presented the 2020 ERCIS activities, and most importantly, planned activities for the near future. The network took the opportunity to thank Miriam Epke for her very much valued contribution to the network during the last years and welcomed Julia Seither to the organization team. Armin further reported about the preparation of the ERCIS Master Thesis Award, which was motivated by the student board members earlier this year, the BPM Winter School and its new format, as well as the ERCIS Round Tables, initiated by the Competence Center Smarter Work.

INSTITUTIONAL CHANGES
The next section covered institutional changes: Patrick Delfmann, skiing ace and researcher on conceptual modelling and process mining, was welcomed to the network as new personal member. Since his offer as a professor at the University of Koblenz-Landau, Patrick cooperated closely with the headquarters, and is also connected to the process science community of the network especially in Austria and Liechtenstein.

After moving to the University of Paderborn, Matthias Trier handed over the contact at the Copenhagen Business School to Till Winkler, who, together with Torkil Clemmensen, introduced the various research teams at the Department of Digitalization. We are very much looking forward to working together and expanding the network's expertise!
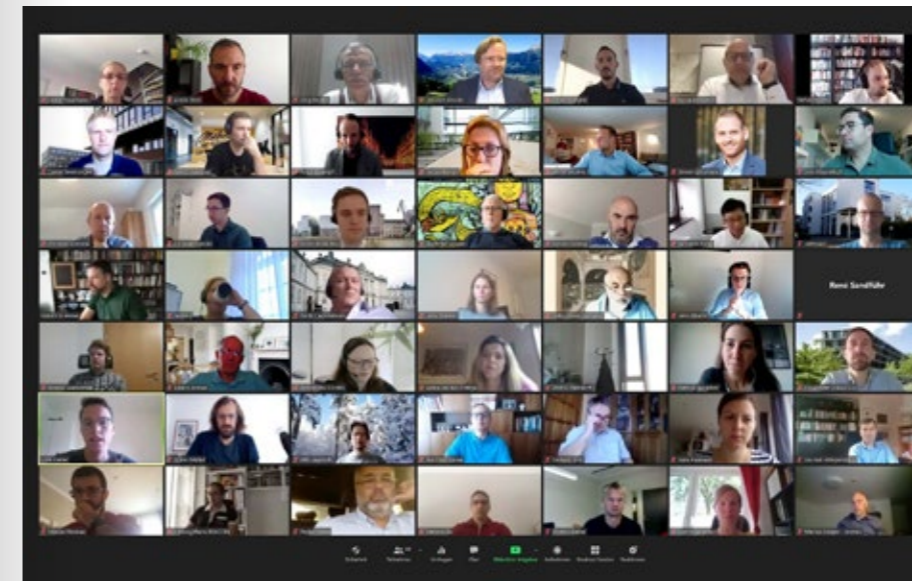
RESULTS OF THE 2019 ANNUAL WORKSHOP
Crispin Coombs reported about the status of the last year's annual workshop outcome, the paper "What Is It About Humanity That We Can't Give Away To Intelligent Machines? A European Perspective". The paper is in the shape of being submitted this year, and Crispin's overall reflection motivated the participants to engage in such joint endeavors – even though the coordination process can be cumbersome.

COMPETENCE CENTERS
The next section was dedicated to presenting the Competence Center's activities, starting with Isabel Ramos, speaking for the Competence Center "Digital Transformation in Small and Medium Companies". Three project proposals have been submitted to the European Commission, of which two have been approved, one is in the process of being re-submitted. Daniel Beverungen represented the Competence Center "Service Science", providing an overview of the project the members are currently working on, and project proposals under revision. He furthermore presented a list of publications and workshops that have been conducted by the competence center, closing with an invitation to the newly built Software Innovation Campus Paderborn, which provides perfect

space for working together. Sara Hofmann talked about the various activities initiated and conducted by the Competence Center "E-Government", which includes several exchanges of staff members among the participating institutions, publications, and a report on the status of the international PIONEER master. Christian Grimme presented the work of the Competence Center "Social Media Analytics", which, among several publications, included the organization of several tracks at conferences, workshops, and the conference MISDOOM. Also, three project proposals have been submitted and are currently under review. Bernd Hellingrath provided insights into the Competence Center "Crisis Management", presenting projects currently being worked on, plus inviting other researchers to join the network by participating in research and teaching. Finally, Simon Lansmann reported on the Competence Center "Smarter Work", which organized two Round Tables during the first wave of the pandemic, discussing the new work models with researchers and practitioners. Currently, the Competence Center works in several studies with Hilti and other companies to understand the "new normal".

Further information about the Competence Centers and their respective activities can be found in the related section in this report and on their dedicated website.

POSSIBILITY OF RESEARCH VISITS TO TWENTE

In 2020, positions are created for visiting researchers in the area of Business Information Systems – University of Twente – short visits *(2–12 weeks)*: ERCIS members are especially invited to spend a research visit in Twente. We are happy to offer furnished accommodation on our wonderful campus. Research visits are open for junior and senior IS faculty.

The IEBIS department started a collaboration with the Dutch Police to study causes and potential solutions to the rising challenges of cybercrime. The project includes 2 PhD positions to address multi-disciplinary aspects of events like DDoS-attacs, phishing and ransomware.

Information systems is expanding and we have welcomed several new faculty in Information systems research at our university: Renata Guizzardi Silva Souza, Dennis Prak, Patricia Rogetzer, Gayane Sedrakyan and Lousie Knight.

TWO INFORMATION SYSTEMS SCIENCES CONFERENCES AT THE UNIVERSITY OF TURKU

The conference Well-being in the Information Society *(WIS)* entered its eight edition with the special topic "Fruits of Respect", the conference Technology Ethics – Tethics entered its fourth edition. Due to the Coronavirus Pandemic, both conferences were held in a virtual form. For the same reason, the traditional Kilpisjärvi Information Systems Seminar *(KISS)*, held without breaks since 1990, had to be totally cancelled.

STUDY ON THE ROLE OF WEB-CONFERENCING SYSTEMS DURING THE PANDEMIC CRISIS

Web-conferencing systems *(such Zoom and Microsoft Teams)* have seen a dramatic uptake during the ongoing COVID-19 crisis and been employed for a variety of new use cases. Against the background of drastic and widespread changes in people's digital practices, a team of researchers at the Hilti Chair of Business Process Management, including Prof. Dr. Jan vom Brocke, Dr. Janine Hacker, Dr. Johannes Schneider, Joshua Peter Handali and Markus Otto, at the University of Liechtenstein have conducted a study to explore the use of web-conferencing systems during the crisis. Applying text mining techniques to a dataset of 3 million tweets, the research team found that web-conferencing systems emerged as a social technology facilitating access to *(everyday)* contacts and activities that were out of reach during the lockdown period. As such, technology evolved as a fallback option that supported societies in carrying on over an extended period of time and contributed to their resilience. With their study, which has recently been published in the European Journal of Information Systems, the authors contribute to the discourse on the role of information systems during the pandemic crisis.

Presentation of the study on cybersecurity at Vaduz Castle

UNIVERSITY OF LIECHTENSTEIN AND *DIGITAL-LIECHTENSTEIN.LI* PUBLISH STUDY ON CYBERSECURITY

Cybersecurity is indispensable for the success of digital transformation, both for large companies and SMEs. This fact is supported by the new study on the state of cybersecurity in Liechtenstein initiated by Prof. Dr. Pavel Laskov, holder of the Hilti Chair for Data and Application Security at the Institute of Information Systems at the University of Liechtenstein, and the initiative digital-liechtenstein.li. The study was carried out by a team of students and includes a representative online survey of over 100 companies and various administrative offices in Liechtenstein. The results of the study were shared in a webinar on cybersecurity and presented to Liechtenstein's Princely Family at Vaduz Castle in June 2020.

NEW SPECIALIZATION IN BUSINESS INFORMATICS AT THE UNIVERSITY OF GDAŃSK

Since October 2016, a new innovative specialization in Business Informatics has been released for the Bachelor studies. The specialization module was made in co-operation with business partners that were involved during the programme development. During the last semester, the studies have been carried out in the dual mode – two days a week of studies at University, and three days a week as an internship at Pomerania IT firms cooperating with the specialization within a Panel of Business Partners.

The Department of Business Informatics successfully finalized the grant regarding the cooperation between industry and academia in the form of the student traineeships in IT firms, mostly international IT corporations.

Due to the pandemic, most of the classes were and are being conducted remotely using MS Teams as conference software, and the Educational Portal of the University of Gdańsk, Mestwin.

HANA-POSTECH TECHFIN COLLABORATION CENTER

A memorandum of understanding was signed with Hana Financial Group, the third-largest financial group in South Korea, to establish POSTECH TechFin Research Center. This agreement, covering from research and development to start-up support, is expected to invest approximately 500 million won annually for at least three years. The research center is attended by 18 professors and plans to carry out research projects in the Tech-Fin area with Hana Finiancial Group. These joint projects will contribute significantly to the development of the financial industry in South Korea.

**RESEARCHERS AND STUDENTS
OF THE NUI GALWAY AWARDED**

Dr. Lorraine Morgan won the prestigious NUI Galway President's Award for Early Career Research. Also, Lero PhD student Mairead O'Connor and Prof. Kieran Conboy were among eight researchers from five leading Irish universities awarded Lero Director's Prizes. Mairead won an award for her work on diversity and inclusion and Kieran won the Rory O'Connor award for outstanding service to Lero. This is the second year of the annual awards presented by Lero, the Science Foundation Ireland Research Centre for Software, to honour members working across its 11 academic partner institutes nationwide.

**NATURE ARTICLE: KI FINDS ALMOST
TWO BILLION TREES IN THE DESERT**
Fabian Gieseke works with an
international team on tree capturing
in Sahara and Sahel

A team of researchers, including Fabian Gieseke from the Department for Information Systems at the WWU Münster, was able to identify more than 1.8 billion trees and bushes in the Western Sahara and Sahel region. The partly very dry area covers about 1.3 million square kilometers. For their analysis, which appeared in Nature on October 14, 2020, the international team evaluated more than 11,000 satellite images.

The large number of individual trees surprised the scientists. Although the plants cover a relatively small area overall - starting at around 0.1 percent in desert areas and up to 13.3 percent in more humid regions. For a long time, however, researchers had assumed that the dry areas would largely manage without trees and bushes.

The deep-learning technique used has analyzed the characteristic shape and color of trees and has thus been able to detect those with crowns of at least three square meters. With the help of this method, scientists around the world could now record and monitor trees outside of forests and further research the role that plants play, for example, in climate change or in the fight against poverty.

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NEWSTICKER +++ **BORDEAUX:** Climate Change Adaptation for Ports *(2017–2021)*, funded by Social Sciences and Humanities Research Council of Canada. Coordinator for Kedge: *Jason Monios.* +++ NEWSTICKER +++ NEWSTICK

NEWSTICKER +++ NEWSTICKER +++ **BORDEAUX:** Research project *(2018–2020)* "Forecasting Air Astana's spare parts and their inventory management" funded by Nazarbayev University. Coordinator: *Zied Babaï.* +++ NEWSTIC

NEWSTICKER +++ **MÜNSTER:** Since October 1, 2020, *Prof. Vossen* is again the Dean of the Münster School of Business and Economics. +++ NEWSTICKER +++ NEWSTICKER +++ NEWSTICKER +++ NEWSTICKER +++ NEWSTICKE

HEADQUARTERS

The ERCIS headquarters is located in Münster, Germany. All full professors of the department of information systems at the University of Münster serve in the board of the network and are active in the fields of information systems, computer science, data science, supply chain management, medical informatics, and law. Additionally, the management team at the headquarters works with the board to organise regular meetings, joint teaching endeavours, and research proposals with the network partners.

UNIVERSITY OF MÜNSTER – CHAIR FOR INFORMATION SYSTEMS AND INFORMATION MANAGEMENT

Smart Cities is the field of research that uses the advances in information and communication technologies to increase the operational efficiency, information sharing, and quality of services of the four constituent areas of a city: Retail, government, mobility, and energy. A focal topic is the development of integrated and configurable reference models for retail, government, mobility, and energy that advance the scientific knowledge and yield practical value for the creation of smart cities. Further important topics are the theory of the citizens' digital sovereignty and its consideration and integration within these reference models.

SELECTED CURRENT RESEARCH PROJECTS

Continuously increasing and changing amounts of data in modern organizations demand new information handling strategies. Effective knowledge management requires a flexible selection of essential information, for example, for decision processes under uncertainty or in dynamic economic markets. In this regard, information systems can reduce decision maker's cognitive load, emotional strain, and stress. However, for those positive effects to occur, persons need to use the information systems trustfully in order to forget "confidently". The goal of the present research project is to model and empirically examine the psychological processes underlying trustful use of information systems, enabling intentional forgetting.

For more information, please visit:
https://www.getrost-vergessen.de

ABOUT THE INSTITUTION

The Chair for Information Systems and Information Management at the University of Münster, directed by Prof. Dr. Dr. h.c. Dr. h.c. Jörg Becker, Professor h.c. *(NRU-HSE, Moscow)*, currently comprises nine postdocs and 15 research assistants. The courses offered by the Chair for BSc and MSc in Information Systems study programs include Application Systems, Information Modeling, and Workflow Management *(Process Modeling field)*, as well as Data Management and Management Information Systems and Data Warehousing *(Data Modeling field)*. Moreover, the courses Retail and Production Planning and Control cover both Process Modeling and Data Modeling in their respective domains. Members of the Chair are involved in research projects funded nationally and internationally. They publish results of their work in journals like BISE *(Business & Information Systems Engineering)*, BPMJ *(Business Process Management Journal)*, Electronic Markets, EMISA *(Enterprise Modeling and Information Systems Architectures)*, ISeB *(Information Systems and e-Business Management)*, and GIQ *(Government Information Quarterly)*, as well as in conference proceedings like ICIS *(International Conference on Information Systems)*, ECIS *(European Conference on Information Systems)*, ER *(International Conference on Conceptual Modeling)*, and HICSS *(Hawaii International Conference on System Sciences)*.

RESEARCH TOPICS

Conceptual modeling has become a mainstream method for describing, designing, and reorganising Information Systems in the last decade. Many large companies use conceptual models for tasks like business process reengineering, software introduction, and compliance management. Conceptual modeling, when being transferred into practice, supports the creation of business value for companies and governmental organizations.

Retail is an area of research that is focused on organizations and application systems in the respective domain including wholesale, stationary retail, and e-commerce. Focal topics to account for interdependencies between an organization and an application system involve process management and conceptual modeling in retail, as well as Enterprise Resource Planning *(ERP)* systems.

E-Government deals with the aspects of administrative processes and services within governmental and inter-governmental organizations and the citizens and businesses using Information and Communication Technology *(ICT)*. E-Government links the field of strategic management with aspects of process management and economic viability and focuses on front- and back-office. E-Government topics can be addressed in terms of content, as well as from technical and conceptual perspectives.

Virtual Institute Smart Energy *(VISE)* – Development of Digital Business Models Based on the Energy Demand Behavior of Households: Energy providers and energy service providers only have little information regarding the determinants of their customers' energy demand behavior, especially regarding private households. A detailed analysis of expectations and requirements of private energy demand is an important prerequisite for a successful adoption of new technology and basis for the development of new business models. The project's goal is the analysis of private households' intention to invest, use, and consequently the development of new business models addressing private households.

For more information, please visit:
https://www.smart-energy.nrw/

AWARDS

Dustin Janhofer *(student at the ERCIS)*, Prof. Becker, Dr. Ann-Kristin Cordes, and Benjamin Barann were nominated for the "Best Research in Progress Award" for their article "Mastering Omni-Channel Retailing Challenges with Industry 4.0 Concepts" at the "53rd Hawaii International Conference on System Sciences" *(HICSS 2020)* in Wailea, USA in January 2020.

Sebastian Halsbenning, Hendrik Scholta, and Marco Niemann were nominated for the "Best Research in Progress Award" for their article "The Data Doesn't Lie - An Approach for Form Usability Evaluation Based on Data Quality" at the "28th European Conference on Information Systems" *(ECIS 2020)* in Marrakech, Morocco in June 2020.

SELECTED PUBLICATIONS

Please see *https://www.wi.uni-muenster.de/department/groups/is/publications* for a complete list of publications.

Betzing, J. H., Kurtz, M., & Becker, J. (2020). Customer Participation in Virtual Communities for Local High Streets. Journal of Retailing and Consumer Services, 54(102025), 1–12.

Beverungen, D., Buijs, J., Becker, J., di, C. C., van der, A. W., Bartelheimer, C., vom Brocke, J., Comuzzi, M., Kraume, K., Leopold, H., Matzner, M., Mendling, J., Ogonek, N., Post, T., Resinas, M., Revoredo, K., del-Rio-Ortega, A., la, R. M., Santoro, F., Solti, A., Song, M., Stein, A., Stierle, M., & Wolf, V. (2020). Seven Paradoxes of Business Process Management in a Hyper-Connected World. Business & Information Systems Engineering, 2020.

Brunk, J., Stierle, M., Papke, L., Revoredo, K., Matzner, M., & Becker, J. (2020). Cause vs. Effect in Context-Sensitive Prediction of Business Process Instances. Information Systems, 2021(95).

Brunk, J., Stottmeister, J., Weinzierl, S., Matzner, M., & Becker, J. (2020). Exploring the Effect of Context Information on Deep Learning Business Process Predictions. Journal of Decision Systems, (Special Issue IFIP DSS 2020).

Chasin, F., Paukstadt, U., Gollhardt, T., & Becker, J. (2020). Smart energy driven business model innovation: An analysis of existing business models and implications for business model change in the energy sector. Journal of Cleaner Production, 2020(269), 122083.

Chasin, F., Paukstadt, U., Ullmeyer, P., & Becker, J. (2020). Creating Value from Energy Data: A Practitioner's Perspective on Data-Driven Smart Energy Business Models. Schmalenbach Business Review, 2020.

Rosemann, M., Becker, J., & Chasin, F. (2020). City 5.0. Business & Information Systems Engineering (BISE), 2020.

Scholta, H., Balta, D., Räckers, M., Becker, J., & Krcmar, H. (2020). Standardization of Forms in Governments: A Meta-Model for a
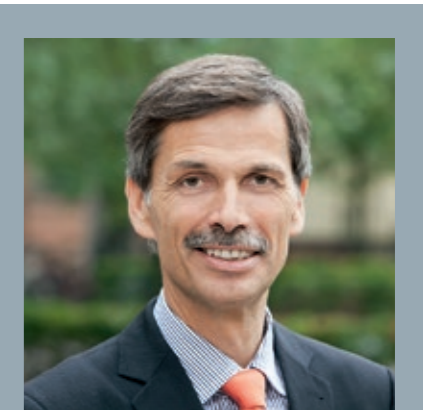
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Reference Form Modeling Language. Business and Information Systems Engineering *(BISE)*.

In addition, five further articles in journals, 29 conference papers, and an article in a book have been published.

DISSERTATIONS

Paukstadt, Ute: Business Model Innovation in the Age of the Internet of Things – Analysis and Development of Business Models for Smart Energy Technologies.

# UNIVERSITY OF MÜNSTER – INSTITUTE OF MEDICAL INFORMATICS (IMI)

ABOUT THE INSTITUTION

The Institute of Medical Informatics (IMI) is dedicated to research and teaching for the full range of informatics applications in medicine. It was founded in 1973 and belongs to the Medical Faculty. Since 2009 it is headed by Martin Dugas. It provides lectures, seminars, and courses in small groups regarding Medical Informatics for medical as well as informatics students. The institute has a long tradition regarding research on information systems in healthcare. Nowadays, the future of information systems in healthcare, specifically regarding electronic health records (EHRs), is a key research focus. Personalised medicine is built upon clinical and molecular data. Therefore data mining and pattern recognition techniques for genomic data, in particular derived from next-generation sequencing of cancer tissue, is an important research focus.

RESEARCH TOPICS

IMI focuses on informatics for personalised medicine. Due to the digital revolution, the relevance of informatics within all fields of medicine is constantly rising. There is a wide scope of applications, ranging from molecular biology over clinical medicine to public health.

The integration of clinical and molecular data, especially the analysis of next-generation sequencing (NGS) in cancer and stem cell research, is a well-established focus of the institute with national and international cooperations for many years. The rapid increase in data volumes of high-throughput sequencing in molecular medicine ("big data") poses constant challenges from an informatics point of view.
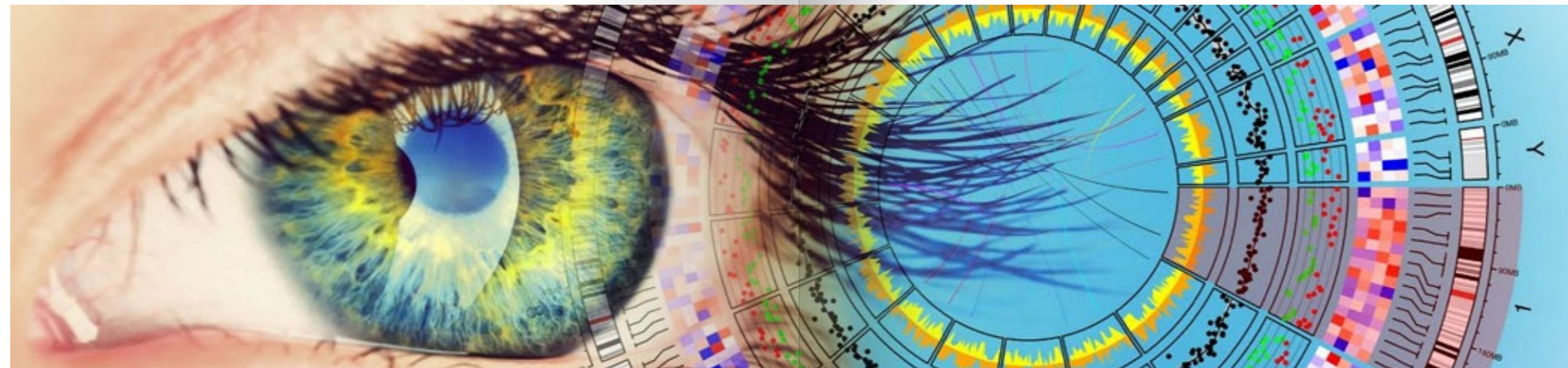
A major proportion of the data needed for clinical studies is also relevant for routine patient care. At present, data for studies and patient care are managed in separate systems. Hence, design and efficient implementation of interoperable information systems in healthcare is a major research topic. Open Metadata is key for interoperability. Specific research topics are data models with semantic annotations and methods for metadata management. Application fields are electronic health record (EHR) and electronic data capture (EDC) systems.

CURRENT RESEARCH PROJECTS

Digital Health

The world-wide largest public portal of medical data models (https://medical-data-models.org) is managed by IMI. It is a registered official European Research Infrastructure. To date, it contains 24.000+ data models and 600.000+ data items with semantic annotations. These data models are available in 18 download formats, in particular CDISC ODM, HL7 FHIR and openEHR ADL. MDM has 1.500+ users worldwide. The GUI is available in 8 languages. The IMI project mobile patient questionnaires (http://mopat.uni-muenster.de) integrate EHR and patient reported outcomes. Currently this software tool is applied successfully in the DFG clinical research unit "Translational Pruritus Research" (CRU 2690).

IMI is part of the HiGHmed-Consortium (www.highmed.org), which is funded by the Federal Ministry of Education and Research in the context of the German Medical Informatics Initiative. Münster is actively involved in the use case infection control: A software system that is developed to analyse various data sources from hospitals, with the aim to detect potentially dangerous germs as early as possible. This use case is of special interest in the current pandemic.

Biomedical Informatics

IMI participates in the DFG clinical research group "Male Germ Cells" (CRU 326). Specifically, IMI developed the Male Fertility Gene Atlas. Within MDS-RIGHT, a European project coordinated by Nijmegen University, IMI analysed mutations in Myelodysplastic Syndrome (MDS). MDS-RIGHT assessed approximately 1000 patient cases with Next-Generation Sequencing (NGS) technology. IMI performed bioinformatics for project partners from the Netherlands, France, Sweden, and Spain. About one third of MDS patients develop leukemia – the objective of the project is to improve diagnostics and therapy using biomarkers from NGS.

PUBLICATIONS

Blitz R, Dugas M. Conceptual design, implementation and evaluation of generic and standard-compliant data transfer into electronic health records. Appl Clin Inform. 2020 May;11(3):374–386. doi: 10.1055/s-0040-1710023

Schuster B, Dugas M, Zink A. Medical apps – possibilities for pruritus. Hautarzt. 2020;71(7):528–534. doi: 10.1007/s00105-020-04603-5

Reutter K, Sandmann S, Rohde J, Müller S, Wöste M, Khanam T, Michgehl U, Klapper W, Wößmann W, Seggewiß J, Lenz G, Dugas M, Burkhardt B. Reconstructing clonal evolution in relapsed and non-relapsed Burkitt lymphoma. Leukemia. 2020 May 14. doi: 10.1038/s41375-020-0862-5

Wünsch C, Banck H, Müller-Tidow C, Dugas M. AMLVaran: a software approach to implement variant analysis of targeted NGS sequencing data in an oncological care setting. BMC Med Genomics. 2020;13(1):17. doi:10.1186/s12920-020-0668-3

Krenz H, Gromoll J, Darde T, Chalmel F, Dugas M, Tüttelmann F. The Male Fertility Gene Atlas: a web tool for collecting and integrating OMICS data in the context of male infertility. Hum Reprod. 2020;deaa155. doi:10.1093/humrep/deaa155

Pereira MP, Hoffmann V, Weisshaar E, Wallengren J, Halvorsen JA, Garcovich S, Misery L, Brenaut E, Savk E, Potekaev N, Lvov A, Bobko S, Szepietowski JC, Reich A, Bozek A, Legat FJ, Metz M, Streit M, Serra-Baldrich E, Gonçalo M, Storck M, Greiwe I, Nau T, Steinke S, Dugas M, Ständer S, Zeidler C; EPP Consensus Conference Participants 2017. Chronic Nodular Prurigo: Clinical Profile and Burden. A European Cross-sectional Study. J Eur Acad Dermatol Venereol. 2020 Feb 20. doi: 10.1111/jdv.16309. PMID: 32078192

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UNIVERSITY OF MÜNSTER – DATA SCIENCE: MACHINE LEARNING AND DATA ENGINEERING

ABOUT THE INSTITUTION

Fabian Gieseke is head of the Machine Learning and Data Engineering group and a director of the ERCIS. Before joining the Department of Information Systems in April 2020, he was an Assistant Professor at the University of Copenhagen. The group's research focus is on the development of efficient implementations for modern machine learning techniques and their application to various domains such as remote sensing or smart grids and smart cities. The group is currently involved in numerous collaborations with both national and international as well as industrial partners.

RESEARCH TOPICS

The data volumes have increased dramatically in various domains over recent years. This is the case, for instance, in remote sensing, where satellites produce data volumes in the petabyte range per year. A similar "data flood" can be observed in many other disciplines as well including medicine, social media, finance, or in the context of modern energy systems. In most cases, the sheer data volume renders a manual analysis impossible, and this necessitates the use of automated data analysis tools.

Machine learning techniques aim at automatically extracting knowledge and have

been identified as one of the key drivers for discoveries and innovation both in research as well as in industry. While machine learning methods usually significantly reduce the time needed to analyze the data at hand, processing tera- and petabytes of data still depicts a challenging problem. A prominent example for such a computational bottleneck is the generation and application of deep neural networks: Even in case powerful compute servers are used, both the training as well as the testing phase can easily take weeks.

We work on reducing the practical runtime needed to process such compute- and memory-intensive tasks. For instance, we resort to high-performance computing and distributed computing to accelerate the overall analysis of the data. Another example is the development of conceptually new techniques, which only consume a fraction of the compute and memory resources but still yield high-quality models similar to those obtained via their original counterpart *(e.g., "tiny" models that can be used on mobile phones or microcontrollers)*. The group is also involved in the development of models that are tailored to novel applications from a variety of domains.

RESEARCH PROJECTS

Many of the current research activities aim

at the analysis of large amounts of satellite data and two corresponding examples are provided below. Besides, the group is involved in collaborations with astrophysicists *(e.g., collaboration with the Heidelberg Institute for Theoretical Studies)*, medical scientists *(e.g., collaboration with the Münster University Hospital)* and with municipalities *(e.g., collaboration in the context of smart grids)*.

Monitoring Changes in Satellite Time Series Data

The remote sensing field witnesses an explosion in the amount of available data. Such data allow the identification of fine details in the landscape and the recent breakthroughs in artificial intelligence *(AI)* facilitate application areas such as agricultural monitoring, infrastructure management, mapping forest development, and many others. Applying AI models on a global scale can become extremely time-consuming with analyses potentially taking weeks, months, or even years. This project aims at the development of highly-efficient parallel implementations for AI methods that allow to detect and monitor "changes" visible in time series satellite data. The project is supported by the Independent Research Fund Denmark *(DFF)* and is conducted in a close collaboration with experts from the University of Copenhagen.

DeepCrop

Recent technological developments in deep learning and drone-borne LIDAR scanners have paved the way for constraining the uncertainty inherent to quantify and project ecosystems' carbon stocks. With a rising demand for biomass, DeepCrop aims to precisely measure the so-called above ground biomass and to estimate carbon sinks in croplands and forests. The ambition is to bridge expertise of experimental scientists and computer scientists to develop novel tools for the automated processing of LIDAR data utilizing deep learning and drones. The project is con-
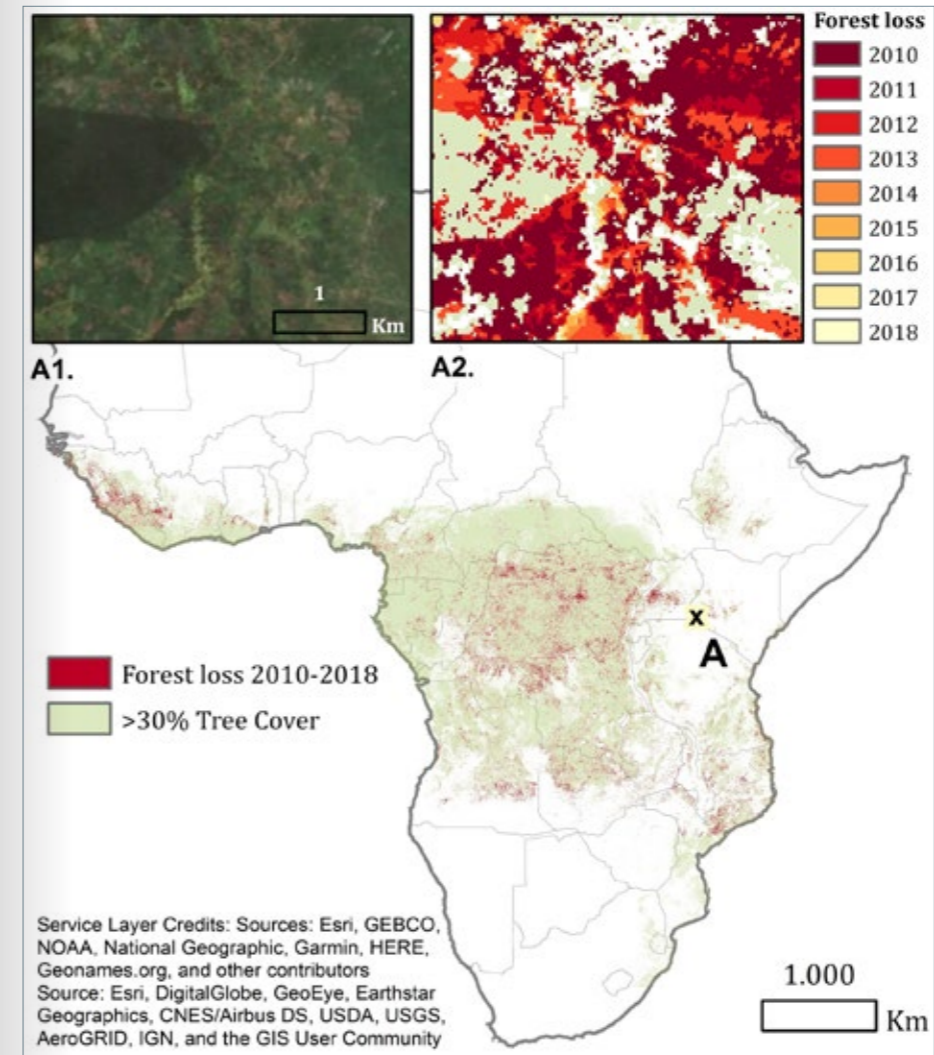
Monitoring Changes in Satellite Time Series Data

ducted in collaboration with the University of Copenhagen and is supported by the Villum Foundation and the Data+ program of the University of Copenhagen.

PUBLICATIONS

Dai, Y., Oehmcke, S., Gieseke, F., Wu, Y., & Barnard, K. (2020). Attention as Activation. In Proceedings of the 25th International Conference on Pattern Recognition *(ICPR)*, Milan, Italy, IEEE, accepted, 2020.

Brandt, M., Tucker, C., Kariryaa, A., Rasmussen, K., Abel, C., Small, J., Chave, J., Rasmussen, L., Hiernaux, P., Diouf, A., Kergoat, L., Mertz, O., Igel, C., Gieseke, F., Schöning, J., Li, S., Melocik, K., Meyer, J., SinnoS, , Romero, E., Glennie, E., Montagu, A., Dendoncker, M., & Fensholt, R. (2020). An unexpectedly large count of trees in the West African Sahara and Sahel. Nature, accepted, 2020.

Oehmcke, S., Tzu-Hsin, K. C., Prishchepov, A. V., & Gieseke, F. (2020). Creating Cloud-Free Satellite Imagery from Image Time Series with Deep Learning. In Proceedings of the 9th ACM SIGSPATIAL International Workshop on Analytics for Big Geospatial Data *(BigSpatial 2020)*, Seattle, USA, accepted, 2020.

Gieseke, F., Rosca, S., Henriksen, T., Verbesselt, J., & Oancea, C. (2020). Massively-Parallel Change Detection for Satellite Time Series Data with Missing Values. In Proceedings of the International Conference on Data Engineering *(ICDE)*, Dallas, USA, pages 385–396, IEEE, 2020.

Hamunyela, E., Rosca, S., Mirt, A., Engle, E., Herold, M., Gieseke, F., & Verbesselt, J. (2020). Implementation of BFASTmonitor Algorithm on Google Earth Engine to Support Large-Area and Sub-Annual Change Monitoring Using Earth Observation Data. Remote Sensing, 12(18), 2020.

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UNIVERSITY OF MÜNSTER –
CHAIR FOR INFORMATION SYSTEMS AND LOGISTICS

RESEARCH TOPICS

Today's supply chains *(SC)* have to cope with growing uncertainties and complexity, e.g., from natural or human threats, increasingly volatile customer demand, or through an increasing number of actors in the value-adding process. Tackling these issues is the major objective of the Chair for Information Systems *(IS)* and Supply Chain Management *(SCM)*, directed by Prof. Dr.-Ing. Bernd Hellingrath. In particular, the chair develops application-oriented research contributions in the areas of SCM, logistics, and operations management with regard to the support by IS. A special focus lies on understanding current logistics and manufacturing issues and resolving them by applying and newly developing modeling and planning methods. In this context, research is fostered by a culture of internationalisation, exemplified by the growing number of international research partners and projects conducted. The group's research focuses on three main areas in the field of supply chain management and information systems:

• Digitalisation is ubiquitous, and thus supply chains are thoroughly disrupted

by its emerging phenomena, such as Industrie 4.0 and Big Data. Within the first research area of Supply Chain Digitalisation, the chair addresses the challenges that come with it, identify, and exploit opportunities that arise. To achieve this, the chair conducts research on emerging trends such as Digital Maturity Evaluation, Production Planning under Industrie 4.0, and Predictive Maintenance. In addition, we investigate how supply chain digitalisation can be facilitated through the means of Computational Intelligence and Supply Chain Analytics.

• Nowadays, cross-functional integration within a company and along the supply chain is essential for business success. As an intra- and inter-organisational strategic resource, the research in the area of Supply Chain Integration can improve firm performance and result in sustainable competitive advantages. The group investigates and evaluates state-of-the-art solutions and develops concepts to facilitate efficient industrial applications. This includes research in Sales and Operations Planning *(S&OP)*, Supply Chain Coordination and Collaboration, and Supply Chain Performance Management,

among others.

• The third research area addresses the field of Supply Chain Security and Crisis Management. In particular, it focuses on specific challenges for decision support systems for practitioners in uncertain and dynamic environments exposed to disruptive events. Our activities are dedicated to understanding the use of information systems for rigor and relevant evaluation and solution design. We aim to provide reference models and procedures to assess current and potential future scenarios by means of modeling, visualisation, analysis, and simulation of versatile networks.

RESEARCH PROJECTS

• The EU-funded project DRIVER *(DRiving InnoVation in crisis management for European Resilience)* has been finalised in June 2020. The main aim was to develop and establish a pan-European test-bed for a practitioner-driven assessment of socio-technical innovations in crisis management. Started in May 2014, a series of trials with first responders across Europe have been executed, making use of the key DRIVER+ artifacts: the

trial guidance methodology, the test-bed technical infrastructure, and the portfolio of solutions.

• Within the BMBF funded project Biskit *(Blut-Informationssystem für Krisenintervention und –management)*, IS-based support for planning and execution of blood supply chains is developed in cooperation with the partner-country South-Africa. The group is creating simulation models to analyse the behavior of the blood supply chain in times of crisis and builds Enterprise Architecture models to conceptualise software solutions for these tasks.

• The EU-funded project STAMINA aims to develop an intelligent decision support platform for pandemic prediction and management. The project creates solutions for the preparedness and response phases of the emergency management cycle in terms of evidence-based decision support for practitioners involved in crisis management.

• In the BMBF funded EpiPredict project, we build tools to investigate the dynamics of infectious disease outbreaks in human and animal populations. CoPredict is a Covid-19-specific extension where we use simulations to assess optimal non-pharmaceutical intervention strategies with minimal societal impact to support the ongoing pandemic containment efforts.

• Theoretical understanding and practical implementation guidance for S&OP is a project between the chair and the Pontifical Catholic University *(PUC)* in Rio de Janeiro, funded by DAAD and CAPES. The goal of the project is to develop concepts to guide successful implementations and transformations of S&OP processes.

• Three successful Predictive Maintenance *(PdM)* projects have been conducted within the last two years. Together with students, the chair collaborated with different renowned manufacturers of

automotive parts, commercial vehicles, and agricultural machinery. The projects resulted in some compelling PdM solutions developed using machine learning technologies.

EVENTS

In January, *Prof. Felipe Scavarda* from PUC visited our group. During his stay, Prof. Scavarda gave a course about Supply Chain Logistics Management to undergraduate students and actively engaged in the S&OP research conducted by the chair.

In January and February, *Prof. Márcio Antonio Thomé* from PUC conducted a research stay at our chair. During this time, Prof. Thomé collaborated with the groups' researchers in the areas of S&OP and supply chain digitalisation.

The DRIVER+ Advanced Crisis Management Conference was a very successful event that brought together over 220 Crisis Management specialists, academics, and technology developers from throughout Europe and beyond. During this event, the final DRIVER + Trial Guidance Methodology handbook and website were released. The event was the culmination of several years of work to help improve crisis management throughout Europe.

In the 51st Annual Conference of the Decision Sciences Institute, the chair was co-chairing the track "Simulation-related Research in Context of Humanitarian Logistics". This session, embedded in a fully digital conference format, aimed at providing a structured overview of the different approaches and discussing selected simulation-based concepts to better understand and improve humanitarian logistics practices.

PUBLICATIONS

Fonio, C., Widera, A. (Ed.) Trial Guidance Methodology Handbook. DRIVER+ (Driving Innovation in Crisis, Management for European Resilience), Brussels, 2020.

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Nicolas, F. N. P., Thomé, A. M. T., & Hellingrath, B. (2020). Usage of Information Technology and Business Analytics within Sales and Operations Planning: A Systematic Literature Review. Brazilian Journal of Operations & Production Management, 17.

Wesendrup, K., & Hellingrath, B. (2020). A Process-based Review of Post-Prognostics Decision-Making. In Proceedings of the 5th European Conference of the PHM Society, Virtual.

DISSERTATIONS

Collaboration and Coordination in Spare Parts Supply Chains. Design of a Maturity Model for Spare Parts Supply Chains in the Mechanical Engineering Industry *(Philipp Saalmann, 2020)*

UNIVERSITY OF MÜNSTER – INSTITUTE FOR INFORMATION, TELECOMMUNICATION AND MEDIA LAW (ITM) – CIVIL LAW DEPARTMENT

ABOUT THE INSTITUTION

The ITM is the leading Institute for Information, Telecommunication and Media Law in Germany. The Institute's work aims at exploring the legal framework and underlying policies of the information society with a particular focus on "information" as an economic and cultural good. The Institute emphasises the importance of interdisciplinary work since a proper understanding of technological or economic backgrounds is a prerequisite for successful regulation. Many activities are carried out in close cooperation with the Faculty of Economics of the University of Münster. In 2002, the ITM was appointed the Competence Centre in Information, Telecommunication, and Media Law for North Rhine-Westphalia.

Dr. Thomas Hoeren is a professor of civil law at the University of Münster and has been the director of the ITM since 1997. Due to international projects such as TIM-BUS Prof. Hoeren has become recognised as a specialist in information law throughout Europe.

RESEARCH TOPICS

Our research focuses on Information Law, Telecommunication Law and Media Law as well as related areas such as Copyright, Platform Regulation or E-Commerce and Consumer Protection Law. Our current projects address the emerging subjects of Artificial Intelligence Law and Algorithms, Data Protection Law or the Future of Legal Professions and Institutions. Since Information, Telecommunication, and Media Law is characterised as a cross-sectional matter, it cannot be fully covered by any of the traditional legal disciplines by itself. The ITM, therefore, strives for interdisciplinary research and teaching activities.

CURRENT RESEARCH PROJECTS

Currently, the ITM is involved in several EU-funded and national projects:

- **GOAL:** The GOAL ("Governance of and by Algorithms") -Project is an interdisciplinary project funded by the Federal Ministry of Education and Research. The project partners are the University of Münster, University of Kaiserslautern, Karlsruhe Institute for Technology (KIT), Ruhr-University Bochum (RUB) and University of Hamburg. The GOAL-Project deals inter alia with the issues of algorithmic behaviour control and artificial intelligence. The aim of the project is to identify governmental, technical and regulative requirements, and options for the design of comprehensive governance structures.

- **Research Center for Industrial Property Rights:** The ITM also hosts the Research Center for Industrial Property Rights, which offers training and conducts research activities in the field of industrial property rights trying to connect science and economics. The Research Center is supported by an association of companies, lawyers, and patent attorneys.

- **Art Law Clinic** is a project in cooperation with the Academy of Fine Arts Münster. Its basic idea is: "Law students for art students". Art students can seek the help of law students in senior classes to solve their basic legal problems, which occur during their academic studies. The service is entirely free and coordinated by employees coming from the ITM and the Academy of Fine Arts Münster. Additionally, a legal guideline has been provided, giving students an entry point and further information on the topic of art law. By combining the inherently different but closely connected topics of law and art, the project will increase the interdisciplinary and mutual understanding between law students and art students and their respective subjects.

- **Matters of Law in the German Research Network (DFN):** The German Research Network (Deutsches Forschungsnetz/ DFN) provides a communication network for universities and research facilities in Germany that not only connects them with one another but also with the community of research and education networks worldwide. Increasingly, the DFN-members are facing legal questions regarding liability, telecommunications, and data protection. The ITM assists in solving those difficult issues and offers general legal advice to the members.

- **Legal Information Office DH.NRW:** The Legal Information Office DH.NRW (Rechtsinformationsstelle DH.NRW) is a contact point for all those involved and interested in e-learning and digital teaching. In May 2020 it was established under the organizational umbrella of the Digital University of North Rhine-Westphalia and is located at the Institute for Information, Telecommunication and Media Law (ITM). Since then, the Office provides teachers and students legal guidance concerning e-learning and digital teaching. The main focus lies on data protection law, copyright law, and examination law.

- **Blockchain Hub (Blockchain Reallabor):** The Blockchain Hub is a multidisciplinary project funded by the Ministry of Economic Affairs, Innovation, Digitalisation and Energy of the State of North Rhine-Westphalia. Its objective is to identify and analyse use cases for Blockchain and Distributed Ledger Technologies. The ITM supports the research in the area of law.

DISSERTATIONS/HABILITATIONS

Julia Dreyer (2020): Die florentinischen Drucker- und Autorenprivilegien gegen den Nachdruck.

Timm Düwel (2020): Das Urheberrecht als Mittel staatlicher Geheimhaltung.

Sophie Heuchemer (2020): Folgenbeseitigung im Äußerungsrecht. Betroffenenschutz bei überholter rechtmäßiger Verdachtsberichterstattung.

Franziska Leinemann (2020): Personenbezogene Daten als Entgelt.

Sebastian-Amadeo Schmolck (2020): Rechtliche Vorgaben für die Weitergabe und Nutzung von Softwareschwachstellen und Exploits.

Nicolai Wolf (2020): Initial Coin Offerings – Ökonomisch effiziente Regulierung kapitalmarktrechtlich und steuerrechtlich bedingter Aspekte von Marktversagen.

Patrick Vincent Zurheide (2020): Herausforderungen bei einer Softwareentwicklung im Scrum-Verfahren: Zur Erforderlichkeit der atypischen vertraglichen Ausgestaltung der BGB-Vertragstypen in der Praxis.

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UNIVERSITY OF MÜNSTER – CHAIR FOR IS AND INTERORGANISATIONAL SYSTEMS

ABOUT THE INSTITUTION

Our research explores the impact of information and communication infrastructures in an organisational context. We are interested in the development of the digital organisation: how do organisations and leaders respond to the challenges and opportunities of an informed society and economy. In particular, we study new modes of organising, coordination and collaboration from the micro level of work practices to the meso level of group practices and the macro level of infrastructure development.

We aim to understand the dynamics of transformation in a historical, societal, regulatory, and economic context. Our work is theoretically and empirically grounded, we employ multiple methods and research approaches with an emphasis on qualitative, interpretative techniques.

It is our research philosophy that the implications of innovative ICT become visible and understandable in the context of (communities of) practices. We advocate approaches, which facilitate research and experimentation in complex real world settings addressing business or societal innovation. Typically, multiple stakeholders and researchers from different disciplinary backgrounds are involved.

RESEARCH TOPICS

We pursue this agenda through three interrelated fields of research:

1. The Communication & Collaboration Management group is broadly concerned with understanding the role of technologies, knowledge, and collaborative processes, both within and between organisations and broader social networks. The principal aim of the group is to promote the critical study of communication, coordination, and collaboration practices that

are perceived as central to the relationship between technology and organisational and societal changes.

2. The Research Group on Strategic Information Management (RG SIM), led by apl. Prof. A. Teubner, does research on the management challenges that executives with information technology responsibility face in the digital age. The following challenges are in the focus of the group's current research:

- Digital Transformation and Technochange: How to align changes of the IT-based infrastructure with organisational change? How to plan, control, and coordinate large, complex, and risky IT endeavours comprising a larger set of interrelated IT projects?

- IT/IS Investment Evaluation and Control: What kind of IT investments should digital organisations make? How to decide on IT-investment alternatives? What is the business value of IT investments? How to control the IT/IS investment portfolio for value delivery?

- IT Outsourcing and Organisation: Which IT tasks can and should be outsourced and what are appropriate sourcing modes (offshoring vs. nearshoring, single vs. multi-vendor sourcing)? Alternatively, how to best organise the in-house IT/IS function in digital organisations?

3. The Interorganisational Systems group studies the development and transformation of interorganisational information infrastructures and related theoretical as well as methodological questions. Specifically, we study:

- How to facilitate collective action in heterogeneous actor constellations or coalitions,

- How governance models, such as multi-sided platforms, ecosystems, commons-based peer production, and blockchain governance, emerge in digital environments,

- How industry structures, specifically structures of intermediation, are transformed alongside the proliferation of ICT.

We study these issues specifically in the context of the health care sector, travel & tourism, and the academic publishing industry.

CURRENT RESEARCH PROJECTS

IT/IS Strategy in the Digital Age
(Dr. J. Stockhinger, apl. Prof. Dr. A. Teubner)
Digital infrastructures fundamentally change the structures of economic value creation, so that today's organisations face a complex and volatile environment that is fundamentally different from the economic situation of the 1970s and 1980s, when mainstream strategy theory was developed.

The project examines the viability and limitations of traditional strategy theories under these conditions. For this purpose, we investigate, how companies are currently dealing with strategy making in digital environments. We also examine whether and how strategy theories and frameworks are or could be applied. The aim is to recognize the possibilities and limits of applying existing theories and to find starting points for the development of new theories.

From artifact to infra structura – The prescription as intellectual and material vantage point to the design of social infrastructure
(Dr. S. Schellhammer, P. Troglauer, WWU, Dr. M. Avci, RWTH)
IS scholars from RWTH Aachen and WWU Münster work with pharmaceutical histo-

rians from the Philipps University of Marburg and the German Pharmacy Museum in Heidelberg to investigate the formation and development of a cornerstone of today's healthcare system – the drug prescription. It will create one of the largest digital collections of prescriptions from the early modern period to modern times in German-speaking countries. The project is funded by The Federal Ministry of Education and Research.

Blockchain as Organisational Technology
(Prof. S. Klein, R. Thapa; in collaboration with UCD and University Zurich)
Blockchain technology provides a distributed ledger and is based on a logic of peer to peer authentication. It gained prominence with the rise of cryptocurrencies but provides a much broader field of possible applications. While it has been originally closely linked to a libertarian agenda rejecting organisations, its developments have illustrated that this ideological framing is being reversed in practice. The purpose of this project is to discuss blockchain as an organisational technology. Its peculiar mode of governance, which we name 'Hanseatic', needs to mediate between the fluidity typical of Free and Open Source Software development and the immutability that organisations adopt blockchain for.

Development of Digital Platforms in Health Care
(Prof. S. Klein, Ass. Prof. D. Fürstenau, Dr. C. Auschra)
The embedding of information systems (IS) infrastructure into everyday social activities and specifically healthcare is creating value conflicts for society. We are looking at a number of diverse infrastructure cases (multi-sided healthcare platforms, single dose dispensing, prescriptions) in order to study the distinctive role of infrastructures in healthcare and their transformation over long periods of time.

Surveillance Capitalism in Academic Publishing
(Prof. S. Klein, Prof. B. Mierzejewska,

Dr. D. Ponte, Dr. S. Vidolov, plus collaborators)
The goal of this project is to examine the changing role and increasing influence of the large academic publishers on university-based research. We take stock of the profound transformations that happened particularly during the past ten years, epitomized by the new identity of Elsevier as an "information analytics company" targeting a global academic market in pursuit of a neo liberal logic, and take a look into possible implications for research during the next ten years.

SELECTED PUBLICATIONS

Bandi, R., Klein, S., Madon, S, Monteiro, E. & Ranjini C R (Eds.). (2020). The Future of Digital Work: The Challenge of Inequality. Proceedings of the 2020 IFIP 8.2, 9.1, 9.4 Joint Working Conference: Springer International Publishing, Cham.
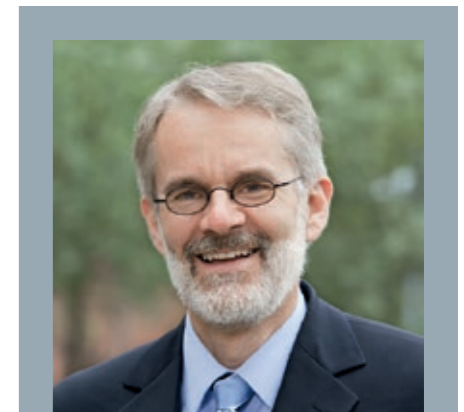
Baptista, J., Stein, M.-K., Klein, S., Watson-Manheim, M. B. & Lee, J. (2020). Digital work and organisational transformation: Emergent Digital/Human work configurations in modern organisations. Journal of Strategic Information Systems, 29(2), 101618.

Gaebert, C. (2020). Contract Design for Short-Term Software Development Outsourcing: An Empirically Supported Economic Analysis. Doctoral Thesis, WWU Münster.

Fürstenau, D., Klein, S. & Auschra, C. (2020). A Configuration Approach to Multi-Sided Platforms in Healthcare: An ALS Platform Case. In ICIS 2020 Proceedings, Hyderabad 2020.

Klein, S. & Watson-Manheim, M. B. (2020). Robo-apocalypse cancelled? Journal of Information Technology.

Schiffer, S., Stockhinger, J. & Teubner, R. A. (2020). Die Grenzen verschwimmen — Chancen und Risiken der Digitalisierung für etablierte Versicherungsunternehmen. Versicherungswirtschaft, 75(07).

Stockhinger, J. & Teubner, R. A. (2020). How Digitalization Drives the IT/IS Strategy Agenda. In ERCIS Working Papers, No 31.

Teubner, R.A. & Stockhinger, J. (2020). IT/IS Strategy Research and Digitalization: An Extensive Literature Review. In ERCIS Working Papers, No 33.

Teubner, R.A. & Stockhinger, J. (2020). Understanding Information Systems Strategy in the Digital Age. Journal of Strategic Information Systems (forthcoming).

Vidolov, S., Kelly, S. & Noonan, C. (2020). Project Management as Skillful Performance: Animating and Enchanting Collaborative Work in Distributed Projects. In ICIS 2020 Proceedings, Hyderabad.

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UNIVERSITY OF MÜNSTER – CHAIR OF PRACTICAL COMPUTER SCIENCE

ABOUT THE INSTITUTION

Prof. Dr. Herbert Kuchen is leading the Practical Computer Science group since 1997. He is teaching in the area of software engineering, programming languages, and programming. Maintaining close collaborations with several local companies, his group is offering students the chance to write bachelor and master theses of high practical relevance.

RESEARCH TOPICS

The research of the group focuses on selected aspects of Software Engineering and Programming. Fields of research are Testing, Model-Driven Software Development, Domain-Specific Languages, Process-Driven Applications, the Integration of Programming Paradigms, Parallel and Distributed Programming, Swarm Intelligence Algorithms, and Machine Learning.

CURRENT RESEARCH PROJECTS

The research on the Münster Logic-Imperative Language (Muli) has recently hit a milestone as it now supports interactions with objects as part of arithmetic and boolean constraints, as published in a re-

cent ERCIS Working Paper. Moreover, our forthcoming work adds support for arrays as logic variables and investigates automated test-case generation as a potential application of Muli.

The research on Parallel Programming focuses on high-level frameworks based on algorithmic skeletons. It aims to minimise the expertise required to create parallel programs by abstracting, e.g. from memory allocations or the number of parallel processes started. Programs written in the framework are converted to MPI, OpenMP, or CUDA programs. For this purpose, we maintain two distinct approaches: the domain-specific language Musket and an extension to the C/C++ standard library Muesli. In the last year, Musket was used to implement a program solving the travelling salesman and the bin packing problem with a meta-heuristic on GPUs. Furthermore, it was used to implement a program for processing telescope data. For future research, the next goal is to support heterogeneous environments with multiple CPUs and GPUs, resulting in programs exploiting the full hardware available.

The research on automatically generating glass-box test cases via the symbolic execution of Java bytecode was extended by an approach for generating database states of NoSQL databases. The approach enables the symbolic execution of programs utilising NoSQL databases and takes into account typical characteristics such as alternative schemas. The proof-of-concept tool has been implemented as an extension of Symbolic PathFinder, an open-source tool for the symbolic execution of Java programs. The tool strives to vastly facilitate the development of symbolic database mocks for any key-value, document-oriented, or graph database. We are also working on the test-case generation for process-driven applications, where a BPMN model describes the interaction with service tasks written in Java.

Further, we have conducted a practice-oriented study on the distribution of children to childcare facilities in Münster. In this research, we developed a new mechanism: the iterative deferred acceptance with ties. It tackles the requirements in the childcare market from a game-theoretical perspec-

tive. The new mechanism is an improvement as it provides transparency and is fast and fair for all participants.

We are also starting to work on an approach to simplify the orchestration of container-based cloud applications using Kubernetes. A new domain-specific language facilitates the management of Kubernetes operators.

Another active area of research is machine learning in chemistry. Together with the research group of Prof. Glorius at the Institute for Organic Chemistry, we are working on numerous projects on the application of machine learning in the field of organic chemistry. Our goal is to provide tools and methods that enable other researchers to efficiently employ machine learning techniques without the demand of depth expertise. Furthermore, we develop new machine learning methods to solve chemical problems in a more advanced fashion. Due to our close collaboration, a very profitable cooperation has been established and will be continued in the future.

EVENTS

On November 24, the Jobhub IT, the IT job fair of the University of Münster, was organised as an online-event (due to the Corona pandemic). 16 companies from the Münsterland region participated.

PUBLICATIONS

Wrede, F., Kuchen, H. (2020). Towards High-Performance Code Generation for Multi-GPU Clusters Based on a Domain-Specific Language for Algorithmic Skeletons. International Journal of Parallel Programming 48(4): 713–728.

Wrede, D., Rieger, C., Kuchen, H. (2020). Generation of high-performance code based on a domain-specific language for algorithmic skeletons. Journal of Supercomputing 76(7): 5098–5116.

Lacerda, M., Pessoa, L.F., Buarque de Lima Neto, F., Ludermir, T., Kuchen, H., (2020). A Systematic Literature Review on General

Parameter Control for Evolutionary and Swarm-based Algorithms , Swarm and Evolutionary Computation, Elsevier, https://doi.org/10.1016/j.swevo.2020.100777.

Menezes, B., de Araujo Pessoa, L. F., Kuchen, H., & Buarque, F. (2020). Parallelization Strategies for GPU- Based Ant Colony Optimization Applied to TSP. In Ian, F., Gerhard, R. J., Luděk, K., Wolfgang, E. N., & Frans, P. (Eds.), Parallel Computing: Technology Trends, Advances in Parallel Computing 36: 321-330, IOS Press.

Hofstedt, P., Abreu, S., John, U., Kuchen, H., & Seipel, D. (Eds.) (2020). Declarative Programming and Knowledge Management. Lecture Notes in Computer Science: Vol. 12057. Springer.

Dageförde, J. C., & Kuchen, H. (2020). Constraint-Logic Object-Oriented Programming with Free Arrays. In Proceedings of the WFLP 2020, CoRR abs/2008.13460, Bologna, Italy.

Dageförde, J. C., & Kuchen, H. (2020). Free Objects in Constraint-logic Object-oriented Programming. In Working Papers, European Research Center for Information Systems: Vol. 32. Münster.

Rieger, C., Lucrédio, D., Pontin, M. F. R., Kuchen, H., Dias, F., & Duarte, L. (2020). A Model-Driven Approach to Cross-Platform Development of Accessible Business Apps. In Proceedings of the The 35th ACM/SIGAPP Symposium On Applied Computing (SAC 2020), Brno, Czech Republic, 984–993.

Schneid, K., Thöne, S., Kuchen, H. (2020). Feature Development in BPMN-Based Process-Driven Applications. Business Process Management (BPM) Forum, Seville, Spain, 35–50.

Dageförde, J. C., & Teegen, F. (2020). Structured Traversal of Search Trees in Constraint-logic Object-oriented Programming. In Hofstedt, P., Abreu, S., John, U., Kuchen, H., & Seipel, D. (Eds.), Declarative Programming and Knowledge Management

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(pp. 199–214). Lecture Notes in Artificial Intelligence: Vol. 12057. Springer.

Sandfort, F., Strieth-Kalthoff, F., Kühnemund, M., Beecks, C., & Glorius, F. (2020). A Structure-Based Platform for Predicting Chemical Reactivity. Chem 6(6), 1379–1390.

DISSERTATIONS

Jan Dageförde: An Integrated Constraint-Logic and Object-Oriented Programming Language

Tobias Reischmann: Applied Matching Algorithms

Fabian Wrede: Optimization, Application, and Usability of Algorithmic Skeletons for Parallel Programming on Multi-Core and Multi-GPU-Clusters

UNIVERSITY OF MÜNSTER –
DATA SCIENCE: STATISTICS AND OPTIMIZATION

WIRTSCHAFTS INFORMATIK & STATISTIK

ABOUT THE INSTITUTION

Heike Trautmann is head of the *Data Science: Statistics and Optimization* group as well as a director of ERCIS. Together with Christian Grimme, she leads the ERCIS Competence Center "Social Media Analytics". Until October, she was Vice Dean for Internationalization at the Münster School of Business and Economics. Her team contributes to the research areas of data science and big data, artificial intelligence, social media analytics, (multi-objective) optimization, evolutionary computation as well as automated algorithm selection and configuration in international and industrial collaborations.

RESEARCH TOPICS

Some of the most challenging real-world problems involve the systematic and simultaneous optimization of multiple conflicting objectives. As most of those Multi-Objective Optimization problems cannot be solved exactly, we apply optimization techniques from Evolutionary Computation to approximate optimal compromises with special focus on multimodality.

In the context of Algorithm Benchmarking, the group evaluates the performance of nature-inspired techniques and contributes to algorithm design from an empirical as well as a theoretical perspective. Algorithm Selection deals with the selection of the best-suited algorithm for a given problem in an automated fashion. Methodologically, identified problem properties are matched to known algorithms' performance *(Exploratory Landscape Analysis)*. Artificial Intelligence and machine learning techniques, in particular deep learning and classification approaches, play a fundamental role in constructing accurate and efficient selection models. Together with the Configuration and Selection of Algorithms *(COSEAL)* research group, the

team is strongly involved in this area focusing on vehicle routing and continuous optimization.

Moreover, the group is highly interested in designing automated algorithm configuration and selection strategies operating on data streams. Matthias Carnein successfully initiated a respective collaboration with experts of the University of Waikato, New Zealand, during a research stay funded by the EU-project BPM-Rise *(https://www.risebpm.eu)* and successfully finished his dissertation in February.

Moreover, specifically textual streaming data is analyzed by Dennis Assenmacher, Lena Clever and Christian Grimme with the aim of propaganda and disinformation detection in online media *(Projects DemoRESILdigital, Moderat!, and DAAD PPP; Competence Center Social Media Analytics)*.

CURRENT RESEARCH PROJECTS

DemoRESILdigital *(www.demoresildigital. uni-muenster.de)* "Democratic resilience in times of online-propaganda, fake news, fear- and hate speech". This junior research group is supported by the Digital Society research program funded by the Ministry of Culture and Science of the German State of North Rhine-Westphalia and associated with the Department of Communication at WWU Münster and the Information Systems and Statistics Group.

Moderat! *(https://www.moderat.nrw)* The project aims to use an integrative and interdisciplinary approach to develop software tools and a web platform that will enable operators to moderate web debates with significantly small effort. Comments will be analyzed automatically so that only a small number of critical comments have to be viewed manually.

The COSEAL *(configuration and selection of algorithms)* research group *(http://www. coseal.net)* is an international consortium of researchers, which addresses current challenges from Algorithm Selection, Algorithm Configuration and Machine Learning.

The Benchmarking Network *(https://sites. google.com/view/benchmarking-network)*,

highly supported by Pascal Kerschke, is an initiative that has emerged in summer 2019, with the idea to consolidate and to stimulate activities on benchmarking iterative optimization heuristics.

DAAD Exchange Program PPP Australia: Detection and classification of malicious virtual grassroots influence campaigns. Dennis Assenmacher and Christian Grimme spent several weeks at the University of Adelaide in March.

The group strongly supports the joint European initiative CLAIRE *(Confederation of Laboratories for Artificial Intelligence Research in Europe, www.claire-ai.org)* that seeks to strengthen European excellence in AI research and innovation.

AWARDS

In May, our student research assistant Janina Pohl received a student research grant from the University of Münster for her work on "Visualization and Analysis of textual Stream Clustering Data for detecting manipulative campaigns in Social Media".

EVENTS

In February, the whole group had a 2-day research workshop at "Landhaus Rothenberge".

In July, Dennis Assenmacher, Lena Clever and Christian Grimme organized a special session and a panel discussion on Data, Algorithms, and Humans in Digital Manipulation at the 22nd Conference on Human-Computer-Interaction *(HCII 2020)*.

In September, several group members actively took part in the hybrid Parallel Problem Solving from Nature *(PPSN)* conference in Leiden *(Program Chair, tutorials, workhops, session chairs, poster presentations)*.

PUBLICATIONS

Assenmacher, D., Clever, L., Frischlich, L., Quandt, T., Trautmann, H., & Grimme, G. (2020). Demystifying social bots: On the intelligence of automated social media actors. Social media – society.

Assenmacher, D., Clever, L., Pohl, J., Trautmann, H., & Grimme, C. (2020). A Two-Phase Framework for Detecting Manipulation Campaigns in Social Media. In Meiselwitz, G. (Ed.), International Conference on Human-Computer Interaction *(HCII 2020)*.

Bossek, J., Kerschke, P., & Trautmann, H. (2020). A Multi-Objective Perspective on Performance Assessment and Automated Selection of Single-Objective Optimization Algorithms. Applied Soft Computing, 2020(88), 105901.

Carnein, M., Trautmann, H., Bifet, A., & Pfahringer, B. (2020). confStream: Automated Algorithm Selection and Configuration of Stream Clustering Algorithms. 14th Learning and Intelligent Optimization Conference *(LION 2020)*, Athens, Greece.

Prager, R. P., Trautmann, H., Wang, H., Bäck, T. H. W., & Kerschke, P. (2020). Per-Instance Configuration of the Modularized CMA-ES by Means of Classifier Chains and Exploratory Landscape Analysis. IEEE Symposium Series on Computational Intelligence *(SSCI)*, Canberra.

Schäpermeier, L., Grimme, C., & Kerschke, P. (2020). One PLOT to Show Them All: Visualization of Efficient Sets in Multi-Objective Landscapes. 16th International Conference on Parallel Problem Solving from Nature *(PPSN XVI)*, Leiden.

Seiler, M. V., Pohl, J., Bossek, J., Kerschke, P., & Trautmann, H. (2020). Deep Learning as a Competitive Feature-Free Approach for Automated Algorithm Selection on the Traveling Salesperson Problem. 16th International Conference on Parallel Problem Solving from Nature *(PPSN XVI)*, Leiden.

Steinhoff, V., Kerschke, P., Aspar, P., Trautmann, H., & Grimme, C. (2020). Multiobjectivization of Local Search: Single-Objective Optimization Benefits From Multi-Objective Gradient Descent. IEEE Symposium Series on Computational Intelligence *(SSCI)*, Canberra.

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UNIVERSITY OF MÜNSTER – CHAIR OF COMPUTER SCIENCE – DBIS GROUP

ABOUT THE INSTITUTION

Databases and database systems have always been at the heart of information systems. While their visibility has been decreasing in recent years, their importance as a core infrastructure underlying modern IT systems, including those on the Web and in the cloud, has always been growing. The DBIS Group in the Department of Information Systems at the University of Münster is a member of the European Research Center for Information Systems *(ERCIS)* and as such studies challenges regarding the adoption, application, exploitation, and usage of databases, data warehouses, and other data management systems in business-oriented domains.

Dr. Gottfried Vossen, Professor of Computer Science and head of the group, is a Fellow of the German Computer Science Society *(GI)*, Honorary Professor at the University of Waikato Management School in Hamilton, New Zealand, and a European Editor-in-Chief of Information Systems, an international journal. He is chairman of the steering committee of the German information technology certification agency Cert-IT and serves on several editorial boards and program committees.

RESEARCH TOPICS

Research topics currently studied by the DBIS Group include challenges involving data and processes, business process management and mining, Big Data recommendation systems, knowledge manage-

ment, data marketplaces, their pricing and querying, and specific challenges related to digitization and digital transformation *(such as bias in data or systems)*. Our approach is based on the conviction that *(business)* processes and process models are elementary tools for perceiving and analyzing data-driven applications. In order to execute a process, however, appropriate means for managing the data that arises are needed. This data typically comes in high quantities, high frequency, and high variety, and hence requires suitable tools for its processing. This is where we derive our research topics from.

CURRENT RESEARCH PROJECTS
Process Model Transformation with NLP

The application of Natural Language Processing *(NLP)* and automated model transformation for the evaluation of the semantic quality of process models is a current research topic of the DBIS Group. Ambiguity during the process of modelling is a common challenge rooted, amongst other things, in the diversity of stakeholders involved. To address this problem, we combine different NLP techniques to analyze a process model and corresponding artefacts with model transformation steps to enable the quality assessment of the represented content. Together with an ontology that is generated from a set of positive examples, e.g., previously used models from a model repository, the evaluation of the represented content in a model can be performed dynamically based on the con-

text. The provided transparency and feedback about the semantic quality of a model or its process description consequently should support communication between stakeholders involved in the modelling process and improve the process model.

Algorithmic Bias in Machine Learning

The comprehensive digitalisation of our society has the consequence that an unimagined extent of data about people, their preferences, their behaviour, or individual incidents is collected and used in numerous decision-making applications. Artificial intelligence can make these decisions very accurate and, due to the often high quality of the results, can give the impression that it is never wrong. Nevertheless, this is not the case and becomes particularly relevant when individuals or groups are systematically affected by potential errors *(bias)*. The right way to deal with bias, however, is anything but trivial. Machine Learning tasks usually come with a high degree of complexity, special requirements, and a large number of possible influencing factors. In such a sophisticated setting, it is imperative to take bias management steps to enable consistent AI-based decision-making processes. The DBIS Group is particularly interested in how to deal with such bias effects in practice and, therefore, currently collaborates with several partners in the insurance industry on empirical research.

Digitalisation of Companies – Digi-Check

Digitalisation of companies is a current research effort of the DBIS group. To initiate or drive forward digitalization efforts, the status concerning digitalisation, i.e., the digital maturity of the company, must be determined first. Therefore, the DBIS group has developed a maturity model that can capture the current digital maturity level of a company. It includes the three primary dimensions Processes, Data, and Business Modell as well as the four secondary dimensions Connectivity, Interaction, Optimisation, and Disruption. Based on these dimensions, we have developed a digitalisation check *(short Digi-Check)* in

the form of a questionnaire that consists of statements for each dimension. The user indicates the degree to which she or he agrees with these statements. In the end, the Digi-Check evaluates a digital level for each dimension and presents the maturity results by using a radar chart. Furthermore, it is possible to vary the weighting of the score in each dimension for the calculation of the overall digital maturity. Our Digi-Check is available online at *https://d-check.uni-muenster.de*. We have successfully applied our check in a case study with 50 medium-sized companies in the area of Münster. Moreover, there is a new, reduced version of the survey that is more suitable for online distribution and self-completion by company representatives. Further research includes the automatic generation of recommendations for action and dynamic aspects regarding evaluation considering the branch of an organisation and the advancement of digitalisation requirements over time.

Process Mining

Business processes today are digitally supported by IT systems of various kinds whose executions leave traces in the form of event logs. By analysing these logs, organisations can discover the underlying process model, compare the executions with an existing process model and detect deviations, and perform comprehensive KPI analysis. In that sense, process mining is seen as a link between traditional Business Process Management *(BPM)* and general Data Science technologies. The DBIS Group is particularly interested in the connection and interplay between process mining and process modelling in business environments to achieve maximum process analysis performance. Additionally, we investigate how process mining can be used within the relatively new declarative process modelling paradigm where processes are not described by modelling the allowed flow but by introducing constraints that restrict their behavior. Event condition action *(ECA)* rules, for instance, could serve as a means for checking declarative constraints on event data or dis-

covering them on given logs.

Benchmarking and Evaluating Recommender Systems

Recommender Systems are an integral part of our daily lives. Whether we listen to music, look for a new job position or browse in an online catalogue, in the background Recommender Systems collect and utilize our implicit and explicit feedback to generate recommendations reflecting our personal preferences and interests. To further improve the recommendation accuracy, the number of considered data sources in the recommendation process increases constantly. For instance, in online retailing, besides product purchases, a Recommender System might also consider a users' browsing behaviour, e.g., clicks and views as well as his or her engagement with products on social media, e.g., likes or comments or newsletter interactions. Therefore, the DBIS Group investigates the impact of utilising and combining these additional sources based on the application of different collaborative filtering approaches. The applied approaches are evaluated and benchmarked not only by their accuracy but also their performance, e.g., for the model generation.

AWARD

Best Evolutionary & Swarm Computation Paper Award, Best Paper Award, 6th IEEE Latin-American Conference on Computational Intelligence *(LACCI 2019)*, Guayaquil, Ecuador, for "Supporting Customers with Limited Budget in Data Marketplaces," by *D. Martins, J. Lechtenbörger, G. Vossen.*

PUBLICATIONS

Homann, L., Martins, D., Vossen, G., & Kraume, K. (2019). Enhancing Traditional Recommender Systems via Social Communities. Vietnam Journal of Computer Science, 6(1), 3–16.

Martins, D (2019). Reverse engineering database queries from examples: State-of-the-art, challenges, and research opportunities. Information Systems, 83, 89–100.
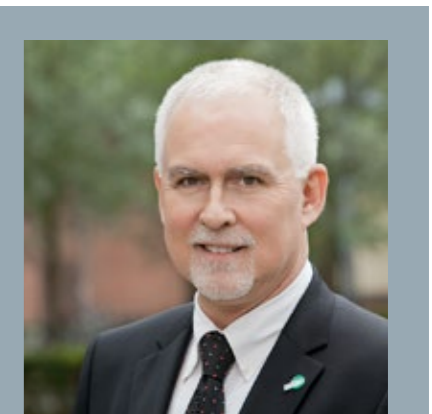
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M. Maleszka, B. Maleszka, D. Krol, M. Hernes, D. Martins, L. Homann, G. Vossen: A Modular Diversity Based Reviewer Recommendation System; in Proc. 12th Asian Conference on Intelligent Information and Database Systems *(ACIIDS)* 2020, Phuket, Thailand, March 2020.

DISSERTATIONS

D. Fekete: The Goal-oriented Business Intelligence Architectures Method – A Process-based Approach to Combine Traditional and Novel Analytical Technologies, Wissenschaftliche Schriften der WWU Münster, Reihe IV, Bd. 18, 2020.

D. Martins: Enabling Non-technical Users to Query and Purchase Data, 2020.

F. Schomm-von Auenmüller: Profiling data and beyond: gaining insights from metadata, 2020.

INTERNATIONAL PARTNERS

The associated partners are research institutions mainly from Europe, but also from around the world, that have long-standing connections with the network. All associated members are outstanding Information Systems institutions, and, more importantly, the personal relations and close ties between the researchers lead to short communication lines and reliable structures for joint research endeavours.

QUEENSLAND UNIVERSITY OF TECHNOLOGY – CENTRE FOR FUTURE ENTERPRISE & INFORMATION SYSTEMS SCHOOL

ABOUT THE INSTITUTION
Queensland University of Technology
Queensland University of Technology *(QUT)* is a major Australian university with a truly global outlook. Home to nearly 50,000 students, we're providing real-world infrastructure, learning and teaching, and graduate skills to the next generation of change-makers. QUT is ranked 20th worldwide in the year 2018 by THE Top 250 Under 50 years World Young University Rankings. QUT is ranked 19th globally in 2020 by the QS Top 50 Under 50 years World Young University Rankings.

Centre for Future Enterprise
The newly established Centre for Future Enterprise *(CFE)* is dedicated to demand-driven, rigorous research exploring and testing possible futures for enterprises of all sizes ranging from large incumbents to emerging start-ups, from the internationally listed corporation to the regional nonprofit charity. CFE is the only research centre within QUT 's Business School, Australia's first triple crown accredited business faculty.

CFE research inspires, informs and enables current and future leaders to navigate a fast-emerging new world, differentiating essential requirements from distracting noise. Based on the fundamental hypothesis that an increasingly opportunity-rich environment will require new enterprise capabilities, CFE research focuses on four themes and the nexus between these themes:

1. Entrepreneurial enterprise
Our related research covers entrepreneurial diversity in people, entrepreneurial opportunities, the entrepreneurial process, entrepreneurial regions and immigrant entrepreneurship in Australia. In alignment with the technology-focus of QUT, research is also focused on AI and Big Data in Entrepreneurship and the use of data analytics and metrics for capturing and studying the entrepreneurial landscape and developments.

2. Digital enterprise
Research within this theme is organised in four streams, i.e. *(1)* humans in the digital economy *(e.g., deviant behaviour, digital literacy)*, *(2)* organisations in the digital economy *(innovation frameworks, digital maturity, technology impact)*, *(3)* policy and processes in the digital economy *(fu-*

ture-proof economies, robotic processes, economy of algorithms) and *(4)* measuring the digital economy *(digital trade, tech-dependent growth)*.

3. Social-purpose enterprise
The multi-disciplinary research in this theme comprises *(1)* nonprofit accountability and accounting, *(2)* philanthropy, fundraising and nonprofit marketing, *(3)* nonprofit governance, management, leadership and culture, *(4)* social enterprise, innovation and business ethics, and *(5)* an emergent theme on faith-based organisations – one quarter of all charities.

4. Robust enterprise
In our research on the robust enterprise we develop approaches to revenue resilience, trust management methodologies, strategic envisioning for technology opportunism and disruption, and study intrapreneurial talent acquisition. Trust- as-a-service as an entrepreneurial opportunity or value resilience in nonprofit organisations are possible future research pathways.

CFE, led by Director Prof. Michael Rosemann, draws together the knowledge and expertise of three tier 2 QUT research centres with world-leading business management academics: including the Australian Centre for Entrepreneurship Research; the Centre for the Digital Economy; and the Australian Centre for Philanthropy and Nonprofit Studies.

CFE cultivates an ambitious, proactive, global research community, characterised by mutual support and collective curiosity, nurturing young talent and connecting researchers with competitive grant funding and reputable industry partners from leading enterprises, charities and governments.

SELECTED CURRENT RESEARCH PROJECTS
Digital Industrial Platforms
This project studies digital industrial plat-

forms in the context of manufacturing and Industry 4.0. These platforms facilitate transactions and innovation leveraging industrial asset data. They are fuelled by digital technologies such as Industrial IoT, cloud computing, edge computing, big data analytics, and artificial intelligence. While digital platforms have been a prominent research topic, their use for industrial, B2B applications is expected to be quite different than their use for mobile apps or games. This requires new theoretical and empirical insights. As such this project targets developing the research agenda and conducting case studies of digital industrial platforms.

This project is a collaboration between Dr. Erwin Fielt, senior lecturer at QUT's School of Information Systems and member of the Centre for Future Enterprise, and Prof. Dr. Martin Matzner, Chair of Digital Industrial Service Systems at the FAU. It also involves two researchers at the chair: Tobias Pauli and Emanuel Marx.

SELECTED PUBLICATIONS
Marx, E., Pauli, T., Fielt, E. & Matzner, M. (2020). From Services to Smart Services: Can Service Engineering Methods get Smarter as well? In Proceedings of the 15th International Business Informatics Congress *(WI2020)*, Potsdam, Germany.

Bouwman, H., De Reuver, M., Heikkilä, M. & Fielt, E. (2020). Business model tooling: Where research and practice meet. Electronic Markets, 30(3): 413–419.

Organisational Intelligence
The emergence of new forms of technological sophistication requires new forms of digital intelligence in organisations. However, unlike individual upskilling, the development of digital literacy within an organisation is still poorly understood, and the exemption in practice. This project between Prof. Michael Rosemann, Director of the Centre for Future Enterprise, and Dr. Ann-Kristin Cordes, ERCIS, has led to the development of a six stages conceptual model advise for such corporate upskill-

ing initiative. Grounded in the theory of dynamic capabilities, the framework is currently empirically tested.

SELECTED PUBLICATION
A.-K. Cordes and M. Rosemann: Developing Organisational Intelligence: A Conceptual Framework. Proceedings of the European Conference on Information Systems *(ECIS)*, Marrakech, Morocco, 15–17 June 2020 *(best RIP paper nominee)*.

Semantic Shopping
Semantic search has become a widely deployed approach to find information. However, the act of shopping has so far largely lacked a comparable user experience. This joint initiative between QUT and ERCIS has led to a paper summarising alternative forms of semantic shopping and as such provided an entire new proposal for a digital engagement channel in the retail industry.

SELECTED PUBLICATION
A.-K. Cordes, B. Barann, M. Rosemann and J. Becker: Semantic Shopping: A Literature Review. In: Proceedings of the 53rd Hawaii Conference on System Sciences *(HICSS)*. Maui, Hawaii, 7–10 January 2020.

City 5.0
Industrie 4.0 is a now established umbrella term describing the sophisticated, integrated digitisation of manufacturing. Our research extends this focus on smart production towards smart consumption. We apply this new paradigm to the conceptual design of future cities and label this framework City 5.0. Here, digitisation is dedicated to overcoming restrictions and leads to a city that is constantly evolving according to the needs of its citizens.

SELECTED PUBLICATION
M. Rosemann, J. Becker and F. Chasin: City 5.0. Accepted in: Business and Information Systems Engineering, 2021.

GUEST LECTURE
On 28 January 2020, Prof. Michael Rosemann conducted a guest lecture on 'Trust

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CRICOS No 00213J

Management' at the research group 'Trust and communication in a digitized world' at the University of Münster. The presentation proposed a four staged model for the management of trust. As an international mentor, Prof. Rosemann used his visit to interact with a number of members of the research group.

VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS – DEPARTMENT OF INFORMATION SYSTEMS AND OPERATIONS MANAGEMENT

WIRTSCHAFTS UNIVERSITÄT WIEN VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS

ABOUT THE INSTITUTION

Vienna University of Economics and Business *(WU Vienna)* is reportedly the biggest business school campus in Europe. The Department of Information Systems and Operations at WU Vienna was founded in the course of WU's organizational restructuring in 2005. Since then, it has consolidated the know-how and reputation of five highly renowned institutes and 16 professors with distinguished focuses in research and teaching, providing a broad representation of IS research topics. Our Bachelor's Program in Information Systems is recognized as Austria's leading degree programs in this field *(according to Format Uni-Ranking, 2009)*.

The established Master's Program in Information Systems ambitiously attempts to follow in these successful steps. It provides students with IT-related knowledge and skills with a particular emphasis on management and research topics. It is a well-balanced mix of theory and practice and the inclusion of state-of-the-art research findings give graduates the tools they need to question standard practices and develop innovative solutions. The Master in Information Systems was designed together with a board of leading Austrian stakeholder from industry and government to meet today's challenges and to provide a solid basis for tomorrow's demands.

RESEARCH TOPICS

The department of Information Systems & Operations consists of five institutes. The Institute for Information Business con-

ducts research in the area of business- and technology-driven innovations with a specific focus on business process management, data management, and knowledge management. The Institute for Information Management and Control's focus is on responding to the needs of organizations and societies in regard to information and technology management, especially considering accountability. The research areas of the Institute for Information Systems and New Media emphasize two major areas: new media, in particular computational media, active media, polymorphic media, and Information system, in particular highly flexible systems and application engineering. The Institute of Management Information Systems aspires to use a wide range of methods to contribute to the development of a sustainable technology aspects. The institute aims to be a think tank for business and society that focuses on the sustainable design of information technology. The Institute for Production Management is focusing on research in the area of supply-chain management.

CURRENT RESEARCH PROJECTS

The Erasmus+ project "BPM and Organizational Theory: An Integrated Reference Curriculum Design" is a joint collaboration together with the University of Liechtenstein *(project coordinator)*, the University of Cologne, and the Radboud University. It investigates the connections of Business Process Management and Organizational Theory emphasizing the different views

that the literature offers on organizational processes. Results of the project comprise a curriculum that aims to educate reflective process practitioners.

Project on Distributed Knowledge Graphs *(Cost Action)* from 2020–2024. The main aim of the Action is to create a research community for deployable Distributed Knowledge Graph technologies that are standards-based, and open, embrace the FAIR principles, allow for access control and privacy protection, and enable the decentralized publishing of high-quality data. The Action will develop practices for scalable, privacy-respecting, high quality and decentralized Knowledge Graph publication and consumption, reach out to the European industry, and formulate a research agenda.

The Erasmus+ project "Supporting Educators' Pedagogical Activities with 360º-Video (SEPA360)" is a joint collaboration between university partners from the UK *(coordinating partner)*, Belgium, Italy, Greece and Austria. Its goal is to explore new and innovative learning opportunities introduced by 360º-video technology, by developing scenarios together with lecturers and researchers and designing an online platform and tool to create interactive 360º-video scenarios. The project initiated in October 2019 and has a duration of 3 years.

Project on Policy Enabled Next geNeration Internet *(PENNI)* from 2020–2022. The PENNI project will lay the foundations for a policy, trust and transparency enabled decentralized Next Generation Internet *(NGI)*, that can support intelligent agents that act on behalf of humans.

Project on Consent reqUest fRamEwork *(CURE)* from 2019-2020. In the project, we aim to develop a GDPR compliant Consent reqUest fRamEwork *(CURE)* that elicits greater involvement of data subjects when it comes to granting consent; improves consent request understandability; affords them more control via usage-based generated consent, templates and/or customization features; and provides high transparency with respect to personal data processing.

EVENTS

ADecentWeb
1st Decentralised Web Symposium *(January 17, 2020)* https://adecentweb.org/events/decentralised-web-symposium/

SELECTED PUBLICATIONS

Bonatti, P. A., Kirrane, S., Petrova, I. M., & Sauro, L. (2020). Machine Understandable Policies and GDPR Compliance Checking. KI – Künstliche Intelligenz Journal.

von Briel, F., Recker, J. C., Selander, L., Hukal, P., Jarvenpaa, S., Yoo, Y., … & Wurm, B. (2020). Researching Digital Entrepreneurship: Current Issues and Suggestions for Future Directions. In Communications of the Association for Information Systems: CAIS.

Brunk, J., Stierle, M., Papke, L., Revoredo, K., Matzner, M., & Becker, J. (2020). Cause vs. effect in context-sensitive prediction of business process instances. Information Systems, 101635.

Drozd, O., & Kirrane, S. (2020). Privacy CURE: Consent Comprehension Made Easy. In International Conference on ICT Systems Security and Privacy Protection *(IFIPSEC)*.

Grisold, T., Wurm, B., Mendling, J., & Vom Brocke, J. (2020). Using process mining to support theorizing about change in organizations. In Proceedings of the 53rd Hawaii International Conference on System Sciences *(HICSS)*.

Havur, G., Vander Sande, M., & Kirrane, S. (2020). Greater Control and Transparency in Personal Data Processing. In International Conference on Information Systems Security and Privacy *(ICISSP)*.

Kirrane, S., & Di Ciccio, C. (2020). BlockConfess: Towards an Architecture for Blockchain Constraints and Forensics. In IEEE 2nd International Workshop on Advances in Artificial Intelligence for Blockchain *(AIChain 2020)*.

Kušen, E., & Strembeck, M. (2020). You talkin'to me? Exploring Human/Bot Communication Patterns during Riot Events. In Information Processing & Management, 57(1), 102126.

Limaj, E., Bernroider, E.W.N., & Ivanova, M. (2020). Facing Legacy Information System Modernization in Scaling Agility in the Banking Industry. In International Conference on Information Systems *(ICIS)*.

Santoro, F. M., Revoredo, K. C., Costa, R. M., & Barboza, T. M. (2020). Process Mining Techniques in Internal Auditing: A Stepwise Case Study. In iSys-Revista Brasileira de Sistemas de Informação, 13(4), 48–76.

Walser, R. J., Cram, W. A., Bernroider, E., & Wiener, M. (2020). How Control Configurations and Enactments Shape Legitimacy Perceptions and Compliance Intentions. In IS Development Projects. In European Conference on Information Systems *(ECIS)*.

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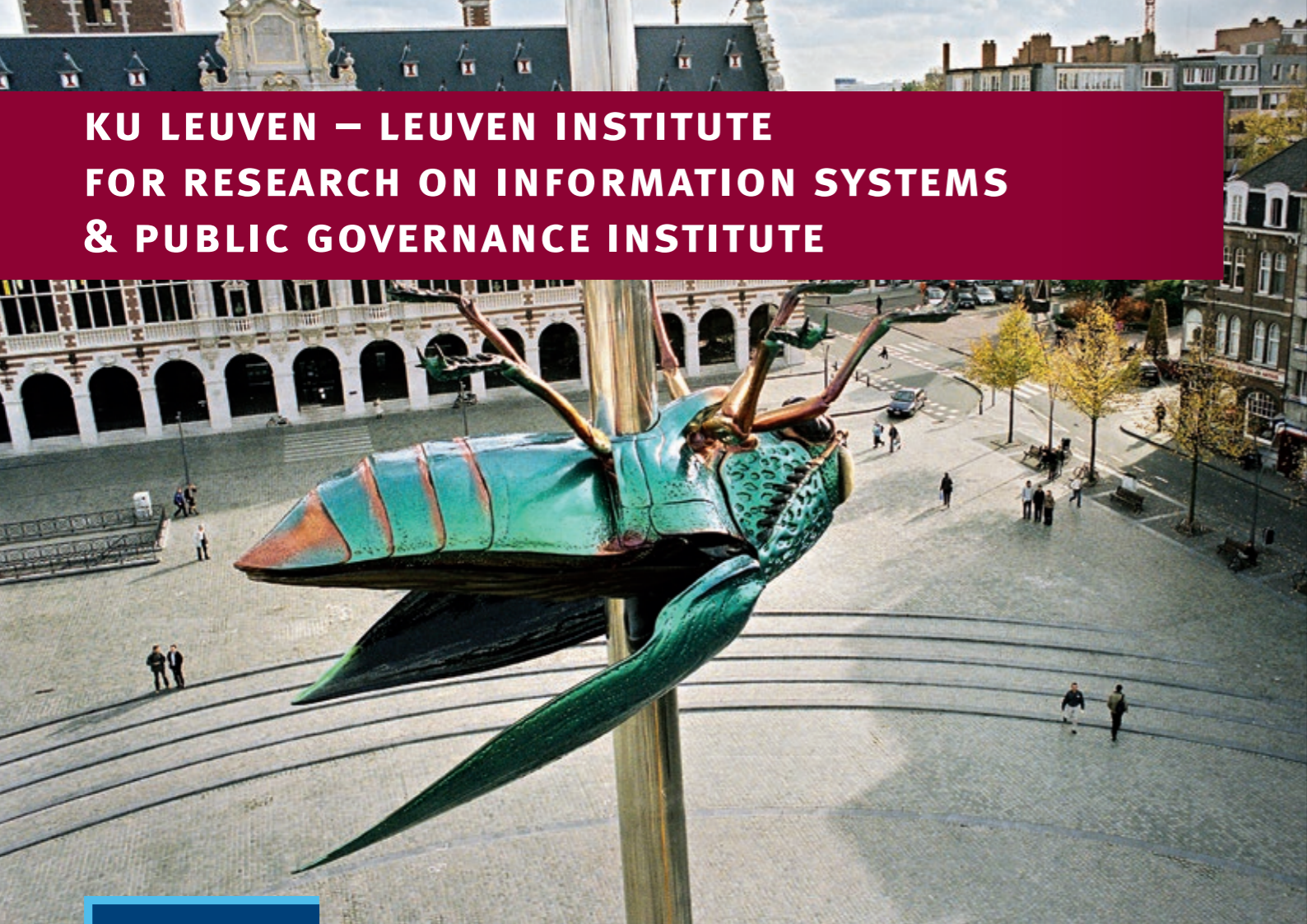1020 Vienna, Austria

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KU LEUVEN – LEUVEN INSTITUTE FOR RESEARCH ON INFORMATION SYSTEMS & PUBLIC GOVERNANCE INSTITUTE

KU LEUVEN

ABOUT KU LEUVEN

Situated in Belgium, in the heart of Western Europe, KU Leuven has been a centre of learning for nearly six centuries. Today, it is Belgium's largest university and, founded in 1425, one of the oldest and most renowned universities in Europe. KU Leuven is a research-intensive, internationally oriented university that carries out both fundamental and applied research. It is strongly inter- and multidisciplinary in focus and strives for international excellence.

Following the integration of the university colleges, the 'entire' KU Leuven counted 57,777 students as of October 2019. The largest student populations are found in the faculties of Economics and Business, Medicine, Engineering Technology, Arts, and Law. Students from approximately 163 countries study at KU Leuven.

LIRIS

The Leuven Institute for Research in Information Systems (LIRIS), founded in 1987, coordinates research in the area of information technology and management in organisations. This research embodies: fundamental issues of information systems in organisations, applied research, and research on the use and implications of information systems throughout society. The LIRIS Faculty currently counts 8 professors, 2 postdocs and around 15 PhD researchers.

PUBLIC GOVERNANCE INSTITUTE

The KU Leuven Public Governance Institute has the mission to gain knowledge and insight regarding politics, administration, and public policies on local, regional, federal, European, and international levels. We intend to make scientific contributions to an improvement in the policy-making, organisation, and management of public administrations.

The KU Leuven Public Governance Institute is an internationally oriented and interdisciplinary research institute that focusses on different aspects of public governance. Both fundamental and applied research are part of our activities, with special attention on theory, empirical research, and practice. Comparative research in particular is one of our core competencies.

RESEARCH TOPICS

The LIRIS research focuses on the entire trajectory of assessing the as-is business situation *(through discovery, analysis, mining)*, modeling the concepts, improving the model to obtain the to-be situation, and engineering the model to an implementation. This integrated approach of models, rules, decisions, processes, structures aims at creating innovative business solutions and is referred to as Business Engineering. It combines knowledge from the fields of business administration as well as information technology and relates it to the transformation from the industrial society into an information society, where creation, integration, processing, management, and use of information and knowledge is a significant economic activity.

Important research topics of LIRIS are:

- Analysis, modeling and architecture of information systems;
- Knowledge discovery, data and process mining;
- Architecture and infrastructure;
- Data, process and decision modeling;
- Business data, process, service, rules and decision management;
- Information strategy.

Public Governance Institute focuses on three distinguishable but partly overlapping clusters within the public governance domain:

- **Politics, citizens, and policies:** This research cluster focuses on the understanding of the relationship between governments, citizens, and policy practices.

- **Administrative organisation and HRM:** This cluster focuses on the changes in the governmental landscape and the way in which the government handles its human capital.

- **Management of information, performance, and finance:** This cluster focuses on research about methods and approaches to manage, use, and exchange information by governments in the policy, management, and financial cycles. This may be within as well as between administrative organisations, but also across and between governments.

CURRENT RESEARCH PROJECTS
Research projects within LIRIS are conducted in four major areas:

Engineering information solutions
Engineering information solutions, dealing with conceptual modeling, data quality, and requirements management is a first important area. It allows creating innovative solutions, based on sound modeling principles and aligned with the business.

- AM3BIT: A multi-stakeholder, multi-modelling, multi-representation based approach to developing information systems, 2020–2024.

Business processes intelligence
A second important area is the area of business processes intelligence. This includes some important new contributions to the theory of process analytics and discovery, and applies process analytics to some specific new domains *(auditing, learning, service, customers, and administrative processes)*, giving rise to auditing analytics, e-learning analytics, service analytics, etc.

- Improving the Interpretability, Bias, and Fairness of Process-Driven Decision Models, 2020–2024.

Business decision management
Business decision management *(modeling, mining and implementing decision representations and business rules)* is an area with a long tradition in LIRIS. The research recently led to an industry standard, DMN *(Decision Model & Notation)*, adopted by the OMG.

- Open Automated Decision Model Generation for Structured Standard Online Advice, 2020–2024.

Business Analytics & Data Science
In close collaboration with a worldwide network of companies and fellow researchers, we study various research topics within the field of data science. Another key research track concerns the development of social network-based analytical models for fraud detection, credit risk modeling, and marketing analytics *(e.g. churn prediction)*.

- Machine learning for fraud analytics, 2020–2024.

LIRIS

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KU LEUVEN – LEUVEN INSTITUTE FOR RESEARCH ON INFORMATION SYSTEMS & PUBLIC GOVERNANCE INSTITUTE

KU LEUVEN

Recent research projects of Public Governance Institute are:

- A Digital Flemish Government *(DigiVO)* – Policy Research Centre Innovative Governance of the Flemish government *(2016–2020)*.

- Terra Mosana, Interreg V Euregion Meuse – Rhine, Belgium, Germany, The Netherlands *(2018–2021)*.

- European Interoperability Framework and Smart Cities and Communities, European Commission ISA2 Action *(2020–2021)*.

- DIGI4FED – Digital *(R)evolution* in Belgian Federal Government: An Open Governance Ecosystem for Big Data, Artificial Intelligence and Blockchain, Belspo Brain-be *(2020–2022)*.

- InGOV – Inclusive Governance Models and ICT Tools for Integrated Public Service Co-Creation and Provision, H2020 SC6-GOVERNANCE *(2020–2023)*.

- Designing blockchain-based public governance models: Trade-offs, user roles and system design choices, KU Leuven Internal Funding C2 *(2021–2023)*.

LIRIS RESEARCH CHAIRS WITH INDUSTRY

The Business Information Systems group has a long tradition in industry-funded research chairs. This partnership with industry is a strong valorization of the research efforts and a good source of relevant research questions. Some current research chairs in business processes, decisions and information management:

ING Research Chair: Applying deep learning on metadata as a competitive accelerator.

Brussels Airport Chair: Smart airport operational analytics.

EDUCATION

Erasmus+: Higher Education Joint Master Degrees – Master of Science in Public Sector Innovation and eGovernance together with Westfälische Wilhelms-Universität Münster – University of Münster and Tallinn University of Technology.

GEOBIZ – Business driven problem-based learning for academic excellence in geoinformatics *(Erasmus+, Western Balkan+ Moldova, 2019–2022)*.

SEED4NA – Spatial Data Infrastructure and Earth Observation Education and Training for North Africa *(Erasmus+, North Africa, 2019–2022)*.

JOURNAL PUBLICATIONS

Martin, N., et al. (2020). Recommendations for enhancing the usability and understandability of process mining in healthcare. Artificial Intelligence In Medicine, 109, Art.No. 101962.

Ruiz, J., Serral, E., Snoeck, M. (2020). Unifying Functional User Interface Design Principles. International journal of human-computer interaction.

Baesens, B., vanden Broucke, S., Höppner, S., Verdonck, T., Stripling, E. with Höppner, S. (corresp. author) (2020). Profit Driven Decision Trees for Churn Prediction. European journal of operational research, 284 (3), 920–933.

Loynes, C., Ouenniche, J., De Smedt, J. (2020). The detection and location estimation of disasters using Twitter and the identification of Non-Governmental Organisations using crowdsourcing. Annals of operations research.

Huang, L., Zhao, J., Zhu, B., Chen, H., vanden Broucke, S. (2020). An Experimental Investigation of Calibration Techniques for Imbalanced Data. IEEE Access, 8, 127343-127343.

Olaya, D., Vasquez, J., Maldonado, S., Miranda, J., Verbeke, W. (2020). Uplift Modeling for preventing student dropout in higher education. Decision support systems, 134, Art.No. ARTN 113320.

Mitrovic, S., De Weerdt, J. (2020). Churn Modeling with Probalistic Meta Paths-based Representation Learning. Information processing & management, 57 (2), 1–12.

Song, R., Huang, L., Cui, W., Oskarsdottir, M., Vanthienen, J. (2020). Fraud Detection of Bulk Cargo Theft in Port Using Bayesian Network Models. Applied Sciences, 10 (3).

Casiano Flores, C., Crompvoets, J., Ibarraran Viniegra, M.E., and Farelly, M., 2019. Governance Assessment of the Flood's Infrastructure Policy in San Pedro Cholula, Mexico: Potential for a Leapfrog to a Water Sensitive City. Sustainability, 2019, 11, 1–28.

Casiano Flores, C., Tan, E., Buntinx, I., Crompvoets, J., Stöcker, C., and Zevenbergen, J., 2020. Governance Assessment of the UAVs implementation in Rwanda under the Fit-for-purpose Land Administration approach. Land Use Policy.

Chantillon, M., Crompvoets, J., and Peristeras, V., 2020. Prioritizing public values in e-government policies: A document analysis. Information Polity *(accepted)*.

Koeva, M., Stöcker, C., Crommelinck, S., Ho, S., Chipofya, M., Sahib,J., Bennett,R., Zevenbergen, J., Vosselman, G., Lemmen, Ch., Crompvoets, J. Buntinx, I., Wayumba, G., Wayumba, R., Ochieng Odwe, P., Osewe, G.T., Chika, B., and Pattyn, V., 2020. Innovative remote sensing methodologies for Kenyan land tenure mapping. Remote sensing, 12(2), 1–27.

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UNIVERSITY OF SÃO PAULO – SCHOOL OF ARTS, SCIENCES AND HUMANITIES

University of São Paulo (copyright – Jornal da USP)

School of Arts, Sciences and Humanities – USP East (copyright – Natalia Dourada)

ABOUT THE INSTITUTION

The University of São Paulo *(USP)*, founded in 1934, is the leading institution of higher education and research in Brazil. USP is a free public university with open access to students selected for an entrance exam. USP forms a large part of Brazilian masters and PhDs and alone accounts for over 20% of all national research production, delivering on average almost 50 research papers per day. There are seven university campi in the state of São Paulo; the main campus is in the city of São Paulo, the state capital. The university has nearly 50 schools and institutes covering all areas of knowledge. There are about 250 undergraduate programs and 250 graduate programs serving almost 100,000 students.

The School of Arts, Sciences and Humanities *(EACH)*, created in 2005, is an interdisciplinary unit of USP that brings together 11 undergraduate and 11 graduate programs in different areas of knowledge. Of these, we act in the Bachelor's Information Systems undergraduate program, with nearly 40 faculty members, and in the Master of

Science and PhD in Information Systems graduate program, with nearly 20 faculty members. Our graduate program in Information Systems has two broad research lines – "systems management and development" and "systems intelligence" – both with strong appeal in applied computing.

Two other USP units with a strong presence in the information systems and applied computing area are: the Institute of Mathematical and Computer Sciences *(ICMC)*, in the campus of São Carlos, with nearly 50 faculty members, and the School of Philosophy, Science and Literature *(FFCLRP)* with the Department of Computing and Mathematics, in the campus of Ribeirão Preto, with nearly 15 faculty members.

RESEARCH TOPICS

With a total of over 100 researchers in the computing field, USP contributes research in a variety of areas, including some focused specifically on information systems. Some important research topics are: artificial intelligence; big data; bioinformatics; bio-inspired computing; biometrics; business process management; chemistry; complex networks; computational intelligence; computational neuroscience; concurrent programming; databases; distance learning; distributed systems; economics;

education; e-government; embedded systems; enterprise environments; functional genomics; games; graphics processing; health; interface human-computer; internet; internet of things; it management; linguistics; machine learning; medical images; mobile devices; mobile robotics; multimedia interactive systems; natural language; pattern recognition; process mining; robotics; serious games; smart toys; social networks; software engineering; systemic biology; web systems.

CURRENT RESEARCH PROJECTS

Process Mining

The quality of business processes running in organisations is of utmost importance in achieving the organisation's strategic goals. This project aims to explore key machine learning and computational intelligence techniques to discover advanced process knowledge for process and organisational improvement.

Smart Toys and Social Robots

Smart toys are becoming more attractive to children, and their sales may increase considerably soon. This project seeks to propose solutions for both toy makers and privacy regulations to be ready to deal with risks posed to children's privacy when the time comes. Another possible reality soon, social and companion robots can be used

to diagnose depression and anxiety in the elderly in their homes and to propose activities to reduce these states, providing a better quality of life.

EVENTS

5th Symposium on Computing in Social Robots and Smart Toys, Organised by P. Hung, M. Fantinato, F. Iqbal, J.-H., Morin, at the 54th Hawaii International Conference on System Sciences *(HICSS 2021)*, Jan 6th, 2021.

PUBLICATIONS

Neubauer, T. R., Peres, S. M., Fantinato, M., Lu, X., Reijers, H. A. Interactive clustering: A scoping review. Artificial Intelligence Review, online first, p. 1–62, 2020.

Carvalho, L. G., Fantinato, M., Eler, M. M. Security requirements identification and prioritisation for smart toys. Electronic Commerce Research and Applications, v. 41, pp. 1–13, 2020.

Albuquerque, O. P., Fantinato, M., Eler, M. M., Peres, S., M., Hung, P. C. K. A study of parental control requirements for smart toys. Proceedings of the IEEE International Conference on Systems, Man, and Cybernetics *(SMC 2020)*, pp. 1–6, 2020.

Fantinato, M., Albuquerque, O. P., Kelner, J., Albuquerque, A. P., Yankson, B. A literature survey on smart toy-related children's privacy risks. Proceedings of the 53rd Hawaii International Conference on System Sciences *(HICSS 2020)*, pp. 1479–1488, 2019.

Albuquerque, O. P., Fantinato, M., Kelner, J., Albuquerque, A. P. Privacy in smart toys: Risks and proposed solutions. Electronic Commerce Research and Applications, v. 39, pp. 1–15, 2020.

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Modern Buildings Reflection in Pinheiros River in São Paul City, Brazil (copyright – shutterstock.com)

43

CHARLES UNIVERSITY –
FACULTY OF MATHEMATICS AND PHYSICS –
DEPARTMENT OF SOFTWARE ENGINEERING

ABOUT THE INSTITUTION

The natural sciences have been a part of the research teaching at Charles University since its founding in 1348.

The Faculty of Mathematics and Physics has been created by separating a part of the Faculty of Natural Sciences on 1 September 1952. Now, it is composed of three schools: School of Physics, School of Mathematics, and School of Computer Science.

The School of Computer Science at the Faculty of Mathematics and Physics includes eight prestigious teaching and scientific workplaces. The quality of their graduates is widely recognized. Among them are a number of top entrepreneurial experts working as computer program developers and technological innovators. Members of the School of Computer Science achieve outstanding scientific results in discrete mathematics. Predominantly in graph theory and its application in intelligent systems, optimization, programming methods, semantics, building large software systems, processing natural language and many others.

The Department of Software Engineering is focused on research and teaching in the areas of database systems, semantic web, similarity search, Bioinformatics & Chem informatics, XML technologies, parallel computing, Big Data, and e-Science.

RESEARCH TOPICS

There are three research groups in the department:

SImilarity RETrieval Research Group (SiRet)
http://siret.ms.mff.cuni.cz/

SIRET was founded in 2006 at the Department of Software Engineering, in the Faculty of Mathematics and Physics, at Charles University in Prague. SRG deals with database methods for efficient and effective similarity search in databases of complex unstructured objects. In particular, SRG is interested in three areas - general methods of indexing similarity (metric and nonmetric spaces), biological applications of the similarity search, indexing image databases for content-based retrieval.

XML and Web Engineering Research Group (XRG)
http://www.ksi.mff.cuni.cz/xrg/

The XML and Web Technologies Research Group (XRG) focuses on XML and Web technologies and their exploitation, service-oriented architectures (design, implementation, management), evolution, change management and adaptability of applications, efficient processing of graph data (XML, RDF, linked data), ontologies, Web 2.0, and semantic web services. Recently, the Big data, Linked data, and graph databases research is currently at the forefront of the group.

Parallel Architectures/Algorithms/Applications Research Group (PARG)
http://www.ksi.mff.cuni.cz/parg/

The Parallel Architectures/Algorithms/Applications Research Group focuses on multi-core CPUs and NUMA servers programming, many-core GPUs and GPGPU computing, utilization of emerging parallel architectures (Intel MIC, Parallela/Epiphany), distributed computing on tightly coupled clusters, parallel data processing, concurrency in database systems, and languages (and compilers) for parallel processing.

CURRENT RESEARCH PROJECTS

The department members are involved in a number of research projects funded by the Czech Science Foundation and Technology Agency of the Czech Republic. In the SiRet group the projects concern three scientific areas: Bioinformatics & Cheminformatics, e.g., rPredictorDB is a predictive database of secondary structures of individual RNAs and their formatted plots. The structures are generated by template-based prediction of RNA secondary structure with experimentally identified structures as templates. Multimedia projects include multimedia exploration framework (Crea-tion of efficient multimedia exploration applications) – an extensible solution for creation of multimedia exploration applications. For example, the Sketch-based Video Browser (or Video Hunter) is an interactive video retrieval tool for known-item search tasks, the project SIR (Smart image retrieval) combines traditional MPEG-7 visual descriptors with feature signatures, leading to improved similarity search in image collections. Finally, PGR Tree allows to apply an R-tree index in a commercial databases platform (PostgreSQL database).

AWARDS

Best Demo Paper Award: *J. Klímek, A. Orumbayev, M. Cutajar, E. Jenkins, I. Latták, A. Mansurov, J. Helmich:* LinkedPipes Applications – Automated Discovery of Configurable Linked Data Applications, In: proc, The Semantic Web: ESWC 2020 Satellite Events, ESWC 2020, Heraklion, Greece, May 2020.

1st place at the Video Browser Showdown 2020 – The SOMHunter team from the SIRET research group has won the 9th Video Browser Showdown competition organized at the 26th International Conference on Multimedia Modeling in Daejeon.

PUBLICATIONS

S. Iqbal, E. Pérez-Palma, J. B. Jespersen, P. May, D. Hoksza, H. O. Heyne, S. S. Ahmed, Z. T. Rifat, M. S. Rahman, K. Lage, A. Palo-tie, J. R. Cottrell, F. F. Wagner, M. J. Daly, A. J. Campbell, D. Lal: Comprehensive characterization of amino acid positions in protein structures reveals molecular effect of missense variants. Proc. of the National Academy of Sciences of the United States of America (PNAS), United States National Academy of Sciences, 2020

S. Iqbal, D. Hoksza, E. Perez-Palma, P. May, J. B. Jespersen, S. S. Ahmed, Z. T. Rifat, H. O. Heyne, M. S.l Rahman, J. R. Cottrell, F. F. Wagner, M. J. Daly, A. J. Campbell, D. Lal: MISCAST: MIssense variant to protein StruCture Analysis web SuiTe. Nucleic Acids Research, Vol. 48, Oxford Journals, 2020

J. Pokorný: JSON Functionally. Proc. of AD-BIS 2020, J. Darmont, B. Novikov, and R. Wrembel (Eds.), LNCS 12245, Springer Nature Switzerland AG, Cham, 2008, pp. 139–153.

J. Pokorný, K. Richta, T. Richta: Information Systems Development with the Help of Petri Nets. Vietnam. J. Comput. Sci. 7(1): 41–64 (2020)

A. Bonifati, I. Holubova, I., A. Prat-Pérez, S. Sakr: Graph Generators: State of the Art and Open Challenges. ACM Computing Surveys, volume 53, issue 2, article no. 36. ACM Press 2020.

I. Holubova, S. Scherzinger: NextGen Multi-Model Databases in Semantic Big Data Architectures. Open Journal of Semantic Web, volume 7, article no. 1, pages 1–16. RonPub UG, Lübeck, Germany, 2020.

M. Kratochvíl, D. Bednárek, T. Sieger, K. Fišer, J. Vondrášek: ShinySOM: graphical SOM-based analysis of single-cell cytometry data. Bioinformatics 36 (10), 3288–3289, 2020

M. Chaloupka, M. Nečaský: Using Berlin SPARQL benchmark to evaluate relational database virtual SPARQL endpoints. Submitted to SWJ, 2020.

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COPENHAGEN BUSINESS SCHOOL –
DEPARTMENT OF DIGITALIZATION (DIGI)

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ABOUT THE INSTITUTION

The Department of Digitalization (DIGI) is one of the largest departments of its kind. Especially in Europe a leading environment for research in Information Systems (IS). DIGI is a multi-disciplinary department that embraces theories and methods from the fields of information systems, management, computer science, organisation studies, economics, sociology, psychology, and the humanities. The mission statement of the department is: Co-creating knowledge with sustainable impact through the study of interrelationships and processes of connecting people, data and information technology.

The association of Information Systems (AIS) is the core community of the department. DIGI has achieved a prominent international position in the AIS Senior Scholar's Basket of 8 rankings. DIGI researchers have a strong presence in adjacent research communities such as human computer interaction, e-government, organisation studies, the learning sciences, and computational social science. The DIGI department houses the Center of Business Data Analytics (cbsBDA), which conducts transdisciplinary basic research at the socio-technical intersections of computer science and social science with specific applications to managers in companies, teachers in schools and residents in cities.

DIGI's vision is to participate in meaningful collaborations with representatives from the industry and society. This is done through engaged scholarships while organising research to accommodate the fast-moving pace and radical innovation that characterises the IS research field. We achieve this by organising our research around themes that address societal or business challenges. The themes are emergent, topical, popular, and dynamic in nature. The themes provide a platform for researchers to collaborate on cross-disciplinary topics of shared interest and communicate our research externally.

RESEARCH TOPICS

At present, the Department of Digitalization conducts research within the following research themes: Digital Health, Digital Sustainability, Digital Anthromorphism, Sports Digitalization, Blockchain, Digital Transformation of Work, Big Social Data Analysis, and FinTech. At least three of these themes have a close affiliation with the new ERCIS clusters:

The Big Social Data Analysis theme links to the Data Science ERCIS cluster. Research in this theme seeks to design, develop and evaluate big data analytics applications for managers (e.g., analytics), teachers (e.g., learning analytics), and citizens (e.g., public health analytics).

The Digital Transformation of Work theme contributes to the Knowledge and Learning ERCIS cluster by providing insights on new practices, in which services and products are produced differently by use of crowds, machines, artificial intelligence, and algorithms.

The Digital Health theme fits into the Digital Public Services ERCIS cluster. Digital health researchers at DIGI examine how digitalisation changes the practices and processes in healthcare organisations, and the behavior of individuals under the overall aim to enhance the quality and safety of healthcare.

RECENT PROJECTS

DIGI has launched several new research projects. The Virtual Stage project demonstrates how virtual reality and augmented reality technology can strengthen the digital skills of companies and help export Danish design. Covid-19 has challenged Danish design companies in bringing new products to the international market. Virtual Stage was launched in collaboration with the Lifestyle & Design Cluster and is supported by the Danish Industry Foundation.

The Advancing Blockchain Commerce for Danish Design (ABCD) project aims to equip Danish companies with the com-

petences to make strategic decisions. Regarding choosing, implementing, and embedding blockchain technology in core activities, with the goal to improve the transparency, traceability, and authentication in their supply chains. The project supports effective distribution and trade consistent with multiple UN Sustainable Development Goals.

The project E-export via Online Markets (E-eksport) aims to improve Danish B2B firm's ability to export via online marketplaces, such as Amazon and Alibaba. This generate knowledge on how to adapt business models when entering global markets. The project designs and develops a platform that enables easy integration to online market places. It is funded by the Danish Industry Foundation and involves several industry partners.

DIGI also drives several competence building initiatives. The project AI for Business Teachers aims to equip faculty at CBS and the Danish business academies with fundamental skills in artificial intelligence. DIGI collaborates with Microsoft to develop student competencies for leveraging data as a force for dialogue. The project Smart Greater Copenhagen develops a training concept to improve innovation competencies amongst employees within smart technology and digitalisation.

AWARDS

DIGI researchers received several awards in 2019/20. Associate Professors Xiao Xiao and Till Winkler were awarded with the AIS Early Career Award and PhD fellow Albert Fei Liu received the AIS Doctoral Student Service Award at the International Conference on Information Systems 2019. Professor Rony Medaglia won the Danish Society for Education and Business (DSEB) Education Award 2019. Post-doctoral researcher Rajani Singh received the 2020 Malawski Young Scientist Award for outstanding contributions to the development of mathematical economics.

PUBLICATIONS

Uri Gal; Tina Blegind Jensen; Mari-Klara Stein / Breaking the Vicious Cycle of Algorithmic Management : A Virtue Ethics Approach to People Analytics. In: Information and Organization, Vol. 30, No. 2, 6.2020.

Carla Bonina; Ben Eaton / Cultivating Open Government Data Platform Ecosystems Through Governance : Lessons from Buenos Aires, Mexico City and Montevideo. In: Government Information Quarterly, Vol. 37, No. 3, 7.2020.

Kim Normann Andersen; Jungwoo Lee; Helle Zinner Henriksen / Digital Sclerosis? : Wind of Change for Government and the Employees. In: Digital Government: Research and Practice, Vol. 1, No. 1, 2.2020.

Abayomi Baiyere; Hannu Salmela; Tommi Tapanainen / Digital Transformation and the New Logics of Business Process Management. In: European Journal of Information Systems, Vol. 29, No. 3, 6.2020, p. 238–259.

João Baptista; Mari-Klara Stein; Stefan Klein; Mary Beth Watson-Manheim; Jungwoo Lee / Digital Work and Organisational Transformation : Emergent Digital/Human Work Configurations in Modern Organisations. In: Journal of Strategic Information Systems, Vol. 29, No. 2, 6.2020.

Jochen Wulf; Till J. Winkler / Evolutional and Transformational Configuration Strategies : A Rasch Analysis of IT Providers' Service Management Capability. In: Journal of the Association for Information Systems, Vol. 21, No. 3, 2020, p. 574–606.

Kimmo Karhu; Robin Gustafsson; Ben Eaton; Ola Henfridsson; Carsten Sørensen / Four Tactics for Implementing a Balanced Digital Platform Strategy. In: MIS Quarterly Executive, Vol. 19, No. 2, 6.2020, p. 105–120.

Rajani Singh; Ashutosh Dhar Dwivedi; Gautam Srivastava / Internet of Things Based Blockchain for Temperature Monitoring and Counterfeit Pharmaceutical Prevention. In: Sensors, Vol. 20, No. 14, 7.2020.

Philipp Hukal; Ola Henfridsson; Maha Shaikh; Geoffrey Parker / Platform Signaling for Generating Platform Content. In: MIS Quarterly, Vol. 44, No. 3, 9.2020, p. 1177–1205.

Daniel Fürstenau; Abayomi Baiyere; Natalia Kliewer / A Dynamic Model of Embeddedness in Digital Infrastructures. In: Information Systems Research, Vol. 30, No. 4, 12.2019, p. 1319–1342.

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TALLINN UNIVERSITY OF TECHNOLOGY – SCHOOL OF BUSINESS AND GOVERNANCE

TAL TECH

ABOUT THE INSTITUTION

Ragnar Nurkse Department of Innovation and Governance *(RND)* was established in 1992 as the Department of Public Administration. Since 2013 it carries the name Ragnar Nurkse Department of Innovation and Governance. RND is the largest and most international Public Administration teaching and research centre in Estonia, having approximately 30 staff members. It is the only research centre in Estonia offering governance and public administration teaching on BA, MA and PhD level.

RND is part of Tallinn University of Technology *(Taltech)*, the only technological university in Estonia, and the flagship of Estonian engineering and technology education. TalTech is a university, which responds actively to the needs of the rapidly developing society and is involved in tackling the challenges of the digital era, by relying on academic competencies and professional management.

RESEARCH TOPICS

RND is an interdisciplinary research centre that focuses on socially relevant and future-oriented research issues, such as *(1)* models and practices of governance and public administration, *(2)* e-governance and digital transformation of societies: datafication, public services and state-citizen relations in the digital era, smart cities and digital public services and cross-border collaboration, *(3)* P2P technologies, its governance and potential new production models, *(4)* fiscal governance and fiscal bureaucracies, *(5)* science and innovation policies and its management and *(6)* philosophy and ethics of science and technology.

Our research contributes to solving the most pressing long-term challenges of Estonia and the European Union and we also contribute to achieving the UN's Sustainable Development Goals.

CURRENT RESEARCH PROJECTS

CAP4CITY *(Strengthening Governance Capacity For Smart Sustainable Cities)* is an Erasmus+ Capacity Building Project with partners from 12 Universities in Latin America and 8 in Europe. The specific aims

of the project are to *(I)* improve the quality in the higher education about Smart Sustainable Cities *(SSC)*; *(II)* increase the competences in developing countries in Latin America; *(III)* develop a network for cooperation among the partners from different regions in the world; and *(IV)* share knowledge, experience and good practices to achieves SSC and in general smart ecosystems. The project officially started in 2019 and lasts until 2022. During the last year we have been working on the development of content *(creation of Smart Sustainable Cities related courses)*. Last month we recorded three lectures that will be included in a MOOC that will be launched by the end of 2020.

RND is also part of the Erasmus Mundus PIONEER Masters' programme, which is an interdisciplinary programme combining the expertise of the fields of Public Administration, Public Management, Information Systems and eGovernance. This programme is run in cooperation with KU Leuven and University of Münster. This year the 2nd cohort of PIONEER students successfully defended their masters' theses.

RND has been coordinating The Once-Only Principle project *(TOOP)* under the Horizon2020 program since 2017. TOOP is looking to contribute to the EU digital single market by developing a technical architecture that is able to connect public administrations and registries across Europe. Over the years TOOP has involved 62 partners from 23 countries. In January 2021 the project will officially come to an end after successfully piloting in three domains: 1) general business mobility, 2) e-procurement, and 3) online ship and crew certificates.

EVENTS

RND was involved in co-organising the fifth edition of the E-Vote-ID conference – one of the leading international events for e-voting experts from all over the world. This year the conference took place in a digital format. One of the main objectives of the conference is to provide a forum for open interdisciplinary discussion on all matters related to electronic voting.

PUBLICATIONS

1. *Krimmer, R.; Duenas-Cid, D.; Krivonosova, J. (2020).* New Methodology Calculating Cost-Efficiency of Voting Channels: Is Internet Voting cheaper in Estonian Municipal Elections? Public Money & Management.10.1080/09540962.2020.1732027.

2. *Krimmer, R.; Duenas-Cid, D.; Krivonosova, I. (2020).* Debate: safeguarding democracy during pandemics. Social distancing, postal, or internet voting – the good, the bad or the ugly? Public Money & Management.10.1080/09540962.2020.1766222.

3. *Azambuja, LS.; Viale Pereira, G.; Krimmer, R. (2020).* Clearing the Existing Fog over the Smart Sustainable City Concept: Highlighting the Importance of Governance. Proceedings of the 13th International Conference on Theory and Practice of Electronic Governance: ICEGOV2020, Athens, Greece, March 11–13, 2020. Ed. Charalabidis, Y.; Cunha, M. A.; Sarantis, D. New York: ACM Press, [forthcoming].

4. *Duenas-Cid, David; Krivonosova, Iuliia; Serrano-Iova, Radu-Antonio; Freire, Marlon; Krimmer, Robert (2020).* Tripped at the Finishing Line: The Åland Islands Internet Voting Project. In: Electronic Voting 5th International Joint Conference, E-Vote-ID 2020, Bregenz, Austria, October 6–9, 2020, Proceedings (36–49). Springer.

5. *Krimmer, Robert; Duenas-Cid, David (2020).* TECNOLOGÍA Y DEMOCRACIA ¿UN AMOR DE PANDEMIA O UNA RELACIÓN ESTABLE? Josep Mª Reniu y J. Víctor Meseguer. ¿Política confinada? Nuevas tecnologías y toma de decisiones en un contexto de pandemia (19–29). Pamplona: Thomson Reuters / Aranzadi [forthcoming].

6. *Krimmer, Robert; Volkamer, Melanie; Beckert, Bernhard; Küsters, Ralf; Kulyk, Oksana; Duenas-Cid, David; Solvak, Mikhel (2020).* Electronic Voting 5th International Joint Conference, E-Vote-ID 2020, Bregenz, Austria, October 6–9, 2020, Proceedings. Springer.10.1007/978-3-030-60347-2.

7. *Krimmer, R.; Duenas-Cid, D.; Krivonosova, J. (2020).* Why the pandemic may pave the way for online voting. apolitical.co.

DISSERTATIONS

1. *Morten Meyerhoff Nielsen, Doctor's Degree, 2020, (sup) Robert Krimmer; Tarmo Kalvet,* The Demise of eGovernment Maturity Models: Framework and Case Studies, Tallinn University of Technology School of Business and Governance, Ragnar Nurkse Department of Innovation and Governance.

2. *Maarja Olesk, Doctor's Degree, 2020, (sup) Tarmo Kalvet; Robert Krimmer,* Challenges of Collaborative Digital Government: e-Participation, Open Government Data and Cross-Border Interoperability, Tallinn University of Technology School of Business and Governance, Department of Business Administration.
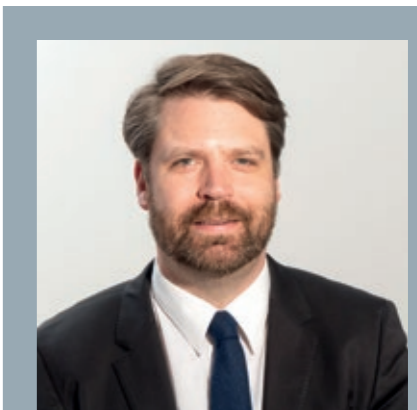
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NEWS

On 28 August, Prof. Krimmer was elected by the Senate of the University of Tartu for the ERA-Chair in e-Governance. Robert Krimmer started his new position on 1 October 2020, an will remain adjunct professor at TalTech until March 2021.

UNIVERSITY OF TURKU –
TURKU SCHOOL OF ECONOMICS – INSTITUTE
OF INFORMATION SYSTEMS SCIENCE

ABOUT THE INSTITUTION

The roots of the Institute for Information Systems Science were established in the year 1971. Nowadays the Institute is a part of the Department of Management and Entrepreneurship at the University of Turku. The mission of the Institute is to educate professionals, who master both, general management, as well as Information Systems skills. In research, the Institute focuses on supporting companies in their Information Systems management. Issues at individual, industry, national and international level are not neglected. The Institute has been a pioneer in English-speaking education, even at the whole university level.

RESEARCH TOPICS

Information Systems Science completes the sphere of Information Sciences at the University of Turku adding to the more technically and natural science-oriented work at the Department of Future Technologies. Research widely covers the topic spectrum of Information Systems Science, with a gravity point in Information and Network Management in the Information Economy. Topics such as management of information resources, health care information systems and network-based ser-

vices (e-services) – including Social Media – belong to the core areas of research, as well as topics on work informatics, ICT ethics, usability issues, and management of ICT in small and medium-sized business.

CURRENT RESEARCH PROJECTS

The institution runs a rich portfolio of projects in different areas. Current examples contain issues such as Business Strategy, digital strategy, governance and management of IT, governance of data, data integration and federation, blockchain and distributed ledger technologies, IT management best practices; CIO/CDO work, ICT in small and medium-sized enterprises, process modelling, master and reference data management, preparing for the health social services renewal in Finland, information system continuity management, management of waste flows, ethical issues within IT, behavioural and social aspects of digital and social media, adoption and diffusion of technological innovations, young people & information technology, freemium business models, virtual worlds, networks and business models, gender in ICT education and hospitality management.

PUBLICATIONS

Baiyere, A., Salmela, H., & Tapanainen, T. (2020). Digital transformation and the new logics of business process management. European Journal of Information Systems, 1–22.

Khanra, S., Dhir, A., & Mäntymäki, M. (2020). Big data analytics and enterprises: a bibliometric synthesis of the literature. Enterprise Information Systems, 1–32.

Mubarak, F., Suomi, R., & Kantola, S.-P. (2020). Confirming the links between socio-economic variables and digitalization worldwide: the unsettled debate on digital divide. Journal of Information, Communication and Ethics in Society.

Mäntymäki, M., Islam, A. N., & Benbasat, I. (2020). What drives subscribing to premium in freemium services? A consumer value-based view of differences between upgrading to and staying with premium. Information Systems Journal, 30(2), 295–333.

Talwar, S., Dhir, A., Kaur, P., & Mäntymäki, M. (2020a). Barriers toward purchasing from online travel agencies. International Journal of Hospitality Management, 89, 102593.

Talwar, S., Dhir, A., Kaur, P., & Mäntymäki, M. (2020). Why do people purchase from online travel agencies (OTAs)? A consumption values perspective. International Journal of Hospitality Management, 88, 102534.

Tandon, A., Dhir, A., Islam, N., & Mäntymäki, M. (2020). Blockchain in healthcare: A systematic literature review, synthesizing framework and future research agenda. Computers in Industry, 122, 103290.

Tandon, A., Kaur, P., Dhir, A., & Mäntymäki, M. (2020). Sleepless due to social media? Investigating problematic sleep due to social media and social media sleep hygiene. Computers in Human Behavior, 113, 106487.

University of Turku Information Systems Science Doctoral Theses 2020:

Governance of Platform Data: From Canonical Data Models to Federative Interoperability.
Nokkala Tiina

Inter-Organisational IT Governance: A Case Study of Municipal ICT Cooperation.
Helin Ari

INSTITUTION AT A GLANCE

The University of Turku is a multidisciplinary scientific university located at the Southwest coast of Finland, in the vibrant student city of Turku. With over 23,000 stu-

dents and 3,500 employees, the University of Turku is one of the largest universities in Finland. The Institute for Information Systems has three full professors and a total staff of about 25 employees with approximately 20 active doctoral level students. The yearly admission for students to the bachelor level, having Information Systems science as their major subject, is around 15 of the annual admission of 250 of the whole Business School. Yearly, in addition, there are approximately 40 master level students in the two international master's programs of the institute: Global Information Systems Management and International Master in Management of Information Technology. Information systems is a popular minor for students of many areas of Economics, Business Administration as well as Computer Science.

The focus of the research activities within the institute lies within understanding the utilisation of information and communication technology in enterprises and other organisations. The research conducted within the institute covers most of the key areas of Information Systems. The research activities can be classified into four themes:

- Management of Information Systems and Business Information Systems
- Networks and Business Models
- Work Informatics
- Healthcare Information Systems

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In terms of research methods used, the institute has a track-record and long traditions of conducting action research dating back to the 1980s. Today, the competence of the faculty members covers the whole methodological spectrum from qualitative to quantitative research.

Despite being in a business school, the school also has a rich tradition in the public sector and third sector organisations. E-health is a good example of this, where the role of public service is essential. Research is done from the viewpoint of different organisational stakeholders: organisation's top management, Information Systems management, as well as individuals such as customers or workers. Recent developments emphasize the management and organisational aspects of data security and privacy, as well as IT governance issues.

KEDGE BUSINESS SCHOOL –
DEPARTMENT OF OPERATIONS MANAGEMENT
AND INFORMATION SYSTEMS (MOSI)

ABOUT THE INSTITUTION

Founded in 1874, KEDGE is a leading French business school with four campuses in France *(Paris, Bordeaux, Marseilles and Toulon)*, three abroad *(Shanghai, Suzhou and Dakar)* and three partner campuses *(Avignon, Bastia and Bayonne)*. The KEDGE community is made up of 12,500 students *(including 50% coming from abroad)*, 174 professors *(including 51% coming from abroad)*, 275 international academic partners and more than 60,000 alumni around the world. KEDGE Business School is AACSB, EQUIS and AMBA-accredited, and is a member of the Conférence des Grandes Ecoles. It is also recognised by the French government, with labelised programmes, and has obtained the EESPIG label. KEDGE's Master in Management was ranked 46th worldwide, the Executive MBA 39th worldwide and 15th in Europe by the Financial Times.

Kedge Business School offers a variety of degree programs *(including Undergraduate, Short-Term, Exchange, PhD, and Postgraduate programmes)* performed by its core faculty of five departments: Management, Operations management and information system, Marketing, Strategy, and Accounting, Finance, Economics. Kedge also covers areas such as global responsibility, supply chain management, wine and spirits management, arts & culture management, and innovation in SME. Its faculty also supports students participating in Thesis Lab, Game lab, and Case Lab.

The "Operations Management and Information Systems" *(MOSI)* department is valued for its competency in the area of Information and Decision Science, Supply Chain Management, Knowledge Management, Serious games, e-business, and Organizational Learning. The main objective of the department of MOSI at Kedge Business School is to develop applied research within the following fields: information systems management, procurement and supply chain management, and quality management.

RESEARCH TOPICS

Majority of research topics currently conducted by the faculty of MOSI department include multiple disciplines, given in the following: IS in operations management, purchasing and IS, e-distribution, e-commerce, e-business, supply chain and operations management, decision-making & decision analysis, digital transformation in supply chain, organizational learning/ knowledge management/competences - communities of practices, gamification in supply chain, supply chain network design, sustainable supply chain and manufacturing, humanitarian logistics, simulation and optimization in supply chain management, maritime transportation, and port management. Our department has a close collaboration with three Centres of Excellence of Kedge Business School: Marketing, Supply Chain and CSR, and five Centres of Expertise: Wine & Spirits, Innovation & Entrepreneurship, Health Management, Finance Reconsidered, and Creative Industries & Culture.

CURRENT RESEARCH PROJECTS

1) MAIA – Models and Methods for an Active Ageing workforce: An International Academy

Funded by the Horizon 2020 research and innovation program, MAIA is aimed at strengthening research collaboration through a multidisciplinary network with leading expertise on ageing and psychosocial aspects, ergonomics, manufacturing system design, robotics/assistance technologies, and economics, between 7 European universities from Italy, Germany, France, and Slovenia as well as 6 non-European universities from USA, Japan, New Zealand, Hong Kong, and Canada. The project will focus on a timely and strategic international challenge: the efficient involvement of active ageing industrial workforce in the manufacturing systems of the future.

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2) VitiREV – Innovons pour des territoires VITIcoles Respectueux de l'EnVironnement

The project VitiREV *(2019–2024)* focuses on the sustainability in wine sector *(logistics and wine tourism)*, focuses on implementing innovative wine tourism strategies from a sustainable development point of view. The project aims to examine the "service provider – customer" relationships via quantitative studies *(surveys, modelling and experiments)* in order to provide a plural, integrated and exhaustive vision of innovative wine tourism practices and experiences. The objective of this track would be to develop theoretical knowledge and to provide assessments and recommendations specific to the areas. This project involves 139 partners, and the total budget is 14 Mln €. Among the academic project's partners are ISVV, University of Bordeaux, Bordeaux Sciences Agro, Bordeaux Wine Campus, and University of British Columbia *(Canada)*, Oenoviti Network, Hong-Kong Polytechnic University School of Hotel & Tourism Management *(HK)*, Sonoma State University *(USA)*, UniSA *(Australia)*.

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3) Analysis of quantum computing development using dynamic communities' detection and topic modelling

We seek to better understand the dynamics of the quantum computing field. We take the view that meso-level structures play a key role in the development of scientific knowledge. To that end, we built networks of co-authorships for successive time windows between 1976 and 2015. For each of these networks, we identified the communities. We then identified the different events that communities undergo from one time step to the next *(i.e. formation, growing, shrinking, continuing, merge, split, dissolving)*. In parallel, we identified the topics dealt with by the communities. We then investigated the co-evolution of knowledge and communities. Preliminary results show that growing and merge are the key events leading to new knowledge production *(formation of communities doesn't produce much knowledge)*. Plotting the frequency of occurrence of events over time shows that growing and merging mostly occur when the field really "takes off". The last periods are characterised by a high number of community dissolutions suggesting that the field has reached some form of maturity where communities are sustainable only if they really contribute to a now structured field.

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PUBLICATIONS

OSBURG, V.-S., V. YOGANATHAN, B. BARTIKOWSKI, H.LIU, M. STRACK, "Effects of Ethical Certification and Ethical eWoM on Talent Attraction", Journal of Business Ethics, 2020, vol. 164, pp. 535–548.

LAGOARDE-SEGOT, T., "Financing the Sustainable Development Goals", Sustainability, 2020, vol. 12, pp. 2775.

MESCHI, P.-X., A.RICARD, E.TAPIA-MOORE, "Pre-Internationalization Conditions and Performance of First-Exporting SMEs" Forthcoming M@n@gement.

SARMADI, K., M. AMIRI AREF, J.DONG, C.HICKS, "Integrated Strategic and Operational Planning of Dry Port Container Network in a Stochastic Environment", Transportation Research Part B: Methodological, 2020, vol. 139, pp. 132–164.

PODINOVSKI, V. V., T.BOUZDINE-CHAMEEVA, "Consistency of returns-to-scale characterizations of production frontiers with respect to model specification..", European Journal of Operational Research, 2020, vol. 280, no. 2, pp. 609–620.

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NATIONAL UNIVERSITY OF IRELAND GALWAY – LERO RESEARCH CENTRE AND BUSINESS INFORMATION SYSTEM

NUI Galway

ABOUT THE INSTITUTION

NUI Galway was founded in 1845 and has grown massively in size and reputation over the past 170 years. According to QS World University Rankings, the University is now among the Top 1% in the world. NUI Galway offers a wide range of undergraduate and postgraduate courses, as well as flexible learning, professional qualifications and online learning options. NUI Galway has five Colleges, 16 Schools, and over 50 academic disciplines.

Lero NUI Galway resides within the J.E. Cairnes School of Business & Economics. Lero is the Irish software research centre. It brings together leading software research teams from universities and institutes of technology, in a coordinated centre of research excellence with a strong industry focus.

Lero NUI Galway aims to deliver word-class, high impact research through industry collaboration. We work at the cutting edge of software development and management, providing unique insights that impact the performance of organisations, while also setting the academic research agenda in the area.

The group has received over €4m in research funding and secured another €3.5m over the next 4 years. The research is funded by Enterprise Ireland, Science Foundation Ireland, the Irish Research Council, the European Commission, and by multinational industry partners.

RESEARCH TOPICS

Our research concentrates on the following key areas: agility, temporality, open innovation, and project portfolio management.

Agility: The growing popularity of agile/lean methods such as Scrum and Kanban indicate a strong desire to improve how we work and create value for customers. Despite many potential benefits of agile/lean adoption, there is no recipe to follow that will guarantee success. We examine agile methods within industry settings and further contribute to the concept and customisation of agile methods.

Temporality: Researchers are quick to refer to time in simple terms such as speed of organisational and social life. Our research explores time as an inherently complex, multi-faceted, and subtle phenomenon. This includes the evaluation of the true 've-locity', speed, and value afforded by analytics and methods such as agile and flow.

Open Innovation: Open Innovation and the associated domains of crowdsourcing, crowdfunding and inner source software are changing the way organisations run projects. While there has been much focus in practice about the use of these methods, little reflection exists upon the theory and processes that underpin the concept. As organisations are faced with increased competition in the innovation space, new methods are needed to form the next generation of innovative products.

Project Portfolio Management: This gap in the literature becomes even more pertinent when we consider that contemporary implementations of agile go beyond small co-located teams with non-standard implementations now widespread – i.e., large and distributed teams or start-ups. This presents new challenges for the scal-ing of agile/lean and requires a rethink of project portfolio management.

CURRENT RESEARCH PROJECTS

A core activity is the researcher-industry knowledge exchange. These exchanges take place every three months and provide evidence-based insights on software implementation and management issues. This enables Lero NUI Galway to create tangible research outcomes that are immediately applicable to organisation settings. The team works with multinationals such as Dell, AIB, Accenture, and Markit | Information Mosaic to deliver solutions to software agility issues.

Currently the team looks at areas such as: *(I)* Social network analysis of multiplex information flow, with a particular emphasis on open and networked innovation and the role of information and communication technologies within these paradigms, *(II)* The use of open innovation strategies and practices across, public, private, and philanthropic organisations, *(III)* The socio-technical aspects of information systems development *(ISD) (Lean, Flow, Scrum)* and the emphases on viewing ISD as evolving activity systems *(teams, organisations)* beyond a single user, *(IV)* Software engineering practices in software start-ups and the adoption of Lean start-up approach and practices in large and established organisations *(V)* Information systems project portfolio management through the lens of complex adaptive systems theory, *(VI)* temporality within the context of ISD.

The Lero team at NUI Galway has now established a "Time and Technology" group. This group will examine how technology is radically shaping not only the pace and rhythms of work, performance, and life more generally, but also the overall human experience of time. An emerging and interdisciplinary research programme examines these complex phenomena from the perspectives of business analytics, psychology, sociology and computer science, exploring a diverse range of topics includ-ing the velocity afforded by analytics and methods such as agile and flow, the role of technology in societal pace and rhythms of life, temporality and ethical decision-making in artificial intelligence, and the dialectical relationships between time and technology in a liquid modern era. Members of the group have recently published research, blogs and articles *(see below)* on the complexity of time and the interplay between time and technology in organisational and societal contexts.

PUBLICATIONS

Conboy, K., Mikalef, P., Dennehy, D., & Krogstie, J. 2019. Using Business Analytics to Enhance Dynamic Capabilities in Operations Research: A Case Analysis and Research Agenda. European Journal of Operational Research. DOI: 10.1016/j.ejor.2019.06.051

Dennehy, D., Kasraian, L., O'Raghallaigh, P., Conboy, K., Sammon, D., & Lynch, P. (2019). 'A Lean Startup approach for developing minimum viable products in an established company'. Journal of Decision Systems. DOI: 10.1080/12460125.2019.1642081

Denehy, D. and Conboy, K. 2019. "Breaking the Flow: A Study of Contradictions in Information Systems Development (ISD)," Information Technology & People. DOI: 10.1108/ITP-02-2018-0102

Carroll, N., and Conboy, K. 2019. "Implementing Large-Scale Agile Frameworks: Challenges and Recommendations," IEEE Software. DOI: 10.1109/MS.2018.2884865

Conboy, K., Dennehy, D., & O'Connor, M. (2018). 'Big time': An examination of temporal complexity and business value in analytics. Information & Management. DOI: 10.1016/j.im.2018.05.010

Brexit, Orwell's 1984 and living in liquid modernity. RTÉ Brainstorm article written by Ronan Doyle
http://whitakerinstitute.ie/rte-brainstorm-brexit-orwells-1984-and-living-in-liquid-modernity/

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Running to go backwards: The problem with productivity apps. Irish Time article written by Prof Kieran Conboy
https://www.irishtimes.com/business/work/running-to-go-backwards-the-problem-with-productivity-apps-1.3845916

LUISS GUIDO CARLI UNIVERSITY – CENTRE FOR RESEARCH IN LEADERSHIP, INNOVATION, AND ORGANISATION *(CLIO)*

ABOUT THE INSTITUTION

Founded in 1966 Luiss is a private Italian University specialised in the social sciences and strongly committed to conduct academic research and educate talented individuals. Luiss faculty is actively engaged in both theoretical and applied research in a variety of areas of business and management including information systems (IS). Since 1998, Luiss researchers have achieved an international standing in IS education – including teaching and research – initially through the Research Centre on Information Systems (CeRSI) and since 2016 through the Centre for Research in Leadership, Innovation, and Organisation (CLIO). The Luiss IS group represents Italy in the ERCIS network and has contributed to the birth and growth of itAIS *(www.itais.org)*, the Italian Chapter of the AIS *(www.aisnet.org)*. ItAIS plays an important role in the promotion and coordination of the Italian IS academic and scientific community.

Teaching and research activities in the IS field at Luiss are conducted at the intersections of Technology, Innovation and Organizing, supported by CLIO members who have published in top international journals including JIT, JSIS, I&M, JKM, RP, AMJ and Management Decision.

RESEARCH TOPICS

Research on IS at Luiss is done in conjunction with project activities in which members of the IS group participate in the iterative phases of designing and evaluating sociotechnical interventions. A multidisciplinary team of IS and organisation scholars with backgrounds in computer science, engineering, economics, law, management and political sciences collaborate in both project and research activities by bringing together a multiplicity of methods for analysing organisational problems and planning interventions. This design orientation allows to engage in national and international cooperation with other universities and research institutions.

IS research at Luiss focuses on four main streams. The first is related to the Dark Net and the Risk Society. The second is related to Digital Innovation. The third is related to Digital Workplace Transformation. The fourth relates to crowd-based phenomena that can be utilised by public and private organisations like crowdsourcing, crowdfunding, and citizen science.

CURRENT RESEARCH PROJECTS

The national competence center in cybersecurity Cyber 4.0 launched in 2019, is a three-year project funded by the Italian Ministry for Economic Development. The project is aimed at increasing cybersecurity awareness and capabilities in the industrial sector with a special focus on SMEs. The Cyber 4.0 is a public-private partnership involving about 40 partners, including universities, manufacturers, service providers, and companies operating in the defense sector. CLIO contributes to the governance of the competence center by structuring training, research, and dissemination activities jointly with the faculty of the Master in Cybersecurity Governance. Four additional project proposals in the area of cybersecurity have been submitted to H2020 and Italian institutions. The four projects are now under evaluation and will strengthen the links with industrial partners in the cyber defense sector. In these initiatives the CLIO's team complements the contribution of technical partners by addressing the regulatory and organisational aspects of cybersecurity governance.

Additional IS projects led by CLIO members are related to cyber intelligence, digital workplace transformation and business resilience. The research on Dark Nets and Online Blackmarkets has been advanced towards theoretical developments on the generative mechanisms of digital infrastructures and platform control in digital ecosystems. An action research project on agile transformation has been started in a pharma company where the CLIO team is developing and validating a framework to manage innovation. An action research project has been started in a car rental company to assess the status of smart-working practices and issue internal policy recommendations. A study on Business Resilience and Digital Transformation has been started to investigate the impact of the pandemic on the business world. CLIO members are further involved in a project regarding the impact of 3D printing and other digital technologies on the organisation of firms and industries. Such project has been developed in collaboration with the Chair of Technology and Innovation Management at ETH Zurich. Finally, a research project founded by the Italian Ministry of research on efficient Algorithms for harnessing networked data.

PUBLICATIONS

Acuña, V., Grossi, R., Italiano, G. F., Lima, L., Rizzi, R., Sacomoto, G., ... & Sinaimeri, B. (2019). On Bubble Generators in Directed Graphs. Algorithmica, 1–17.

Alaimo, C. and Kallinikos, J. (2019). "Social Media and the Infrastructuring of Sociality", Research in the Sociology of Organizations, 62, 289–306.

Alaimo, C., Kallinikos, J, and Valderrama, E. (2020). "Platforms as service ecosystems: Lessons from social media", Journal of Information Technology.

Alaimo, C., Kallinikos, J. and Aaltonen, A. (2020). "Data and Value", in Nambisan, S. Lyytinen, K. and Yoo, Y. *(eds.)* The Handbook of Digital Innovation, Cheltenham: Edward Elgar Publishing.

Cappa F., Oriani R., Peruffo E. and McCarthy I. (2020). "Big Data, a Valuable Resource in the Digitalized Environment? Unpacking the Effects of Volume, Variety and Veracity on Firm Performance", Journal of Product Innovation Management, In Press.

Cappa, F., Oriani, R., Pinelli, M., & De Massis, A. (2019). When does crowdsourcing benefit firm stock market performance? Research Policy, 48(9), 103825.

Cappa, F., Rosso, F., Giustiniano, L., & Porfiri, M. (2020). Nudging and citizen science: The effectiveness of feedback in energy-demand management. Journal of Environmental Management, 269, 110759.

Ceci, F., Masini, A., & Prencipe, A. (2019). Impact of IT offerings strategies and IT integration capability on IT vendor value creation. European Journal of Information Systems, 1–21.

Coppa E., Finocchi I, Garcia R. L. (2019). Counting cliques in parallel without a cluster: Engineering a fork/join algorithm for shared-memory platforms. Information Sciences 496, 553–571, 2019.

Di Pietro, F., (2020). Crowdfunding for Entrepreneurs: Developing Strategic Advantage Through Entrepreneurial Finance. Routledge, London, UK.

Di Pietro, F., Bogers, M., Prencipe, A. (2020). Organisational Barriers and Bridges to Crowd Openness in Equity Crowdfunding. Technological Forecasting and Social Change. In press.

Di Vincenzo, F., Mascia, D., Bjork, J., Magnusson, M. (2020). "Attention to Ideas? Exploring Idea Survival in Internal Crowdsourcing". European Journal of Innovation Management, 1–22. Published ahead-of-print.

Franco, S., Caroli, M., Cappa, F., & Del Chiappa, G. (2020). "Are You Good Enough? CSR, Quality Management and Corporate Financial Performance in the Hospitality Industry". International Journal of Hospitality Management, 88,102395.

Homberg, F., Vogel, R., & Weiherl, J. (2019). Public service motivation and continuous organizational change: Taking charge behaviour at police services. Public Administration, 97(1), 28–47.

Kazemargi, N., Spagnoletti, P. (2020) "Cloud Sourcing and Paradigm Shift in IT Governance: Evidence from the financial sector", Agrifoglio R. et al. *(Eds)* Digital Business Transformation, Lecture Notes in Information Systems and Organisation 38, Chapter 4, Springer.

Kazemargi, N., Spagnoletti, P. (2020). Exploring IT investment decisions of SMEs in the Fourth Industrial Revolution", Agrifoglio R. et al. *(Eds)* Digital Business Transformation, Lecture Notes in Information Systems and Organisation 38, Chapter 6, Springer.

Spagnoletti, P., Kazemargi., N., Prencipe, A., 2020. "To cloud or not to cloud: strategic choices and IT governance in the digital transformation of a University", LUISS University Press, ISBN: 978-88-6105-524-7.

AWARDS

Lomi A., Lerner J., Mascia D., Tonellato M. 2020. "Assembling the team: An analysis of partner selection and performance in robot-assisted surgery". Best Global Paper Award, 80th Annual Meeting of the Academy of Management, year 2020, Health Care Management Division, Vancouver (Canada).

EVENTS

17th edition of the ItAIS conference, Pescara, October 15th–16th 2020.

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UNIVERSITY OF LIECHTENSTEIN – INSTITUTE OF INFORMATION SYSTEMS – HILTI CHAIR OF BUSINESS PROCESS MANAGEMENT

UNIVERSITÄT LIECHTENSTEIN

ABOUT THE INSTITUTION

The Institute of Information Systems at the University of Liechtenstein *(www.uni.li/iwi)* was founded in the early 1990s and has grown continuously ever since. It is represented by the Hilti Chair of Business Process Management, held by Prof. Dr. Jan vom Brocke. The Institute hosts two further chairs, the Hilti Chair for Data and Application Security, held by Prof. Dr. Pavel Laskov as well as the Chair for Technology and Innovation, held by Prof. Dr. Stefan Seidel.

Members of the institute have published in leading IS journals, including MISQ, ISR, JAIS, JMIS, JIT, EJIS, ISJ, Communications of the ACM, MIT Sloan Management Review, and Management Science. The institute offers a master's degree in Information Systems with three subject areas *(Business Process Management, Data Science, and Data and Application Security)*, a Ph.D. programme in Information and Process Management, and a bachelor's degree in Business Administration majoring in Information Management & IT. The current three years AIS Research Performance Ranking lists the Institute #1 in the DACH region *(Germany, Austria, Switzerland)*, #5 in Europe, and #39 worldwide.

The institute is also a co-founder of the Hilti Fellowship Program, which provides ERCIS students with the opportunity to combine an Internship at the Hilti Corporation with a semester abroad at the University of Liechtenstein *(www.uni.li/hilti-fellowship)*. The institute represents the Association for Information Systems *(AIS)* in Liechtenstein through the Liechtenstein Chapter of the AIS *(LCAIS)*, which was recognised as Outstanding Chapter of the AIS for the sixth consecutive year in 2019.

RESEARCH TOPICS

Our research addresses information systems from four complementary perspectives *(in alphabetical order)*:

- Data – Data science focuses on capabilities to harvest and analyse data as a key enabler for improving and innovating processes as well as services, products, and business models.

- Innovation – Digital Innovation focuses on the transformative power of digital technologies to create new IT-enabled products, processes, and business models.

- Processes – Business process management takes an innovation-driven and value-oriented perspective on business processes to identify and evaluate the business potential of information and communication technologies in contemporary organisations. Recently, a collaborative effort has been initiated, involving many ERCIS partners, to constitute Process Science as the interdisciplinary study of processes.

- Security – Data and Application Security focuses on the development of reactive and proactive security mechanisms.

CURRENT RESEARCH PROJECTS

Digital capital creation

Digital capital describes infrastructural *(networks etc.)* and institutional *(regulations etc.)* factors that enable digitalisation on an individual, organisational, political and societal level. It forms the basis for the generation of other forms of capital, such as economic capital or human capital, which is the primary goal of all organisations. Well-known forms of digital capital range from digital procurement processes to the Sharing Economy. As part of a research project, the Institute of Information Systems examines the role of digital technologies in the generation of various forms of capital. The aim of the project is to develop a Liechtenstein model for the generation and use of digital capital.

Digitally Multisensory: From Human-Like to Human-Centered Principles

Digital technologies are already ubiquitous in our daily lives, but they can do even more when they are able to communicate with us through various sensory modalities. Even though most interfaces rely on vision and hearing, some digital technologies also take the potentials of other sensory perceptions into account. Examples include digital support tools for fragrance creation by combining scents and users' preferences or software enabling choreography and improvisation by fusing touch, vision, and movement. They are intended to support humans and can follow two design approaches: human-like and human-centered. In this project we aim to understand the differences between human-like and human-centered approach to design and how the differences are related to the design of multisensory digital support tools, including their use by expert users. Our findings will be synthesized in a set of design principles for multi-sensory digital support tools that are also human-centered.

AWARDS

AIS Fellow Award

Prof. Dr. Jan vom Brocke received the AIS Fellow Award for outstanding contributions to the information systems discipline in terms of research, teaching and service.

Honorary Professor at the National University of Ireland, Galway

Prof. Dr. Stefan Seidel has been appointed Honorary Professor of the National University of Ireland, Galway *(NUIG)*.

AIS Best Information Systems Publications Award

Prof. Dr. Stefan Seidel, Dr. Leona Chandra Kruse, Dr. Nadine Székely, Michael Gau, and Daniel Stieger received the "AIS Best Information Systems Publications Award" for their publication "Design Principles for Sensemaking Support Systems in Environmental Sustainability Transformations" in the European Journal of Information Systems.

PUBLICATIONS

Breitinger, F., Tully-Doyle, R., & Hassenfeldt, C. (2020). A survey on smartphone user's security choices, awareness and education. Computers & Security, 88.

Gregor, S., Chandra Kruse, L., & Seidel, S. (in press). The Anatomy of a Design Principle. Journal of the Association for Information Systems.

Mendling, J., Berente, N., Seidel, S., & Grisold, T. (in press). Pluralism and Pragmatism in the Information Systems Field: The Case of Research on Business Processes and Organizational Routines. The Data Base for Advances in Information Systems.

Hacker, J., vom Brocke, J., Handali, J., Otto, M., & Schneider, J. (2020). Virtually in this together – how web-conferencing systems enabled a new virtual togetherness during the COVID-19 crisis. European Journal of Information Systems.

Schmiedel, T., Recker, J., & vom Brocke, J. (2020). The relation between BPM culture, BPM methods, and process performance: Evidence from quantitative field studies. Information & Management, 57(2), 103175.

Schneider, C., Weinmann, M., Mohr, P., & vom Brocke, J. (2020). When the stars shine too bright: Assessing the influence of dimensional ratings on overall product ratings. Management Science.

Werder, K., Seidel, S., Recker, J., Berente, N., Gibbs, J., Abboud, N., & Benzeghadi, Y. (2020). Data-Driven, Data-Informed, Data-Augmented: How Ubisoft's Ghost Recon Wildlands Live Unit Uses Data for Continuous Product Innovation. California Management Review, 62(3), 86–102.

vom Brocke, J., Hevner, A., Léger, P. M., Walla, P., & Riedl, R. (2020). Advancing a NeuroIS Research Agenda with Four Areas of Societal Contributions. European Journal of Information Systems, 29(1), 9–24.

vom Brocke, J., Winter, R., Hevner, A., & Maedche, A. (2020). Accumulation and Evolution of Design Knowledge in Design Science Research – A Journey Through Time and Space. Journal of the Association for Information Systems, 21(3), 520–554.

Gerster, D., vom Brocke, J., Conboy, K., Dremel, Ch., Mayer, R. (in press). Managing Time Complexity through Agility: The Cases of Fujitsu's World Record and Four Fortune 500 Companies. MIS Quarterly Executive.

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DISSERTATIONS

- *Roope Jaakonmäki:* "Utilizing Big Data Analytics for the Management of Processes"
- *Lena Kaiser:* "Dealing with Distributed Innovation Actors in the Era of Digital Innovation"
- *Alexander Schmid:* "On the Role of Socio-Technical Inertia in Organizational Transformations"
- *Ana Procopio Schön:* "The missing piece of the puzzle: An exploration of the human aspect in open forms of innovation"
- *Miriam Schüßler:* "Unveiling Business Model Innovation: Capabilities and Interdependencies within the Ecosystem"
- *Charlotte Wehking:* "Business Process Management in the Era of Digital Transformation. Context Awareness and Methods in Focus"
- *Isabell Wohlgenannt:* "On the Potential of Gamification to increase Knowledge Sharing in Value Networks"

KAUNAS UNIVERSITY OF TECHNOLOGY – DEPARTMENT OF INFORMATION SYSTEMS / CENTRE OF INFORMATION SYSTEMS DESIGN TECHNOLOGIES

Photo by T. Kozlovas (the parents are our employees)

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ABOUT THE INSTITUTION

The Department of Information Systems at the Kaunas University of Technology *(KTU)* was founded in 1993 as a result of more than 20 years of research in the field of information systems *(IS)*. Since then, we have grown to become one of the leading departments in the KTU Faculty of Informatics. In 2012, the Department's Laboratory of Information Systems and Databases Design was restructured into the Centre of Information Systems Design Technologies *(headed since by prof. R. Butleris)*. In 2014, the Center has been expanded as part of the move to the newly established Integrated Science, Studies and Business Centre *(Valley)* "Santaka". As of autumn 2020, the Department and Centre combined employed 30 researchers and teachers. Over the years, we established good relationships with the local IT companies and accumulated valuable research experience with Lithuanian and international partners.

Our academic work is about providing quality education on fundamental and advanced subjects in the field of information

systems. The Department has developed first and second cycle study programmes titled "Information Systems" and "Information Systems Engineering" respectively. For the 2020–2021 study year, 46 new students were admitted to the Bachelor study programme, and 10 to the Master's. There were also 7 PhD students at the Department.

RESEARCH TOPICS

The KTU Department of Information Systems / Centre of IS Design Technologies specialize in areas related to Information Systems and Software Engineering, namely:

- Model driven development, model-to-model transformations
- Computer aided software engineering *(CASE)* technologies
- Conceptual modeling and databases
- Modeling of business processes, business vocabularies, and business rules
- User needs analysis and requirements modeling
- Ontologies and solutions for the Semantic Web
- Big data and business intelligence
- Knowledge based systems
- Model-driven testing of information systems
- Project management

- Information systems user interface and usability
- Machine learning
- Blockchain

CURRENT RESEARCH AND DEVELOPMENT PROJECTS

- Development of Data Management Web Services for the Lithuanian State Forest Cadastre *(2020–2021)*. Funded by the Lithuanian State Forest Survey Service.

- Development of Measures to Increase Efficiency of the Public Sector Buildings Life-Cycle by Applying Building Information Modeling – BIM-LT *(2019–2021)*. Financed by EU structural funds. The project is carried out in cooperation with the Vilnius Gediminas Technical University as well as several Lithuanian public institutions and coordinated by the Ministry of Environment of Lithuania.

- Development of Multichannel Sales Processes Management Equipment "ORIVUS" *(2018–2020)*. Financed by the EU Structural Funds, Investment Action Programme measure "Intellect. General Science - Business Projects", project partner – JSC "NFQ Technologies".

- Development of Public Services of the Syntactic Semantic Information System of

Lithuanian Language *(2017–2020)*. The project is carried out along with the Vytautas Magnus University *(Lithuania)* and financed by the Ministry of Transport and Communications of Lithuania.

- Development of the Artificial Intelligence and Statistical Models Ensemble Construction Algorithm *(2019–2020)*. Commissioned by JSC "RIVILĖ".

- Enterprise Financial Performance Data Analysis Tools Platform *(AIFA) (2020-2022)*. Financed by the EU Structural Funds, Investment Action Programme measure "Smart FDI", project partner – JSC "INTEL-LERTS".

- Integrating Virtual and Augmented Reality With Wearable Technology Into Engineering Education. ERASMUS+ KA203 project coordinated by the University of Agder and involving another ERCIS member – University of Minho.

- Modeling of the System for Financial Data Analytics, Business Rules, and Decision Management in Enterprises *(2020–2022)*. Commissioned by JSC "Kvantas".

EVENTS

The 26th International Conference on Information and Software Technologies took place on October 14–16, 2020, in Kaunas, Lithuania. ICIST is organized annually by the Faculty of Informatics of Kaunas University of Technology and is chaired by the professor Audrius Lopata of the Department of Information Systems.

PUBLICATIONS

Danėnas P., Skersys T., Butleris R. (2020). Extending drag-and-drop actions-based model-to-model transformations with natural language processing. Applied Sciences: Special issue: Model-based systems engineering: rigorous foundations for digital transformations in science and engineering. Basel : MDPI AG, vol. 10, iss. 19, 1–33.

Germanaitė I. E., Zaleckis K., Butleris R., Jarmalavičienė K. (2020). Case study of spatial pattern description, identification and application methodology. Journal of Universal Computer Science. Graz : Graz University of Technology, vol. 26, iss. 6, 649–670.

Jurgelaitis M., Butkienė R., Vaičiukynas E., Drungilas V., Čeponienė L. (2019). Modelling principles for blockchain-based implementation of business or scientific processes. CEUR workshop proceedings: IVUS 2019 international conference on information technologies. Aachen : CEUR-WS, vol.

2470, 43–47.

Mažeika D., Butleris R. (2020). Integrating security requirements engineering into MBSE: profile and guidelines. Security and Communication Networks. London : Wiley–Hindawi, vol. 2020, 1–12.

Vileiniškis T., Butkienė R. (2020). Leveraging predicate-argument structures for knowledge extraction and searchable representation using RDF. International Journal of Knowledge Engineering. Singapore : IJKE, vol. 6, iss. 1, 30–34.

UNIVERSITY OF AGDER —
DEPARTMENT OF INFORMATION SYSTEMS

UiA University of Agder

ABOUT THE INSTITUTION

The Department of Information Systems *(IS)* is one of four departments within the Faculty of Social Sciences at the University of Agder *(UiA)*. With an academic staff of 26 permanent positions and three adjunct professors, this is one of the largest IS departments in Norway.

The department offers a three-year bachelor programme in IT and Information Systems, a one-year undergraduate study in IT and Information Systems, a two-year master's programme in Information Systems, and a three-year PhD programme in Information Systems. The master programme started in 1999 as the first IS master programme in Norway. The University of Agder also has a Department of ICT, responsible for education and research within computer science and ICT engineering. In 2019, the two departments started a new, joint master programme in cybersecurity.

The Department of Information Systems contributes actively to the IS community by publishing in leading IS journals, and hosting and participating in international conferences.

RESEARCH TOPICS

The research in the Department of IS is mainly organized in three interdisciplinary centres:

Centre for Digital Transformation *(CeDiT)* conducts advanced social science research on how digitalization transforms societies and institutions. CeDiT applies an institutional approach to address transformation processes following digital innovation and change, based on a multidisciplinary approach with an active engagement of multiple stakeholders. The centre includes researchers from the faculty of Social Sciences, including academics within areas such as organizational studies, political science, sociology, developmental studies, and information systems.

Centre for eHealth focuses on teaching, research, development, and testing of new technology for the health and social sector. Taking a user perspective, the aim of the centre is to make everyday life easier in today's health society by developing technological solutions such as smart house solutions and mobile home services.

Centre for Integrated Emergency Management *(CIEM)* focuses on how the potential of evolving information and communication technologies can be fully deployed for significantly improving emergency preparedness and management. In collaboration with emergency stakeholders, the centre conducts research on community resilience, situational awareness, human-centered sensing, social media, decision support, cybersecurity, and critical infrastructures.

CURRENT RESEARCH PROJECTS

GOV 3.0 Scientific foundations, training, and entrepreneurship activities in the domain of ICT enabled governance (2017–2020). The project is a Knowledge alliance funded by the EU under the Erasmus+ programme. GOV 3.0 includes eight partners from seven European countries. The University of the Aegean is leading the project. Key objectives include the development of a scientific roadmap, training curricula, and partnership activities in the domain of ICT-enabled governance.

InWork – need-based innovation for including persons with disabilities in working life through the use of technology (2017–2020). Project funded by the Research Council of Norway. The project consortium consists of the University of Agder, The Oslo School of Architecture and Design, two municipalities, two IT consulting companies, the Confederation of Norwegian Enterprises, and The Norwegian Association for Persons with Intellectual Disabilities. The project aims at developing innovative applications that can ease the transition from school to working life for persons with intellectual disabilities.

Sharing incident and threat information for common situational understanding (IN-SITU) (2019–2022). Project funded by the Research Council of Norway. The project is led by the Centre for Integrated Emergency Management at UiA, with the Norwegian University of Science and Technology, Linköping University, and the University of Sydney as academic partners. The consortium also includes two IT companies and the County Governor of Agder. INSITU will develop knowledge and solutions for effective information sharing among emergency responders in complex operations requiring collaboration between several agencies.

EVENTS

The Department of Information Systems and the Centre for Digital Transformation *(CeDiT)* organizes the 15th International Conference on Design Science Research in Information Systems and Technology *(DESRIST)*. The conference is run online on December 2–4, 2020. The conference theme is Designing for Digital Transformation – Co-Creating Services with Citizens and Industry.

PUBLICATIONS

Busch, P. A., & McCarthy, S. (2020). Antecedents and consequences of problematic smartphone use: A systematic literature review of an emerging research area. Computers in Human Behavior, 106414.

Flak, L. S., & Hofmann, S. The Impact of Smart City Initiatives on Human Rights. EGOV-CeDEM-ePart 2020, 165–173. Best paper award.

Garmann-Johnsen, N. F., Helmersen, M., & Eikebrokk, T. R. (2020). Employee-driven digitalization in healthcare: codesigning services that deliver. Health Policy and Technology, 9, 247–254.

Gjøsæter, T., Radianti, J., & Chen, W. (2020). Universal Design of ICT for Emergency Management from Stakeholders' Perspective – A Systematic Literature Review. Forthcoming in Information Systems Frontier.

Grønsund, T., & Aanestad, M. (2020). Augmenting the algorithm: Emerging human-in-the-loop work configurations. The Journal of Strategic Information Systems, 29(2), 101614.

Hatakka, M., Thapa, D., & Sæbø, Ø. (2020). Understanding the role of ICT and study circles in enabling economic opportunities: Lessons learned from an educational project in Kenya. Information Systems Journal, 30(4), 664–698.

Hausvik, G. I., Thapa, D., & Munkvold, B. E. Information quality life cycle in secondary use of EHR data. International Journal of Information Management, 56, 102227.

Hustad, E., Sørheller, V. U., Jørgensen, E. H., & Vassilakopoulou, P. Moving ERP systems to the cloud: the challenge of infrastructural embeddedness. International Journal of Information Systems and Project management, 8, 5–20.

Iden, J., Eikebrokk, T. R., & Marrone, M. (2020). Process reference frameworks as institutional arrangements for digital service innovation. International Journal of Information Management, 54, 102150.

Pappas, I. O., Papavlasopoulou, S., Mikalef, P., & Giannakos, M. N. (2020). Identifying the combinations of motivations and emotions for creating satisfied users in SNSs: An fsQCA approach. International Journal of Information Management, 53, 102128.

Sein, M. K. (2020). The Serendipitous Impact of COVID-19 Pandemic: A Rare Opportunity for Research and Practice. International Journal of Information Management, 102164.

Shahia, G. K., Dirksonb, A., & Majchrzak, T. A. (2020). An Exploratory Study of COVID-19 Misinformation on Twitter, Online Social Networks and Media.

Sæbø, Ø., Federici, T., & Braccini, A. M. (2020). Combining social media affordances for organising collective action. Information Systems Journal, 30, 699–732.

Vassilakopoulou, P., & Grisot, M. (2020). Effectual tactics in digital intrapreneurship: A process model. The Journal of Strategic Information Systems, 29(3), 101617.

Wollscheid, S., Tømte, C. E., & Sjaastad, J. (2020). How a SPOC might facilitate in-service teachers' interactions in professional development. Nordic Journal of Digital Literacy, 15(02), 125–137.
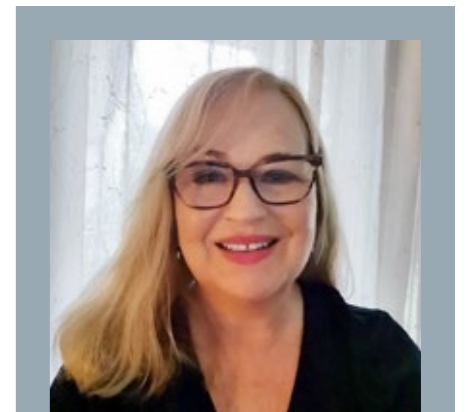
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DISSERTATIONS

Ajer, A. K. S. (2020). Institutional perspective on introducing enterprise architecture. The case of the Norwegian hospital sector.

Askedal, K. (2020). Enhancing the Benefits Management Model for Complex eHealth Efforts.

Berge, G. T. (2020). Methods for automated structuring of health information for clinical decision support.

Dini, A. A. (2020). Technology Affordance and Constraint Perspectives on Social Media Use in eParticipation : A Case Study in Indonesia.

Llave, M. R. (2020). Business Intelligence and Analytics in Small and Medium-Sized Enterprises.

UNIVERSITY OF GDANSK – DEPARTMENT OF BUSINESS INFORMATICS

ABOUT THE INSTITUTION

With 21,958 students, 11 faculties and 1,767 academic staff members, the University of Gdansk is the largest institution of higher education in the Pomeranian, Poland. It offers the opportunity to study in 89 different fields of studies with more than 270 specialisations.

The Department of Business Informatics (BI) of the University of Gdansk is involved in research and teaching in the field of Business Informatics on Bachelor, Master, Post-Diploma and Doctoral levels. For 20 years, the Department of Business Informatics has been running the Pomeranian Regional Academy Cisco, educating hundreds of computer network administrators with professional skills confirmed by international Cisco certificates.

As regard to teaching, some of Departments' academic publications are bestsellers in Poland, like the book "Business In-formatics. Theory and Applications.", PWN, 2019 (in Polish). This book was awarded in the Competition of Polish Society for Informatics, for the best informatic book of 2019. The Department is also active internationally, organising conferences including the 10th European Conference on Information Systems (ECIS 2002) entitled "Information Systems and the Future of the Digital Economy", The 7th International Conference on Perspectives in Business Informatics Research (BIR 2008), The 8th International Conference on European Distance and E-learning Network (EDEN 2009) and the series of events rebranded now as EuroSymposium on Digital Transformation. The Department has been an associate partner of the European Research Center for Information Systems (ERCIS) consortium since 2004.

In the years 2013–2017, the Department of Business Informatics of University of Gdansk participated in the World IT Project (S. Wrycza and D. Gajda), regarding ITOC – Occupational Culture of IT in various civilization areas, coordinated by University of North Carolina, USA. In 2019 the summarising publication book entitled "The World IT Project. Global Issues in Information Technology", World Scientific-Now Publishers, 2020. In the succeeding chapters, the outcomes of research from 37 countries are presented.

The Department is involved in the following international research initiatives:

Polish Chapter of Association for Information Systems – PLAIS was awarded five times by AIS as an outstanding chapter – in 2014, 2016, 2017, 2018 and 2019. The Polish Chapter of AIS – PLAIS was established in 2006 as the joint initiative of Prof. Claudia Loebbecke, University of Cologne, Germany, former President of AIS and Prof. Stanisław Wrycza, University of Gdansk, Poland. PLAIS co-organises international and domestic conferences on Business Informatics and now on Digital Transformation. There is a very dynamic and creative Gdansk AIS Student Chapter at the Department of Business Informatics, one of only few European AIS Student Chapters. Student teams of this branch are awarded annually in the global AIS Competition for students for their projects and works in 2015–2020, successively at: University of Alabama (2015), Indiana University (2016), Birgham Young University (2017), University of Texas in Dallas (2018), Illinois State University (2019 – I st place). Gdansk AIS Student Chapter gained the title of Best New Chapter Award for the years 2015–2016 and in 2017 the title of Outstanding Fundraising Award for AIS Student Chapter. Each yearly Student Competition is connected with the advanced Annual AIS Student Chapter Leadership Conference.

The Annual International Conference on Perspectives in Business Informatics Research – BIR.

NTIE (Naukowe Towarzystwo Informatyki Ekonomicznej) – Polish Society for Business Informatics Research.

RESEARCH TOPICS

The areas of research interest at Department of Business Informatics cover the following theme:

- Agility
- Big Data
- Business Informatics
- Business Processes Modelling
- Digital Transformation
- ERP, CRM, SCM, WFM, BI Systems
- Information Systems Development
- ICT Global Development
- IT Acceptance Research
- SCRUM
- Social Media Analytics
- UML and SysML

CURRENT RESEARCH PROJECTS

Currently, the Deparment is concerned with the development and launch of an English Master's Degree in Business Informatics at the Faculty of Management of University of Gdansk in the academic year 2021–2022 in intensive cooperation with SUA – SAP University Alliance including its alliances, and its rich educational e-learning resources.

PUBLICATIONS
Journal articles
Wrycza Stanisław, Maślankowski Jacek (2020): Social Media Users' Opinions on Remote Work during the COVID-19 Pandemic. Thematic and Sentiment Analysis, Information Systems Management, DOI: 10.1080/10580530.2020.1820631.

Maślankowski Jacek, Brzezicki Łukasz (2020): The Use of Social Media in Higher Education Institutions, in: Wiadomości Statystyczne, vol. 65, no. 2, 2020, pp. 30–42, DOI:10.5604/01.3001.0014.0455.

Monograph articles
Wrycza Stanislaw, Gajda Damian, Palvia Prashant (2020): Information Technology Issues in Poland (Chapter 27), in: Palvia P. et al. (eds) The World IT Project World Scientific-Now Publishers Series in Business.

Krauze-Maślankowska Patrycja (2020): The Importance of Open Government Data in Creating Enterprise Value, w: Antonowicz P., Malinowska E., Siciński J., Zaremba U., Stakeholders in the digital economy - models of modern market behavior, WSIiZ, 2020.

Conference materials
Kuciapski Michał (2020): Interaction enjoyment perspective in explaining technology acceptance: a study of employees' acceptance of m-learning, in: AMCIS 2020: Proceedings, 2020, Association for Information Systems, ISBN 978-1-7336325-4-6, pp. 1–11, Article number:14.

Lustofin Paweł, Soja Piotr, Kuciapski Michał (2020): Investigating the role of business-IT alignment in the software-as-a-service adoption decision: a preliminary model, in: AMCIS 2020: Proceedings, 2020, Association for Information Systems, ISBN 978-1-7336325-4-6, pp. 1–11, Article number:21.

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WROCŁAW UNIVERSITY OF SCIENCE AND TECHNOLOGY – DEPARTMENT OF APPLIED INFORMATICS

ABOUT THE INSTITUTION

Wroclaw University of Science and Technology (WUST) is one of the biggest and best technical universities in Poland with 24 692 students including 1165 foreign students being educated by 1993 academic teachers. Research and development works are carried out in the 12 scientific disciplines: • Architecture and Urban Design, • Automation, Electronic and Electrical Engineering, • Information and Communication Technology, • Biomedical Engineering, • Chemical Engineering, • Civil Engineering and Transport, • Mechanical Engineering, • Environmental Engineering, Mining and Energy, • Mathematics, • Chemical Sciences, • Physical Sciences, • Management and Quality Studies.

WUST rates high in the annual rankings of Polish universities. Once again, the position in the research and teaching field places WUST among the best six universities and three technical universities in Poland. Regarding the category of innovation, for many years Wroclaw University of Science and Technology is on the first place among Polish Universities. In the Academic Ranking of World Universities, the best university discipline Mathematics was ranked 201–300. Again this year, the European Commission granted WUST the logo "Human Resources Excellence in Research".

The Department of Applied Informatics (DAI), chaired by Professor Ngoc Thanh Nguyen, as part of the Faculty of Computer Science and Management currently consists of 54 computer science scientists and 9 Ph.D. students. We regularly co-organize three international scientific conferences: Asian Conference on Intelligent Information and Database Systems (ACIIDS), International Conference on Computational Collective Intelligence (ICCCI), and International Conference on Multimedia and Network Information Systems (MISSI). We also teach students of the Faculty of Computer Science and Management at two levels of education: three-and-half-year bachelor's degree and one-and-half-year master's degree. Our Department offers two specializations for full-time study programme in the field of Computer Science. We supervise PhD candidates conducting research in areas linked to our work.

RESEARCH TOPICS

Our main objective is to carry out basic and applied research in the field of Applied Informatics (AI). Due to ERCIS classification the following clusters have been identified: (1) Data Science and Artificial Intelligence, (2) Process Science, (3) Knowledge and Learning, (4) Supply Chain Management and finally (5) Digital Public Services. The major issues, perspectives and challenges are as follows:

- Computational Collective Intelligence, mainly established in cluster (1).
- Knowledge Management Systems, referred to any kind of ISs from cluster (3).
- Agents and Multi-Agent Systems related to cluster (1).
- Recommendation and Personalization Methods applied in all ERCIS clusters.
- Ensemble and Hybrid Models resulted in all ERCIS clusters.
- Semantic Information Retrieval come up in cluster (3).
- Multimedia Information Processing covering clusters (1), (3).
- System Performance Analysis merges clusters (2), (4), and (5).
- E-Learning Methodologies focused on applications from cluster (3) of online collaboration paradigms.

CURRENT RESEARCH PROJECTS

The Department of Applied Informatics was involved in the year 2020 in two international and two national projects.

1) Joint Polish-Vietnamese research agreement led by the Ho Chi Minh City International University and the Department of Applied Informatics at the Wroclaw University of Science and Technology. Duration: 2020–2022. Contact: Prof. Ngoc Thanh Nguyen

2) Polish-Norwegian research project on "Highly accurate and autonomous programmable platform for providing data services on air pollution to drivers and public entities" (HAPADS) funded by the National Center for Research and Development. Duration: 2020–2022. Contact: Dr. Krystian Wojtkiewicz

3) Mozart project on "Development of an innovative method of matchmaking business and scientific partners based on the deep learning model" funded by the City of Wrocław. Duration: 2020–2021. Contact: Prof. Dariusz Krol

4) Sonata project on "Methods of managing the evolution of ontologies and their alignments" funded by National Science Centre. Duration: 2018–2021. Contact: Dr. Marcin Pietranik

AWARDS

- Prof. Lech Madeyski and Prof. Ngoc Thanh Nguyen were elected to the IT Committee of the Polish Academy of Sciences for the 2020–2023 term.

- Rafał Palak, MSc. and Krystian Wojtkiewicz, PhD faced the problem of measuring centralization in graphs in an unconventional way. For their work, they were awarded at the 33th International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems, winning the Best Poster Paper Award.

- Prof. Ngoc Thanh Nguyen has been invited to act as "Associate Editor" of the journal "IEEE Transactions on Systems, Man and Cybernetics: Systems" and is responsible for the selection process of articles in the area of decision-making systems and multi-agent systems.

- Dr. Marek Krótkiewicz and Dr. Arkadiusz Liber were promoted to the positions of Professor of WUST by the Rector of the Wroclaw University of Science and Technology.

PUBLICATIONS

Kern R., Kozierkiewicz A., Pietranik M., The data richness estimation framework for federated data warehouse integration. Information Sciences, 513. 10.1016/j.ins.2019.10.046.

Kitchenham, B., Madeyski, L., Brereton, P., Meta-analysis for families of experiments in software engineering: a systematic review and reproducibility and validity assessment. Empir Software Eng 25, 353–401, 10.1007/s10664-019-09747-0.

Linh Anh Nguyen, Quang-Thuy Ha, Ngoc-Thanh Nguyen, Thi Hong Khanh Nguyen, Thanh-Luong Tran, Bisimulation and bisimilarity for fuzzy description logics under the Gödel semantics, Fuzzy Sets and Systems, Volume 388, Pages 146–178, 10.1016/j.fss.2019.08.004.

Hnatkowska B., Kozierkiewicz A. and Pietranik M., Semi-Automatic Definition of Attribute Semantics for the Purpose of Ontology Integration, in IEEE Access, vol. 8, pp. 107272–107284, 10.1109/ACCESS.2020.3000035.

Pucher S., Król D., A Quality Assessment Tool for Koblenz Datasets Using Metrics-Driven Approach. In: Fujita H., Fournier-Viger P., Ali M., Sasaki J. (eds) Trends in Artificial Intelligence Theory and Applications. Artificial Intelligence Practices. IEA/AIE 2020. 10.1007/978-3-030-55789-8_64

DISSERTATIONS/HABILITATIONS

On 29.01.2020 the Commission for Scientific Degrees in the discipline of Information and Communication Technology positively voted on the application for the award of the habilitation (Doctor of Science) for Dr. Marek Krótkiewicz.

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UNIVERSITY OF MINHO – DEPARTMENT OF INFORMATION SYSTEMS

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University of Minho
School of Engineering

ABOUT THE INSTITUTION

The Department of Information Systems is located in the Campus de Azurém of University of Minho, in the city of Guimarães, the cradle city of Portugal. The department was established in the late 1990s, after a graduation program in Information Systems was created. The Department of Information Systems currently offers an integrated master *(5 years degree program)* in Engineering and Management of Information Systems, a master on Information Systems and a doctoral program on Information Systems and Technologies. All programs involve the collaboration between two schools of the University of Minho: School of Engineering and the School of Economics and Management.

The research done by the department's researchers *(faculty and fellows)* is inte-grated in a R&D unit – ALGORTIMI. ALGO-RITMI encompasses research activities in a wide range of areas including information systems, computer science, computer networks and pervasive computing, industrial electronics, industrial engineering, optimi-sation, among others.

The Department of Information Systems promotes academic work that focuses on themes at the intersection of information technologies, information, and hu-man and social endeavours. Particular importance is given to design activities addressing phenomena that embrace that intersection aiming at solving enter-prise problems or at seizing opportunities where information technology plays a cen-tral role. Research activities combine engi-neering and technology research methods, together with the ones used in the organi-sational studies, management, economics and social sciences. Within the depart-ments' research projects, it is therefore possible to find interpretive, positivist and design science perspectives and a wide range of research methods and techniques appropriate to the study of the particular Information Systems phenomena being addressed.

RESEARCH TOPICS

The research performed by the Depart-ment's faculty is consolidated in the IST *(Information Systems and Technologies)* research group of ALGORITMI. This stream includes three main research groups:

• Intelligent Data Systems group that deals with technologies, tools, models and tech-niques related to the Data Mining and Data Warehousing Systems. The main objective is the research in knowledge areas such as Adaptive Business Intelligence, Intelligent Decision Support Systems, Data Mining, Intelligent Data Analysis, Data Warehouse And OLAP.

• Information Systems and Technology for the Transformation of Organizations and Society group. The researchers in this group adopt interdisciplinary approaches and research methods originated in the social sciences and engineering. These ap-proaches are used to study the IS/IT adop-tion and use in organisations and society, and to develop new tools to solve identi-fied problems or knowledge gaps.

• Software Engineering and Management group is devoted to the development of state-of-the-art software-based informa-tion systems. This group focuses on both the engineering and management dimen-sions of the following research topics: *(I)* analysis and design of information sys-tems; *(II)* business and location-enhanced database systems; *(III)* metadata and on-tologies for the semantic Web; and *(IV)* process and project management life-cy-cles.

CURRENT RESEARCH PROJECTS

In 2020 numbers, the IST research was funded by new projects totaling the amount of 3 262 233 €, including the pro-jects:

• VOIL – Virtual Open Lab *(www.voil.eu)*;
• AugmentedWearEdu – Integrating virtual and AUGMENTED reality with WEARable technology into engineering EDUcation;
• IViSSEM – 6.849,32 Journal Articles Eve-ryday: Visualize or Perish! *(http://www.ivis-sem.net/)*;
• IntVIS4Insp – Sistema de Visão por Computador Inteligente e Flexível para In-speção Automática *(http://www.ccg.pt/my-product/intvis4insp/)*;
• TSIM – Test System Intelligent Machines *(http://www.ccg.pt/my-product/tsim-test-system-intelligent-machines/)*.

PUBLICATIONS

Balsa, C., Lopes, I., Rufino, J., & Guarda, T. (2020, April). An Exploratory Study on the Simulation of Stochastic Epidemic Mod-els. In World Conference on Information Systems and Technologies *(pp. 726–736)*. Springer, Cham.

Fernandes, G., Araújo, M., Andrade, R., Pin-to, E. B., Tereso, A., & Machado, R. J. (2020). Critical factors for benefits realisation in collaborative university-industry R&D pro-grams. International Journal of Project Or-ganisation and Management, 12(1), 1–30.

Gregorka, L., Silva, S., & Silva, C. (2020). Employer branding practices amongst the most attractive employers of IT and engi-neering sector. International Journal of Hu-man Capital and Information Technology Professionals *(IJHCITP)*, 11(1), 1–16.

Guarda, T., Lopes, I., Victor, J. A., & Vázquez, E. G. (2020). User Behavior: The Case of In-stagram. In Marketing and Smart Technolo-gies *(pp. 38–48)*. Springer, Singapore.

Lopes, I. M., Guarda, T., & Oliveira, P. (2020). General Data Protection Regulation in Health Clinics. Journal of Medical Systems, 44(2), 53.

North, K., Hermann, A. Ramos, I. Aramburu, N., Gudoniene. D. (2020). The VOIL Digital Transformation Competence Framework. Evaluation and Design of Higher Educa-tion Curricula. In: Lopata, A., Butkienė, R., Gudonienė, D., Sukackė, V. *(Eds.)* Informa-tion and Software Technologies, 26th Inter-national Conference, ICIST 2020, Kaunas, Lithuania, October 15–17, 2020, Proceed-ings, Springer *(Communications in Com-puter and Information Science)* pp. 1–14, https://doi.org/10.1007/978-3-030-59506-7_23.

Tam, C., da Costa Moura, E. J., Oliveira, T., & Varajão, J. (2020). The factors influencing the success of on-going agile software de-velopment projects. International Journal of Project Management, 38(3), 165–176.

Ziyadin, S., Sousa, R. D., Malayev, K., Yer-gobek, D., & Nurlanova, A. (2020). The influ-ence of logistics innovations on manage-ment of freight-transportation processes. Polish Journal of Management Studies, 21.

DISSERTATIONS/HABILITATIONS

Débora Dutra, "Decision-making factors for providing mobile governance solutions". Supervisors: *Delfina Sá Soares*.

Maria Isabel Mendes Pereira, "Adoption of information systems security policies in lo-cal public administration in Portugal". Supervisor: *Filipe de Sá-Soares*.

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NATIONAL RESEARCH UNIVERSITY
HIGHER SCHOOL OF ECONOMICS – MOSCOW

NATIONAL RESEARCH UNIVERSITY

ABOUT THE INSTITUTION

Moscow Institute of Electronics and Mathematics *(MIEM HSE)* is an engineering subdivision of the National Research University Higher School of Economics. The Institute was established in 1962 as a higher education institution focused on training of high-qualified engineers for the electronic industry. In 2011 MIEM was incorporated into HSE University. MIEM has three schools *(School of Applied Mathematics, School of Computer Engineering, and School of Electronic Engineering)* providing education in 5 bachelor's *(including 1 enhanced 6-year programme)* and 7 master's programmes, and PhD school of technical sciences.

Currently, MIEM is introducing a new educational model and digital services aimed to combine research and project-based learning with the study of cutting-edge technologies and the needs of today's technocratic *(digital)* society.

RESEARCH TOPICS

The fields of cyber-physical systems and the Internet of Things belong to the top priorities of the research agenda of MIEM. Following topics are the particular focus:

Wireless technologies and communication systems. The Telecommunication Systems Laboratory and the Laboratory for the Internet of Things and Cyber-physical Systems, which have been launched recently, boast world-class competencies in 5G systems and focus their activities on the scientific problems related to next-generation, 6G systems. Several agreements with major Russian and international companies *(e.g., Cisco, Samsung, Huawei, Rostelecom)*

were signed to pave the way for developing a technological base for this field of engineering.

Quantum hardware components and photonics. The Laboratory for Quantum Technologies has been set up in order to boost research activities in the field of quantum detectors and photonics outlined as one of the future priorities. The efforts are focused on the scientific and technological issues related to the creation of quantum hardware components for national manufacturers of electronics.

Security of cyber-physical systems. At present, research activities are successfully underway in the traditional field of computer and information security, as well as the field of security of cyber-physical systems, e.g., advanced developments in post-quantum cryptography, special solutions for cloud storage protection, and safe computing.

Computer simulation of radio-electronic equipment. This is a well-established area of research at HSE MIEM. Today, several agreements are in place to support its development, in cooperation with such enterprises as Mikron, Milandr, and certain RAS Institutes. At present, the field has widened, thanks to its merging with digital synthesis, i.e., fabless-design of microelectronics.

In addition to the specified topics, covering comprehensively end-to-end technologies for cyber-physical systems, certain niche sub-fields are also developing under the Engineering Sciences. On one hand, they are fairly closely linked with this major field, and, on the other hand, they represent autonomous topics, which feature certain achievements and potential for their further development. These include aerospace technologies, development of technologies for remote Earth sounding and geospatial data processing, as well as supercomputer simulations of physical processes, new materials, and engineering systems.

CURRENT RESEARCH PROJECTS

Projects supported by the Russian Science Foundation:

- Methods for ensuring that heterogeneous traffic service quality requirements are met in fifth-and next-generation wireless networks
- Algebraic and analytical methods of the theory of nonlinear ordinary differential equations and their applications to the study of finite-dimensional dynamical systems
- Development of methods for studying the historical structure of a population from genome-wide sequences using deep machine learning

Projects supported by the Russian Foundation for Basic Research:

- Investigation of the effect of magnetic disorder on the transport and superconducting properties of thin epitaxial transition metal films
- Research of information technology principles and methods of moeling and ensuring the reliability of electronic craft equipment of cyber-physical systems
- Methods for analysing secure data transfer protocols
- Investigation of multi-element single-photon devices with an enlarged input aperture as IR photon receivers
- Monte Carlo simulation algorithms and modern problems of statistical mechanics
- Development of algorithms for generating sparse rigid structures
- Modeling of hydrodynamic problems using the lattice Boltzmann equation method
- Hyperchaos and mechanisms of its occurrence, multistability and synchronisation in models of interacting neurons
- Quantum tomography of a superconducting single-photon detector
- Experimental study of the band structure of single carbon nanotubes in nonequilibrium systems

EVENTS

In 2020 MIEM hosted and co-organised the following international events:

- **Moscow Workshop on Electronic and Networking Technologies**, March 11–13 2020, Moscow,
- **Engineering Technologies and Computer Science: Innovation & Application**, June, 24–27 2020, Moscow Saint-Peterburg,
- **Computer Simulations in Physics and beyond**, October 12–16 2020, Moscow,
- **History of Computing in the Russia, former Soviet Union and Council for Mutual Economic Assistance countries**, October 6–8 2020, Moscow

SELECTED PUBLICATIONS

Virtanen, P., Gommers, R., Oliphant, T.E., Haberland, M., Reddy, T., Cournapeau, D., Burovski, E., Peterson, P., Weckesser, W., Bright, J., van der Walt, S.J., Brett, M., Wilson, J., Millman, K.J., Mayorov, N., Nelson, A.R.J., Jones, E., Kern, R., Larson, E., Carey, C.J., Polat, İ., Feng, Y., Moore, E.W., VanderPlas, J., Laxalde, D., Perktold, J., Cimrman, R., Henriksen, I., Quintero, E.A., Harris, C.R., Archibald, A.M., Ribeiro, A.H., Pedregosa, F., van Mulbregt, P., Vijaykumar, A., Bardelli, A.P., Rothberg, A., Hilboll, A., Kloeckner, A., Scopatz, A., Lee, A., Rokem, A., Woods, C.N., Fulton, C., Masson, C., Häggström, C., Fitzgerald, C., Nicholson, D.A., Hagen, D.R., Pasechnik, D.V., Olivetti, E., Martin, E., Wieser, E., Silva, F., Lenders, F., Wilhelm, F., Young, G., Price, G.A., Ingold, G.-L., Allen, G.E., Lee, G.R., Audren, H., Probst, I., Dietrich, J.P., Silterra, J., Webber, J.T., Slavič, J., Nothman, J., Buchner, J., Kulick, J., Schönberger, J.L., de Miranda Cardoso, J.V., Reimer, J., Harrington, J., Rodríguez, J.L.C., Nunez-Iglesias, J., Kuczynski, J., Tritz, K., Thoma, M., Newville, M., Kümmerer, M., Bolingbroke, M., Tartre, M., Pak, M., Smith, N.J., Nowaczyk, N., Shebanov, N., Pavlyk, O., Brodtkorb, P.A., Lee, P., McGibbon, R.T., Feldbauer, R., Lewis, S., Tygier, S., Sievert, S., Vigna, S., Peterson, S., More, S., Pudlik, T., Oshima, T., Pingel, T.J., Robitaille, T.P., Spura, T., Jones, T.R., Cera, T., et al., SciPy 1.0: fundamental algorithms for scientific computing in Python, *(2020)* Nature Methods, 17 (3), pp. 261–272.

Kavuri, S., Moltchanov, D., Ometov, A., Andreev, S., Koucheryavy, Y., Performance Analysis of Onshore NB-IoT for Container

Tracking During Near-the-Shore Vessel Navigation, *(2020)* IEEE Internet of Things Journal, 7 (4), article № 8950122, pp. 2928-2943.

Chemodanov, D., Esposito, F., Calyam, P., Sukhov, A., REBATE: A REpulsive-BAsed Traffic Engineering protocol for dynamic scale-free networks, *(2020)* Future Generation Computer Systems, 108, pp. 624–635.

Fedorov, I.D., Orekhov, N.D., Stegailov, V.V., Nonadiabatic effects and excitonlike states during the insulator-to-metal transition in warm dense hydrogen, *(2020)* Physical Review B, 101 (10), article № 100101

Alfimov, G.L., Fedotov, A.P., Sinelshchikov, D.I., Determination of the blow up point for complex nonautonomous ODE with cubic nonlinearity, *(2020)* Physica D: Nonlinear Phenomena, 402, article № 132245

Lebedev, V., Olevskii, A., Homeomorphic changes of variable and Fourier multipliers, *(2020)* Journal of Mathematical Analysis and Applications, 481 (2), article № 123502

Pirmagomedov, R., Ometov, A., Moltchanov, D., Lu, X., Kovalchukov, R., Olshannikova, E., Andreev, S., Koucheryavy, Y., Dohler, Applying blockchain technology for user incentivization in mmWave-Based mesh networks, *(2020)* IEEE Access, 8, article № 9026789, pp. 50983–50994.

Korneeva, Y.P., Manova, N.N., Florya, I.N., Mikhailov, M.Y., Dobrovolskiy, O.V., Korneev, A.A., Vodolazov, D.Y., Different Single-Photon Response of Wide and Narrow Superconducting MoxSi1-x Strips, *(2020)* Physical Review Applied, 13 (2), article № 024011

DISSERTATIONS/HABILITATIONS

A. P. Presnova, Method of synthesis of suboptimal controls for uncertain nonlinear dynamic systems.

L. F. Ziganurova, Study of virtual time models in parallel discrete event simulation algorithms.

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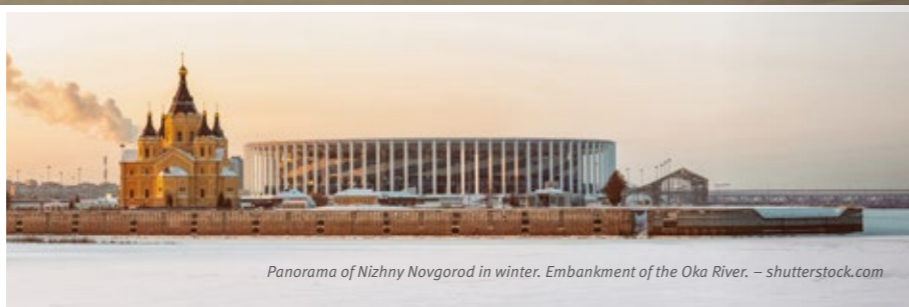School of Business Informatics

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NATIONAL RESEARCH UNIVERSITY HIGHER SCHOOL OF ECONOMICS – NIZHNY NOVGOROD

NATIONAL RESEARCH
UNIVERSITY

Panorama of Nizhny Novgorod in winter. Embankment of the Oka River. – shutterstock.com

ABOUT THE INSTITUTION

The Higher School of Economics in Nizhny Novgorod *(HSE NN)* was founded in 1996. The main educational activities of the Faculty of Informatics, Mathematics and Computer Science *(IMCS)* of the HSE NN are related to modern enterprise organisation, enterprise architecture, business mathematical and computer modeling. Three laboratories TAPRADESS *(Theory and Practice of Decision Support Systems)*, LATNA *(Laboratory of Algorithms and Technologies for Networks Analysis)* and TMD *(Topological Methods in Dynamics)* are the research units of the Faculty IMCS. In 2014 the Department of Fundamental Mathematics was opened.

RESEARCH TOPICS

The research of the Faculty IMCS focuses on the following directions:

- Cognitive science – the development of methods and techniques of receiving, processing, storage, use, and management of professional knowledge.

- Situational Modeling – multidimensional modeling of the behaviour and decision making processes of individual and collective agents in complex distributed systems.

- Original ways of formalising the knowledge, which are based on ontological engineering, and are supplemented by practical methods of integration and verification of complex corporate service oriented systems.

- New mathematical models and multiagent optimisation algorithms in distributed service-oriented systems applicable to different domains *(transport, planning, training activities)*; the result defines new approaches to the creation and use of intelligent decision support systems in the modern service-oriented economy.

- Axiomatic approach to non-compensatory aggregation *(decision making rules)* and axiomatic approach to general measure of power *(power indices)* in a voting body.

CURRENT RESEARCH PROJECTS

"Mathematical modeling of pathological behavior in multiplex networks arising as a result of dysfunction of single elements in application to biomedicine problems" *(TMD Laboratory)*.

"Development and analysis of new methods of sub-symbol distributed computing for the aggregation of linguistic estimates in multi-criteria choice problems" *(TAPRADESS Laboratory)*.

"MURA Defect Algorithm Development and Ability Construction" *(LATNA Laboratory)*.

AWARDS

Ekaterina Didenkulova *(Laboratory of Topological Methods in Dynamic)*: Prize for young scientists *(General Assembly of the European Geophysical Union, Vienna)*. The award was given for the development of the theory of nonlinear waves in geophysics, in particular, for the study of extreme waves *(rogue waves)*.

EVENTS

XII Summer School on Operations Research, Data, and Decision Making, ORA 2020, May 19–21, 2020

The 10th International Conference on Network Analysis, June, 15–16 2020

SELECTED PUBLICATIONS

Demidovskij A., Babkin E. "Designing a Neural Network Primitive for Conditional Structural Transformations" in "Artificial Intelligence", RCAI 2020. Switzerland: Springer, 2020.

Malyzhenkov P., Zyuzina A. "Enterprise Transformation as a Consequence of the Transition to a Digital Economy", in Zaramenskikh E., Fedorova A. Lecture Notes in Information Systems and Organisation, vol. 40 "Digital Transformation and New Challenges", Springer 2020.

Ulitin B., Babkin E, "Providing Models of DSL Evolution Using Model-to-Model Transformations and Invariants Mechanisms" in Zaramenskikh E., Fedorova A. Lecture Notes in Information Systems and Organisation, vol. 40 "Digital Transformation and New Challenges", Springer 2020.

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Kalyagin V. A., Koldanov A. P., Koldanov P. et al., Statistical Analysis of Graph Structures in Random Variable Networks, Springer, 2020.

Kuznetsov A., Savchenko A. A New Sport Teams Logo Dataset for Detection Tasks, in bk.: Proceedings of the International Conference on Computer Vision and Graphics (ICCVG 2020). Vol. 12334. Cham: Springer, 2020.

Didenkulova E., Pelinovsky E. Breather's characteristics within the framework of the modified Korteweg-de Vries equation, Symmetry. 2020. Vol. 12. No. 4.

DISSERTATIONS/HABILITATIONS

Ilya Bychkov (LATAS laboratory) has defended the dissertation «Models and algorithms for the problem of production cells formation solution».

UNIVERSITY OF MARIBOR –
FACULTY OF ORGANIZATIONAL SCIENCES

University of Maribor
Faculty of Organizational Sciences

ABOUT THE INSTITUTION

The Faculty of Organizational Sciences is a founding member of the University of Maribor. It has been involved in research and education about the organisational and informational sciences for more than 50 years. Today it provides Bologna programs of Information Systems, Human Resource and Educational Systems, and Business and Work Systems. During this period, the Faculty has taught a large number of graduates who have pursued employment in the manufacturing and service industries as well as governmental and educational institutions. Research area of the Faculty covers complex dynamic management systems, including aspects from human resources, information systems, business processes and general management. Research is organised in many laboratories and in the eCenter. All are involved in research projects, prototyping, consulting,

education and training at national and international level. Their activities have been organised and are run following the Living-Lab approach, with a strong involvement of business and government organisations, users, IT providers and universities. The resulting eLivingLab is the Slovenian founding member of the European Network of Living Labs *(ENoLL)*. The Faculty has a wide range of experiences from many EU, national and industry projects. The Faculty has established connections with numerous institutes, faculties and universities around the world and strives to enhance its internationally renowned reputation.

RESEARCH TOPICS

Research area of the Faculty of Organizational Sciences is focused to investigation of complex dynamic management systems, covering various aspects from human resources, information systems, business processes and general management. The significant focus is in digital transformation of organisations and society. In particular, we investigate the implementation of newest ICT and their impact on evolvement and design of *(digital)* business models achieving sustainable performance from an economic, social, and environmental perspective.

The majority of our research and development activities are carried out within the following research topics:

- Business models and business model innovation
- Digital business and digital transformation
- Data science
- eHealth
- Social media and social CRM
- Cloud computing and HPC
- Internet of things
- Decision support systems
- Management of information systems
- Business processes management
- Simulation systems and models
- Organisational learning
- Quality and asset management
- Enterprise sustainability and sustainable development

CURRENT RESEARCH PROJECTS
EU projects and Bilateral projects:

- Hospitals and faculties together for prosperous and scientific based healthcare *(ProCare)*, Erasmus +

- Development of a cyberphysical system for stress control for individuals and groups at-risk – Bilateral Project

National Research programme:
- Decision support systems in digital business, Research programme, P5-0018

- Impact of management, organisational learning and knowledge management in modern organisations, Research programme, P5-0364-0586

BLED eCONFERENCE

UNI BIZ TECH GOV

EVENTS
Conferences in 2020
33rd Bled eConference: Enbabling Technology for a Sustainable Society, June 29, 2020 *(online event)*
https://arhiv.fov.um.si/ebled2020/

39th International Conference on Organizational Science Development: Organisations at Innovation and Digital Transformation Roundabout, September 23–24, 2020 *(online event)* *https://konferenca.fov.um.si/en/homepage/*

Education in Information Society, October 9, 2020 *(online event)*
http://vivid.fov.uni-mb.si/

SELECTED PUBLICATIONS
Pucihar, Andreja. The digital transformation journey : content analysis of Electronic Markets articles and Bled eConference proceedings from 2012 to 2019. EM, ISSN 1019–6781.

FERENCEK, Aljaž, KOFJAČ, Davorin, ŠKRABA, Andrej, SAŠEK, Blaž, KLJAJIĆ BORŠTNAR, Mirjana. Deep learning predictive models for terminal call rate prediction during the warranty period. Business systems research, ISSN 1847–9375, 2020.

MAROLT, Marjeta, ZIMMERMANN, Hans Dieter, PUCIHAR, Andreja. Enhancing marketing performance through enterprise-initiated customer engagement. Sustainability, ISSN 2071-1050, 2020, vol. 12, iss. 9 (3931).

ŽIBERT, Maja, ROZMAN, Črtomir, ŠKRABA, Andrej, PREVOLŠEK, Boris. A system dynamics approach to decisionmaking tools in farm tourism development. Business systems research, ISSN 1847-9375, 2020, vol. 11.

KERN, Tomaž, KRHAČ ANDRAŠEC, Eva, URH, Benjamin, SENEGAČNIK, Marjan. Digital transformation reduces costs of the paints and coatings development process. Coatings, ISSN 2079-6412, 2020, vol. 10, iss. 7 (703).

DISSERTATIONS/HABILITATIONS
Finished dissertations:
Marija Milavec Kapun: Model of the patient's self-care process.

Marjan Brelih: A Model of Quantitative and Qualitative Decision Knowledge Modelling Integration.

Katarina Galof: Developing a model of health care management of the elderly in performance of daily activities in home environment.

Boštjan Kušar: The multi-level model of personnel reorganisation of the public health institutions with implementation of public-private partnership.

Dissertations in progress:
Matjaž Kragelj: Development of methodology for automatic classification of electronic publications in Universal Decimal Classification – UDK.

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Tatjana Kitić Jaklič: Key factors in the design of effective and efficient organisational model of emergency medical services in Slovenia.

Aleš Levstek: Development of a flexible model for strategic IT management in medium-sized enterprises.

Doroteja Vidmar: Effects of Information Technologies on Sustainability Performance of Organisations.

POHANG UNIVERSITY OF SCIENCE AND TECHNOLOGY *(POSTECH)*

ABOUT THE INSTITUTION

Industrial and Management Engineering is an academic discipline that involves the study of the design, development, and the management of integrated systems of people, material, equipment, and information in a variety of sectors. Therefore, Industrial and Management Engineering provides excellent opportunities to create new values and innovations in today's dynamic global environment.

We are pursuing an understanding of engineering technology and management by combining the contents of business administration with the existing industrial engineering field. While Industrial Engineering deals with the systematic planning, design, and optimisation of complex industrial systems, Industrial and Management Engineering extends its coverage to more comprehensive fields, including the service industry, information industry, and management science.

The mission of the Department of Industrial and Management Engineering is to cultivate creative leaders in the era of convergence and innovation based on the core competencies of Pohang University of Science and Technology (POSTECH). To achieve this mission, we focus on providing specialised education and research programs based on the unique strengths of the Department; conducting research that significantly contributes to the academia and to the industry; and fostering the development of young talents with systems thinking capability, passion, and humanity.

RESEARCH TOPICS

There are three research groups and two research centers at the department. The Business Analytics research group studies quantitative analysis techniques based on statistical techniques and optimisation techniques to support corporate decision making and strategy formulation. BA research group extracts information from data and uses it to derive knowledge and finally wisdom. BA research group's main research topics are *(1)* data mining and graphical modeling techniques, *(2)* process mining and social network analysis

techniques, and *(3)* large-scale sustainable system analysis.

The Smart Service System Research Group studies technologies that optimise the architecture, processes, and operations of the service system to meet the needs and context of stakeholders. Examples of smart service systems include smart home and smart health care, Smart transportation system, and smart factory. Smart Service System research group's main research topics are *(1)* Human-centered system UI / UX design, *(2)* Smart healthcare service system, and *(3)* Smart transportation / energy / information network system.

The SRM Research Group conducts research on systemic risk management that takes into account the interdependencies of risk factors, from a more diverse perspective on risks at the national, social, and enterprise levels that may arise in modern society. SRM Research Group's major research topics include *(1)* management of future forecast responses and disaster responses to various crisis situations at the national level, *(2)* enterprise-wide risk management measures, and *(3)* desirable financial systems for the aging society.

Future City Open Innovation Center *(FOIC)* and Open Innovation Big Data Center *(OIBC)*

FOIC focuses on the development of innovative future and smart city technologies, including retrofitting existing infrastructures with the latest technological advances for the efficient establishment and proliferation of a smart city. OIBC focuses on developing platform technologies from big data gathered from the implementation of FOIC-led initiatives. Both centers are based on a foundation of open cooperation: the Open Innovation Centers aim to create socioeconomic value by attracting companies and startups to foster their growth through collaboration with the University's advanced research infrastructures.

CURRENT RESEARCH PROJECTS

- Blockchain platform with business models towards cross-domain interoperability *(Ministry of Science and ICT, Jun. 2018 – Dec. 2021)*: The objective of the project is developing a blockchain platform that supports cross-domain interoperability. The platform will be applied in three industries such as healthcare, insurance, and automotive.

- Industrial AI Professional Master and Ph.D Program *(Ministry of Trade, Industry and Energy, March. 2019 – Feb. 2024)*.

- Context-aware Process and Organization Analytics: Extending Business Analytics towards more effective and flexible organization *(National Research Foundation of Korea, Mar. 2017 – Feb. 2020)*.

- Development of AI-based Recommendation System for Curated Retailing Services *(Samsung C&T, Nov. 2019 – Dec. 2020)*.

- The revolutionary athlete data integration technology for national football performance innovation *(Korea Football Association, Dec. 2018 – Dec. 2022)*.

- Manufacturing Process diagnosis and improvement based on process mining *(POSCO Co., Mar. 2019 – Oct. 2020)*.

AWARDS

Ms. Jungeun Lim, Dr. Minsu Cho, Dr. Minseok Song won the best paper award at the Second International Workshop on Process-Oriented Data Science for Healthcare *(PODS4H)*, 2020.

Ms. Jungeun Lim, Dr. Minsu Cho, Dr. Minseok Song won the best paper award at Korean Society for Quality in Health Care, 2020.

Mr. Shinnyum Park and Dr. Minseok Song won the best paper award at Korean Society for Computational Design and Engineering, 2020.

SELECTED PUBLICATIONS

Hong, I., Frank, M. R., Rahwan, I., Jung, W.-S., and Youn, H. "The universal pathway to innovative urban economies.", Science Advances 6 (34), 2020.

Beverungen, D., Buijs, J.C.A.M., Becker, J., Di Ciccio, C., van der Aalst, W.M.P., Bartelheimer, C., vom Brocke, J., Comuzzi, M., Kraume, K., Leopold, H., Matzner, M., Mendling, J., Ogonek, N., Post, T., Resinas, M., Revoredo, J., del-Rio-Ortega, A., La Rosa, M., Santoro, F., Solti, A., Song, M., Stein, A., Stierle, M., Wolf, V., "Seven Paradoxes of Business Process Management in a Hyper-Connected World.", Business & Information Systems Engineering, DOI:doi.org/10.1007/s12599-020-00646-z, April 2020.

Park. G. Song, M., "Predicting Performances in Business processes using Deep Neural Networks." Decision Support Systems, Volume 129, DOI:10.1016/j.dss.2019.113191, February 2020.

Cho, M., Kim, K., Lim, J., Baek, H., Kim, Hwang, H., Song, M., Yoo, S., "Developing data-driven clinical pathways using electronic health records: The cases of total laparoscopic hysterectomy and rotator cuff tears." International Journal of Medical Informatics, 133:104015, DOI:10.1016/j.ijmedinf.2019.104015, January 2020.

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Sunrise at the giant hand at Homigot Beach – shutterstock.com

DISSERTATIONS/HABILITATIONS

Seunghoon Lee, Comprehensive Simulation and Redesign System for Business Process and Organizational Structure.

Changhyub Oh, Building Evacuation Planning Algorithms considering Network Congestion and human Behavior.

UNIVERSIDAD DE SEVILLA – ISA RESEARCH GROUP

ABOUT THE INSTITUTION

The Universidad de Sevilla *(US)* was established in 1505 and, with more than 70,000 students and 6,800 staff, is the third largest university in Spain. US embraces academia, industry, engineering, and science and, with a relevant educational and technological infrastructure, is an intellectual reference in the South of Europe. More than 10,000 students are following postgraduate courses, enrolled into 86 master's programmes and 152 doctoral programs. US holds academic partnerships with 850 institutions throughout the world.

US is also devoted to research and innovation. Therefore, in addition to its 4,300 academic staff, there are 1,600 researchers and over 470 scientific groups associated to the university who research in economic, social and human sciences, law, technological activities, life sciences, physics, chemistry, mathematics, and the environment. Research is carried out within academic departments in 8 research centers and 9 university research institutes.

The Applied Software Engineering *(ISA)* Group at US is led by Antonio Ruiz-Cortés and composed by 21 members. Its research has always aimed at finding ways to automate activities that are usually performed by hand. Currently, it spans six areas of interest including Business Process Management *(BPM)*, Service Governance, Metaheuristics, Experiments Support, Search-based Software Engineering, and Software Testing. The research on BPM aspects is led by Manuel Resinas and it occupies 9 group members including 1 Professor, 2 Associate Professors, 5 Assistant Professors, and 1 Post-doc Researcher.

RESEARCH TOPICS

In the field of performance management, the group has a strong experience in the monitoring of business processes based on process performance indicators *(PPIs)*. The current interests involve improving the modelling, monitoring, and prediction of PPIs. Regarding modelling, the research is focused on making the definition of PPIs and the whole process to develop a PPI dashboard easier for non-expert users. Concerning monitoring, new techniques and methodologies for the definition and monitoring of decisions and unstructured processes are being devised. Finally, in the area of predictive monitoring of PPIs, the research targets problems that appear when a predictive model is deployed in a production system, such as the reliability of the models or the evolution of the predictive model.

The research on human resources covers several different angles. One stream of research focuses on the application of methodologies to improve personal productivity. This includes the analysis of the effect of techniques like mindfulness to perform cognitive-intensive tasks like conceptual modelling and the development of novel methodologies for time management and work organisation. Another research stream is focused on the configuration and use of workstream collaboration tools and other related technologies to improve the collaboration and productivity of people in a context of digital transformation. Finally, the third research stream tackles the organisational perspective of business processes pursuing the optimisation of the management of human resources along with process modelling, execution, and analysis.

Finally, we have recently started a research line focused on how to develop chatbots that can automate certain aspects of the process management or support the interaction of customers and participants with a given business process.

CURRENT RESEARCH PROJECTS

• OPHELIA. Optimisation of Human-based Knowledge-intensive Services with Service-based Applications. RTI2018-101204-B-C22. Funded by Spanish Government. 01/01/19 – 31/12/21. 147.136€. Part of project HAMLET. The objective of OPHELIA is to improve the efficiency of knowledge-intensive human-based services supported by service-based applications *(SBA)*.

• HORATIO. Improvements in the reliability, customisation, and operating costs of software services regulated by user agreements. RTI2018-101204-B-C21. Funded by Spanish Government. 01/01/19 – 31/12/21. 148.830€. Part of project HAMLET. The objective of HORATIO is to develop models, techniques and tools that improve the reliability, customisation and operating cost of user agreement-regulated SBAs.

• CONFLEX. Integration of context-aware resource management into flexible process-oriented organisations. RTI2018-100763-J-I00. Funded by Spanish Government. 15/11/19 – 14/11/22. 151.008€. The aim of CONFLEX is to integrate contextual information in the tasks related to resource management in business processes and to align the solutions developed with actual needs of today's organisations.

• EKIPMENT+. Performance improvement in Knowledge-Intensive Processes: An empirical approach based on people, teams, software, and data. P18-FR-2895. Funded by Andalusian Government *(PAIDI 2020)*. 01/01/20 – 31/12/21. 120.625€. The aim of EKIPMENT+ is to increase the efficiency of organisations by developing models, techniques, and tools that helps them improve the performance of their knowledge-intensive processes and the mechanisms to monitor and empirically validate these improvements.

AWARDS

Bedilia Estrada Torres, postdoctoral researcher of the ISA group, and her coauthors were nominated to the Best Paper Award at RCIS conference 2020 with their paper: "Discovering Business Process Simulation Models in the Presence of Multitasking".

Alberto Martín López, PhD student of the ISA group, won the ACM Student Research Competition at ICSE conference 2020.

EVENTS

Cristina Cabanillas *(Universidad de Sevilla, Spain)*, together with Andrea Delgado *(Universidad de la República, Uruguay)*, Aurelie Montarnal *(IMT Mines Albi, France)* and Hernán Astudillo *(Universidad Técnica Federico Santa María, Chile)* are organising the minitrack on "Digital Government and Business Process Management" within the HICSS 2021 conference. It was intended to be held in Hawaii, in January 2021, but due to the COVID-19 pandemic, it will take place virtually.

SELECTED PUBLICATIONS

D. Beverungen, J.C.A.M. Buijs, J. Becker, C. Di Ciccio, W.M.P. van der Aalst, C. Bartelheimer, J. vom Brocke, M. Comuzzi, K. Kraume, H. Leopold, M. Matzner, J. Mendling, N. Ogonek, T. Post, M. Resinas, K. Revoredo, A. del-Río-Ortega, M. La Rosa, F.M. Santoro, A. Solti, M. Song, A. Stein, M. Stierle, V. Wolf: Seven Paradoxes of Business Process Management in a Hyper-Connected World. Bus Inf Syst Eng (2020). *https://doi.org/10.1007/s12599-020-00646-z*

A. del-Río-Ortega, J. Peña, M. Resinas, A. Ruiz-Cortés: Productivity Challenges in Digital Transformation and its Implications for Workstream Collaboration Tools. HICSS 2021, in Press.

J. Troya, J.A. Parejo, S. Segura, A. Gámez-Díaz, A. E. Márquez-Chamorro, A. del-Río-Ortega. Flipping Laboratory Sessions in a Computer Science Course: An Experience Report. IEEE Transactions on Education *(2020)*. *https://doi.org/10.1109/TE.2020.3016593*

C. Cabanillas, M. Resinas, A. Ruiz-Cortés: A Mashup-based Framework for Business Process Compliance Checking. IEEE Transactions on Services Computing *(2020)*. *http://dx.doi.org/10.1109/TSC.2020.3001292*

C. Cabanillas, L. Ackermann, S. Schönig, C. Sturm, J. Mendling: The RALph miner for automated discovery and verification of resource-aware process models. Softw. Syst. Model. 19(6): 1415-1441 *(2020)*.

B. Bernárdez, A. Durán, J. A. Parejo, N. Juristo, A. Ruiz-Cortés: Effects of Mindfulness on Conceptual Modeling Performance: a Series of Experiments. IEEE Transactions on Software Engineering *(2020)*. *http://dx.doi.org/10.1109/TSE.2020.2991699*

M. Cruz, B. Bernárdez, A. Durán, J.A. Galindo, A. Ruiz-Cortés: Replication of Studies in Empirical Software Engineering: A Systematic Mapping Study, From 2013 to 2018. IEEE Access 8: 26773-26791 *(2020)*.

DISSERTATIONS/HABILITATIONS

Cristina Cabanillas, currently postdoctoral research fellow at Universidad de Sevilla, received her habilitation for Full Professor from WU Vienna in Information Systems in June 2020.

Margarita Cruz Riscos, received her PhD, "A proposal to report replications of experiments in Software Engineering". Supervised by Amador Durán Toro and Beatriz Bernárdez. July 2020. Universidad de Sevilla.

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IE BUSINESS SCHOOL – INFORMATION SYSTEMS AND TECHNOLOGY DEPARTMENT
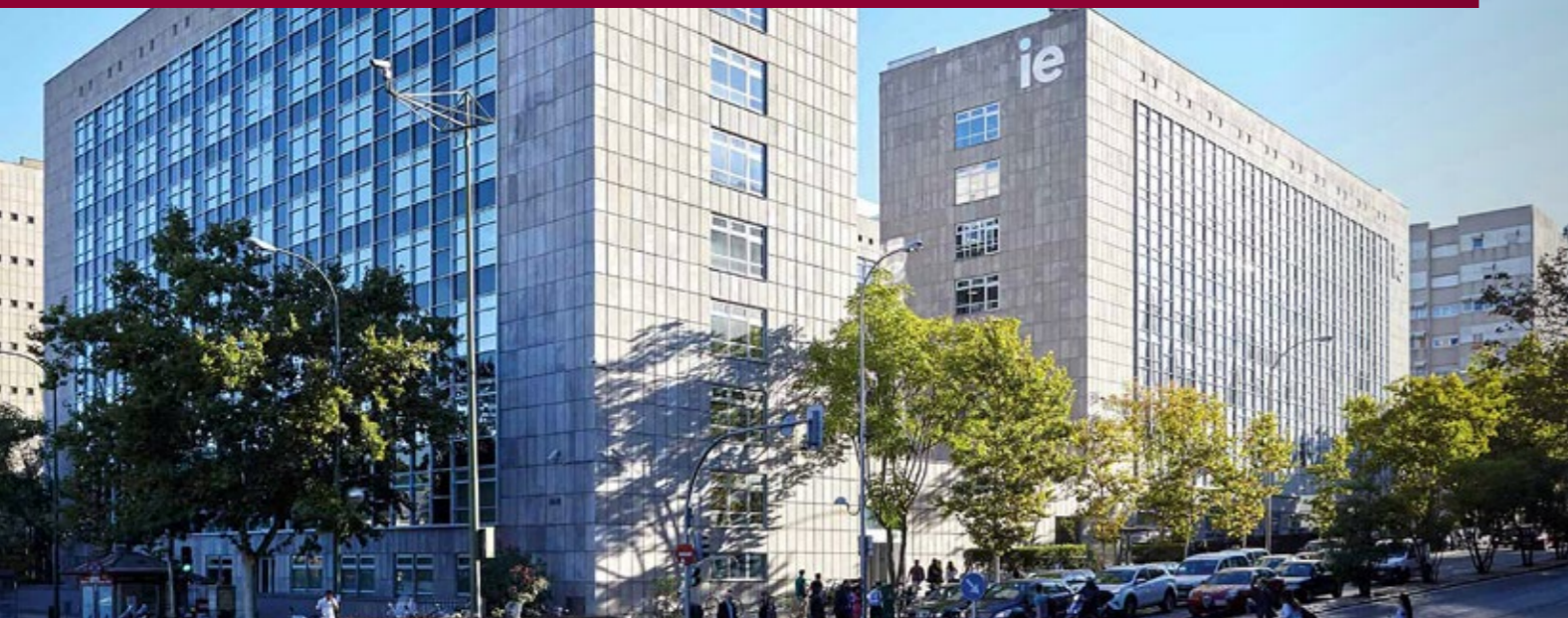
ABOUT THE INSTITUTION

IE Business School is one of Europe's top providers of management education and a laboratory for new entrepreneurial ventures. IE's Information Systems and Technology Department *(ISTD)* is responsible for all technology-related courses and pursues research on the transformative use and impact of digital technologies in today's world.

Faculty at ISTD teaches courses on Digital Innovation and Technology Management in the MBA and the Tech MBA programs, manages the concentration on Digital Business in the Master in Management, and supervises the major on Information Systems in the PhD in Management and the Doctorate in Business Administration. Members of the Department have published in leading IS journals, including MIS Quarterly, Information Systems Research, European Journal of Information Systems, International Journal of Information Management, and Decision Support Systems, among others.

RESEARCH TOPICS

Research work within ISTD includes several research lines. One research line focuses on Digital Innovation, studying the interplay between organizational capabilities and digital innovation, value co-creation in digital platforms, and digital competences. A second line of research is Information Security and Privacy, investigating topics such as cybersecurity behaviour of Spanish households, hacker behaviour analysis, computational reputation applied to cybersecurity, and the interplay among trust management, security risks, and compliance. Another line of research focuses on Business Intelligence, Analytics, and Machine Learning; work in this line has concentrated on applying machine learning in key areas such as sustainability, Green IS, education, and e-health. A final research line is Economy of Information Systems, focusing on IT outsourcing and Cloud Computing, organisational networks and the Sharing Economy, and the valuation of digital innovations.

CURRENT RESEARCH PROJECTS

DIGYMATEX is an EU-funded project that aims to provide evidence-based tools to assist in understanding and determining children's digital maturity. The project wishes to provide clear evidence on how digital maturity impacts information and communication technologies *(ICT)* behaviour of children at the ages of 9–16, by maximising risks *(risk factors)*, minimising risks *(resilience factors)*, and maximising benefits *(enhancing factors)*. The main two outputs of the project are two tools: The Digital Youth Maturity Index *(DYMI)* and the DIGyou3 program. The DYMI is an innovative tool that will establish and implement a comprehensive understanding and taxonomy of children's digital maturity. The DYMI will precisely measure and predict harmful and beneficial ICT-related behaviour and consequences for specific user groups. The DIGYou3-program is a technology-related solution and recommendation program, which supports the application of the DYMI on three levels – individual, social, and national. The program will help to improve relevant dimensions of children's digital maturity, the development of ICT-related competencies and support the more beneficial influence on components of child development.

For more information, please visit
https://digymatex.eu

AWARDS

Prof. Luz Rello was awarded the R+D+I Entrepreneur Award of Very Young Scientists Awards by Muy Interesante Magazine, 2020.

In 2019, Change Dyslexia, a social enterprise founded by Prof. Luz Rello, was awarded the UNESCO's King Hamad Bin Isa Al-Khalifa Prize for the Use of ICT in Education *(first Spanish institution to receive this award)*, and the Finnovating InsurTech Awards 2019 for its social impact.

EVENTS

IE hosted SCECR 2020, the Sixteenth Symposium on Statistical Challenges in Electronic Commerce Research. The theme for SCECR2020 was "Technology + Human". The event was held totally online and included over 100 paper and 50 posters.

For more information, please visit
http://www.scecr.org/

SELECTED PUBLICATIONS

de Souza, L. A., Ramos, I. M. P., & Esteves, J. (2020). A orientação empreendedora dos gerentes de projetos influencia na intenção de adotar plataformas de crowdsourcing innovation. Revista Inovar Contábil, 1(1).

Giarratana, M. S., Pasquini, M., & Valogianni, K. (2020). Social Identity Theory and Abduction in Management Research. In Academy of Management Proceedings (Vol. 2020, No. 1, p. 16850). Briarcliff Manor, NY 10510: Academy of Management.

Goh, J. M., & Arenas, A. E. (2020). IT value creation in public sector: how IT-enabled capabilities mitigate tradeoffs in public organisations. European Journal of Information Systems, 29(1), 25–43.

Rauschenberger, M., Baeza-Yates, R., & Rello, L. (2020, April). Screening risk of dyslexia through a web-game using language-independent content and machine learning. In Proceedings of the 17th International Web for All Conference (pp. 1–12).

Ravindran, K., Muñoz, J. M. G., & van den Bergh, A. (2020). When the Cloud runs out of its silver lining. In The Routledge Companion to Managing Digital Outsourcing (pp. 288–298). Routledge.

Valogianni, K., Ketter, W., Collins, J., & Zhdanov, D. (2020). Sustainable Electric Vehicle Charging using Adaptive Pricing. Production and Operations Management, 29(6), 1550–1572.

Arenas, A. E., Goh, J. M., & Matthews, B. (2019). Identifying the business model dimensions of data sharing: A value-based approach. Journal of the Association for Information Science and Technology, 70(10), 1047–1059.

Arenas, A. E., Goh, J. M., & Urueña, A. (2019). How does IT affect design centricity approaches: Evidence from Spain's smart tourism ecosystem. International Journal of Information Management, 45, 149–162.

Rathee, C., Giarratana, M. S., & Valogianni, K. (2019). Crossing trajectories of firm innovation and scientific research: Going beyond basic versus applied. In Academy of Management Proceedings (Vol. 2019, No. 1, p. 16427). Briarcliff Manor, NY 10510: Academy of Management.

Rauschenberger, M., Baeza–Yates, R., & Rello, L. (2019). Technologies for Dyslexia. In Web Accessibility (pp. 603–627). Springer, London.

Valogianni, K., Ketter, W., Collins, J., & Adomavicius, G. (2019). Heterogeneous Electric Vehicle Charging Coordination: A Variable Charging Speed Approach. In Proceedings of the 52nd Hawaii International Conference on System Sciences.

Vega, F. C., Soriano-Ferrer, M., & Rello, L. (2019). Dislexia. Ni despiste, ni pereza: Todas las claves para entender el trastorno. La Esfera de los Libros.

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UNIVERSITY OF ST. GALLEN – INSTITUTE OF INFORMATION MANAGEMENT

Institut für Wirtschaftsinformatik

Universität St.Gallen

ABOUT THE INSTITUTION

For 30 years, the Institute of Information Management at the University of St. Gallen *(IWI-HSG)* has been dedicated to applied and design-oriented research at the interface between business and IT. Founded in 1989, the institute pursues a mixed funding approach from both public and private sources. Privately funded research at IWI-HSG is usually organized in the form of research consortia *("competence centers")*. These centers, each of which includes between four and eighteen corporate partners, fall under the responsibilities of different chaired professors. In addition to its research activities, IWI-HSG lecturers engage in executive education, offering degree and non-degree programs in areas such as Business Engineering or IT Business Management. Being one of the largest research units at a top business school, the IWI-HSG's contributions focus on business innovation, including methods, reference models, and innovative prototypes.

Prof. Andrea Back, Prof. Walter Brenner, Prof. Reinhard Jung, Prof. Jan Marco Leimeister, and Prof. Robert Winter are heading five research groups comprising eleven assistant professors or postdocs, nineteen research assistants, ten research affiliates, sixteen student assistants and thirteen support staff members.

SELECTED RESEARCH TOPICS

The Chair of Prof. Back focuses on innovative applications of new technologies covering topics such as agile innovation, cybersecurity, digital maturity and transformation, digital strategy and transformation, new work and learning, smart IoT and mobile business as well as sports digitalisation.

The Chair of Prof. Brenner focuses on information management, industrial services and enterprise systems, and digital consumer business *(e.g., consumer and big data analytics)*. Another focal field of interest is design thinking.

The Chair of Prof. Jung investigates IT-enabled service, and business innovation with a focus on health IS and wearable technology. It also covers business engineering and the use of data-driven services by individuals.

The Chair of Prof. Leimeister works on designing, implementing and managing IT-enabled means of organisation and innovation. Research activities focus particularly on the future of work, service engineering and management, digital business, data-driven organisations and digital learning.

The Chair of Prof. Winter focuses on understanding and design of enterprise-wide integration, coordination and transformation problems. Major projects in this field deploy simulation, experiments, and action design research.

SELECTED RESEARCH PROJECTS

A list of competence centers and current projects can be found at:
http://www.iwi.unisg.ch/?id=1202

Agile Transformation: The Competence Center Agile Transformation offers a unique mix of exchange, collaboration, academic expertise, and advisory services to support the agile transformation of companies. Further information:
https://agile.iwi.unisg.ch/

Ambidextrous Digital Platforms: With the aim of developing both descriptive and prescriptive theories and drawing on both organisational ambidexterity and complex adaptive systems as theoretical lenses, this project is expected to provide a thorough description of the dynamics, determinants, and design configurations through which platform owners simultaneously manage and legitimate a balanced co-existence of top-down control and bottom-up emergence. Further information: https://www.alexandria.unisg.ch/id/project/247758

Cognitive Automation: The Competence Center Cognitive Automation combines academic insights from the forefront of cognitive automation research and advisory expertise in a platform of exchange and collaboration for practitioners. Members are enabled to seize the vast potential of cognitive automation to improve operational efficiency and effectiveness and to leverage cognitive technologies as a strategic differentiator for their organisation. Further information:
https://cognitive.iwi.unisg.ch/

Crowdsourcing: The research goals of the Competence Center Crowdsourcing include the development of models and instruments for systematic design, introduction as well as usage of crowdsourcing approaches for digital work and IT-based innovations. Further information:
http://crowdsourcing.iwi.unisg.ch

Design Thinking: The Design Thinking Group is focused on embedding human-centric innovation tools into corporate structures. The research team strives to improve the capability of corporate IT and to reduce costs and risks in innovation projects. Further information:
http://dthsg.com/

Digital Service Innovation: Research conducted in the context of the CC Digital Service Innovation revolves around service and business innovation. It also seeks to understand the acceptance and usage of digital services by individuals and enhance their user experience through digital nudging. Further information:
https://dsi.iwi.unisg.ch/

Digital Strategy and Transformation: The CC Digital Strategy and Transformation is developing management instruments and tools for strategy work in the digital age. The Digital Transformation Maturity Model for the Fuzzy Front End stage of digital transformation has been adopted – and adapted – widely in practice. Recently, concepts and methods for managing established firms' collaboration with the startup ecosystem have been published and are being used. A next focus area for relevant research is intrapreneurship methods. Further information: https://aback.iwi.unisg.ch/kompetenz/digital-strategy-transformation/

PUBLICATIONS

The following list is a limited extract of the IWI-HSG publication list in 2019 and 2020. A complete list of publications with full texts of many papers is available at:
http://www.iwi.unisg.ch/publikationen

Dellermann, Dominik.; Lipusch, Nikolaus.; Ebel, Philipp.; Leimeister, Jan Marco (2019). Design principles for a hybrid intelligence decision support system for business model validation. Electronic Markets, 29, pp. 423–441.

Schilling, R.; Aier, S. & Winter, R. (2019). Extending the Portfolio of Control Mechanisms for Managing IS Complexity: Designing an Enterprise Architecture Label, Proceedings of the 40th International Conference on Information Systems *(ICIS 2019).*

Troll, Julia, Blohm, Ivo & Leimeister Jan Marco (2019). Why Incorporating a Platform-Intermediary can Increase Crowdsourcees' Engagement, Business & Information Systems Engineering, 61, pp. 433–450.

EVENTS

The 50th edition of the St. Galler Anwenderforum took place in October 2019, this time focusing on enterprise architecture in agile transformation.

In December 2019, the International Conference On Information Systems *(ICIS 2019)*
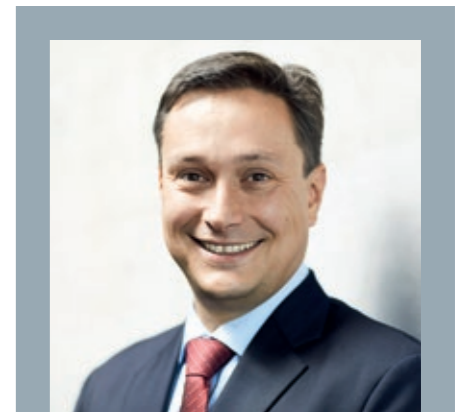
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took place in Munich. IWI HSG has been heavily involved in this very successful event – with more than 2000 participants and all-time-highs in submissions, industry partners, conference innovations and beyond. Prof. Dr. Leimeister has served as Program Chair and Prof. Dr. Walter Brenner as CIO Panel Co-Chair. Initially founded in 1979, ICIS is the most important Information Systems conference worldwide.

ERCIS COOPERATION

Our long-term cooperation with our neighboring ERCIS partner in Liechtenstein was successfully continued. Jan vom Brocke is lecturing in two courses of the HSG Doctoral Programme in Business Innovation together with IWI-HSG professors. Together with Robert Winter, Jan vom Brocke also continued to offer the "Design Science" Doctoral Seminar in the VHB ProDok international Doctoral Programme.

UNIVERSITY OF TWENTE – CENTER FOR TELEMATICS AND IT – DIGITAL SOCIETY INSTITUTE

ABOUT THE INSTITUTION

The University of Twente is where talent can best realise its full potential. Students and staff are the key and thus, over 3,000 scientists and professionals carry out ground-breaking research, bring about socially relevant innovation, and provide inspiring teaching for more than 11,740 students. To us, entrepreneurship comes as second nature. The campus is home to around 100 businesses, including student-run businesses. The University of Twente has also generated more than 1000 successful spin-off companies, including well known E-businesses such as Booking.com, SciSports and Takeaway.com. The university's business park, Kennispark Twente, encourages and assists entrepreneurs to start new companies. But there's so much more happening on our wonderful, green campus. Our sports and cultural facilities are unique and we host events such as the world's largest student think tank, Create Tomorrow. Another legend of the Twente campus is the Netherlands' largest student sports event, the Batavieren Race. The campus is a hive of activity - a truly inspirational place to be! – University of Twente, the entrepreneurial university. The UT has ICT and Information Systems Research among its focus areas.

The Digital Society Institute is one of the three multidisciplinary research institutes of the University of Twente. At the Digital Society Institute, we strive to engineer digitalisation toward systems that allow for well-informed, even accountable, decision-making. We achieve this by doing scientific research that contributes to solving three challenges.

RESEARCH TOPICS

An essential aspect of our mission is to conduct research that has an impact on society. Digitalisation stretches out from creating, innovating, and developing digital technologies to adopting and crafting them to our everyday needs, desires, and habits. In this way, digitalisation shapes technologies by adding value and imposing what we can and are willing to adopt and use for our desires and the challenges we face. The Digital Society institute focuses on three themes:

• Data Science and Artificial Intelligence

Various groups at the University of Twente conduct research on data science and artificial Intelligence, including work on fundamental understanding of machine learning, sensors, efficient realisation of artificial intelligence in hardware, to development and application of artificial intelligence in fields such as health, safety, and security, the geo-spatial domain, and manufacturing, to name a few. Central unifying themes are embedded and augmented intelligence.

• Creating Intelligent Manufacturing Systems

Smart innovations in manufacturing are key to securing the welfare and wellbeing of society. Smart industry is the way forward for industry. Using Smart Industry means personalised and smart products, optimising human-machine interaction, yielding faster, cheaper, and more sustainable production. It means adapting business models to changing industries and services and is thus of utmost importance to maintain the competitive edge.

• Improving Healthcare with E-Health

It becomes more and more evident that the current approach to healthcare is not sustainable, especially when considering the increasing volume and demands of chronic diseases, requiring a rethinking of strategies towards innovative solutions. The use of information and communication technologies in healthcare – eHealth – is a promising strategy to improve healthcare worldwide.

Excellence is a key issue. The institute's project Living Smart Campus forms a linking pin between all research activities, and is as such profiling for 'Science for a Smart Society'. The Campus becomes a center of open innovation, to which also industry, government bodies, and citizens are committed.

Various departments are joining efforts in these centers to address research challenges in an interdisciplinary way. More information on the centers can be found via https://www.utwente.nl/en/digital-society/

CURRENT RESEARCH PROJECTS

DSI is active in dozens of research projects, financed at the national and European level and directly by industry. Departments directly related to ERCIS research themes are the IEBIS *(Industrial Engineering and Business Information Systems)* group and the SCS *(Services, Cybersecurity and Safety research group)*.

The IEBIS group is concerned with studying novel ways of managing business processes and supply chains using innovative techniques such as simulation, *(social)* data mining, multi-agent coordination and gamification. Researchers in IEBIS use design science methods to develop Decision Support Systems and Inter-Organisational Systems, connecting networks of businesses and governments.

The goal of the SCS group is to develop methods and techniques for developing IT-based services that balance service levels with safety- and security-levels, and to develop methods and techniques that make existing IT-based services more secure.

Selected research projects include:
- **Data driven Architecture for Predictive Maintenance in the Maritime Sector** – This project focuses on the development of service logistic control towers in a maritime setting, in which several supply chain players participate. In this joint university-industry project, we develop decision support models that integrate the planning of operations, maintenance, and resources.

- **Autonomous Logistics Miners** – This project investigates the application of AI to autonomous logistics.

- **Circular Performance Management** – The project studies the development of performance and recommender systems for circular products and processes across supply chains.

- **SynchromodalIT** – this project aims at designing advanced algorithms and business-IT architectures to facilitate dynamic planning of logistics across various modalities. As part of the project, two PhD theses where completed and an educational game was developed to illustrate the synchromodal concept – see https://www.trucksandbarges.nl/

AWARDS

The Netherlands Organization for Scientific Research *(NWO)* funded several projects for PhD and postdoc positions in the IEBIS department.

EVENTS

On January 14th, 2020, the IEBIS department, jointly with the land registry *(Kadaster)*, organised a supply chain hackathon. Eight companies presented their datasets and student teams used data science and supply chain integration methods to provide new insights and suggest new business models.

PUBLICATIONS

Aulkemeier, F., Iacob, M. E., & van Hillegersberg, J. (2019). Platform-based collaboration in digital ecosystems. Electronic markets, 29(4), 597–608.

Folmer, E., Ronzhin, S., Van Hillegersberg, J., Beek, W., & Lemmens, R. (2020). Business Rationale for Linked Data at Governments: A Case Study at the Netherlands' Kadaster Data Platform. IEEE Access, 8, 70822–70835.

Fraccascia, L., Yazdanpanah, V., van Capelleveen, G., & Yazan, D. M. (2020). Energy-based industrial symbiosis: a literature review for circular energy transition. Environment, Development and Sustainability, 1–35.

Spil, T. A., Romijnders, V., Sundaram, D., Wickramasinghe, N., & Kijl, B. (2020). Are serious games too serious? Diffusion of wearable technologies and the creation of a diffusion of serious games model. International journal of information management, 102202.

Vegter, D., van Hillegersberg, J., & Olthaar, M. (2020). Supply chains in circular business models: processes and performance objectives. Resources, Conservation and Recycling, 162, 105046.

DISSERTATIONS

Data quality improvement: procedure to improve data quality issues within and between sources, Turpijn, B., 17 Apr 2019, Enschede: University of Twente. 165 p., Pd Eng Thesis.

Industrial Symbiosis Recommender Systems, van Capelleveen, G. C., 27 May 2020, Enschede: University of Twente. 276 p., PhD Thesis.

Strategic HRM: It's all in the game: Exploring configurational theory in HRM using a simulation model and serious game, Collou, L. D., 18 Jun 2020, Enschede: University of Twente. 179 p. PhD thesis.

Multi-client functional encryption for controlled data sharing, van de Kamp, T. R., 21 Feb 2020, Enschede: University of Twente. 150 p.

All publications are available at *doc.utwente.nl*

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DSI: https://www.utwente.nl/en/digital-society
Scientific Director:
Prof. Dr. Maarten van Steen

LEIDEN UNIVERSITY – LEIDEN INSTITUTE OF ADVANCED COMPUTER SCIENCE *(LIACS)*

ABOUT THE INSTITUTION

The Leiden Institute of Advanced Computer Science *(LIACS)* is a center of excellence for multidisciplinary research and education in computer science and artificial intelligence *(AI)*. LIACS features a wide range of research, from theory to algorithms to applications, with a strong focus on artificial intelligence and data science. Within the Dutch university landscape in computer science, LIACS has positioned itself with the motto: AI4LIFE, basically meaning that we want to make use of modern AI methods *(from optimisation, deep learning, reinforcement learning, quantum computing, machine learning)* for solving problems in other scientific domains, predominantly Life Sciences. This aim is pursued by LIACS researchers in leading roles in the SAILS program, the CCLS initiative, and also the European initiative for excellence in AI research and innovation, CLAIRE. We also cooperate with knowledge institutes, governments, and companies.

As a consequence of our broad and international working field, we offer complete and outstanding education. LIACS is a major institute in education for computer science. It features Bachelor, Master, as well as PhD programs and a broad variety of study tracks, some of which are in collaboration with other scientific domains such as Biology and Economics. The institute is growing rapidly. In 2020, LIACS has around 90 staff members, 80 PhD students, and 40 non-scientific personnel.

RESEARCH TOPICS

Artificial Intelligence has become a major focus of LIACS research recently. To accomplish a stronger momentum and to exploit synergies among fields, networking initiatives have been established across the faculty of science *(center for computational life science, CCLS)* and across the entire university *(Society Artificial Intelligence and Life Science, SAILS)*. These instruments stimulate collaboration within the university on artificial intelligence topics and bring these topics to new application domains. Moreover, with its participation in European and International research networks ERCIS and CLAIRE, the research in LIACS is integrated in a wider community of researchers.

Applied Data Science Lab: Exploratory projects with companies, governments, and NGOs generate ample opportunities in terms of societal challenges, science strategy, valorization, and research collaboration. In the LIACS Applied Data Science Lab, our master's students and graduates carry out short-term exploratory studies. The applied Data Science Lab's primary purpose is to help clients explore their opportunities in data science whilst gaining working experience for the student.

Collaboration for Smart Industry: We have a strong focus on providing Smart Computing for Science & Industry, which materialises in longstanding cooperations with industrial partners and governments. These help us to focus on the applicability of research results and, at the same time, generate new directions for our research in computer science. Our collaborations include partners such as Honda Research, Zorginstituut Nederland, Tata Steel, Greenchoice, BMW, KLM, General Electrics Aviation, Young Capital, Qualogy, Ministry of Foreign Affairs, National Police, Woo000nnect, Stabiplan, Naturalis Museum, and De Nederlandsche Bank.

CURRENT RESEARCH PROJECTS

HORIZON 2020 Research and Innovation Staff Exchanges *(RISE)* project RISE_SMA "RISE Social Media Analytics", with University Duisburg-Essen *(ERCIS Partner)*, Agder University, Kristiansand *(ERCIS partner)*, and others: The role of LIACS is to devise algorithms for complex network analysis and visualisation, and support the work packages on text mining.

LIACS participates in the ERCIS competence center *(see https://www.ercis.org/about-us/competence-centers)* on "Social Media Analytics: Identification and Analysis of Disinformation, Propaganda, and Manipulation via Online Media". Leiden is active in two different focus groups and leader of two work packages.

A SAILS Symposium "The Future of AI is Human" took place on 14 October 2019, and several initiatives to harvest the power of AI for various societal and life science applications were started, including collaboration with social sciences, archeology, and law.

Center for Computational Life Science *(CCLS)*: About 10 presentations of researchers in LIACS and external speakers took place. Among others, the topic that received a lot of attention in 2020 was the development of antiviral drugs and vaccines.

The Benchmarking Network *(https://sites.google.com/view/benchmarking-network)* is supported by ERCIS members Münster *(Pascal Kerschke)* and Leiden *(Mike Preuss)*. It emerged in summer 2019, with the idea to consolidate and to stimulate activities on benchmarking iterative optimisation heuristics.

EVENTS

The Parallel Problem Solving by Nature *(PPSN 2020)* international conference *(A-rated in the CORE ranking)* was hosted by LIACS from Sept. 5–9, 2020 at Leiden University and the Corpus Museum & Conference Center. It was chaired by Thomas Bäck and Mike Preuss in a hybrid format and featured 99 original research papers.

The MISDOOM international conference *(October 26–27, 2020 hosted by LIACS)* emerged from the ERCIS project PropStop in 2019. The second issue featured more than 70 presentations and more than 190 registered participants. The multi-disciplinary conference discussed the media situation and tools to respond to societal challenges in online media such as filter bubbles, fake news, disinformations, and social bots. It was chaired by Frank Takes and Suzan Verberne.

BNAIC *(19 & 20 November, 2020 hosted by LIACS)* is the BeNeLux conference on artificial intelligence and has this year been organised as an online conference, in combination with the BENELEARN event, focusing on learning and machine learning. It was chaired by Jan van Rijn and Mitra Baratchi.

The mid-term meeting of EU Horizon 2020 RISE-SMA project was planned for end of October 2020. Several collaborations between ERCIS members emerged, such as a visit by Michael Emmerich to the Kristiansand Kommune, in January 2020 and several joint research projects and publications with the groups of Frank Takes and Suzan Verberne *(LIACS)*: https://social-media-analytics.org/

DISSERTATIONS

The full list of recent dissertations is available at: *https://theses.liacs.nl/.*

Samineh Bagheri was the first PhD student to defend her thesis fully online at Leiden University. Online dissertations were just one of the many challenges faced in the year 2020, resulting from the COVID-19 pandemic.

Pelin Aspar (Inst. Wirtschaftsinformatik, WWU Münster) continued her PhD research project that is jointly supervised by ERCIS Partners WWU Münster and LIACS.

PUBLICATIONS

Plaat, A. (2020). Learning to Play – Reinforcement Learning and Games. Springer.

Hangl, S., Dunjko, V., Briegel, H.J., Piater J.H. (2020). Skill Learning by Autonomous Robotic Playing Using Active Learning and Exploratory Behavior Composition. Frontiers Robotics AI 7: 42 *(2020).*

van Engelen, J.E., Hoos, H.H. (2020). A survey on semi-supervised learning. Mach. Learn. 109(2): 373–440 *(2020).*

Doerr, C., Ye, F., Horesh, N., Wang, H., Shir, O., Bäck, T. (2020). Benchmarking discrete optimization heuristics with IOHprofiler. Appl. Soft Comput. 88: 106027 *(2020).*

Risi, S., Preuss, M. (2020). From Chess and Atari to StarCraft and Beyond: How Game AI is Driving the World of AI. Künstliche Intell. 34(1): 7–17 *(2020).*

Barbouch, M., Takes, F.W., Verberne, S. (2020). Combining Language Models and Network Features for Relevance-based Tweet Classification, in Proceedings of the 12th International Conference on Social Informatics *(SocInfo)*, Lecture Notes in Computer Science 12467: 15–27, Springer, 2020.

Virag, D., Offerman, T., de Jong, B., Preuss, M. (2020). IT security challenges for continuously connected near-autonomous vehicles. ICE/ITMC 2020.

Clever, L., Assenmacher, D., Müller, K., Seiler, M.V., Riehle, D.M., Preuss, M., Grimme, C. (2020). FakeYou! – A Gamified Approach for Building and Evaluating Resilience Against Fake News. MISDOOM 2020.

van Duijn, M., Preuss, M., Spaiser, V., Takes, F., Verberne, S. (2020). Disinformation in Open Online Media, Second Multidisciplinary International Symposium, MISDOOM 2020 *(edited volume / conference proceedings)*, Lecture Notes in Computer Science 12259, Springer, 2020.

Kerschke, P., Wang, H., Preuss, M., Grimme, C., Deutz, A.H., Trautmann, H., Emmerich, M.T.M. (2019). Search Dynamics on Multimodal Multiobjective Problems. Evol. Comput. 27(4): 577–609 *(2019.)*

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SIMON KUZNETS KHARKIV NATIONAL UNIVERSITY OF ECONOMICS – INFORMATION SYSTEMS DEPARTMENT

KhNUE
Simon Kuznets

ABOUT THE INSTITUTION

Simon Kuznets Kharkiv National University of Economics is the leading higher education institution of the Eastern Ukraine, which provides a full range of educational services, carrying out multistage training, retraining and upgrading experts' skills in 15 specialities, such as Economics and Entrepreneurship, Management and Administration, Information Systems and Computer Science, Publishing and Printing Business.

The Information Systems Department has 32 professors, more than 350 students on bachelor level and more than 100 on master level. The department is an active member of IT Ukraine Association and Kharkiv IT Cluster. 12 professors are Microsoft certified specialists. Microsoft IT Academy works since 2009, collaboration with IBM in the frame of IBM Academic Initiative program has been ongoing since 2012.

The Master Double Diploma Programme MBA "Business Informatics" with University Lumiere Lyon-2, France was established in 2005. According to research of SMBG Consulting Group, the Programme is included in the top 10 Master Programmes in Business Intelligence in France in 2012–2019. The Programme graduated more than 250 students.

Simon Kuznets Kharkiv National University of Economics has more than 7200 students *(including 700+ foreign students)*, 7 faculties, 700+ faculty members and offers training primarily structured around the new teaching architecture of the higher education. Having a considerable experience

in training Ukrainian students, KhNUE influences HR, scientific, technical and economic policy of industrial enterprises and organisations in the country. The University trains highly skilled economists familiar with modern information technologies and innovative model of behaviour. The University established a flexible system of quality specialists' preparation management, based on continuous monitoring of KhNUE graduates' achievements.

RESEARCH TOPICS

The majority of Simon Kuznets Kharkiv National University of Economics Information Systems Department research activities are carried out within the following topics:

- Mobile technologies in operative management of an enterprise
- System of monitoring in scientific researches in higher education
- Fuzzy logic and modelling in logistic and marketing
- Information security
- Distributed data warehouses
- Knowledge base and artificial intelligence
- Innovative computer technologies in higher education

CURRENT RESEARCH PROJECTS

ERASMUS+ CBHE DocHub – Structuring cooperation in doctoral research, transferrable skills training, and academic writing instruction in Ukraine's regions. One of the project objectives is to establish inter-HEI subject-specific research network in information systems that is integrated through regular seminars and co-supervision of PhD students.

ERASMUS+ CBHE EDUQAS – Implementation of Education Quality Assurance system via cooperation of University-Business-Government in HEIs. Wider objective of the project is to improve education quality assurance systems through the development of efficient internal quality standards leading to better employability of students in Partner Countries Universities. IS department of KhNUE will work on the establishment of QA system for bachelor and master degree programs in Information Systems.

Modern methods and means of analysis and development of information systems. The purpose of the research is the development of basic research in the field of intellectual and information-computer technologies in various spheres of human activity.

EVENTS

The International Scientific and Practical Conference "Information Systems and Technologies", April 9–10, 2020.

International Scientific Conference of Young Scientists and Students "Information technology in the modern world: the research of young scientists", March 19–20, 2020.

Participation in the Coursera for Campus project, as a result of which IT students received 230 certificates of MOOC Coursera.

Project "Very digital residences", the task of which was to rethink the cultural heritage of the cities of Kharkiv and Odessa by using media art and digital technologies. The modern factory-laboratory FabLab KhNUE became one of the digital residences and the platform for installations based on augmented reality, virtual reality and digital content.

PUBLICATIONS

Information Technologies and Systems: Monograph // general edition of V. Ponomarenko. – Kharkiv: Publishing House "Style Publishing House", 2020. – 174 pp.

Golubnichy D., Tretyak V. Modern Problems Of Computer Science And IT-Education: collective monograph // [editorial board K. Melnyk, O. Shmatko]. – Vienna : Premier Publishing, 2020. – Pp. 142–156.

Minukhin S. Research of Apache Spark Cluster Performance on the Azure Platform for Machine Learning Methods // Scientific works of Kharkiv National Air Force University – 2020. – №1 (63). – P. 81–88.

Zolotaryova I., Plekhanova G. Information Technologies for Optimization of Private Blockchane by Helping the Consensus Algorithm // Information processing systems: collection of scientific papers. – Kharkiv: Kharkiv National Air Force University, 2020. – Issue. 1. – P. 107–114.

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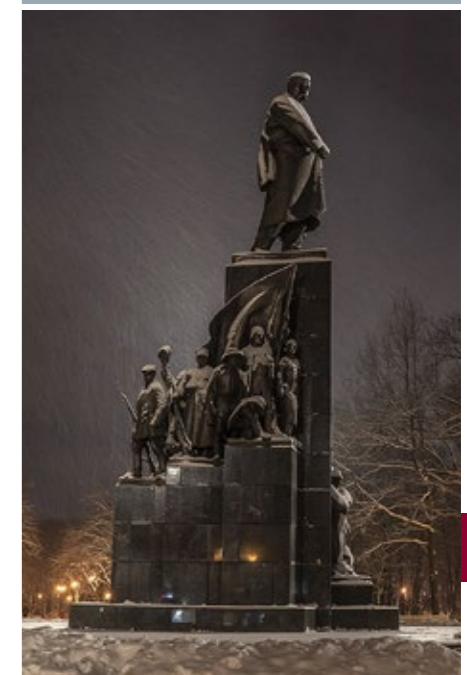
LOUGHBOROUGH UNIVERSITY – CENTRE FOR INFORMATION MANAGEMENT *(CIM)* – SCHOOL OF BUSINESS AND ECONOMICS

ERCIS 2019 workshop

Crispin Coombs

ABOUT THE INSTITUTION

The School of Business and Economics of Loughborough University is one of the most renown business schools in the UK and has triple-accreditation of the MBA programme via AACSB, EQUIS and AMBA. The Centre for Information Management *(CIM)* is located within the School of Business and Economics as one of its key research hubs. CIM is concerned with the application and implications of modern IT, through digitisation, the digital economy and through the development of the theory base of Information Systems.

Situated very close to East Midlands Airport *(13km)*, Loughborough University is 182 km north of London. The campus is the largest in the UK in terms of its size, and the student population of the university is close to 20,000. The origins of the institution are in 1909 when the Loughborough Technical Institute was founded, but it was in 1966 that a university charter was granted. Since then, Loughborough University has risen in stature and is today regarded as one of the UK's top ten universities. Since 2015, Loughborough University has a second campus at the Queen Elizabeth Olympic Park in London.

"WHAT IS IT ABOUT HUMANITY… ?"

The 2019 annual ERCIS meeting was held at Loughborough University. A centrepiece of the workshop was an exchange of ideas and expertise among colleagues. This ad-dressed the important issue of Artificial Intelligence and its impact on society. We were inspired by a previous ERCIS workshop activity that produced a paper on Business Process Management published in CAIS *(vom Brocke et al. 2010)*.

This special discussion took place over 2/3 of a day during the main ERCIS workshop. Patrick Stacey lead the discussion with his presentation "Towards a New Humanism. Or are we too late?" The host team also identified four themes to investigate regarding machines and humanism: Crime & Conflict, Jobs, Attention Economy, and Wellbeing. These themes were selected because of the coverage they had already attracted in the media and academic discourse.

To encourage discussion, a world café format was adopted. Our world café had four tables, one for each of the themes from the inspiration session and a table host that collated the discussion. There was time for three café rotations to allow ERCIS colleagues to discuss different themes. Key discussion points were captured using post-it notes on flip charts.

After workshop, Boyka Simeonova reviewed all the post-its and created a matrix of themes and cross cutting issues shared with the table hosts. Patrick and table hosts were invited to write up their contributions for the paper. Initial submissions from table hosts were provided in November 2019 and synthesised into initial draft February 2020. Crispin and Peter Kawalek reviewed and edited contributions, and added the introduction and conclusion, June - August 2020. The final paper, "What Is It About Humanity That We Can't Give Away To Intelligent Machines? A European Perspective" was submitted to International Journal of Information Management at the end of October 2020.

The workshop and write up process has produced an exciting and thought-provoking paper. We believe it is an excellent example of the contribution of ERCIS to important IS debates. The workshop activity was fun, engaging for colleagues, and is one example of how powerful the annual workshop can be and what we can produce. Peter and Crispin would like to extend our heartfelt thanks to all ERCIS members who participated in the workshop last year and our co-authors on the paper.

CONTINUING COLLABORATION WITH SAO PAULO.

In September 2020, Crispin Coombs delivered a guest lecture for PhD and MSc programmes at the University of Sao Paulo, Brazil. The lecture was at the invitation of Professor, Dr. Cesar Alexandre de Souza, School of Economics, Management, Accounting and Actuarial Sciences and attracted over 30 participants including IS academics across Brazil. Crispin's talk was entitled "Will COVID-19 be the Tipping Point for the Intelligent Automation of Work?" and was based on his 2020 paper of the same name published in the International Journal of Information Management.

RESEARCHER PROFILE

It has been another successful year for Dr Konstantina Spanaki. In 2020 she had four papers accepted. In addition, she is guest editor of two special issues. The first is for the International Journal of Production Research, and considers Artificial Intelligence *(AI)* and Data Sharing in Manufacturing, Production and Operations Management Research. The second is for the International Journal of Information Management and considers Understanding the Use of Digital Technologies in Entrepreneurial Start-up Settings and Growth –Oriented Firms.

NEW RECRUIT TO TECHNGI PROJECT

TECHNGI is a major UKRI initiative on the future of the insurance industry. It is led by Professors Holland and Milne. Anil Savio Kavuri recently joined as a Research Asso-

References to Dr Spanaki's newest papers are below:

Giannakis, M, Dubey, R, Yan, S, Spanaki, K, Papadopoulos, T (2020) Social media and sensemaking patterns in new product development: demystifying the customer sentiment, Annals of Operations Research, ISSN: 0254-5330. DOI: 10.1007/s10479-020-03775-6.

Jinasena, N.D., Spanaki, K., Papadopoulos, T., Balta M.E. (in press) Success and Failure Retrospectives on IT Project Management: a FinTech case study Information Systems Frontiers.

Papadopoulos, T, Singh, SP, Spanaki, K, Gunasekaran, A, Dubey, R (in press) Towards the next generation of Manufacturing: Implications of Big Data and Digitalization in the context of Industry 4.0 [Editorial], Production Planning and Control, ISSN: 0953-7287.

Spanaki, K, Karafili, E, Sivarajah, U, Despoudi, S, Irani, Z (in press) Artificial intelligence and food security: swarm intelligence of AgriTech drones for smart AgriFood operations, Production Planning & Control, ISSN: 0953-7287.

ciate at TECHNGI and is already Research Fellow at Australian National University. Anil has a PhD in Economics from Australia National University, MPhil in Finance from University of Cambridge, a M.I.A from Columbia University and First Class BSc Economics from University College London. Anil is well known to his university classmates as he graduated top of the class in the most technical subjects. These include Game Theory, Experimental Economics, Money & Banking at University College of London and Economics of Energy, Marine Energy Transportation, Petroleum Markets & Trading at Columbia University. His professional background includes being a project financier at Scotia Capital on Wall Street, New York, and a consultant at the World Bank. Anil's research focuses on determining the impact of digital technologies, FinTech and InsurTech on innovation and other macroeconomic variables.

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STEVENS INSTITUTE OF TECHNOLOGY – SCHOOL OF BUSINESS

ABOUT THE INSTITUTION

Founded in 1870, Stevens Institute of Technology is a premier private university focused on research and entrepreneurship in technology-related fields. Located across the Hudson River from Manhattan in Hoboken, New Jersey, Stevens has a population of 3,624 graduate *(master's and PhD)* students and 3,659 undergraduate students. Stevens is committed to exploring the frontiers of engineering, science, and management through integrative research and education programs. Stevens' three schools and one college support the mission of the Institute: The School of Engineering and Science, the School of Business, the School of Systems and Enterprises, as well as the College of Arts and Letters.

Stevens is regularly listed in the top 3% of US universities based on student return on investment. Notable graduates include Frederick Winslow Taylor, the father of scientific management, Henri Gantt, whose GANTT chart is a staple in most project manager's toolkits, and Alfred Fielding, the inventor of the Bubble Wrap.

The School of Business has 67 full-time faculty and 430 undergraduates, 900 MS students, 150 MBA students, 80 executive master's students, 25 PhD students and numerous non-degree graduate and executive programs. Within the school, the Information Systems groups is among the largest graduate programs in the US, with a mix of evening and weekend classes, as well as online course offerings to students around the globe.

RESEARCH TOPICS

Within the School of Business, two IS-related research groups operate in the areas of Business Process Innovation and Decision Technologies.

The Center for Decision Technologies *(CDT)*, directed by Prof. Jeffrey Nickerson, performs funded research on topics related to decision making, combining perspectives from information systems, management science, organisation science, cognitive science, social network analysis, and other computational sciences.

The Center focuses on bringing needed techniques to several areas. In the area of crowdsourcing and collective intelligence, it is now possible to quickly mobilise a crowd in minutes to address large-scale social problems. One ongoing example of research relates to the open source sharing of designs for use with 3D printers. Researchers at the CDT are interested in the role that crowds can play in sustainability – finding local solutions to energy needs that fulfill communities' objectives. In the area of social networks and Big Data, research at the Center focuses on the intersection of transportation and communication networks. In many recent large-scale natural disasters, social media infrastructure has proven more resilient than traditional news outlets. At the same time, rumors propagate, and inaccurate ones impede rescue and recovery, which has led to a research interest in designing social media processes that will be useful during emergencies.

The Center received funding in excess of $4 Million during the last 4 years, from the National Science Foundation and other sources.

The Center for Business Process Innovation *(CEBPI)* studies the interplay between business processes and the organisation. Under the direction of Prof. Michael zur Muehlen, the Center's research activities have been organised around several key issues.

The Center's research on Business Process Analytics is examining how to advance the family of methods and tools that can be applied to event streams in order to support decision making in organisations. Research is also being conducted in the area of enterprise architecture, which contain analytical or prescriptive models of organisations, in order to efficiently identify organisational and technical interfaces, streamline cross-functional operations, and assert compliance to rules and regulations. Researchers at the CEBPI are also interested understanding the dynamics of digitalised design processes and the impact of digital technology on business process innovation.

Research at the CEBPI focuses on how organisations evolve in their ability to govern and change operational work and decision-making processes. Some organisations begin by creating technical infrastructure and the working out organisational adaptions, while others try to work out organisational details first before choosing appropriate technology. In either approach, the roles and responsibilities of a process support and management organisation evolve over time, and little guidance exists as to how organisation can pursue operational efficiency in a repeatable and effective fashion.

CURRENT RESEARCH PROJECTS

Recent research at the CDT focuses on the relationship between routines and innovation in design contexts, such as those with "open source-like" characteristics, to better understand the variables and phenomena such as routine variation, sequential structuring, structural evolution, and temporal modes as well as their impacts on design outcomes such as effective coordination, digital artifact innovation, and requirements computation.

Recent research at the CEBPI aims to understand the skills, positions, and organisation structures of change management professionals in industries under different regulatory intensities. Additional research projects focus on the opportunities of digital technologies such as Robotic Process Automation, Cognitive Computing, and Blockchain on the design of business processes, and the changing skills of workforces to survive in the age of smart business processes.

SELECTED PUBLICATIONS

Zheng, Min; Marsh, Jessecae K; Nickerson, Jeffrey V; Kleinberg, Samantha (2020). How Causal information affects decisions. Cognitive Research: Principles and Implications, 5(1).

Cui, Zhenyu; Nguyen, Duy. (2020). NONPARAMETRIC DENSITY ESTIMATION BY B-SPLINE DUALITY. Econometric Theory, 36(2), 250–291.

Liu, Chen; Rouse, William Bill; Belanger, David. (2020). Understanding Risks and Opportunities of Autonomous Vehicle Technology Adoption Through Systems Dynamic Scenario Modeling—The American Insurance Industry. IEEE Systems Journal, 14(1), 1365–1374.

Kumar, Akhil; Liu, Rong; Shan, Zhe. (2020). Is Blockchain a Silver Bullet for Supply Chain Management? Technical Challenges and Research Opportunities. Decision Sciences, 51(1), 8–37.

Grover, Varun; Lindberg, Aron; Benbasat, Izak; Lyytinen, Kalle. (2020). The Perils and Promises of Big Data Research in Information Systems. Journal of the Association for Information Systems, 21(2), 268–291.

Kashani, Ali R; Gandomi Mostafa; Camp, Charles V; Gandomi, Amir H. (2020). Optimum design of shallow foundation using evolutionary algorithms. Soft Computing, 24(9), 6809–6833.

Lindberg, Aron. (2020). Developing Theory Through Integrating Human and Machine Pattern Recognition. Journal of the Association for Information Systems, 21(1), 90–116.

Nagasubramanian Gayathri; Sakthivel, Rakesh Kumar; Patan Rizwan; Gandomi, Amir H; Muthuramalingam, Sankayya; et al. (2020). Securing e-health records using keyless signature infrastructure blockchain technology in the cloud. Neural Computing & Applications, 32(3), 639–647.

Kasinathan, Gopi; Jayakumar, Selvakumar; Gandomi, Amir H; Ramachandran, Manikandan; Fong, Simon James; et al. (2019). Automated 3-D lung tumor detection and classification by an active contour model and CNN classifier. Expert Systems with Applications, 134, 112.

Liu, Ying; Feng, Mai; MacDonald, Chris. (2019). A Big-Data Approach to Understanding the Thematic Landscape of the Field of Business Ethics, 1982–2016. Journal of Business Ethics, 160(1), 127–150.

DISSERTATIONS/HABILITATIONS

Morkan, Baris: Unexpected Events in Mega Construction Projects: Responding to Unexpected Events through Multi-Stakeholder Strategies.

Fan, Jiacheng: Optimal Investment Problems in Financial Engineering.

Ye, Ziwen: Detecting, Analyzing and Categorizing Financial Events in High Frequency Trading and Its Application.

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PERSONAL MEMBERS

Personal members in the ERCIS network are experts in their field of research and have strong personal connections within the network. To become a personal member, one should already have worked with partners from the network in the context of research projects, joint courses, or publications.

PADERBORN UNIVERSITY
The University for the Information Society

About Me:

My research interests comprise service science, business process management, information modeling, and the socio-technical design of information systems. A particular focus of mine is designing information systems that enable service-oriented business models. Apart from conducting several projects for the European Commission and the German government, I am involved in many industry collaborations at the Software Innovation Campus Paderborn *(SICP)*. I am a member of the editorial boards for Business & Information Systems Engineering *(BISE)*, a guest editor for several other journals, and one of the academic heads of the Service Science Competence Center at ERCIS.

SELECTED PUBLICATIONS

Beverungen, D.; Kundisch, D.; Wünderlich, N.V.: Transforming into a Platform Provider: Strategic Options for Industrial Smart Service Providers. Journal of Service Management. Forthcoming.

Beverungen, D.; Buijs, J.C.A.M; Becker, Jörg; Di Ciccio, C.; van der Aalst, W.M.P.; Bartelheimer, C.; vom Brocke, J.; Comuzzi, M.; Kraume, K.; Leopold, H.; Matzner, M.; Mendling, J.; Ogonek, N.; Post, T.; Resinas, M.; Revoredo, K.; del-Río-Ortega, A.; La Rosa, M.; Santoro, F.M.; Solti, A.; Song, M.; Stein, A.; Stierle, M; Wolf, V. (2020): Seven Paradoxes of Business Process Management in a Hyper-Connected World. Business & Information Systems Engineering. Forthcoming.

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UNIVERSITÄT KOBLENZ · LANDAU

About Me:

Patrick Delfmann is a professor of Information Systems and head of the Research Group of Corporate Communication Systems at the University of Koblenz-Landau. He holds a Diploma Degree *(MSc)* in Information Systems and a Ph.D. from the School of Business and Economics at the University of Münster. Patrick's research focuses on Business Process Management Technologies and covers Process Mining, Predictive Process Analytics, Business Rules Management, Process Query Languages, Conceptual Modeling, and Compliance. Currently, he supervises two research projects, "Social Process Mining" and "Handling Inconsistencies in Business Process Modeling", both funded by the German Research Foundation *(DFG)*. Patrick's research has been published in Journals such as Management Information Systems Quarterly, Information Systems, Communications of the Association of Information Systems, and Information Systems Frontiers, amongst others.

SELECTED PUBLICATIONS

Hasić, F.; Corea, C.; Blatt, J.; Delfmann, P.; Serral, E.: Decision Model Change Patterns for Dynamic System Evolution. Knowledge and Information Systems 62 *(2020)*, S. 3665–3696.

Nagel, S.; Corea, C.; Delfmann, P.: Cognitive Effects of Visualization Techniques for Inconsistency Metrics on Monitoring Data-Intensive Processes. Information Systems Management, in press, DOI: 10.1080/10580530.2020.1808124.

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UNIVERSITÀ DEGLI STUDI DELLA TUSCIA

About Me:

I am an Associate Professor at the University of Tuscia, where I teach Organisation Theory and Management of Information Systems. I am the Director of the II level Master in Artificial Intelligence for Business and Security, a member of the board of advisors of the PhD course in Economics, Management and Quantitative Methods.

My research activities focus on the impact of ICT on communication and coordination of teams and organisations. Currently, I am studying how social media platforms support and constrain the management of communities for collective action with a specific focus on eParticipation and in cooperation with the University of Agder *(NO)*, and the University of Pescara *(IT)*. I am also exploring how IoT, Cloud Computing, Big Data, Artificial Intelligence, and Digital Technologies of Industry 4.0 contribute to organisational sustainability from a triple bottom line perspective in manufacturing companies.

SELECTED PUBLICATIONS

Sæbø, Ø., Federici, T., Braccini, A.M.: Combining social media affordances for organising collective action. Information Systems Journal 30(4), 699–732 *(2020)*.

Sæbø, Ø., Federici, T., Braccini, A.M.: From protest to parliament: The role of digital technologies within an online community. Journal of Information Technology Teaching Cases 10(1), 35–45 *(2020)*.

Margherita, E.G., Braccini, A.M.: Industry 4.0 Technologies in Flexible Manufacturing for Sustainable Organizational Value: Reflections from a Multiple Case Study of Italian Manufacturers. Inf. Syst. Front. *(2020)*.

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About Me:

Marco De Marco is full professor of Organisation and Information Systems at Università Telematica Internazionale UNINETTUNO in Rome where he serves also as Dean of the Faculty of Economics. He is the author of several books and numerous essays and articles; mainly on the development of information systems, the impacts of technology on organisations and e-government. He is a member of the editorial board of several academic journals. In 2008 and 2009 he was a Board committee member of the Association for Information Systems, representing Europe, Africa, and the Middle East. His main research interests have included information systems development and performance measurement methodologies, while bank information systems and their specificities were a particular study and focus. He has been serving as an officer of the major conference on information systems ICIS, ECIS, MCIS and he was cofounder of the Italian chapter of the AIS. At ICIS 2010 he was awarded the AIS Fellow Prize for his contribution to the IS discipline.

SELECTED PUBLICATIONS

M. Savastano, F. Bellini, F. D'Ascenzo, and M. De Marco (2019), "Technology adoption for the integration of online–offline purchasing: Omnichannel strategies in the retail environment", International Journal of Retail & Distribution Management, Vol. 47 No. 5, pp. 474–492. DOI: 10.1108/IJRDM-12-2018-0270.

L. Bullini Orlandi, F. Ricciardi, C. Rossignoli, and M. De Marco (2019), "Scholarly work in the Internet age: Co-evolving technologies, institutions and workflows" Journal of Innovation & Knowledge 4 (1), 55–61. DOI: 10.1016/j.jik.2017.11.001.

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About Me:

I am an associate professor in Information Systems at the University of Agder, Norway, where I am member of the Centre for digital transformation *(CeDiT)*. My research focuses on the adoption of e-government both by government employees and by citizens. Furthermore, I analyse how governments interact with their various stakeholders via different communication channels. In my research, which deals with e-government on a national and international level, I combine my Information Systems background with insights from other disciplines such as communication and media science. Currently, I am working on a study in which I analyse citizens' channel choice for contacting governments as well as governments' multichannel manage- ment strategies. In addition, I am research- ing the societal consequences of digitali- sation in smart cities.

SELECTED PUBLICATIONS

Hofmann, S., Madsen, C., Distel, B. (2020). Developing an analytical framework for an- alyzing and comparing national e-govern- ment strategies. International Conference on Electronic Government, 2020.

Flak, L. S., Hofmann, S. (2020). The impact of smart city initiatives on human rights. International Conference on Electronic Government, 2020. *(Winner of the best pa- per award)*

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About Me:

Oliver Müller is a professor of Manage- ment Information Systems and Data Ana- lytics at Paderborn University. He holds a BSc and MSc in Information Systems and a Ph.D. from the University of Münster's School of Business and Economics. In his research, Oliver studies how organizations create value with *(big)* data and analytics; for example, by enhancing judgment and decision making, supporting knowledge management, or automating business pro- cesses. His research has been published in the Journal of Management Information Systems, Journal of the Association of In- formation Systems, European Journal of Information Systems, European Journal of Operational Research, and various others.

SELECTED PUBLICATIONS

Kucklick, J. P., & Müller, O. (2020). Location, location, location: Satellite image-based real-estate appraisal. 16th Symposium on Statistical Challenges in Electronic Com- merce Research. Available at: arXiv pre- print arXiv:2006.11406.

Thiess, T., & Müller, O. (2020). Setting sail for data-driven decision making: An action design research case from the maritime industry. Design Science Research Cases, Springer, pp. 291–317.

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Freie Universität Berlin

About Me:

Since 2017, I have been an assistant pro- fessor of information systems at Freie Universität Berlin in cooperation with the Einstein Center Digital Future *(board mem- ber since 2018)*. Before that, I completed my doctorate at the University of Münster in 2015 and took on the coordination of the DFG graduate school "User-Centred Social Media" at the University of Duisburg-Essen *(2015–2017)*. My research is focused on the emergence of innovative information and communication systems and their im- pact on individuals, enterprises, and soci- ety as a whole. In an exemplary project, I investigate the design and diffusion of so- cial bots in enterprise social networks. In another project, I study aspects that influ- ence the employee's attitude towards the rapid digital transformation of their work environment as well as the acceptance of (Explainable) Artificial Intelligence in deci- sion support systems.

SELECTED PUBLICATIONS

Meske, C. and Amojo, I. (2020). Enterprise Social Bots as Perception-Benefactors of Social Network Affordances. International Conference on Information Systems *(ICIS)*.

Meske, C. and Amojo, I. (2020). Status Quo, Critical Reflection and Road Ahead of Digital Nudging in Information Systems Re- search – A Discussion with Markus Wein- mann and Alexey Voinov. Communications of the AIS *(CAIS) (46)*, pp. 402–420.

Meske, C. and Bunde, E. (2020). Transpar- ency and Trust in Human-AI-Interaction: The Role of Model-Agnostic Explanations in Computer Vision-Based Decision Sup- port, Proceedings of the International Con- ference on Artificial Intelligence in HCI, pp. 54–69.

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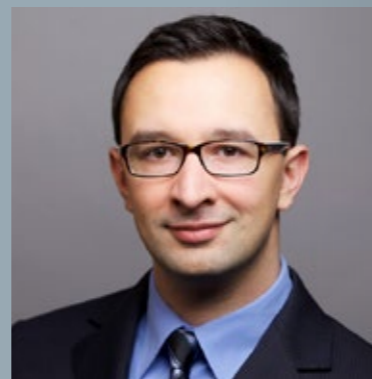
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EINSTEIN CENTER Digital Future

RUHR UNIVERSITÄT BOCHUM RUB

About Me:

I am head of the Chair of Industrial Sales and Service Engineering in the Mechanical Engineering Department at the Ruhr-Uni- versität Bochum. My main research inter- ests are in the area of digital servitization of manufacturing. For instance, my team and I investigate how enterprises can in- novate with product-service systems and smart services. Amongst others, I am prin- cipal investigator of the BMBF-funded con- sortium projects Smart Service Retrofits for Highest Availability of Machinery and Equipment (retrosmart), Development of a Privacy Management System for Personal- ized Assistance Systems in Production and Service (PersonA), and Integrated Business Model and Process Design for the Interna- tional Provision and Marketing of Service Knowledge (SerWiss). Our team operates an innovation lab *(www.leonardolounge.de)* in cooperation with the IHK Mittleres Ruhrgebiet. Together with the ERCIS Per- sonal Member Stefan Stieglitz and our two colleagues Frederik Ahlemann and Manuel Wiesche, I initiated a joint PhD Course on "Research Methods in Information Systems" in the Ruhr area in 2020.

SELECTED PUBLICATIONS

Anke, J., Poeppelbuss, J. & Alt, R. (2020). It Takes More than Two to Tango: Identifying Roles and Patterns in Multi-Actor Smart Service Innovation. In: Schmalenbach Business Review. *https://doi.org/10.1007/ s41464-020-00101-2*

Anke, J., Ebel, M., Poeppelbuss, J. & Alt, R. (2020). How to Tame the Tiger – Exploring the Means, Ends and Challenges in Smart Service Systems Engineering. In Proceed- ings of the 28th European Conference on Information Systems (ECIS). *https://aisel. aisnet.org/ecis2020_rp/155*

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Open-Minded

About Me:

Stefan Stieglitz is Professor for Professional Communication in Electronic Media/ Social Media at the University of Duisburg-Essen. In his research he investigates the digital transformation, with a particular focus on communication and collaboration technologies, and its effects on enterprises and organisations as well as on society and individuals. Based on interdisciplinary research and advanced methods of data analytics, he and his group perform excellent research to improve theory and practice. The research group cooperates with selected partners from industry as well as outstanding national and international academic institutions. Stefan's work has been published in reputable journals, such as Journal of Management Information System, Business & Information Systems Engineering, Journal of Information Technology, and European Journal of Information Systems *(EJIS)*.

SELECTED PUBLICATIONS

Stieglitz, S., Meske, C., Ross, B. & Mirbabaie, M. (2020). Going Back in Time to Predict the Future – The Complex Role of the Data Collection Period in Social Media Analytics. Information Systems Frontiers, 22, 395–409.

Mirbabaie, M., Bunker, D., Stieglitz, S., Marx, J. & Ehnis, C. (2020). Social media in times of crisis: Learning from Hurricane Harvey for the coronavirus disease 2019 pandemic response. Journal of Information Technology, 35(3), 195–213.

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About Me:

I am Senior Assistant Professor at the University "G. d'Annunzio" Chieti-Pescara *(Italy)*, where I teach "Digital Business Organization" and "Organizational Theory". I am member of the board of advisors of the PhD program in "Accounting, Management and Business Economics". I am the Secretary of the Italian chapter of the Association for Information Systems *(AIS)* since 2008 *(http://www.itais.org)*.

My research is currently focused on digital innovations and business transformation affecting people and organisations. I am also interested in the use of social network analysis techniques applied to bibliometric data for performing literature analysis. I have also recently applied these techniques to social media data in order to investigate individual behaviors in an online community *(in collaboration with the University of Agder (NO) and the University of Tuscia (IT))*.

SELECTED PUBLICATIONS

Scornavacca, E., Paolone, F., Za, S. and Martiniello, L., 2020. Investigating the entrepreneurial perspective in smart city studies. International Entrepreneurship and Management Journal, *https://doi.org/10.1007/s11365-019-00630-4*

Za, S., Ceci, F., Masciarelli, F. and Iaia, L., 2020. Are Cynics More Social Network dependent? Exploring YouTube and Facebook Usage. In Proceedings of the 28th European Conference on Information Systems *(ECIS)*, *https://aisel.aisnet.org/ecis2020_rp/144*

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ERCIS

ADVISORY BOARD

The ERCIS network has strong connections to local, national, and international companies working with us on various fields of expertise. Aside from sponsoring the network, the feedback of those companies during regular meetings, round tables, or during one-to-one talks, as well as their inclusion in research projects and studies, ensures that we work on practically relevant topics.

arvato
BERTELSMANN
Supply Chain Solutions

Team Arvato SCS CIM

OUR COMPANY
As part of the Bertelsmann Group, Arvato Supply Chain Solutions SE is a full service provider and business process outsourcing partner. We are specialists in end-customer-oriented industries with a focus on efficient, scalable and adaptable supply chain and digital solutions.

The list of our references include over 500 global market leaders, Fortune 500 companies and established brands, as well as young start-ups and expanding SMEs who rely on us to help them develop and internationalize their business models.

We believe that to develop the most efficient SCM and IT-solutions, you need to understand market demands and customer requirements. That is why we are organized in different industry segments. Our management team and their respective teams are proven experts in their fields.

The business unit collaborating with ERCIS focuses on the automotive, banks and insurance business. We support the leading brands with omnichannel commerce, (digital) after sales, e-mobility and marketing solutions in Europe, the US and globally.

We cultivate an open, non-dogmatic and entrepreneurial company spirit, with a strong business focus on realization of SCM and IT innovations – beyond simple buzzwords. Exchange at eye level promotes a culture of creativity in the workplace and strengthens teamwork within our company. This in turn helps us to act entrepreneurial and forward facing.

For more information please visit our website: *https://arvato-supply-chain.com*

PROJECT SEMINAR
WWU MÜNSTER & ERCIS
In the previous semester we were partner of the project seminar "Logistics Marketing Portal" at the chair for Information Systems and Supply Chain Management *(WWU Münster)*. The aim of the project was to concept an automated logistics marketing portal to improve and control of marketing activities in companies with independently operating salespersons. We are looking forward to the next phases of our collaboration, inspiring discussions and to be challenged by and to learn from ERCIS students forward thinking mindset.

JOB OPPORTUNITIES
Are you looking for a career entry? We could offer you to work in an international environment, with multifaceted projects in the automotive, banks & insurance sector and being part of young-spirited, open minded mixed team with heterogeneous backgrounds. We are looking forward getting to know you!

In Münster, Cologne and Harsewinkel we are regularly looking to fill e.g. these positions:

- UX/UI Designers
- *(Junior)* Software Developer Java/Web
- *(Junior)* Project Manager
- *(Junior)* Business Intelligence Manager
- *(Junior)* Data Scientist
- Management Associate Trainee
- Internship / Working Student *(Digital)* Business Development

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BISON

ABOUT THE COMPANY
As a leading supplier of merchandise management systems, Bison offers complete solutions for retail. Bison has its headquarters in Sursee, employs approximately 300 staff and generates a turnover of over EUR 70 million. With over 30 years of market experience, Bison makes a reliable, secure contribution to the success of its customers. Each customer receives comprehensive and long-term support, with a focus on mutual trust and the protection of customers' IT investments.

Bison Smart Retail Solution was specially developed for the retail sector. This solution covers the core processes for goods management and at the point of sale in full. By integrating a solution for traceability, Bison offers a modern, up-to-date package of solutions. Based on the standard solution and individually tailored to customer preferences, considerable added value is created for the customer.

The Bison Retail expertise hub has comprehensive process knowledge and can provide and implement technical solutions, above all in all areas relating to multi-crosschannel®. Bison Process enables a crosschannel sales approach and process management, including in-store, e-commerce and m-commerce. This industry model provides retail-specific processes. These can be individually configured to meet the company's requirements, without programming and without losing the release capabilities of the software. The open architecture of Bison Process ensures the company a high level of investment protection; the software is always a step ahead of challenges in the market, both in terms of its technology and its functionality.

The product portfolio is complemented by POS solutions, electronic shelf labelling (ESL), mobile solutions for mobile end devices and digital signage solutions. Bison's modern POS solution can be perfectly integrated into existing system environments thanks to the modular structure and its exceptional flexibility. Thanks to the ESL concept, the headquarters or individual branches can respond quickly to changing market or price situations. The wireless base station simplifies internal processes and creates a direct connection between the shelf and POS. In addition, the electronic shelf labelling at the POS creates new possibilities in terms of information. This is used not only for product identification and price labelling, but also in combination with specially developed apps or with internet of things (IOT) modules which provides further useful services for the customer in terms of traceability of the product, product features, contents (allergens) etc. Thanks to the mobile solutions, normal Smartphone devices can be turned into powerful mobile hand-held devices. The scanning solutions include a barcode scanner, a magnetic card reader and an optional Bluetooth component to connect a mobile printer. The RFID option vastly expands the range of uses. Thanks to standard or individually programmed applications, the devices offer a multitude of in-store application possibilities, e.g. stocktaking, order creation, goods-in process and picking.

Bison offers innovative communication options through digital signage. The solutions can be managed efficiently by the simple user functionality and automatic interfaces. Bison is a general contractor and covers all the processes of a modern retailer using integrated solutions, from the central ERP system to branch management to POS systems and digital signage.

TOPICS OF INTEREST
- Interest in European (sales) partnerships
- Development of new approaches to tackling retail-specific questions and problem areas bearing in mind the cloud approach
- Integration of Zebra Technologies, iPod, iPhone, iPad and Samsung Galaxy in operating procedures
- E-Paper integration options (e.g. Electronic Shelf Labeling)

JOB OPPORTUNITIES
For students:
Diploma/bachelor theses in the fields of IT, software development and marketing

For graduates:
Consultants, software developers, project managers and sales representatives

For further information please visit *www.bison-group.com*

CLAAS

ABOUT THE COMPANY

What started in 1913 with the manufacture of powerful straw binders has become a leading giant on the global market: CLAAS is one of the world leaders in the production of agricultural technology. The company is the European market leader in combine harvesters and world market leader for self-propelled harvesters. Its tractors, balers and forage harvesting machines also hold top positions in agricultural technology worldwide.

This is supported by the most state-of-the-art information technology. Machine-to-machine communication, intelligent networking, the improvement of the harvesting process as a whole – industry 4.0 is already the company's reality and sustainability is its principle.

CLAAS products ensure efficiency in agricultural production and they go easy on natural resources as they continuously reduce energy consumption. More than 11,000 employees are engaged in this task in 140 countries; talented people from all professions, who make their daily contribution towards feeding the world.

TOPICS OF INTEREST

- Connected machines
- Farming 4.0
- Omni-channel customer experience
- Precision Farming
- Data Management
- Big data & AI

Today the harvest chain is seeing many innovations coming through, especially in drive technology, machine intelligence and networking. In 2010, CLAAS consolidated its range of electronics expertise and, since then, has placed it under a collective name. "Efficient Agriculture Systems", abbreviated as "EASY", is the CLAAS collective term, which encompasses machine control and performance optimization, steering systems, precision farming and monitoring, software solutions and services.

However, digital transformation has changed much more than just the technology of our machines. New product features, different license models and data driven business models require our business unit for sales and service to reinvent our traditional way of doing business. At CLAAS, we are striving to digitize all traditional customer touchpoints for each and every farmer. Our online and offline world is merging into one Omni-channel customer experience.

CLAAS is heavily investing in its digital future. In addition to the new development center for electronics on the machines in Dissen, massive investments are being made in the customer and dealer systems in order to link the customer's processes seamlessly with ours. The well-known positive customer experience from our physical dealer touchpoints will be ensured for our digital touchpoints through the integration of state-of-the-art systems e.g. Salesforce, SAP hana, Tableau and modern IT architectures.

JOB OPPORTUNITIES

CLAAS is special because it is a family-owned enterprise with a long-term, forward-looking approach which is based on the commitment of its employees. At CLAAS, you won't find 'just another job'. You will instead face the challenging task of continuously improving harvesting performance through innovative technology.

- **Selected vacancies in Germany for professionals:** SAP Consultant, Specialist Big Data Infrastructures, Senior Sales Force Developer, IT Project Manager

- **Selected vacancies in Germany for students:** Internship Digital Transformation, Internship Online Business After Sales, Internship Business Development Digital Customer Touchpoint, Internship Data Analytics/ Data Science/ AI (usual procedure: 3 months internship + 3 months joint thesis project)

If you have any questions about our current international vacancies, our contacts at the respective locations are happy to help.

www.claas.jobs

Instagram: *@claas_careers*

DO SOMETHING GREAT

ABOUT THE COMPANY

With a pioneer spirit and start-up attitude cronos was founded in 1991 in Münster, Germany. Our core area of consulting is IT and process optimization for utility companies. We support our customers in the process of digitization and the development of new business fields.

cronos is an official SAP, UiPath, celonis and Microsoft partner, has long standing partnerships with universities and a combined experience of over 1000 customer projects. Drawing from this experience and based on the latest technological trends, like Blockchain, SAP S/4HANA, Robotic Process Automation, Process Mining and Machine Learning, we are able to develop innovative and approved solutions for the utilities industry.

We make an active contribution to the success of the energy transition in Germany, Austria and Switzerland. With over 300 permanent consultants in 5 locations, we are the biggest independent SAP consulting firm for the utilities industry in GSA. Our success is the result of a well-balanced team formation bringing together young and experienced IT specialists, who are among the most sought-after consultants in the industry.

FACTS

- market leader as biggest independent IT consultancy for the utility sector
- 300+ consultants
- 200+ active customers
- 1000+ successful projects
- 25+ years of experience
- SAP Diamond Initiative & Gold Partner
- UiPath Diamond Partner
- Celonis Gold Partner

TOPICS OF INTEREST

- software engineering
- project management
- portals
- app development
- SAP HANA
- process automation
- CRM
- SAP Customer Experience
- analytics
- online marketing
- HTML5, JAVA
- SAP Cloud Platform
- SAP Fiori
- Machine Learning
- strategy consulting
- AI
- SAP UI5
- Process Mining
- Robotic Process Automation

JOB OPPORTUNITIES

Think outside the box – especially in IT! Driven by innovative and creative young people, digitization accelerates the development of new technologies and new challenges. Granting young professionals the freedom to explore ideas and to assume more responsibilities is part of our credo. We maintain a strong academic network and offer attractive programs for students and graduates. Our regular workshops, graduate programs and extensive onboarding system jumpstart a career in IT development and consulting.

WE ARE LOOKING FOR TALENTS

- Junior IT consultant
- Junior RPA developer
- Junior RPA consultant
- Junior app developer
- Junior cloud developer
- Junior ERP consultant
- Working Student
- Bachelor-/Master-Thesis

Find out more about our student and graduate programs:

www.cronos.de/campus
www.cronos.de/cronologewerden

D·M·I

ESB_Professional/Shutterstock.com

ABOUT THE COMPANY

DMI takes responsibility for the digital archiving of patient records and provision in client software systems. Since 1966, the specialised service provider has been providing hospitals with continuous support in the optimisation of information-based processes and with fully compliant archiving throughout constant changes in technology and framework conditions. In production centres and at clients' locations, DMI staff digitise, qualify, integrate and archive every second patient record for in-patients based on certified information security and data protection guidelines and ensure seamless integration into health IT systems. Through its interface expertise with all data management HIS architectures, DMI enables the consolidation of digitised paper-based patient records with electronic documents and data, as well as medical image documentation, in audit-proof long-term archives. Interoperability *(the ability of systems to interact with one another)*, including on a data level, is the basis for the integration and sustainability of our solutions.

DMI provides its clients with lean, secure, efficient processes through consolidated patient records.

Our relationships with our clients are shaped by commitment, respect and fairness. The quality of our service business is based on the professional and social skills of our employees.

TOPICS OF INTEREST
- Consolidating medical records including electronic and digitized documents
- Interoperable IT architectures based on current standards
- Audit-proof digital archiving for compliance
- Deep integration of archived documents into administrative and clinical work-flows for enabling effective clinical processes for best patient outcomes
- The link between medical informatics and medical research as well as routine practice in healthcare

DMI AS AN EMPLOYER

DMI is not your typical medium-sized company: it is an owner-managed organization of roughly 1,000 highly motivated staff and a flat hierarchy. Its approach is long-term and sustainable, with continuing education of employees as a key ingredient. With a focus on the German healthcare market and additional activities in banking, insurance, general business, and the public domain, DMI offers high-value services:

- digitization, qualification, consolidation, presentation, and archiving of documents
- integration into information-based processes
- analysis of documentation process landscapes and support for optimization aiming at effectiveness and compliance.

Company headquarters are situated in the pulsating university city of Münster in North Rhine-Westphalia *(NRW)*; service centers are located in the castle town of Leisnig near Leipzig *(Saxony)* and Essen (the "Green Capital", NRW).

JOB OPPORTUNITIES

Are you up to this challenge? DMI's team members are committed to achieving results for customers in a dynamic ecosystem of evolving technologies and continuously changing customer demands. A multitude of benefits make DMI an attractive employer.

- Selected open positions in Germany for professionals: *(senior)* software developers for applications, information systems specialists, experts for IT infrastructures and networks.
- Selected open positions in Germany for students: thesis students *(business IT, information systems, IT, software development)* for innovation in documentation and archiving enabled by state-of-the-art IT and by digital transformation.

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www.dmi.de

ABOUT THE COMPANY

At Hilti we create and design leading-edge technology, software and services, which power the professional construction industry. Hilti stands for quality, innovation and direct customer relationships resulting in about 250,000 individual customer contacts each day. Based in Schaan, Liechtenstein, the company has 30,000 employees in more than 120 countries around the world who contribute to making construction work simpler, faster and safer while inspiring customers every single day with technologically leading products, systems, software and services.

Many ideas for improvements are developed directly on construction sites while talking to customers. If there is an on-site challenge for which no Hilti solution exists, one will be developed. This is why the company invests approximately 6 percent of sales each year in research and development. We run our own research and design labs, working with top technical universities and partners, all over the world. We make our own products in Hilti factories and with external partners, making sure all our products match the same high quality and standards.

We are particularly motivated by the possibilities that digital technology can bring to a traditional sector like construction. Right now, we have a unique opportunity to solve real-world problems and lead the way in revolutionizing our industry. As a company whose lifeblood is innovation, we give our customers the next level of digital offerings on an impressive global scale.

For you, it means unrivalled opportunities to work in a 'start-up within' environment, develop an international career and have an impact on the shape of things to come.

ABOUT GLOBALIT IN HILTI

It's an incredibly exciting time to join Hilti, especially if you work in the digital space. We've always been a company at the forefront of engineering hardware solutions, and today we're investing more than ever in software technologies as digital transformation is a big priority for us.

Hilti is a great place for you to show your worth as you learn, grow and carve-out your career in Information Technology. Global IT within Hilti is a truly global team with main hubs in Buchs *(Switzerland)*, Kuala Lumpur *(Malaysia)*, and Plano and Tulsa *(USA)*. All locations have highly competent teams who work very closely together and in profound partnership with their business counterparts. Hilti's Global IT team is known for their focus on sustainable business enablement by translating latest IT innovations into value creating solutions and services.

So, have a career with the best! Become a valuable member in a highly professional and international team of IT experts.

TOPICS OF INTEREST
- Business applications – where we run a fully consolidated global SAP S/4 HANA system landscape.
- Digital workplace – where we connect our 30,000 Hilti people and make them an information-enabled team.

- Cloud application platform – where we build our common platform for all digital and software offerings to our customers.
- Enterprise computing – where we design, build and operate our network and computing capabilities.

Our Global IT roles range from data analysts, project managers and system engineers to cyber security experts, user experience designers and enterprise architects.

We have been recognized as one of best workplaces on the 2020 Fortune 100 Best Companies to Work For® list and 2019 Best place to Work by Glassdoor, and were ranked among the top employers by the Great Place to Work® Institute multiple times. Further, the snow-draped mountains, crystal-clear lakes and marvelous landscapes in the so-called Happy Valley invite for lots of outdoor activities and allow you to work where others spend their holidays.

JOB OPPORTUNITIES IN OUR STRATEGIC IT OFFICE IN BUCHS, SWITZERLAND:
- Interns or thesis students
- Hilti Fellowship program *(in cooperation with University of Liechtenstein)*
- Graduate positions

Take a look at the open positions on *https://careers.hilti.li/en-li/corporate-it* or get in touch with us directly.

CONTACT

Dr. Susanne Buddendick
Head of IT Growth
susanne.buddendick@hilti.com

INFORMATIONSFABRIK

RAISE THE POWER OF DATA

OUR MISSION?
RAISE DATA
TREASURES!

We develop ideas, offer solutions
and drive companies forward.

ABOUT THE COMPANY

Where quick reactions to ever changing business requirements are of paramount importance and subsequent decisions have a wide impact, we provide the pertinent facts. Informationsfabrik consultants are experts in the areas of Next Generation BI, Big Data and Artificial Intelligence. Our focus lies on the financial and insurance service industry, the banking and industry sector.

WE PRODUCE INFORMATION

Decision making in companies is based on the evaluation and analysis of information. Be it for intelligent marketing, for improved customer communications and recommender systems, or for determining churn probabilities: Accurate information to act upon has become a major asset for any business process. With methods provided by Data Analytics and Artificial Intelligence, a whole lot of new possibilities to extract and condense information from data came into existence.

We support our customers in several analytics subject areas. Our team shares the aspiration to deliver information in the correct format to the right person at the right time using modern technologies and our innovative approaches.

Visual Analytics promises a fast and effective way to get a thorough understanding of business data. No means are better suited to give meaning to data than a visual form of representation. We support our customers by creating diagrams and conveying the required knowledge. In fact,

we also empower our clients to conduct ad-hoc analysis and reports by providing an environment in the sense of BI Self-Service which can be used by power- or business users without IT assistance. Eventually this leads to faster and more accurate decision-making. Of course, we will make sure that any data governance and legal obligations are met.

We design and implement BI, DWH and Big Data solutions. In a Data Warehouse data from different source systems and of varying formats is consolidated, stored for data analysis and ultimately used to support business decisions.

Our highly qualified staff has acquired profound knowledge for conception and design of such solutions and are familiar with new modelling and architecture paradigms.

Another important subject area is Big Data. In recent years the amount of semi- or unstructured data sources has massively increased. At the same time the challenge of realizing storage, information extraction, and information integration for analysis rises. We support our customers to cope with the difficulty of complex Big Data solutions.

Last, but not least we employ Data Science and Predictive Analytics methods to create new possibilities for extracting knowledge from our client's data. We offer guidance on planning and executing Data Science projects. Following our self-developed approach, shaped by the experience from hundreds of projects, we handle vast amounts of data and deliver high quality information and predictions.

We collaborate closely with our customers and help to expand their knowledge with individual trainings and valuable coaching.

Since our foundation in 2000, we managed to become renowned business analytics experts. To give our clients certainty in a couple of mouse clicks is the goal we have devoted ourselves to.

Work-Life-Balance
YOUR JOBOPPORTUNITIES
AT INFORMATIONSFABRIK

- Data Scientist (f/m/d)
- Junior Big Data Engineer (f/m/d)
- Junior Visual Analytics Expert (f/m/d)
- Full Stack Web Developer (f/m/d)
- Devops Engineer (f/m/d)
- Internship (f/m/d)

Apply now online via our career portal: www.informationsfabrik.de/karriere

IQ-OPTIMIZE

The IQ-optimize Software AG is a provider of modern, innovative software technology and offers its customers reliable and customer-oriented IT services. Since 1996 IQ-optimize develops customized applications and advanced software products. The IQ-optimize Software AG is a subsidiary of 1&1 Drillisch AG. 1&1 Drillisch AG is a listed public limited company and offers telecommunications services. The portfolio of the IQ-optimize Software AG is broad. The priorities are customer oriented and serve all needs of costumers

Main competences of IQ-optimize Software AG are:

- Software development, operation and maintenance of workflow and document management systems for business processes automation, billing and mediation, ERP and retail for web shops, stores and indirect sales including sales of subsidized goods.

- Media design for trendsetting websites.

- Implementation, hosting and operation of customized IT infrastructures and cloud solutions including service management, maintenance, security and monitoring.

- IQ Optimize is Advisory Board Member since 2004.

RESEARCH TOPICS

Optimization; Innovation; Omnichannel; Telecommunication; Workflow Management; CRM; Web Sales; Retail; Business Intelligence; Service Management and Security; Hosting and Cloud Solution

JOB OPPORTUNITIES

We are offering various job opportunities within our Software Development, Billing, Operation, Business Intelligence, Media Design and Project Management Units. Additionally to these areas we are offering job opportunities within our Cloud Technology area based on OpenStack. Please refer to https://www.iq-optimize.de/job for further details.

http://www.iq-optimize.de

PICTURE

ABOUT THE COMPANY

The PICTURE GmbH intends to promote organisations in their modernisation efforts. We combine a methodical approach, technical support and considerable process expertise with a sustainable qualification approach. This integrated approach helps to achieve success in process management. The PICTURE GmbH is a spin-off of the University of Münster, founded in 2007 by Lars Algermissen and Thorsten Falk. Thereby the PICTURE GmbH stays connected with the university and still benefits from a transfer of knowledge. The core business segment of the PICTURE GmbH is process consulting, process analysis and organisational design. The PICTURE GmbH is a consulting firm as well as a software company with consultants and developers specialised on process consulting. The company is well known for the PICTURE method and the PICTURE platform, which in combination allow describing, analysing and optimising business processes within organizations.

THE PICTURE METHOD –
EASY. EFFECTIVE. EFFICIENT.

On the basis of 24 building blocks the Picture method provides the opportunity of process controlling by gathering and illustrating process data in a plain and transparent manner.

This method of process modelling lays the foundation for an extensive business assessment, as it offers a target-oriented and efficient way to analyse the coherencies of a company's organisational structure and business procedures.

The following illustration furnishes a brief overview about the Picture method:

Self-Explanatory
Simplified process modelling due to easy-to-use an intuitive components.

Standardized Process Description
Increased comparability and analysability due to a formal and contentual standardisation of the description level.

Instruction and Integration of Employees
Due to its simplicity it enables employees to adopt this model quickly and fosters staff acceptance.

Flexibility in Process Description
The PICTURE method can be personalised according to the individual requirements of organisations.

Efficient Process Modelling and Activity Analysis
The 24 buuilding blocks enable to filter essential information for further analysis.

THE PICTURE PLATFORM

The Picture method is embedded in the web-based Picture platform. This platform serves to support process management within organisations as well as inter-site projects. The PICTURE platform is tailored to the special needs of organisations and aims to provide a vivid, precise and generally intelligible methodology to illustrate these needs through customised processes.

Visit our website *www.picture-gmbh.de*

JOB OPPORTUNITIES

Job Opportunities at the PICTURE GmbH:

- (Junior) Sales Consultant (f / m)
- (Junior) Consultant
- (Senior) Consultant
- Software Developer
- Student Assistant (f / m)

TOPICS OF INTEREST

- Process management and optimisation
- Quality Management and Risk Management
- Organizational review
- Knowledge Management
- Task and Product Review
- Software implementation
- Process Benchmarking
- Change Management
- Process-oriented Budged Consolidation
- Implementation of Document Management Systems Reorganisation Studies Interface Analyses, Implementation of Software

PROVINZIAL

© Roland Horn

ABOUT THE COMPANY

The Provinzial Group is the second largest public insurance group in Germany. We insure what is dear to our customers: their belongings, their home, their vehicle, their working power, their leisure activities, partly their health and even their lives. We are also happy to help with retirement planning.

We gain our strength from the regional ties of our subsidiaries. For more than 300 years, we are where our customers are. Today, more than five million private and corporate customers place their trust in us. What makes us special is our regionality and proximity. Our advisors are at most a few minutes away from our customers and can be reached through our many digital channels at any time.

Furthermore, we put great importance on sustainability and commitment to the regions that are firmly anchored in our corporate values. Whether in the field of art and culture, sports sponsorship or security: We engage ourselves – and we do so in many different areas.

As Provinzial Group we belong to the Savings Banks Finance Group, Germany's leading and most successful financial network. We are one of Germany's top 10 insurers with a premium volume of more than six billion Euros and around 5,400 employees. The Provinzial Holding AG as holding company of the whole group is headquartered in Münster. There are five regional indemnity and casualty insurers operating under the holding company: the Westfälische Provinzial Versicherung AG, the Provinzial Rheinland Versicherung AG, the Provinzial Nord Brandkasse AG, the Lippische Landesbrandversicherung AG and the Hamburger Feuerkasse Versicherungs-AG. Furthermore, the two life insurance companies Provinzial NordWest Lebensversicherung AG and Provinzial Rheinland Lebensversicherung AG are also part of the group.

SELECTED PROJECTS

We are constantly driving forward the digitalization of the insurance industry. In projects and the design of new digital business models, we are constantly improving our IT competencies:

PROVINZIAL innowingz

During cross-departmental project days that are setup as a collaborative challenge, we work out innovative solutions for insurance services and develop concepts to bring digital offers closer to our customers.

andsafe

andsafe is the digital commercial insurer of the Provinzial Group. It started its business operations in 2019 and focuses on fully automated, digital processes in the commercial insurance sector.
www.andsafe.de

Apato
Willkommen zuhause

The start-up company Apato focuses on the real estate rental market. Founded in 2020 as a wholly owned subsidiary of the Provinzial Group, the company has set itself the task of developing and operating digital services relating to real estate.
www.apato.de

TOPICS OF INTEREST

Our IT department is a full-service provider for the Provinzial Group. We focus on:

- Business Process Management and Automation
- Data Analytics and Artificial Intelligence
- IT Security and Governance
- Enterprise Architecture
- Software Engineering
- Digital Transformation and Innovation
- Insurance and Financial Services
- Risk Management

JOB OPPORTUNITIES

Today, around 950 employees work in our IT department. Convince yourself of the innovative drive of a company rich in tradition.

We search regularly:
- Java Developers
- Business Analysts

We offer:
- Direct Entries
- Trainee Programs
- Internships
- Working Student Activities

We support:
- Bachelor and Master Theses

For more information, visit us on
www.provinzial-konzern.de/content/karriere
www.provinzial-konzern.de

or follow us on

shutterstock.com

SAP

Our Purpose:
Help the world run better and improve people's lives.

SAP's strategy is to help every business run as an intelligent enterprise. As a market leader in enterprise application software, we help companies of all sizes and in all industries run at their best: 77% of the world's transaction revenue touches an SAP® system. Our machine learning, Internet of Things *(IoT)*, and advanced analytics technologies help turn customers' businesses into intelligent enterprises. SAP helps give people and organizations deep business insight and fosters collaboration that helps them stay ahead of their competition. We simplify technology for companies so they can consume our software the way they want – without disruption. Our end-to-end suite of applications and services enables business and public customers across 25 industries globally to operate profitably, adapt continuously, and make a difference. With a global network of customers, partners, employees, and thought leaders, SAP helps the world run better and improve people's lives.

For more information, visit
www.sap.com

TOPICS OF INTEREST

Business Technology Platform
- Database & Data Management
- Intelligent Technologies
- Application Development
- Predictive Analytics
- Artificial Intelligence / Machine Learning
- Blockchain
- Cyber Security / Quantum Technologies

Intelligent Suite
- Digital Supply Chain
- Industrie 4.0 / IoT
- Employee Experience Management

JOB OPPORTUNITIES

Dreamers. Thinkers. Doers. Looking for your dream job? Find it at SAP. Bring everything you are – and become everything you want.

jobs.sap.com

SCHWARZ

ABOUT THE COMPANY

The Schwarz Group is a leading international trading company with 458,000 employees worldwide and over 12,500 stores in more than 33 countries. It is made up of the two retail divisions, Lidl and Kaufland, and is based in Neckarsulm in Baden-Wuerttemberg.

In addition to the retail business, the Schwarz Group has continuously expanded its portfolio to include production capacities for food. These include own brands in the beverages, baked goods, confectionery and ice cream sector.

The Schwarz Group has been involved in the collection, sorting and recycling of recyclable materials for many years. The group company, PreZero, is the disposal and recycling service provider for the entire group.

Schwarz IT is the powerful technology partner of the entire Schwarz Group. As a central IT service provider, Schwarz IT is responsible for the selection and provision of IT infrastructure, IT platforms and business applications for the whole group.

By continuously considering current technological developments, Schwarz IT identifies innovative courses of action. In close cooperation with the departments, Schwarz IT develops professional, efficient IT solutions. In total, Schwarz IT is responsible for IT at more than 12,500 locations throughout the Schwarz Group in over 33 countries en-route to "Trading 4.0".

Our guiding principles are enthusiasm for innovation, proximity to people, and understanding the business; as a leading technology partner, we are the digital heartbeat of the Schwarz Group: efficient, fast, flexible.

TOPICS OF INTEREST

Digital Transformation and Innovations, Business Transformation, extensive service processes, IT architecture, Cloud Data, Informatics, Master Data Management, SAP HANA, Big Data, Business Intelligence, Artificial Intelligence & Analytics, SAP Retail/EWM/CAR, Salesforce, CRM, SuccessFactors, GK Software, Hybris, Solution Development, Design Thinking, Conversational Commerce *(Chatbot, VoiceBot)*

JOB OPPORTUNITIES

In a wide range of exciting tasks and global projects, employees work in a dedicated, independent and cheerful way towards providing optimum business support to Europe's largest retail company in terms of assisting global business processes, and designing, developing and rolling out systems. Furthermore, they ensure a highly-available IT system and application landscape as well as ultra-modern, high-end technologies.

Goals: The Schwarz Group, number four in global retail with annual sales of over 113,3 billion euros, will continue to grow with its divisions. The digitization of the world offers many previously unimaginable possibilities for the further development of existing business models and for the establishment of completely new concepts. For this to succeed, we create the decisive technological prerequisites.

Together we secure the diverse, global daily business of the Schwarz Group. Through the forward-looking development of innovative solutions, we enable new business ideas to be put into practice.

Become part of Schwarz IT, the powerful technology partner of Schwarz Group. We are looking for go-getters, who want to become part of the digital heartbeat. We offer a variety of opportunities from internships to permanent positions.

Schwarz IT – more IT than you might think!
Find out about our attractive job offers at

www.it.schwarz

www.xing.com/companies/schwarzitkg
www.linkedin.com/company/schwarz-it-kg
www.kununu.com/de/schwarz-it

viadee®
IT-Unternehmensberatung

AT VIADEE, YOU ARE IN THE RIGHT PLACE

ABOUT THE COMPANY

viadee Unternehmensberatung AG is a German IT-Company with more than 150 tech-interested employees. Our company culture is dedicated to caring for each one individually, maximizing our potential. Applying this principle, we have come a long way since 1994 to offer great individual solutions to our customers.

viadee currently has an office in Münster, as well as an office in Cologne and Dortmund. All are located in the state of North-Rhine Westphalia, allowing us to focus a regional customer base. Projects are seldom far away from our employee's home location, which proudly makes us say that most of our consultants have the chance to sleep at home.

The industry sectors, in which our consultants are active, include banking, electric power industry, trade, IT and service companies, logistics, public service, telecommunications, insurers, logistics and supply plants.

TOPICS OF INTEREST

We consist of a lot of people with a technological and methodical affinity. Keeping up to date with the ever-changing world of IT, there exist various opportunities within viadee.

Bringing BPMN (business process model notation) models to life is currently one of our core activities. Prominent mention should be given to our open source contributions on GitHub, as well as our confluence BPM-Modeler on the Atlassian Marketplace. Work often is organized in agile projects leveraging other Java-based technologies, be newest technologies with Quarkus and Micronaut or Spring Boot, or established practices like WSDL and SOAP. Java and SAS have accompanied us through almost all of our company history and with most customers. However, we take an undogmatic view on technologies and methods and use whatever is appropriate, such as Python and R in the Data Science Domain. To keep up with the scientific discussion we enjoy cooperation, both with ERCIS, and other research institutions.

Test automation is great to ensure software quality. We feel it is even greater with software developed here called Mateo, the viadee test automation framework: An opportunity to create cross-platform integration tests, be it web-based, or on the level of an operating system.

Areas of expertise and consulting products, such as these, are invented and supported like internal startups by using lean methods.

Employees have the opportunity to contribute their topics of interest as part of our research and development activities. Right now, this is happening with explainable artificial intelligence (XAI), IT-Security, Cloud Architecture, and several other topics.

JOB OPPORTUNITIES

Interested in our topics and ready to take the next step? If you see yourself in a technical role, while being open and interested in the social components of everyday business life, we would love to welcome you on board.

IT-Consultant for
• Software Development
• Software Architecture
• Business Intelligence

To find out about our benefits and further job listings make sure to visit our website *www.viadee.de/karriere*. For a closer look at our field of interest, you are invited to follow along at *blog.viadee.de* – a blog to which every employee can add content.

FOR MORE INFORMATION, PLEASE CONTACT:

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www.viadee.de

Westfalen

Corporate headquarters of the Westfalen Group at Industrieweg in Münster.

ABOUT THE COMPANY

The Westfalen Group is an energy sector technology company operating with a total of 22 subsidiaries and associates in Germany, Belgium, France, the Netherlands, Austria, Poland and Switzerland. The family business, founded in 1923, has over 20 production sites located across Europe and is headquartered in Münster. Its business sectors are gases, energy supply and service stations. With about 1,800 employees, the Westfalen Group posted sales of around 1.9 billion euros in the 2019 financial year.

Gases

The Westfalen Group produces and distributes approximately 300 technical gases and gas mixtures for almost every application in industry and trade, food production, laboratories, pharmaceuticals, medicine and homecare.

Energy Supply

Under its Westfalengas brand, the Westfalen Group is one of Germany's leading liquid gas supply companies. There are more than 2,000 possible applications for Westfalengas: as off-grid thermal energy for heating factories and agricultural buildings, for thermal processes in industry and commerce, or as an environmentally friendly propellant for passenger cars or forklift trucks.

Service Stations

With around 260 stations, the Westfalen Group has the largest independently-branded filling station network in Germany, primarily in North-Rhine Westphalia and Lower Saxony. In addition to conventional fuels, Westfalen and Markant stations also offer the alternative energies of LPG, charging current and hydrogen.

A family owned company

The Fritsch-Albert family ensures continuity of the family company: Since July 2018, Wolfgang Fritsch-Albert has been Chairman of the Supervisory Board at the Westfalen Group. Prior to this, he led the company as CEO from 1977 to 2018. Renate Fritsch-Albert joined the Supervisory Board in April 2017. She was previously a member of the Executive Board.

Climate protection with hydrogen

The Westfalen Group supports regional and nationwide environmental protection initiatives. In 2018, for example, it entered into a cooperation with Stadtteilauto CarSharingGmbH. Both companies offer an emission-free hydrogen vehicle to rent.

Systematic energy and environmental management

The Westfalen Group has, for many years, continued to pursue a rigorous energy and environmental management system. In 2018 the effectiveness of this system was proven once again by the company's successful certification to internationally recognized standards DIN EN ISO 14001 *(Environmental Management Systems)* and DIN EN ISO 50001 *(Energy Management Systems)*. In addition, more than 700,000 kilowatt hours of electricity have been saved over the past three years.

TOPICS OF INTEREST

• Industry 4.0
• IoT in Logistics
• Data Analytics and Machine Learning
• Mobile Solutions
• Business Process Excellence
• Digital business models

Westfalen is constantly looking for new business fields and technologies in order to continue to establish forward-looking products on the market by strengthening entrepreneurship, the first startup ideas were put into practice this year, among others with the mobile payment app fillibri and the sustainability platform Green Funding.

JOB OPPORTUNITIES

If you are interested to work with great people at the Westfalen Group please look at our website:

https://westfalen.com/de/de/karriere/

WESTPHALIA DATALAB

German AI Award – Award Ceremony Felix Fiege (FIEGE), Prof. Dr. Reiner Kurzhals & Philip Vospeter (Westphalia DataLab) (left to right)
Photo: Viviane Wild

ABOUT THE COMPANY

The Westphalia DataLab is a data science software development and consulting company with deep expertise in the areas of artificial intelligence (AI) and machine learning – as shown by the "Deutscher KI-Preis" officially awarded by WELT / Axel Springer SE in 2020 and the title "Machine Learning Champion" bestowed upon in 2019 by the Center Smart Services of RWTH Aachen University, an independent review of more than 300 machine learning providers.

As a visionary company, the Westphalia DataLab is one of the first data science companies in Europe that from the outset has committed to the productization of data science projects: That is, we develop scalable data products based on our cross-industry expertise and individual project experience. Simply put, we turn data projects into data products. Our data products combine state of the art algorithms in the back end with a user-friendly interface and thus enable all types of companies and users to benefit from AI technologies without requiring any data science expertise.

The Westphalia DataLab was founded in Muenster in 2017 by a team around Prof. Dr. Reiner Kurzhals and the pioneer in contract logistics FIEGE Group as a strategic investor. In August 2020, we were able to win REMONDIS, one of the world's largest recycling, service and water companies, as an investor.

PRODUCTS AND SERVICES – TOPICS OF INTEREST

Data Activation & Innovation – Data Science Consulting & Implementation

Our experienced Data Activation & Innovation team offers tailored project support for customers across all industries – from identifying the most relevant use case and carrying out the Proof of Concept up to the seamless integration of the analysis results into operational business processes and IT infrastructure. Our current projects include developing route optimization tools for logistics, predictive quality solutions for mechanical engineering, a customer feedback analysis tool for consumer goods manufacturing, a predictive diagnostic ophthalmology assistant, and others.

Westphalia Forecast – Software as a Service Product

Westphalia Forecast is the first product that we offer as a Software as a Service (SaaS) solution. It is a fully automated forecasting solution that enables customers across all industries to create precise forecasts of e.g. sales, incoming goods, or personnel requirements. It has already been used successfully for different use cases in varied industries, especially when more traditional planning approaches, often based on Excel, fail to deliver the desired accuracy.

deepeye – Innovation Pipeline

Harnessing AI to prevent blindness: deepeye is our product under development that is driving the digital revolution in ophthalmology. In cooperation with the eye center St. Franziskus-Hospital Muenster and Novartis as a sponsor, we have developed an AI-based decision support system for ophthalmologists in the treatment of the eye disease age-related macular degeneration (AMD), one of the leading causes of vision loss in the developed world.

JOB OPPORTUNITIES

Fancy some data? Then join us and become part of our rapidly growing start-up. Use the unique opportunity to actively participate in the design and development of a young company and new products.

- Backend Developer
- Fullstack Developer
- Senior Fullstack Developer
- Data Scientist
- Senior Data Scientist

www.westphalia-datalab.com

zeb

ABOUT THE COMPANY

zeb is the leading strategy and management consultancy specializing in financial services in Europe. We support banks, insurance companies and (tech) service providers in dealing with all the challenges and opportunities arising from transformation in the industry. As an employer, we rely on people who like to try new things, take responsibility and inspire others through their actions.

TOPICS OF INTEREST

As a partner for change, it is our aim to improve the performance and competitive strength of our clients. The success of our consulting services is based on wellfounded methodology, combined with indepth expertise and excellent knowledge of the sector. The focus of our work lies in strategy & organization, finance & risk and IT. We intend to continue our growth path in the future. Our thematic growth focus is on management and IT consulting.

ADDITIONAL INFORMATION ABOUT THE COMPANY
#ShapeSpaces

Entering new spaces, shaping and designing them, grasping and changing the unknown. That's our thing. We love to discover new things, try them out and develop them further—and we love to infect others with our enthusiasm for doing so.

Shape Spaces expresses the key element of the zeb culture: shaping things. With expertise, courage and creativity, we drive the transformation of the financial sector forward. We love to discover new things, try them out and develop them further. We are looking for people who overcome boundaries, shape the future and infect others with their enthusiasm.

Shape your professional future with us.

Stay and grow

"Stay and grow" is our motto. zeb promotes long-term careers—with a focus on your personal career path. We are looking for people with an excellent university education and team spirit. Our principle at zeb: reasoning beats hierarchy. This means that your opinion matters. Get involved in the dialog that gives rise to something new. Listening well is just as important as arguing convincingly. Question the familiar and inspire others with your ideas. Create new solutions in a team and dive deep into the topic.

JOB OPPORTUNITIES
Required specializations:
business administration, economics, (business) informatics, (business) mathematics, applied physics

Possibilities to join the company:
- Internship
- Student assistant
- Theses and dissertations
- zeb.bachelor.welcome
- Direct start

www.zeb-career.com/de/
www.zeb-career.com/en/

COMPETENCE CENTERS

The ERCIS network bundles certain areas of expertise in several competence centers. Competence centers are multi- and interdisciplinary consortia consisting of partner institutions from research as well as from practice to focus on distinct topics.

Hi'BPM

Social Process Mining
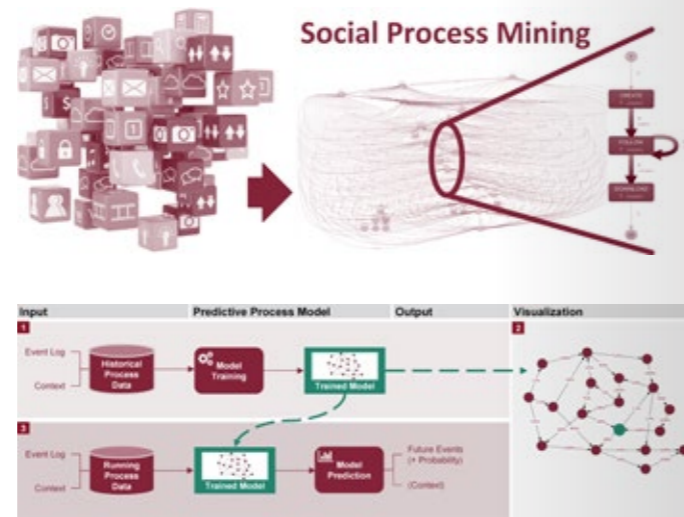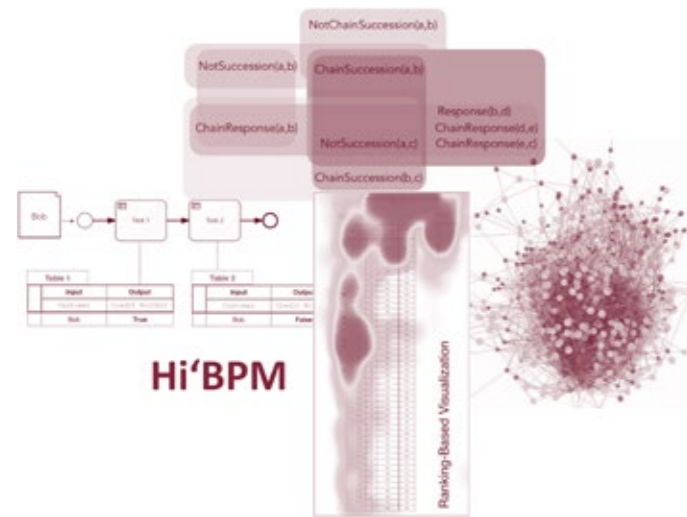
CONCEPTUAL MODELING

The Competence Center for Conceptual Modeling focuses on the development of novel methodologies, providing automatic support for the design, enactment, and analysis of conceptual models in different business domains. In the last year, we particularly worked on the following topics:

• **Business Rules Management:** Business rules are formal prescriptions that a company has to comply with in order not to face negative monetary or legal effects. Business rules are used to control the execution of business processes, and they are often maintained in business rule repositories as part of process-aware application systems such as business process management software and/or workflow management systems. An important task of Business Rules Management is to maintain repositories in order to cope with inconsistencies, for instance. In our research project "Handling Inconsistencies in Business Process Modeling (HI'BPM)", which is funded for two years by the German Research Foundation (DFG, DE 1983/9-1), we have developed a methodology that can identify such inconsistencies automatically and support analysts in resolving them with corresponding inconsistency measures and visualizations

• **(Social) Process Mining:** Process Mining is a popular research stream in the realm of Business Process Management. It develops approaches to learn the structure and behavior of a business process auto-matically from log files of business software. Traditional Process Mining focuses on highly structured processes as they are typically executed in enterprise systems or semi-structured processes, which are supported, for instance, by case handling systems. A new research field in Process Mining, which we initiated with our research project Social Process Mining (SPM), focuses on unstructured processes as we find them in Enterprise Social Software (ESS). The goal of the SPM-project, which is funded for three years by the German Research Foundation (DFG, DE 1983/12-1), is to develop Process Mining algorithms that consider the special character of unstructured ESS processes and to apply them on large ESS log data to automatically detect typical collaboration scenarios in ESS.

• **Predictive Process Monitoring:** Predictive Process Monitoring is used to learn the structure and behavior of a business process automatically from log files of business software and predict the future behavior of currently running process instances. The prediction results can be used to proactively influence process instances, for example, to assure beneficial behavior and avoid unfavorable one. We can use predictive process analytics, for instance, to support public traffic systems or tourist installations to optimize their operating rate or to avoid congestion, optimize the behavior and output of plants, or decrease fine particulate matter pollution in large cities. Currently, we work on considering the process context in predictive process monitoring algorithms as it can be expected that including knowledge about additional process event attributes in the prediction will increase the prediction accuracy. The latter is an important aspect since current predictive process monitoring approaches still suffer from low prediction accuracy.

SELECTED PUBLICATIONS

Brunk, J., Stierle, M., Papke, L., Revoredo, K., Matzner, M., & Becker, J. (2020). Cause vs. Effect in Context-Sensitive Prediction of Business Process Instances. Information Systems, 2021(95), in press, *https://doi.org/10.1016/j.is.2020.101635*.

Brunk, J., Stottmeister, J., Weinzierl, S., Matzner, M., & Becker, J. (2020). Exploring the Effect of Context Information on Deep Learning Business Process Predictions. Journal of Decision Systems, in press, *https://doi.org/10.1080/12460125.2020.1790183*.

Corea, C., Thimm, M. (2020). On Quasi-Inconsistency and its Complexity. Artificial Intelligence. In press, *https://doi.org/10.1016/j.artint.2020.103276*.

Hasic, F., Corea, C., Blatt, J., Delfmann, P., Serral, E. (2020). Decision Model Change Patterns for Dynamic System Evolution. Knowledge and Information Systems (2020)62, pp. 3665-3696.

Nagel, S., Corea, C., Delfmann, P. (2020). Cognitive Effects of Visualization Techniques for Inconsistency Metrics on Monitoring DataIntensive Processes. Information Systems Management. In press, *https://doi.org/10.1080/10580530.2020.1808124*.

SELECTED CONFERENCE PUBLICATIONS

Becker, J., Brunk, J., Ding, W., & Niemann, M. (2020). Conceptualization of an Integrated Procedure Model for Business Process Monitoring and Prediction. In: Proceedings of 2020 IEEE 22nd Conference on Business Informatics (CBI), Antwerp, Belgium, pp. 49–57.

Brunk, J. (2020). Structuring Business Process Context Information for Process Monitoring and Prediction. In: Proceedings of 2020 IEEE 22nd Conference on Business Informatics (CBI), Antwerp, Belgium, pp. 39–48.

Corea, C., Nagel, S., Delfmann, P. (2020). Effects of Visualization Techniques on Understanding Inconsistencies in Automated Decision-Making. In: Proceedings of the 53rd Hawaii International Conference on System Sciences (HICSS 2020). Hawaii.

Corea, C., Thimm, M. (2020). Towards Inconsistency Measurement in Business Rule Bases. In: Proceedings of the 24th European Conference on Artificial Intelligence (ECAI 2020). Santiago de Compostela.

Hasić F., Corea C., Blatt J., Delfmann P., Serral E. (2020). A Tool for the Verification of Decision Model and Notation (DMN) Models. In: Dalpiaz F., Zdravkovic J., Loucopoulos P. (eds): Research Challenges in Information Science. RCIS 2020. LNBIP 385. Springer, Cham.

Weinzierl, S., Zilker, S., Brunk, J., Revoredo, K., Matzner, M., & Becker, J. (2020). XNAP: Making LSTM-based Next Activity Predictions Explainable by Using LRP. In Proceedings of the International Conference on Business Process Management 2020 — 4th International Workshop in Artificial Intelligence for Business Process Management, Sevilla, Spain.

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CRISIS MANAGEMENT

The Competence Center for Crisis Management (C³M) integrates the research efforts of the ERCIS network in the domain of crisis management (CM) and humanitarian logistics. Our main objective is to identify relevant challenges in practitioner realities and to design appropriate socio-technical solutions. In this context, C³M investigates the role of Information and Communication Technologies (ICT) concerning logistics and supply chain management. C³M integrates a collaborating network of different practitioner and research groups from the CM and humanitarian logistics domain. C³M concentrates on six research topics within the application domain, starting at the visualization and modelling of processes up to the analysis and coordination of humanitarian relief chains.

RESEARCH PROJECTS

In the year 2020 the whole globe experienced how it feels to being directly affected by a disaster. The spread of COVID-19 has impacted the way we work and live significantly: This, certainly, also applies for the C³M team. However, being active in several international networks implies that spending full working days in teleconferences has already been part of routines for our team. Thus, we had the right skills and tools to continue and even increase our activities during this pandemic. A short recap:

D+ Consortium Members at the Final Conference, February Brussels

The final conference of the DRIVER+ project in February has been the last big event organized in a conventional physical setup. Over 220 international Crisis Management specialists, academics, and technology providers came together in Brussels to experience and discuss the manifold results of the DRIVER+ project, which came to an end after more than six years. The almost whole C³M team participated actively at the conference and released the final D+ Trial Guidance Methodology (TGM) handbook and website. Besides, our simulation environment HumLogSUITE has received much attention at the innovation boost.

C³M Team at the D+ Final Conference

We are honored to announce that the TGM did not only turn into a CEN workshop agreement, but also that ERCIS committed to maintain access to the interactive TGM website supporting nine European languages: tgm.ercis.de. This transformation from a research project into CM realities is embedded in a comprehensive sustainability plan, which relies foremost on CM practitioners throughout Europe. Thus, it was an honour to provide the first TGM training module to the Center of Expertise network. D+ was not just a project or – as labelled by the EC Research Executive Agency – a success story, it was truly a unique and outstanding journey of a growing CM community mutually learning from each other towards continuously improving European resilience. The finalization of D+ is not its end, it is yet a new beginning.

Three new exciting research projects started this year:

• A direct continuation of the D+ activities are realized through the H2020 funded demonstration project "STAMINA: Demonstration of intelligent decision support for pandemic crisis prediction and management within and across European borders" (GA 883441, 09/2020–08/2020). C³M's role covers the methodological design and support of twelve trials with the objective to assess potential innovations in pandemic crises.

• With the EPIPREDICT project, "User-oriented Extension and Automation of Agent-based Software for Pathogen-specific Modelling of Epidemics", we directly contribute to the development of information systems for pandemic management (FKZ 01KI1913, 03/2020–02/2022). The project is funded by the Nationale Forschungsplattform für Zoonosen and aims at the development of a test-bed to evaluate epidemic and pandemic intervention strategies for deeper understanding of infection dynamics.

• The BISKIT project, "Blood Information System for Crisis Intervention and Management", receives funding from the Federal Ministry of Education and Research (FKZ 01N15214, 04/2020–03/2023). The tasks of the C³M team are to apply our simulation environment HumLogSUITE to evaluate different logistics setups for the South-African blood supply chains as well es to

C³M

NOHA students after the Disaster Response Simulation during the Humanitarian Logistics Course

develop its Enterprise Architecture using the TOGAF framework.

CONFERENCES, TEACHING AND OTHER ACTIVITIES

Although the ISCRAM conference 2020 has been skipped due to COVID-19, all accepted papers have been published in the annual proceedings. Thus, we are very excited about the first joint publication on congestion management with our associated partner Prof. Mark Haselkorn from the Center for Collaborative Systems for Security, Safety, and Regional Resilience (CoSSaR) at the Human Centered and Design Department (University of Washington). And since our POMS mini-track on simulation in humanitarian operations had to be postponed due to the same reasons, we were very happy to organize a mini track at the virtual edition of the 51st Annual Conference of the Decision Sciences Institute.

Additionally, it was a pleasure to continue our course "Logistics in Humanitarian Action" for the Joint Master's Programme in International Humanitarian Action offered by the Network on Humanitarian Action (NOHA) at the group of Prof. Dr. Dennis Dijkzeul, Institute for International Law of Peace and Armed Conflict (Ruhr Universität Bochum) in February this year. Further, we were pleased to participate at the NOHA Cluster Workshop hosted by our colleagues from the Ruhr University Bochum in order to discover further collaboration poten-

tials. If you are interested in further activities in the year 2020, such as our group presentations at Risky Monday, hosted by the Institute of Rescue Engineering and Civil Protection of the TH Köln University of Applied Sciences or the AMCIS research seminar LACAIS, please have a look at our website: crisismanagement.ercis.org.

We are so grateful for the exchanges and collaborations with our friends and partners and we are looking forward to their continuation and new initiatives in the next year. Stay healthy!

SELECTED PUBLICATIONS

Fonio, C., Widera, A. (Ed.) Trial Guidance Methodology Handbook. DRIVER+, Brussels, 2020.

Henke, S., Widera, A., Hellingrath, B. (2020). Application of Simulation in the Area of Humanitarian Logistics – A Systematic Literature review. 51st DSI Conference.

Irfansyah, A.; Widera, A.; Haselkorn, M.; Hellingrath, B. (2020). Current Trends and Future Challenges in Congestion Management. 17th ISCRAM Conference.

Ponge, J.; Hellingrath, B.; Ludwig, S.; Karch, A. (2020). Towards a User-oriented Modeling Platform for Agent-based Simulations of Infectious Diseases. 51st DSI Conference.

Widera, A. et al. (2020). Systematic assessment of innovative solutions for crisis management – Trial guidance methodology. CEN Workshop Agreement, CWA 17514:2020 (E).

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DT in SMEs

DIGITAL TRANSFORMATION IN SMES

Digital transformation has been defined as the integration of digital technology into all areas of business leading to fundamental changes in operations and value creation to customers. It requires a cultural change towards a continuous challenging of the status quo, proactively promoting the adoption of new practices and the continuous adjustment to turbulent, uncertain markets. Digital transformation can be a double-edged sword, both solving old problems and creating new problems. It is particularly demanding for small firms due to their general lack of resources. SMEs make up most of the economy in terms of value creation and number of employees and are therefore critical to the economic development of the modern societies. Thus, it is imperative that SMEs can innovate and transform using new technology. This Competence Center wants to be a leading knowledge hub for academia and industry in this endeavour.

The Digital Transformation in SMEs Competence Center *(DT in SMEs CC)* is a joint effort of several ERCIS institutional members, namely University of Agder, University of Luleå, University of Münster, University of Turku, University of Twente, University of Minho, Wroclaw University of Science and Technology. The Competence Center aims at encouraging research and providing expertise on the digital transformation of SMEs.

Webpage: *https://ccdt.ercis.org/*

ACTIVITIES
Seminar: Socio-technical approaches in the IS Discipline
February 20 – 21, 2020, Porto, Portugal
Professor Suprateek Sarker – University of Virginia's McIntire School of Commerce

The Seminar "Socio-technical approaches in the IS Discipline" aimed to train junior researchers in the social and technical components that characterise the phenomena researched in the Information Systems discipline as well as the role of socio-technical approaches in the development of research in this discipline. Participants in the seminar were invited to analyse their research in the light of socio-technical principles.

Within the socio-technical approach, the qualitative research of the phenomena relevant to the Information Systems discipline was discussed. This presentation aimed to promote an understanding of the role played by qualitative research in the IS

discipline. The seminar focused in particular on interpretive case studies and ethnographic studies, highlighting their specificities. Participants were encouraged to reflect on the challenges associated with writing and publishing these studies by analysing and discussing high-quality papers.

The seminar was intended for researchers and PhD students in Information Systems. The seminar brought together participants from several universities in Portugal, including UMINHO, as well as from University of Münster and Università degli Studi della Tuscia.

PROJECTS
Submitted in 2020:

• ERASMUS+ KA202 "SMEs: Be prepared for supply chain risks!". Resubmission of a previously submitted project called "AwarenesS Training for supply chain RISKs in SMEs". The project was approved. The ERCIS Members involved were Alessio Braccini – Universita Degli Studi Della Tuscia *(IT)*, University of Minho *(PT)*, and Tallinn University of Technology *(EE)*.

• ERASMUS+ KA203 "Integrating virtual and AUGMENTED reality with WEARable technology into engineering EDUcation" – AugmentedWearEdu's main goal is to introduce a novel framework for e-Learning to integrate low-cost off-the-shelf commercial *(COTS)* VR/AR tools and haptic wearables to enable digital access to laboratories in higher education. The project was approved. The ERCIS members involved are University of Agder *(NO – coordinator)*, Kaunas University of Technology *(LT)*, and University of Minho *(PT)*.

• H2020-SwafS-2018-2020 "Open Science For the digital transfOrmation of Circular bUSinEss moDels". FOCUSED aims to put citizens' concerns at the heart of the research agenda on circular economy by tackling issues that concern them. The project was not approved but a resubmission is planned for next year.

The ERCIS members involved are the University of Minho *(PT – coordinator)*, the Tallinn University of Technology *(EE)*, and Alessio Braccini – Universita Degli Studi Della Tuscia *(IT)*.

Being carried out in 2020:

• Virtual Open Innovation Lab *(VOIL)* – ERASMUS +: KA203 – Strategic Partnerships for higher education. The project aims at developing a curriculum to guide the learning of emerging technologies and assess their potential for innovating and digitally transform Micro, Small and Medium Enterprises – SMEs.

The participating ERCIS members are the University of Münster, the University of Minho, the Kaunas University of Technology and the University of Agder.

Intellectual Outputs in their almost final stage: O1 Digital transformation toolkit, O2 Digital transformation curriculum, and O3 Simulation Resource Pack.

PUBLICATIONS
North, K., Hermann, A. Ramos, I. Aramburu, N., Gudoniene. D. (2020): The VOIL Digital Transformation Competence Framework. Evaluation and Design of Higher Education Curricula. In: Lopata, A., Butkienė, R., Gudonienė, D., Sukackė, V. *(Eds.)* Information and Software Technologies, 26th International Conference, ICIST 2020, Kaunas, Lithuania, October 15–17, 2020, Proceedings, Springer *(Communications in Computer and Information Science)* pp. 1–14, *https://doi.org/10.1007/978-3-030-59506-7_23.*

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https://ccdt.ercis.org/

E-GOVERNMENT

The E-Government Competence Center brings together members in the ERCIS network working on digitalisation in the public domain. Our research covers a broad range from individuals' use of e-government technology to e-participation to process management.

eGov-Campus at the University of Münster

Public service delivery becomes increasingly digital making e-government endeavours more and more important. However, the public sector still faces a lack of personnel with sufficient IT competence to master this enormous challenge. To overcome this problem, the research project "eGov-Campus" started in 2020 intending to build up a nationwide e-learning platform for e-government so that public officials can join the platform for digital upskilling in, e.g. MOOCs or other distance/blended learning approaches. Therefore, the project is split into a technical part for setting up the platform itself and another part for developing the lecture and tutorial content. The CC eGov is involved in both parts. At the University of Münster, we are gathering the requirements to conceptualize the platform to the needs of public officials. Also, we will contribute with a teaching module dedicated to process management in the public sector. The project is funded by the German IT planning council with two million Euros and lasts until 12/2021. The Hessian State Chancellery serves as the project coordinator.

eGov

Two new studies funded by the National E-Government Competence Centre in Germany

The German National E-Government Competence Centre *(NEGZ)* has funded two studies that researchers from the ERCIS Competence Center E-Government have been working on in 2020. The study on citizen user journeys investigates how public sector organizations can apply the customer journey concept that originates from the private sector to shift the focus to the citizens' needs. Despite various examples from the government practice, research on digital government has barely regarded customer journeys. Therefore, the ERCIS E-Government Competence Center completed a project this year that transferred the customer journey concept to the public sector. The researchers developed a generic citizen journey and identified critical contact points where citizens moved from the online to the offline channel.

A second study focuses on no-stop shops, which means that a citizen does not need to perform any action to receive a government service. A no-stop shop requires a comprehensive integration of citizen data to anticipate their needs. Additionally, public sector organisations offer various services that could potentially be provided in such a no-stop shop. The ERCIS

WI_Potsdam

E-Government Competence Center runs a project that first develops a catalogue of requirements for a no-stop shop with special consideration of the citizens' digital sovereignty. The project's second aim is the creation of a method for the selection of services for the implementation in a no-stop shop.

### Master's Program Public Sector Innovation and E-Governance *(PIONEER)* started fourth round

PIONEER is a joint master program organized by the KU Leuven, the University of Münster and TalTech University Tallinn providing the students with interdisciplinary expertise. The third cohort has attended the summer term in Münster. Due to the COVID19 pandemic, it was a completely virtual semester with lots of challenges on very short notice for both, students and lecturers. Nevertheless, Kari Jacobsen and Stephen McCarthy supported the program as virtual guest lecturers. While the third cohort has moved to Tallinn now, mostly in a presence setting, the fourth cohort with 21 students started in Leuven.

German online access act – status quo in municipal administrations

This project examines the status quo of the implementation of the German online access act for municipal administrative services that guarantees online access to more than 500 administrative services by
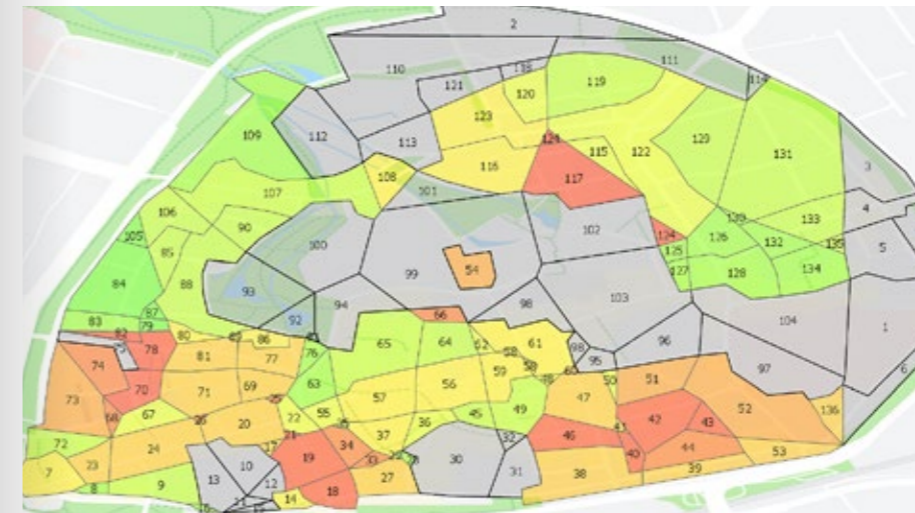
Paderborn: Recommended areas (dark green) for opening a new retail site

the end of 2022. A comprehensive survey of the implementation of this law at the municipal level allows a detailed analysis of and tailored recommendations for the development potential in the next two years. First results indicate that most municipals already provide printable PDF forms for their services. However, seamless online services are still the exception in Germany.

Digital government track at the Wirtschaftsinformatik conference

Sara Hofmann and Michael Räckers from the Competence Center have organised this year's Digital Government Track at the German Wirtschaftsinformatik conference. Being scheduled in March prior to the lockdown, the conference could take place physically in Potsdam, Germany. In this track, researchers from the ERCIS partner at the University of Paderborn, Germany, presented their design of a software prototype considering local customers' shopping interests and geospatial data on their shopping trips for retail site selection. With real data on 500 customers and 1,100 shopping trips, they demonstrated and evaluated the IT artefact. The results illustrate how retailers and public town centre managers can use CCARS for spatial location selection, growing retailers' profits and a city centre's attractiveness for its citizens.

SELECTED PUBLICATIONS

Hofmann, S., Madsen, C., Distel, B. (2020). Developing an analytical framework for analyzing and comparing national e-government strategies. International Conference on Electronic Government, 2020.

Lintula, J., Tuunanen, T., Päivärinta, T. (2020). Value co-creation for smart villages: The institutionalization of regional service ecosystems. In ICIS 2020 Proceedings. December 2020.

Magnusson, J., Koutsikouri, D., Päivärinta, T. (2020). Efficiency creep and shadow innovation: enacting ambidextrous IT Governance in the public sector, European Journal of Information Systems.

Sæbø, Ø., Federici, T., Braccini, A.M. (2020). From protest to parliament: The role of digital technologies within an online community. J. Inf. Technol. Teach. Cases. 10, 35–45.

zur Heiden, P.; Berendes, C.I.; Beverungen, D. (2020). Designing City Center Area Recommendation Systems. In: Proceedings of the 15th International Conference on Wirtschaftsinformatik 2017 / 15. Internationale Tagung Wirtschaftsinformatik, Potsdam, Germany.

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Doctoral Consortium at the WI 2020

ERCIS

Service Science at the European Research Center for Information Systems

SERVICE SCIENCE

The Service Science Competence Center is ERCIS' center for conducting research and industry projects in service management and service engineering. The team currently consists of two full professors, one executive, 17 research assistants, and three international partners.

The proliferation of the Service Economy has changed the way we view value creation throughout various industry sectors and societies. Selling products is increasingly replaced by customised service offerings and alternative revenue streams *(e.g., power-by-the-hour)*. Research in the academic discipline of Service Science, Management, and Engineering is focused on understanding and facilitating the creation of value in service systems, involving interactions of service providers and service customers. The mission of the ERCIS Service Science Competence Center is twofold. On the one hand, we strive to understand the nature and impact of service orientation on commercial businesses, the public sector, and society.

On the other hand, we contribute to further shaping the course of the service economy by designing new business solutions and software artifacts. Our research is equally dedicated to research excellence and to providing results that companies can utilise to further shape their businesses in the service society. We achieve this goal based on a network of excellent researchers in the ERCIS network.

SELECTED RESEARCH PROJECTS
DeLePred

The DeLePred *(Deep Learning in the Context of Predictive Maintenance)* project, funded by the BMBF, aims to develop a machine learning approach to predict the failure of machines. While current techniques for predictive maintenance apply statistical approaches, we focus on deep learning-based methods in this research project. The results will support the adoption of predictive maintenance, taking it from buzzword to real-world application.

Digital Business *(DigiBus)*

Digital platforms like Amazon, Uber, and Airbnb disrupted much of the B2C market. The goal of the DigiBus project is to unlock the potential of digital platforms for industrial companies in the B2B sector. Objectives involve identifying what platforms exist, how companies can offer their services on existing platforms, and what strategic options they have to launch a platform themselves.

ACADEMIC ACTIVITIES

Martin Matzner and the Chair of Digital Industrial Service Systems at FAU organised the Doctoral Consortium of the 15th Internationale Tagung Wirtschaftsinformatik in 2020. The doctoral consortium offered Ph.D. students the opportunity to discuss their dissertations with renowned researchers and collect their feedback and input. With Thomas Grisold from the University of Liechtenstein, Martin Matzner served as Track Chair for the Student Track at the 15th Internationale Tagung Wirtschaftsinformatik *(WI 2020)*.

Daniel Beverungen and his team at Paderborn University organised the workshop "Organizational transformation as a part of digital service system engineering" at WI2020 and the 2nd SICP *(Software Innovation Campus Paderborn)* Symposium. At these events, participants from academia and industry discussed implementation and transformation strategies for digital service innovations. Christian Bartelheimer serves as a student representative for the AIS Special Interest Group on Services *(SIGSVC)*.

Workshop at the WI 2020

EDITORIAL JOBS

Daniel Beverungen is a member of the editorial board of Business & Information Systems Engineering *(BISE)*. With Christoph Breidbach and Lysanne Lessard, he served as Track Chair for "Service Innovation, Engineering, and Management" at the virtual 2020 ECIS Conference. Daniel Beverungen, Christiane Lehrer, Thomas Hess, and Antonia Köster chaired the track "Digital Transformation and Business Models" at the WI 2020. A follow-up Special Issue in Electronic Markets is underway.

Martin Matzner is one of the editors of the Journal of Service Management Research.

SICP_08-10-20 Panel Discussion at the SICP Symposium

AWARDS

Tobias Pauli won the paper-a-thon award at the 40th International Conference on Information Systems *(ICIS)* in Munich.

Daniel Beverungen was awarded as a Distinguished Member of the AIS.

SELECTED PUBLICATIONS

Beverungen, D.; Buijs, J.C.A.M; Becker, Jörg; Di Ciccio, C.; van der Aalst, W.M.P.; Bartelheimer, C.; vom Brocke, J.; Comuzzi, M.; Kraume, K.; Leopold, H.; Matzner, M.; Mendling, J.; Ogonek, N.; Post, T.; Resinas, M.; Revoredo, K.; del-Río-Ortega, A.; La Rosa, M.; Santoro, F.M.; Solti, A.; Song, M.; Stein, A.; Stierle, M; Wolf, V. (2020): Seven Paradoxes of Business Process Management in a Hyper-Connected World. Business & Information Systems Engineering, forthcoming.

Beverungen, D.; Kundisch, D.; Wünderlich, N.V.: Transforming into a Platform Provider: Strategic Options for Industrial Smart Service Providers. Journal of Service Management. Forthcoming.

Brunk, J.; Stierle, M.; Papke, L.; Revoredo, K.; Matzner, M.; Becker, J. (2021). Cause vs. effect in context-sensitive prediction of business process instances. Information Systems 95.

Hoffmann, M.; Wildermuth, S.; Gitzel, R.; Boyaci, A.; Gebhardt, J.; Kaul, H.; Amihai, I.; Forg, B.; Suriyah, M.; Leibfried, T.; Stich, V.; Hicking, J.; Bremer, M.; Kaminski, L.; Beverungen, D.; zur Heiden, P.; Tornede, T

(2020). Integration of Novel Sensors and Machine Learning for Predictive Maintenance in Medium Voltage Switchgear to Enable the Energy and Mobility Revolutions. Sensors 2020, 20(7), 2099.

Hoyer, W. D.; Kroschke, M.; Schmitt, B.; Kraume, K.; Shankar, V. (2020). Transforming the Customer Experience Through New Technologies. Journal of Interactive Marketing.

Pauli, T.; Marx, E.; Matzner, M. (2020). Leveraging Industrial IoT Platform Ecosystems: Insights from the Complementors' Perspective. Proceedings of the 28th European Conference on Information Systems *(ECIS)*.

Poniatowski, M.; Lüttenberg, H.; Beverungen, D.; Kundisch, D. (2020): Three Layers of Abstraction – A Conceptual Framework for Theorizing digital Multi-Sided Platforms. Information Systems and e-Business Management. Forthcoming.

Weinzierl, S.; Wolf, V.; Pauli, T.; Beverungen, D.; Matzner, M. (2020): Detecting Workarounds in Business Processes – A Deep Learning Method for Analyzing Event Logs. Proceedings of the 28th European Conference on Information Systems *(ECIS)*.

Wolf, V. (2020): Understanding Smart Service Systems Transformation – A Socio-Technical Perspective. Proceedings of the 28th European Conference on Information Systems *(ECIS)*.

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Please contact us for more information on our projects or for starting exciting initiatives in service science.

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SMARTER WORK

New technologies are increasingly used in dynamic organizations and change how work is organized and performed, for example, in virtual or distributed teams with flexible working hours and work locations. "Smarter Work" describes an approach of designing these new ways of working, supported by communication and collaboration systems, with a strong emphasis on the well-being and productivity of all actors involved. We help exploiting the potentials of new working modes by means of a conscious and coordinated use of technologies and aligning digital as well as analogous work.

The Competence Center Smarter Work supports organizations with the introduction, use and management of new communication and collaboration systems. We build on years of experience with transformation processes towards "Smarter Work". We integrate individual and organizational perspectives in our research projects, inquiring about employees who use new technologies in their everyday work. Our research is characterized by the pursuit of long-term improvements. To this end, we seek a focused understanding of underlying organizational problems before pointing out customized options for action. Our recommendations are based on established scientific approaches. We combine a broad repertoire of methods (e.g., surveys, interviews, physiological measurements, digital forensics) with traditional and innovative theories, which allow us to understand and answer complex questions about the organization of work. This is made possible by an interdisciplinary team of scientists from business, computer science, psychology, sociology, as well as practitioners from the IT industry.

SELECTED RESEARCH PROJECTS

- Algorithmic Management and People Analytics
  (PI J. Hüllmann)

Algorithmic management depicts data-driven technologies to support or automate decision-making with people-related outcomes. Organizations increasingly implement algorithmic management in the workplace — under the name people analytics — to scrutinize and improve their people's practices and decisions. Moving beyond the hype, we question the wider implications of its use in the workplace, addressing growing concerns about privacy, validity, and algorithmic bias.

- Leadership in Online Communities
  (PIs R. Thapa, S. Vidolov)

Our conceptualization of leadership moves the focus from individual traits to the actual practices of leading that can be embodied and carried by different community actors. In this project, we develop an analytical tool to evaluate the leadership capacity of an open-source software community from a distributed leadership perspective using the example of Drupal. We examine mediated interactions and work practices *(Drupal`s issue queue)* and combine it with theoretically informed leadership archetypes. Practical insights are derived for managers to improve their leadership capabilities.

- Working from Home during COVID-19
  (PIs J. Mattern, S. Lansmann)

Based on a four-week diary study in April and May 2020 with 37 participants from the University of Muenster, we examine the impact of 'enforced' working from home due to COVID-19 for employees. We use the concepts of psychological detachment and communication overload to analyze the relationship between working from home and perceived stress. Initial findings show that employees do not feel more stressed and that working from home is a viable option for the post-COVID-19 work organization.

- To Zoom or Not to Zoom in Times of COVID-19
  (PIs K. Dassel, S. Klein)

We examine the selection and use of Zoom as a video conferencing application in academic environments during the onset of the COVID-19 pandemic at universities across the globe. In addition to understanding decision-making in times of crisis, we are particularly interested in individual responses to the well-documented security risks of Zoom.

- Dialectics of Individual and Collaborative Work
  (PI S. Lansmann)

Against the backdrop of the proliferation of Enterprise Collaboration Platforms, specifically Microsoft Teams, we aim at conceptualizing the back-and-forth of individual and collaborative work in multi-project settings. Particularly, we investigate how Microsoft Teams is appropriated and used by knowledge workers at Hilti *(Liechtenstein)* and LVM *(Germany)*. Following a socio-technical perspective, we shed light on how employees integrate the tool into their existing set of communication tools and how this affects the rhythm of individual and collaborative work.

- Organizational Onboarding in the Age of Pandemics *(PIs K. Dassel, S. Schellhammer, P. Troglauer)*

Onboarding is management jargon referring to the mechanism through which new employees acquire necessary behaviors, knowledge, and skills to become effective organizational members. What used to be done through mutual introductions and personal discussions has changed significantly due to the COVID-19 pandemic. As a consequence of studying and working from home, not only the start in the organization but also the development of social networks is exacerbated. In a bachelor's project seminar in cooperation with the Practical Computer Science Group *(Prof. Dr. Kuchen)*, we investigate how to offer an adequate digital alternative for conducting effective organizational onboarding for students of the University of Muenster.

SELECTED PUBLICATIONS

Lansmann, S., Schallenmüller, S., & Rigby, M. (2019). Teams Everywhere — Investigating the Impact of Microsoft Teams on Knowledge Worker. In Proceedings of the Pre-ICIS 2019, 8th International Workshop on The Changing Nature of Work, Munich, Germany.

Mattern, J., Tarafdar, M., & Klein, S. (2019). Thriving in a Demanding Environment — Coping Strategies of IT Professionals. In Proceedings of the Pre-ICIS 2019, 8th International Workshop on The Changing Nature of Work, Munich, Germany.

Hüllmann, J. A. (2019). The Construction of Meaning through Digital Traces. In Proceedings of the Pre-ICIS 2019, 8th International Workshop on The Changing Nature of Work, Munich, Germany.

Mattern, J. (2020). A Classification of Organizational Interventions to Enable Detachment from Work. In Proceedings of the 33rd Bled eConference, Bled, Slovenia.

Hüllmann, J. A., & Krebber, S. (2020). Identifying Temporal Rhythms using Email Traces. In Proceedings of Americas Conference of Information Systems *(AMCIS)*, Salt Lake City, United States.

Hüllmann, J. A., & Mattern, J. (2020). Three Issues with the State of People and Workplace Analytics. In Proceedings of the 33rd Bled eConference, Bled, Slovenia.

Thapa, R., & Vidolov, S. (2020). Evaluating Distributed Leadership in Open Source Software Communities. In Proceedings of the 28th European Conference of Information Systems *(ECIS)*, Marrakesh, Morocco.

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COMPETENCE CENTER SMARTER WORK

SOCIAL MEDIA ANALYTICS

The Competence Center Social Media Analytics *(CC SMA)* continues to deal with challenges due to the rapid and often disruptive evolution of social media technology. The main research focus of the CC SMA is the misuse of social media technology for disinformation, propaganda, and fake news distribution. The *(international)* partners approach the topic from the different angles of their respective disciplines: computer science, psychology, statistics, journalism and media, communication science, as well as mathematics.

Besides considering automated systems for *(dis-)*information and fake distribution, the CC SMA increasingly focuses on the human factor in propaganda and hate speech. Together, these elements can be building blocks for disinformation campaigns and imposed societal shifts.

In this context, the University of Münster established a funded joint research scheme with colleagues from the University of Adelaide to investigate on disinformation campaigns and simulated grass roots movements. Additionally, during the summer, several members of the CC SMA have set up multiple research proposals to strengthen research in identifying patterns of disinformation campaigns and protecting the society against disinformation campaigns.

RESEARCH ON SMA METHODOLOGY

Lead by CC-SMA members from Münster, a group of international renowned researchers in the community put an important methodological topic on the research agenda: the benchmarking crisis in SMA due to a lack of comparison of methods and replicability of results induced by li-

censing terms and data sharing policies that limit scientific data sharing. The colleagues discussed this issue during a workshop organised by members of the CC in the context of the International Human Computer Interaction Conference held in Copenhagen, Denmark and summarised their ideas regarding a benchmarking framework in a position paper submitted to Information Systems.

The methodological aspects of the CC's work is also related to the continued collaboration with the joint European initiative CLAIRE, i.e. the Confederation of Laboratories for Artificial Intelligence Research in Europe.

Continuing the MISDOOM Story

Members of the CC SMA supported the ERCIS & CC-SMA partner LIACS @University of Leiden in organising the Multidisciplinary International Symposium on Disinformation in Open Online Media *(www.misdoom. org)* held in Leiden *(NL)* by October 26–27 *(postponed due to COVID-19)*. The symposium is sponsored by ERCIS and continues the initial idea of a multidisciplinary joint conference on disinformation research from bringing together computer science, social science, political science, journalism, and public services. The second edition of this conference has significantly grown compared to the 2019 edition: more than 70 talks and papers were presented in two plenary and four parallel sessions.

PUBLICATIONS

Members of the CC SMA have published multiple papers on disinformation identification and current topics like the COVID-19 pandemic and related disinformation and conspiracy campaigns:

Assenmacher, D., Adam, L., Trautmann, H., & Grimme, C. (2020). Towards Real-Time and Unsupervised Campaign Detection in Social Media. In R. Barták & E. Bell *(eds.)*, Proceedings of the Thirty-Third International Florida Artificial Intelligence Research Society Conference, Originally to be held in North Miami Beach, Florida, USA, May

17–20, 2020 (pp 303–307). AAAI Press. *https://aaai.org/ocs/index.php/FLAIRS/ FLAIRS20/paper/view/18452*

Assenmacher, D., Clever, L., Frischlich, L., Quandt, T., Trautmann, H., & Grimme, C. (2020). Demystifying Social Bots: On the Intelligence of Automated Social Media Actors. Social Media + Society, 6(3). *https:// doi.org/10.1177/2056305120939264*

Assenmacher, D., Clever, L., Pohl, J. S., Trautmann, H., & Grimme, C. (2020). A Two-Phase Framework for Detecting Manipulation Campaigns in Social Media. In G. Meiselwitz *(ed.)*, Social Computing and Social Media. Design, Ethics, User Behavior, and Social Network Analysis–12th International Conference, SCSM 2020, Held as Part of the 22nd HCI International Conference, HCII 2020, Copenhagen, Denmark, July 19–24, 2020, Proceedings, Part I *(Vol. 12194, pp 201–214)*. Springer. *https://doi. org/10.1007/978-3-030-49570-1_14*

Clever, L., Assenmacher, D., Müller, K., Seiler, M. V., Riehle, D. M., Preuss, M., & Grimme, C. (2020). FakeYou! – A Gamified Approach for Building and Evaluating Resilience Against Fake News. Proceedings of the 2nd Multidisciplinary International Symposium on Disinformation in Open Online Media, LNCS.

fake news, social bots, disinformation, filter bubbles, virality, deep fakes & more!

Grimme, C. (2020). Künstliche Intelligenz: Begriffsklärungen und technische Einschätzungen als Grundlage für Regulierungsansätze. In D. Aufderheide & M. Dabrowski *(eds.)*, Digitalisierung und Künstliche Intelligenz: Wirtschaftsethische und moralökonomische Perspektiven *(Vol. 574, pp 159–170)*. Duncker & Humblot.

Grimme, C., Preuss, M., Takes, F. W., & Waldherr, A. (eds.). (2020). Disinformation in Open Online Media – First Multidisciplinary International Symposium, MIS-DOOM 2019, Hamburg, Germany, February 27–March 1, 2019, Revised Selected Papers *(Vol. 12021)*. Springer. *https://doi. org/10.1007/978-3-030-39627-5*

Stöcker C., Preuss M. (2020). Riding the Wave of Misclassification: How We End up with Extreme YouTube Content. In G. Meiselwitz *(ed.)*, Social Computing and Social Media. Design, Ethics, User Behavior, and Social Network Analysis–12th International Conference, SCSM 2020, Held as Part of the 22nd HCI International Conference, HCII 2020, Copenhagen, Denmark, July 19–24, 2020, Proceedings, Part I *(Vol. 12194, pp 359–375)*. Springer. *https://doi.*

org/10.1007/978-3-030-49570-1_25

Thorsten Quandt, Svenja Boberg, Tim Schatto-Eckrodt, Lena Frischlich (2020). Pandemic News: Facebook Pages of Mainstream News Media and the Coronavirus Crisis – A Computational Content Analysis. CoRR abs/2005.13290

ACTIVITIES

• Research visit to Australia in 2020: Dennis Assenmacher and Christian Grimme spent several weeks at the University of Adelaide in March.

• The CC SMA and the ERCIS *(by sponsoring)* supported the organisation of the MIS-DOOM 2020 in Leiden, The Netherlands.

• The CC SMA organised two sessions on the topic "Data, Algorithms, and Humans in Digital Manipulation" at the 2020 Human Computer Interaction International Conference in Copenhagen, Denmark.

• Christian Stöcker held a Keynote at the Parallel Problem Solving from Nature Conference *(Leiden, NL)* about "AI and Academia – are you ready to become toolmakers?"

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ERCIS

CRISIS COMMUNICATION
IN SOCIAL MEDIA

Researchers from LIACS and University and Kommune Kristiansand strengthened their collaboration within the Project EU Horizon 2020 RISE-Social Media Analysis in Societal and Crisis Communication with University Agder, University of Duisburg-Essen from the ERCIS network. The mid-term meeting will be held end of October 2020. Michael Emmerich *(Leiden University)* visited Kristiansand Kommune and Agder University for a research visit that took place 1st January – 8th January 2020 in order to join efforts in network modelling for the dynamics of news in crisis communication. The research visit was part of the RISE-SMA Project. During the visit, the three types of crisis communication were discussed: health crisis, catastrophes/natural disaster, and socio-political crisis and how network models can help to understand the dynamics of crisis information flow in social media.

ONGOING COLLABORATION BETWEEN
LUISS AND UNIVERSITY OF AGDER

Two EU H2020 projects in the cybersecurity area have been jointly developed by CLIO and the Center of Integrated Emergency Management of the University of Agder. Furthermore, Luiss University and the University of Agder have continued their collaboration activities on e-participation and cybersecurity. Paolo Spagnoletti and Tommaso Federici have visited UiA in 2020.

JOINT PHD EVALUATION
WITH THE UNIVERSITY OF AGDER
AND THE UNIVERSITY OF TWENTE

By invitation of University of Agder, and prof Bjørn Erik Munkvold, Jos van Hillegersberg took part in the PhD evaluation committee of Marilex Rea Llave on Business Intelligence and Analytics in Small and Medium-Sized Enterprises. The candidate was supervised by Dag H. Olsen and Eli Hustad at University of Agder. The thesis defense took place online in august 2020 because of the covid travel restrictions.

STRATEGIC PARTNERSHIP
BETWEEN UNIVERSITY OF TWENTE
AND UNIVERSITY OF MÜNSTER

A strategic partnership between the University of Twente and the University of Münster has been established and the executive boards of the two universities have expressed their mutual interest in stimulating strategic joint research initiatives to enhance opportunities for collaboration. Annual grants are available, for example, a *(joint)* position, special equipment, or networking events for the gathering of new consortia, or to secure the participation of industrial parties/companies in a joint, third-party funding application.

UNIVERSITY OF AGDER AND
UNIVERSITY OF DUISBURG-ESSEN:
JOINT PHD EXAMINATION

Stefan Stieglitz, University of Duisburg-Essen, and Sara Hofmann, University of Agder, co-supervised PhD candidate Tobias Kroll who defended his thesis at University of Duisburg-Essen in July 2020. The thesis title is "Towards a Soft Paternalism to Manage Information Systems in Organisations".

JOINT PUBLICATION
BY COPENHAGEN BUSINESS SCHOOL
AND UNIVERSITY OF TWENTE

Ongoing collaboration and visits of Dr. Jonas Hedman of Copenhagen Business School resulted in a joint paper co-authored with Jos van Hillegersberg on technologies for Smart Contracting in Sourcing arrangements presented at the Global Sourcing Workshop. The paper is forthcoming in a Springer edited volume.

KICK-OFF MEETING OF THE PROJECT
AUGMENTEDWEAREDU

On November 2nd the kickoff-meeting of the project Integrating virtual and AUGMENTED reality with WEARable technology into engineering EDUcation *(Augmented-WearEdu)* took place *(ERASMUS+ KA203 – Strategic Partnerships for higher education – 2020-1-NO01-KA203-076540)*. The project aims at developing a novel framework for e-Learning to integrate low-cost off-the-shelf commercial *(COTS)* VR/AR tools and haptic wearables to enable digital access to laboratories in higher education. The project is coordinated by the University of Agder and includes 5 partners from different European countries. Other partners belonging to the ERCIS network are the Kauno Technologijos Universitetas *(LT)* and the University of Minho *(PT)*.

WORLD IT PROJECT

The University of Gdansk participates in the World IT Project. The project includes 37 countries from all continents in the research topic IT Occupational Culture *(ITOC)*. The videoconferences on IS/IT research were given by Professors from Slovenia and Latvia.

http://worlditproject.com/

JOINT RESEARCH PROPOSAL –
SMARTFORMS

The University of Minho participated in the effort of improving the proposal – SMARTFORMS – Personalized, adaptive and self-learning user interfaces for data exchange in digitized public administrations, submitted to H2020-SC6-TRANSFORMATIONS-2020. This was a collaborative effort of 12 partners, some of which members of ERCIS. The proposal was not approved for funding even though the evaluation it received *(13)* was above the threshold *(10)*. Therefore, it was decided to resubmit the project later.

JOINT RESEARCH PROPOSAL –
FOCUSED

The University of Minho lead the effort to develop an H2020 project proposal – Open Science For the digital transfOrmation of Circular bUSinESs moDels *(FOCUSED)* that was submitted to the call of H2020-SwafS-2018-2020. The main objective of FOCUSED is to address the goal of the European Commission to increase public engagement in scientific endeavors, in particular those aimed at assisting the innovation of circular business models through digital technologies. FOCUSED aims to put citizens' concerns at the heart of the research agenda on circular economy by tackling issues that concern them. This was a collaborative effort of 12 partners, some of which members of ERCIS. The proposal was not approved for funding but received an encouraging evaluation. Therefore, it will be resubmitted in a next opportunity.

SCIENTIFIC COLLABORATION
BETWEEN LEIDEN UNIVERSITY AND
WWU MÜNSTER

Leiden University and WWU Münster continued their successful collaboration within the ERCIS project on topics of social media, artificial intelligence, and multicriteria decision making. There have been joint supervision of PhD students *(The thesis of Pelin Aspar is supervised by both Thomas Bäck in Leiden and Heike Trautmann in Münster)* and by meetings on joint publications that were submitted in 2020. Also, members of WWU Münster served in the PPSN2020 Computer Science conference, by organizing tutorials and workshops; Heike Trautmann was joint program chair in this event organized by Leiden University.

COVID-19

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RESEARCH ON COVID-19 MISINFORMATION – CALL FOR PARTICIPATION

As part of the RISE_SMA project, a new focus group on COVID-19 was formed. The group deals with COVID-19 in the full scope of the project *(i.e., information extraction and dissemination for societal and crisis communication)*. So far, it specifically focussed on misinformation. A cooperation of the ERCIS partners in Duisburg-Essen, Leiden, and Kristiansand *(Agder)* lead to a first article – one of the earliest papers on COVID-19 misinformation to be published on a journal level.

We would like to include more ERCIS partner in this thread of research. While we arguably cannot engage in research on medical remedies, we as IS researchers can – and should! – contribute to mitigating the pandemic, nonetheless. Finding better ways of fighting misinformation on social media is one example for this. If you are interested in research on communication and information extraction in the context of COVID-19, please reach out to Tim A. Majchrzak *(timam@uia.no)*. We mean to form ad-hoc team to do joint research without any obligations attached.

PUBLICATION

Shahi, G. K., Dirkson, A., and Majchrzak, T. A. (2020): An Exploratory Study of COVID-19 Misinformation on Twitter, Online Social Networks and Media, Elsevier

JOINT RESEARCH ON AUTOMATED CONFIGURATION OF STREAM CLUSTERING ALGORITHMS OF THE DATA SCIENCE: STATISTICS AND OPTIMIZATION GROUP *(MÜNSTER)* WITH THE COMPUTER SCIENCE DEPARTMENT, UNIVERSITY OF WAIKATO, NEW ZEALAND

Carnein, M., Trautmann, H., Bifet, A., & Pfahringer, B. (2020). confStream: Automated Algorithm Selection and Configuration of Stream Clustering Algorithms. In Proceedings of the 14th Learning and Intelligent Optimization Conference *(LION 2020)*, Athens, Greece, 80–95.

JOINT RESEARCH ON EXPLORATORY LANDSCAPE ANALYSIS, AUTOMATED ALGORITHM SELECTION AND GAME AI OF THE DATA SCIENCE: STATISTICS AND OPTIMIZATION GROUP *(MÜNSTER)* WITH LIACS, UNIVERSITY OF LEIDEN, THE NETHERLANDS

Clever, L., Assenmacher, D., Müller, K., Seiler, M. V., Riehle, D. M., Preuss, M., & Grimme, C. (2020). FakeYou! – A Gamified Approach for Building and Evaluating Resilience Against Fake News. In Proceedings of the 2nd Multidisciplinary International Symposium on Disinformation in Open Online Media, Leiden, Netherlands.

Prager, R. P., Trautmann, H., Wang, H., Bäck, T. H. W., & Kerschke, P. (2020). Per-Instance Configuration of the Modularized CMA-ES by Means of Classifier Chains and Exploratory Landscape Analysis. In Proceedings of the IEEE Symposium Series on Computational Intelligence *(SSCI)*, Canberra, Australia.

ERASMUS+ PROJECT: TEXT MINING FOR CURRICULUM DESIGN

The University of Liechtenstein *(project lead)*, the University of Münster and the National University of Ireland finalised working together on the Erasmus+ funded project "Text Mining for Curriculum Design for Multiple Information Systems Disciplines". Traditionally, curriculum design is performed manually by academics with years of experience in the design process. Decisions about content and competences are often made based on highly subjective impressions of individuals. The discipline of data science, in particular text mining, offers new opportunities to support the curriculum design process by using the abundance of information available such as job ads from industry, curricula from various academic institutions through semi-automatic means due to the immense volume of information. The methodology that this project will develop and make available to the public could therefore facilitate curriculum design in other disciplines across Europe as well.

JOINT PUBLICATIONS

Handali, J. P.; Schneider, J.; Dennehy, D.; Hoffmeister, B.; Conboy, K.; & Becker, J. (2020). Industry demand for analytics: A longitudinal study. Proceedings of the 28th European conference on information systems, An Online AIS Conference.

Dennehy, D.; Conboy, K.; Babu, J.; Schneider, J.; Handali, J.; vom Brocke, J., Hoffmeister, B.; & Stein, A. (in press). Adopting Learning Analytics to Inform Postgraduate Curriculum Design. Proceedings of the IFIP WG8.6. Indian Institute of Management Tiruchirappalli, India.

ERASMUS+ PROJECT: BUSINESS PROCESS MANAGEMENT AND ORGANIZATIONAL THEORY

The University of Liechtenstein, the Vienna University of Economics and Business, the University of Cologne and Radboud University have acquired an Erasmus+ funded project on Business Process Management *(BPM)* and Organisational Theory. Led by Dr. Thomas Grisold *(University of Liechtenstein)*, the project integrates theories and methods from the organisational studies into BPM. It will result in a transdisciplinary curriculum which enables aspiring business process managers to become "reflective process practitioners" and take a more holistic view on business process work.

ERASMUS+ PROJECT: EXPLORATIVE BUSINESS PROCESS MANAGEMENT

The University of Liechtenstein is leading an Erasmus+ funded project on explorative business process management *(BPM)*. In cooperation with the Vienna University of Economics and Business and the University of Bayreuth, a reference module is developed that covers different aspects of explorative BPM. This is important because BPM activities are mostly concerned with operational efficiency and overlook opportunities for innovation. Particular focus is placed on the role of digital technologies. The project will result in a reference module including a set of various lectures and recommendations on how explorative BPM can be taught in Europe and beyond.

Picture: PhD seminar at Flumserberg

VIRTUAL PHD SEMINAR ON "DESIGN SCIENCE"

Since 2017, Prof. Dr. Jan vom Brocke *(University of Liechtenstein)* and Prof. Dr. Robert Winter *(University of St. Gallen)* have been offering a joint PhD course on "Design Science" as part of the VHB-ProDok course program. Being forced to virtualize the course because of the COVID-19 restrictions, Jan vom Brocke and Robert Winter redesigned the course syllabus so as to be compatible with distance learning. While in previous years about 15 PhD students could take part in the on-site physical course, the online format attracted about 60 participants from Europe *(many of them from the ERCIS network)*, the United States, and New Zealand and it has been offered three times in 2020. Born out of necessity, the virtual format allowed more interested students to participate and helped to increase the visibility and reach of the course.

PHD SEMINAR AT FLUMSERBERG

For the seventh time, the Institute for Information Systems organised a ski seminar for PhD students. The seminar took place at Flumserberg and was led by Prof. Dr. Stefan Seidel, University of Liechtenstein, Prof. Dr. Nicholas Berente, University of Notre Dame, Prof. Dr. Roland Holten, Goethe University Frankfurt, Prof. Dr. Jan Mendling, Vienna University of Economics and Business, and Prof. Dr. Christoph Rosenkranz, University of Cologne. Eleven PhD students from different universities presented their PhD research projects and discussed current topics of Information Systems research. Joint ski tours guaranteed an unforgettable experience for all participants.

UNIVERSITY OF LIECHTENSTEIN: VISITING PROFESSORS FROM VARIOUS ERCIS PARTNERS

As part of the University of Liechtenstein's master's program in Information Systems, Prof. Dr. Gottfried Vossen, Dr. Armin Stein *(both University of Münster)*, and Prof. Dr. Jan Mendling *(WU Vienna)* visited the University of Liechtenstein, where they gave lectures to the students.

Prof. Dr. Jan vom Brocke from the University of Liechtenstein is Adjunct Lecture at the University of St. Gallen and Adjunct Professor at the National University of Ireland Galway. Further, Prof. Dr. Stefan Seidel *(University Liechtenstein)* has been appointed Honorary Professor of the National University of Ireland in Galway.

JOINT PROGRAMMES BETWEEN UNIVERSITY OF MÜNSTER AND UNIVERSITY TWENTE

Students can now opt for the two year master programme in Business Information Technology offered by the University of Twente *(The Netherlands)* and the Westfälische Wilhelms-Universität Münster *(Germany)*. This programme leads to two diplomas. Students can benefit from the experience of spending time at both institutions. More details are available on the web: *https://www.utwente.nl/en/mbit/studyprogramme/doubledegree/*

Furthermore, the *double degree Bachelor* "International Business Administration – Learning across Borders" has been established, as well as an *executive program in Data Science*, where University of Twente faculty is contributing to the design and execution of several teaching modules. Several meetings have been held already to explore this initiative. The program will kick-off in November 2020: *https://weiterbildung.uni-muenster.de/en/startpage/master-programs/data-science/*

Transnational Meeting at University of Liechtenstein

ERASMUS+ PROJECT
VIRTUAL REALITY IN HIGHER EDUCATION: APPLICATION SCENARIOS AND RECOMMENDATIONS

The Erasmus+ project partners at the University of Liechtenstein *(Jan vom Brocke)*, University of Duisburg-Essen *(Stefan Stieglitz)*, and University of Agder *(Tim A. Majchrzak)* investigate the potential of virtual reality *(VR)* in university teaching. In a first step, they collected existing VR applications in the literature and on the market. Afterwards, they conducted a survey among university teachers in the ERCIS network to assess the current state of VR implementation and related challenges in European universities. They conducted design thinking workshops with teachers and students at the three partner universities to develop innovative VR application scenarios that go beyond the current state-of-the-art. Now, the three project partners kick-off the implementation phase: This means they will implement innovative VR applications in real courses at their universities. This exciting phase in the project

will result in recommendations for teachers to facilitate the introduction of VR in university teaching. The European Center for Information Systems *(ERCIS)* and University of Nebraska Omaha support the project as associated partners.

Here comes a sneak preview of what will happen in the implementation phase: The project partners at the University of Liechtenstein developed an educational VR game based on the well-known game "Who-am-I". Usually, players have a sticky note on their forehead and ask questions to guess the celebrity name on it. In the VR edition, students will receive nameplates with Information Systems theories, concepts, and methods to practice for their final exam. The project partners at the University of Duisburg-Essen redesigned the lecture Communication & Collaboration Systems as a flipped classroom. Students

University of Liechtenstein: The "Who-am-I" of Management Information Systems

will be provided with a standalone VR headset and join the app "Spatial" to learn through discussions and group work with their fellow students. The project partners at the University of Agder will introduce 360° videos in a course on Information Security Management. The students will immerse themselves in hacking scenarios enabling them to improve their skills in security need and requirement analysis.

PUBLICATIONS

Radianti, J., Majchrzak, T. A., Fromm, J., Stieglitz, S. & Vom Brocke, J. (2020). Virtual Reality Applications for Higher Education: A Market Analysis. Hawaii International Conference on System Sciences, Maui, Hawaii *(accepted)*.

Radianti, J., Majchrzak, T. A., Fromm, J. & Wohlgenannt, I. (2020). A Systematic Review of Immersive Virtual Reality Applications for Higher Education: Design Elements, Lessons Learned, and Research Agenda. Computers & Education, 147.

Wohlgenannt, I., Fromm, J., Stieglitz, S., Radianti, J. & Majchrzak, T. A. (2019). Virtual Reality in Higher Education: Preliminary Results from a Design-Science-Research Project. International Conference on Information Systems Development, Toulon, France.

University of Duisburg-Essen: A Flipped Classroom in Social VR

University of Ager: An Immersive Security Experience

Photo by M. Binkis

ICIST 2020

October 15–17, 2020, Kaunas, Lithuania, *https://icist.ktu.edu/*

The 26th International Conference on Information and Software Technologies *(ICST)* is organised by Kaunas University of Technology and is one of the oldest IT research conferences in Lithuania. In 2020, the conference talks and presentations revolved around five major areas, namely:

- Intelligent Methods for Data Analysis and Computer Aided Software Engineering
- Intelligent Systems and Software Engineering Advances
- Smart e-Learning Technologies and Applications
- Language Technologies

In addition to the above, a special session on Distance education, Technologies and Security During the Period of COVID-19 Pandemic has also been held.

The conference featured 3 key note presentations and 30 paper presentations, some of which were delivered via videoconferencing. For the ninth time already, the Conference Proceedings were published by Springer as a part of Communications in Computer and Information Science *(CCIS)* series.

PROJMAN 2020 – INTERNATIONAL CONFERENCE ON PROJECT MANAGEMENT

October 21–23, 2020, Algarve, Portugal. During this 3-day conference, under the leitmotiv of Project Management, academics, scientists, project managers and solution providers from all over the world will had the opportunity to share experiences, bring new ideas, debate issues, and introduce the latest developments in this largely multidisciplinary field.

39TH INTERNATIONAL CONFERENCE ON ORGANIZATIONAL SCIENCE DEVELOPMENT: ORGANIZATIONS AT INNOVATION AND DIGITAL TRANSFORMATION ROUNDABOUT
September 23–24, 2020 *(online event)*

The International Conference on Organizational Science Development is the conference with the longest tradition at the University of Maribor. Every year in March it attracts international participants and researchers in the field of organisational sciences. This year the conference was organised online, due to COVID-19 pandemic.

INNOVATION BREAKFAST

In November 2020, the University of Liechtenstein in cooperation with the Vienna University of Economics and Business and the University of Bayreuth launched a new virtual format. The "Innovation Breakfast" presents entrepreneurs with results from current research on innovating business processes. The results stem from the EU-funded Erasmus+ project "Reference Module Design for Explorative Business Process Management". The Innovation Breakfast will involve four meetings, all of which are planned as one-hour sessions in the morning. They are dedicated to various topics, such as corporate strategy and digital technologies. Each session includes a keynote, which is followed by an open discussion round. Participation is free of charge. Anyone can register at *www.uni.li/ digitalisierung*.

15TH INTERNATIONAL CONFERENCE ON DESIGN SCIENCE RESEARCH IN INFORMATION SYSTEMS AND TECHNOLOGY *(DESRIST)*

The University of Agder hosted the 15th DESRIST conference on December 2–4, 2020. The conference theme was Designing for Digital Transformation – Co-Creating Services with Citizens and Industry.

DESRIST brings together researchers and practitioners engaged in all aspects of design science research, with a special emphasis on the design of services for digital transformation. The conference was run online, and was organised by the Department of Information Systems & CeDiT – Centre for Digital Transformation at the University of Agder, Norway.

CAPSI2020 – CONFERENCE OF THE PORTUGUESE ASSOCIATION FOR INFORMATION SYSTEMS

The 19th edition of the Portuguese Association of Information Systems Conference was held online on October 16th and 17th, 2020 in a joint effort by Portucalense University, University of Porto and the Polytechnic of Porto. The conference main theme was "Artificialization, Humanization: The challenges of Information Systems in the transformation of society".

CONFERENCE "EDUCATION IN INFORMATION SOCIETY"
October 9, 2020 *(online event)*

Modern life can no longer be imagined without information and communication technologies *(ICT)*. In pedagogic terms, ICT increases both the level of motivation among learners as well as their creativity; it allows teachers to present complex knowledge and skills in a much clearer manner and illustrate intricate issues through play, practical examples and interactive learning. This conference presented both the modern teaching methods as well as the use of modern ICT at the primary, secondary and tertiary level of education. It also analyses the situation in Slovenia and inform us of developments elsewhere in Europe. The conference was held online, due to Covid-19 pandemic.

http://vivid.fov.uni-mb.si/

PPSN2020

SEMINAR:
SOCIOTECHNICAL APPROACHES
IN THE IS DISCIPLINE

The event occurred on Feb 27–28, 2020 in Porto. The event had the objective of promoting the discussion of the role and principles of sociotechnical approaches in the development of research in the Information Systems discipline. The seminar was lead by Suprateek Sarker from the University of Virginia's McIntire School of Commerce, Charlottsville, VA, USA. This seminar was attended by a total of 27 participants, including professors, researchers and doctoral students in Information Systems from various universities, polytechnics and research laboratories in Portugal and Europe.

PARALLEL PROBLEM-SOLVING CONFERENCE IN LEIDEN UNIVERSITY

The 16th International Conference on Parallel Problem Solving from Nature *(PPSN XVI)* was held in Leiden, The Netherlands on September 5–9, 2020. Leiden University and the Leiden Institute of Advanced Computer Science *(LIACS)* are proud to have hosted the 30th anniversary of PPSN. The PPSN conference series *(bi-annual)* was originated in 1990, to bring together researchers and practitioners in the field of Natural Computing, the study of computing approaches which are gleaned from natural models. Today, the conference series has evolved and welcomes works on all types of iterative optimization heuristics; including submissions on connections between search heuristics and machine learning or other artificial intelligence approaches. PPSN XVI featured workshops and tutorials covering advanced and fundamental topics in the field of Natural Computing, as well as algorithm competitions. The keynote talks were given by leading researchers in the AI community, Carme Torres *(AI and robotics)*, Eric Postma *(deep learning)* and Christian Stöcker *(AI and climate change)*.

33RD BLED ECONFERENCE:
ENBABLING EECHNOLOGY FOR A
EUSTAINABLE EOCIETY
June 29, 2020 *(online event)*

The Bled eConference attracts speakers and delegates from universities, business, information technology providers and government and is the major venue for researchers working in all aspects of digital business and digital transformation. The 33rd Bled eConference theme was related to enabling technologies for a sustainable society. For the first time in history, the event was held online. It attracted 90 participants from more than 20 countries. Beside opening session with keynote address, there was also a separate session for short presentations of the accepted research papers, separate session dedicated to PhD consortium and separate session for Students bazaar of innovative digital prototypes.

THE 12TH ASIAN CONFERENCE ON INTELLIGENT INFORMATION
AND DATABASE SYSTEMS *(OnLine ACIIDS 2020)*
23–26 March 2020

OnLine ACIIDS 2020 was the 12th event in a series of international scientific conferences on research and applications in the field of intelligent information and database systems. The aim of ACIIDS 2020 was to provide an international forum of research workers with scientific background on the technology of intelligent information and database systems and its various applications. The ACIIDS 2020 conference was hosted on the ZOOM.us platform and co-organized by King Mongkut's Institute of Technology Ladkrabang, Thailand and Wroclaw University of Science and Technology, Poland under the patronage of the Polish Ministry of Science and Higher Education and IEEE SMC TC on Computational Collective Intelligence.

For this edition of the conference, the hosts received 285 papers from 43 countries all over the world. Each paper was peer-reviewed by at least two members of the international Program Committee and the international reviewer board. Only 105 papers with the highest quality were selected for an oral presentation and publication in these two volumes of the ACIIDS 2020 proceedings.

OUTLOOK FOR 2021

FEBRUARY 2021

START OF THE HILTI FELLOWSHIP PROGRAM *(Summer term 2021)*, February, *www.uni.li/hilti-fellowship*

PHD SKI SEMINAR, February 01–06, Flumserberg, Switzerland

DAGSTUHL SEMINAR ON "CHALLENGES ON BENCHMARKING OPTIMIZATION HEURISTICS",
February 21–26, Schloss Dagstuhl, Wadern, Germany, *www.dagstuhl.de/21081*

ERCIS BPM WINTERSCHOOL, February 22–26, *www.ercis.org/education/ercis-bpm-winter-school*

MARCH 2021

STUDENT TRACK AT THE VIRTUAL WI 2021, March 09–11, *www.wi2021.de*

40ᵀᴴ INTERNATIONAL CONFERENCE ON ORGANIZATIONAL SCIENCE DEVELOPMENT – ORGANIZATION AT INNOVATION AND DIGITAL TRANSFORMATION ROUNDABOUT, March 18–20, Portorož, Slovenia, *konferenca.fov.um.si/en/homepage/*

APRIL 2021

13ᵀᴴ ASIAN CONFERENCE ON INTELLIGENT INFORMATION AND DATABASE SYSTEMS *(ACIIDS 2021)*,
April 7–10, Phuket, Thailand, *aciids.pwr.edu.pl/2021/*

DEADLINE FOR APPLICATION FOR THE HILTI FELLOWSHIP *(Winter term 2021/22)*, April 30, *www.uni.li/hilti-fellowship*

JUNE 2021

34ᵀᴴ BLED ECONFERENCE – ACCELERATED DIGITAL INNOVATION FROM THE CRISIS,
June 28–July 1, Bled, Slovenia; *bledconference.org*

SEPTEMBER 2021

START OF THE HILTI FELLOWSHIP PROGRAM *(Winter term 2021/22)*, September 2021, *www.uni.li/hilti-fellowship*

ERCIS ANNUAL WORKSHOP, September 2021, Wroclaw, Poland, *www.ercis.org/events/annual-workshop*

13ᵀᴴ INTERNATIONAL CONFERENCE ON COMPUTATIONAL COLLECTIVE INTELLIGENCE *(ICCCI 2021)*,
September, Rodos Palace, Greece, *iccci.pwr.edu.pl/2021/*

21ᵀᴴ INTERNATIONAL SYMPOSIUM ON OPERATIONS RESEARCH IN SLOVENIA – SOR'20,
September, Bled, Slovenia; *sor20.fov.uni-mb.si*

12ᵀᴴ INTERNATIONAL CONFERENCE ON MULTIMEDIA & NETWORK INFORMATION SYSTEMS *(MISSI 2021)*,
September 1–3, Paris, France, *missi.pwr.edu.pl/2021/*

EUROPEAN CONFERENCE ON MACHINE LEARNING AND PRINCIPLES AND PRACTICE OF KNOWLEDGE DISCOVERY IN DATABASES *(ECML PKDD 2021)*, September 13–17, Bilbao, Spain, *2021.ecmlpkdd.org*

OCTOBER 2021

DEADLINE FOR APPLICATION FOR THE HILTI FELLOWSHIP *(Summer term 2022)*, October 31, *www.uni.li/hilti-fellowship*

EDUCATION IN INFORMATION SOCIETY, October, Ljubljana, Slovenia, *vivid.fov.uni-mb.si*

CAPSI2021 – Conference of the Portuguese Association for Information Ssystems, October, *(location: not yet defined)*

27ᵀᴴ INTERNATIONAL CONFERENCE ON INFORMATION AND SOFTWARE TECHNOLOGIES *(ICIST 2021)*,
October 14–16, Kaunas, Lithuania, *icist.ktu.edu/*

NOVEMBER 2021

PROJMAN 2021 – INTERNATIONAL CONFERENCE ON PROJECT MANAGEMENT, November, *projman.scika.org*

ERCIS TEAM

For everything that concerns the ERCIS network simply write us an email. You will for sure get an answer from one of our team members. The team consists of Dr. Armin Stein, who is the managing director of the ERCIS network and is being supported by Dr. Katrin Bergener, who works part-time for the team and furthermore as Coordinator for the WWU Centre for Europe, and Julia Seither.

Besides answering emails, the team helps organising events, maintains the website, organises the network communication, and supports project applications.

If you are interested in the network, get in touch with them!

info@ercis.org

THE IS RESEARCH NETWORK –
LET'S TAKE CARE OF EACH OTHER

ERCIS

European
Research
Center for
Information
Systems

WWU
MÜNSTER

WWW.ERCIS.ORG