

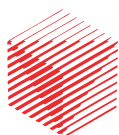
ERCIM

European Research Consortium
for Informatics and Mathematics

Connected Excellence in Research

Activity Report 2021

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ERCIM – the European Research Consortium for Informatics and Mathematics – aims to foster collaborative work within the European research community and to increase cooperation with European industry. In 2021, the members of ERCIM included 16 leading research establishments from 15 European countries. Encompassing about 10 000 researchers and engineers, ERCIM is able to undertake consultancy, development and educational projects on any subject related to its field of activity. ERCIM was founded in 1989.

What is ERCIM?

ERCIM aims to foster collaboration within the European ICST research community and to increase cooperation with industry. Its members are centres of excellence across Europe. ERCIM is internationally recognized as a major representative organization in its field. ERCIM provides access to all major ICST research groups in Europe and has established an extensive program of working groups, publications, fellowships and prizes. It also hosts the European branch of the World Wide Web Consortium (W3C).

ERCIM, a consortium of leading research institutions, focuses on information and communication science and technology (ICST) and related areas of mathematics. ERCIM has a successful track record of promoting ICST research and cooperation in Europe and beyond. Membership is open to top level research institutions (including universities) in ICST.

Objectives

ERCIM's aim is to play a leading role in Information and Communication Technology in Europe by:

- building a Europe-wide, open network of centres of excellence in ICST and Applied Mathematics.
- excelling in research and acting as a bridge for applications
- being internationally recognised both as a major representative organisation in its field and as a portal giving access to all relevant ICST research groups in Europe
- liaising with other international organisations in its field
- promoting cooperation in research, technology transfer, innovation and training.

International Cooperation

ERCIM considers it a high priority to develop cooperation with scientists all over the world. ERCIM hosts the European branch of the World Wide Web Consortium (W3C), the unique international standardization body which sets the Web standards and protocols (HTML, HTTP, XML, etc.). Through W3C, ERCIM participates also in the definition of Web data standards such as RDF, SPARQL and OWL which are of high importance to the research community. ERCIM participates in EU activities and projects. ERCIM has also established cooperation with Informatics Europe and with ACM Europe. In 2021 ERCIM has established contacts with the Japan Science and Technology Agency (JST) and started a series of joint symposia.

Consultancy

ERCIM experts have been involved in many advisory bodies convened by the European Commission. Additionally, ERCIM senior researchers are participating in several EC-funded roadmapping projects as partners, invited participants or members of advisory boards.

Research Projects

In addition to many projects involving ERCIM member institutes, ERCIM is itself participating in several European Commission related activities and projects as coordinator or partner. In these projects, several member institutes carry out the research while the ERCIM Office takes care of administrative and financial tasks.

Working Groups

Working Groups are specialist networks set up by researchers, within which the ERCIM partners arrange regular workshops with invited external participation to study a specific topic and prepare international research projects.

Members

Member institutes are leading research establishments with excellent links to both the national and international, academic and commercial research communities. All current ERCIM members are national centres of excellence, independent of specific commercial ties. They have a strong involvement in the research programs of the European Union and their country, and joint projects with both small and medium-sized enterprises and large industrial companies.

Benefit of Membership

ERCIM is a European-wide network internationally recognized as a representative organisation in its field. Members can benefit from:

- International recognition as a leading centre for ICT R&D. ERCIM, a European-wide network of centres of excellence in ICT, is internationally recognised as a major representative organisation in its field;
- More influence on European and national government R&D strategy in ICT. ERCIM members team up to speak with a common voice and produce strategic reports to shape the European research agenda;
- Privileged access to standardisation bodies, such as the W3C which is hosted by ERCIM as to other bodies with which ERCIM has also established strategic cooperation.
- Invitations to join projects of strategic importance;
- Establishing personal contacts among executives of leading European research institutes during the bi-annual ERCIM meetings;
- Invitations to join committees and boards developing ICT strategy nationally and internationally;
- Excellent networking possibilities with more than 10.000 high-quality research colleagues across Europe. ERCIM's mobility activities, such as the fellowship programme, leverages scientific cooperation and excellence;
- Professional development of staff including international recognition;
- Publicity through the ERCIM website and ERCIM News, the widely read quarterly magazine.

Innovation

In addition to research in computer science and mathematics, innovation and transfer of research results is one of the ERCIM institutes' current main assignments. ERCIM members play a pioneering role in creating small and medium-sized high-tech companies, an effective way of achieving such a transfer. In addition, ERCIM members have a long track record of cooperation with European industry in R&D projects, generally within the framework of European programmes. As a network, ERCIM can help industrial partners to locate the best scientific teams in Europe for a given domain.

Start-up support

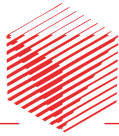
In 2021, ERCIM has launched a start-up support programme for Europe, where partners in ERCIM offer help for start-ups, especially those related to mathematics and informatics (ICT), to expand their businesses in other countries than their own.

Cor Baayen Award

Each year, ERCIM presents a promising young researcher in computer science and applied mathematics with the prestigious Cor Baayen Award.

Publications

ERCIM publishes the quarterly magazine "ERCIM News", white papers, and policy documents.



ERCIM

European Research Consortium
for Informatics and Mathematics

ERCIM is holding general meetings in spring and fall of each year. The 2021 spring meetings were held online on 14-16 June 2021 due to the Covid-19 pandemic, while the fall meetings, including the ERCIM AISBL general assembly, were held as a hybrid meeting, hosted by ICS-FORTH on 25 and 26 October 2021.

The ERCIM community is supported by a Consortium of two bodies:

- ERCIM AISBL an international non for profit association under Belgian law, carrying on the activities of ERCIM concerning collaborative research, networking, and support.
- ERCIM EEIG, the European Economic Interest Grouping, responsible for managing the ERCIM Office and hosting the European branch of W3C.

ERCIM Association

The ERCIM association is managed by the Board of the Association:

- Björn Levin, RISE, Sweden, President
- Chrisos Koulamas, ISI, Greece: Treasurer
- Gabriel David, INESC TEC/University of Porto, Portugal: Secretary

and in addition:

- Han La Poutre, CWI, Strategy Task Group chair and Vice-President
- Dimitris Plexousakis, ICS-FORTH, Science Task Group chair
- Monica Divitini, NTNU, Human Capital Task Group chair
- Andreas Rauber, SBA Research and TU Vienna, Outreach Task Group chair.

ERCIM EEIG

The ERCIM EEIG is governed by the EEIG Board of Directors. In 2021 the board was composed of:

- Bruno Sportisse, Inria (president ERCIM EEIG)
- Dieter Fellner, Fraunhofer-Gesellschaft
- Fabio Martinelli, CNR
- Dimitris Plexousakis, ICS-FORTH.

and supported by an Executive Committee composed of:

- Alexander Nouak, Fraunhofer-Gesellschaft (chair)
- Thierry Priol, Inria
- Yannis Tsikikas, FORTH
- Maurice ter Beek, CNR.

ERCIM Start-Up Support Program for the EU

Start-up companies in the areas of mathematics and computer science often are not bound to national borders. Especially in current times, where virtual meetings occur abundantly, this becomes even more emphasized: many start-up companies like to explore their possibilities abroad. When considering other countries, they often face several challenges. Such challenges usually concern getting to know local customers, actors, practices, or laws; or the need for local (low-budget) office space and funds.

Partners in ERCIM like to offer help for start-ups, especially those related to mathematics and informatics (ICT), to expand their businesses in other countries than their own. Several ERCIM partners thus like to cooperate with each other, in order to help out start-ups for this matter. The participating ERCIM institutes may differ in the kind of support they offer, and in whether they provide support themselves or refer start-ups to the appropriate help somewhere else.

Procedure

Below, we classify certain areas for help; this eases the search for help. In order to request help, a start-up may reach out to the local contact person in its own country, who will assess the possibilities for referring the start-up to the requested country. Further,

- the local institute should check the requests by start-ups (only promising and serious requests are further referred), and
- only the participating institute in the country of the start-up can connect to another, participating institute.

Types of support

A) Guidance & introduction to customers, actors, and events

Knowing the right people, companies, events, customers and other actors is of uttermost importance when a start-up company wants to reach out to some other country. Getting introduced to these can be most helpful. Examples of questions and requests that are relevant are:

- What are good routes to customers?
- What are the best trade fairs and similar events?
- Introduction to potential customers, partners, or networks.
- Getting an overview over the relevant business landscape and its relevant actors

B) Local practices

Local business practices vary from country to country, even within Europe. Getting help with the local (national) practices and possible additional help can be useful for start-ups. Examples of questions that are relevant are:

- What do customers expect?
- How is my offer best packaged?
- What are the customs of dealing with (potential) partners?

C) Legal, accounting, and administration

Once a start-up is actually doing business abroad, the national laws, rules, and administrative matters in that country become important. Getting help on these matters or getting pointers to the right people that could help, could be essential for doing business. Examples of questions that are relevant are:

- What are the local, national rules and regulations about doing business?
- How to take care of administrative matters?
- How to get access to legal and accounting services? Or what are recommended services?

D) Office space

Trying to expand to another country may require actual local activities and being present. Local office space can be essential. Examples of questions or requests that are relevant are:

- Can I get shared office space? Or some other kind of desk-surfing? Especially at/by the institute affiliated to ERCIM?
- Are there potential hosting options available? E.g. at science & technology parks?

E) Investors and funds

Acquiring appropriate funds can be important in order to expand in another country. Examples of questions that are relevant are:

- How or where can I find the proper VC funds or investors?
- Can I be introduced to VC funds or investors?

Participating ERCIM institutes

For the time being, the start-up support is organised between participating ERCIM institutes only. That is, a start-up can get support from a participating ERCIM partner in another country, if the ERCIM partner in its own country participates in this start-up program. The initial participants in this program in 2021 are CWI (The Netherlands), FORTH-ICS (Greece), INESC (Portugal), Inria (France), RISE (Sweden), and SIMULA (Norway).

An updated list of participating institutes, the type of support offered and contacts is given at

<https://www.ercim.eu/start-up-support>

Science Coordination

A major activity within the scope of the Association's mission is related to the promotion of excellence in research and the maintenance of a strong portfolio of scientific activity, materialized in the form of ERCIM-led and coordinated joint research projects and ERCIM-hosted Working Groups. The Science Task Group aims to enable, encourage, sustain and coordinate scientific activities in the form of collaborative research projects and working groups in areas of ICST and Mathematics within which significant research activity is taking place at Institutions within and beyond ERCIM.

The Science Task Group is therefore divided into subtasks:

- Working Groups for building and maintaining a strong network of ERCIM researchers in the different scientific fields of competence of ERCIM.
- Expert Groups which are established on the initiative of ERCIM board to investigate current topics for a limited period with the aim to produce strategic papers or to coordinate relevant activities of common interest.
- Projects for stimulating the submission of ERCIM-led strategically relevant projects and for helping to define the topics for the yearly ERCIM Conference.

In 2021, ERCIM has established contacts with the Japan Science and Technology Agency and started a series of joint ERCIM-JSP symposia. From the ERCIM side, the symposia are organised under the auspices of the Science Task Group.

The members of the Science Task Group in 2021 included:

Chair:

- Dimitris Plexousakis, FORTH

Members:

- Stéphane Bordas, Univ. of Luxembourg (FNO)
- Gabriel David, INESC
- Han La Poutré, CWI
- Bartek Klin, University of Warsaw
- Christos Koulamas, ISI
- Björn Levin, RISE SICS
- Kyrre Lekve, SIMULA
- Thierry Priol, Inria
- Carlo Meghini, CNR
- Edgar Weippl, SBA.
- Tumo Tuikka, VTT.

The Science Task Group can be contacted at tg-science@ercim.eu

*Dimitris Plexousakis, ICS-FORTH
chair of the ERCIM Science Task Group*



ERCIM-JST Joint Symposium on Big Data and Artificial Intelligence

ERCIM and Japan Science and Technology Agency (JST) have organised the first joint symposium on Big Data and Artificial Intelligence, held on 18 and 19 February 2021. The online symposium aimed to present recent results of research conducted in the context of the JST CREST programme, as well as relevant research results from European institutions. The meeting provided the opportunity to the participants from Japan and Europe to familiarize themselves with recent research results and consider collaboration prospects that will arise in the context of the Horizon Europe framework programme or relevant initiatives from JST. Approximately 80 invited participants attended the event.

Ms. Hiroko Tatesawa, Manager, ICT Group, Department of Strategic Basic Research, JST, introduced JST. JST, as one of the national Japanese funding agencies has about 1200 employees and an annual budget of 122.4 billion Yen (about 950 million Euro). ERCIM President Dr. Björn Levin (RISE), then gave an overview on the activities of ERCIM.

With nine short talks, JST delivered an overview of the CREST Program on Big Data Applications:

- Development of a knowledge-generating platform driven by big data in drug discovery through production processes by Dr. Makoto Taiji, (on Account for Kimito Funatsu (PI))
- Big data assimilation and AI: Creating new development in real-time weather prediction by Dr. Takemasa Miyoshi, RIKEN Center for Computational Science
- Establishing the advanced disaster reduction management system by fusion of real-time disaster simulation and big data assimilation by Prof. Shunichi Koshimura, International Research Institute of Disaster Science, Tohoku Univ.
- Exploring etiologies, sub-classification, and risk prediction of diseases based on big-data analysis of clinical and whole omics data in medicine, by Prof. Tatsuhiko Tsunoda, Graduate School of Science, Univ. of Tokyo
- Early detection and forecasting of pandemics using large-scale biological data: designing intervention strategy by Prof. Kimihito Ito (on Account for Hiroshi Nishiura (PI)), Division of Bioinformatics, Research Center for Zoonosis Control, Hokkaido Univ.
- Statistical computational cosmology with big astronomical data by Prof. Naoki Yoshida, Department of Physics/Kavli IPMU, Univ. of Tokyo
- Data-driven analysis of the mechanism of animal development by Shuichi Onami, RIKEN Center for Biosystems Dynamics Research

- Knowledge Discovery by Constructing AgriBigData by Masayuki Hirafuji, Graduate School of Agricultural and Life Sciences, Univ. of Tokyo
- Scientific Paper Analysis: Knowledge Discovery through Structural Document Understanding by Yuji Matsumoto, RIKEN Center for Advanced Intelligence Project.

The CREST programme is one of JST's major undertakings for stimulating achievement in fundamental science fields.

From ERCIM, three 20 minutes presentations were given:

- Scalable computing infrastructures: Keeping up with data growth by Prof. Angelos Bilas, FORTH
- Security, Privacy and Explainability for ML Models by Prof. Andreas Rauber, SBA Research and TU Wien and by Dr. Rudolf Mayer, SBA Research
- IoT - Big Data, Privacy: Resolving the contradiction by Rigo Wenning, Legal counsel, W3C.

The first day concluded with a presentation "AI and HPC" given by Prof. Satoshi Matsuoka, Director, RIKEN Center for Computational Science. In his talk, Prof. Matsuoka presented "Fugaku", the largest and fastest exascale supercomputer, how it is built and used for applications and experiments. These include for example the exploration of new drug candidates for COVID-19, a digital twin of the entire smart city of Fugaku, and unprecedented deep learning scalability for AI developments.

The second day started with three more 20 minutes presentations from European researchers:

- Big Data Trends and Machine Learning in Medicinal Chemistry by Prof. Jürgen Bajorath, Prof., Univ. Bonn
- Data security and privacy in emerging scenarios by Prof. Sara Foresti, Univ. Milano
- Using Narratives to Make Sense of Data by Dr. Carlo Meghini, CNR.

Dr. Katsumi Emura, Director of AIP Network Laboratory, JST gave at talk "Promoting innovation with advanced research ecosystem - Introduction of JST AIP Network Laboratory". The AIP Network Laboratory is a virtual laboratory with teams in the fields of AI, big data, IoT, and cyber security under the JST Strategic Basic Research Program. This talk was followed by five short overviews of some other JST CREST Programs in the ICT area:

- Introduction for the research area of Core Technologies for Advanced Big Data Integration Program by Prof. Masaru Kitsuregawa, Director-General, National Institute of Informatics, Univ. of Tokyo
- A Future Society Allowing Human-Machine Harmonious Collaboration by Prof. Norihiro Hagita, Art Science Department, Osaka University of Arts
- Symbiotic Interaction Research toward Society of Human and AI by Prof. Kenji Mase Graduate School of Informatics, Nagoya Univ.

- Towards the Next Generation IoT Systems by Prof. Emeritus Hideyuki Tokuda, President, National Institute of Information and Communications Technology (NICT)
- Fundamental Information Technologies toward Innovative Social System Design by Prof. Sadao Kurohashi, Graduate School of Informatics, Kyoto Univ.

Prof. Masashi Sugiyama, Director, RIKEN Center for Advanced Intelligent Project, Univ. of Tokyo then gave a keynote talk entitled “Fundamental Machine Learning Research Opens Up New AI Society”.

The last presentation of the symposium was given by Dr. Fosca Giannotti, CNR on “Explainable Machine Learning for Trustworthy AI”.

The symposium was organised and chaired by Prof. emeritus Yuzuru Tanaka, Hokkaido University, Prof. emeritus Nicolas Spyrtos, Université Paris - Saclay, and Prof. Dimitris Plexousakis, FORTH-ICS and University of Crete.

More information:

Programme and links to slides and recorded presentations:

<https://www.ercim.eu/events/ercim-jst-joint-symposium>

Second JST-ERCIM Symposium

The second ERCIM-JST symposium was organised by JST and held online on 8 and 9 December 2021. The symposium aimed to present future visions and recent research results conducted in the frame of Japanese Advanced Integrated Intelligence Platform the (JST AIP) project as well as from European institutions. Some 50 scientists participated in this event.

The joint workshop focused on the theme “Accelerating digital transformation with trust for a post-COVID-19 society”. It presented recent results, emerging design frameworks and technical solutions for dealing with the coming social changes in the era of digital transformation. In a remote and contactless environment, sophisticated trust concepts and technologies are strongly demanding in every social and technology domain. Furthermore, it also provided an opportunity to share the different situations in Japan and Europe concerning the use of big data for analysis, the protection and preservation of privacy, the adherence to principles of human centric artificial intelligence (AI), and several standardisation efforts. Of particular interest were results from applications of AI in areas such as medical diagnosis, bioinformatics and drug discovery.

The symposium was structured in four themes: (i) Trustworthy AI: theory and systems, (ii) Mathematical approaches to privacy

and security, (iii) The future of IoT and AI, and (iv) Digital governance, ethical, legal and societal impacts, and AI.

The first day started with a keynote talk by Prof. Takayuki Ito (Kyoto University) entitled “An agent that facilitates crowd discussion”. He presented a large-scale online discussion platform called D-Agree. Such platforms require support functions that can efficiently achieve a consensus, reasonably integrate ideas, and discourage flaming.

Two parallel sessions then investigated the topics “Trustworthy AI: theory and systems” and “Mathematical approaches to privacy and security” In the Trustworthy AI session, Prof. Isao Echizen (National Institute of Informatics) presented “Real or fake? From biometric data protection to fake media detection”, and Tim Baarslag (CWI) spoke about “Coordination of intelligent and autonomous systems through negotiation”. In the parallel session “Mathematical approach to privacy and security” Jun Sakuma (Tsukuba University) gave a presentation “Towards the realisation of AI trusted by humans” followed by Michele Sebag (CNRS – French National Centre for Scientific Research) who spoke about “Extremely private supervised learning”.

Then, all participants came together in a panel session with the speakers to discuss questions about the relationship between their work and trust, the problems to be solved by AI and how can they be solved.

Prof. Fabio Martinelli (CNR IIT) opened the second day with a keynote on “Data usage control for data sovereignty”. He introduced the notions of data centric policies, policy refinement and policy enforcement in several scenarios, including cyber-threat intelligence management.

The symposium continued with two parallel sessions. “The future of IoT and AI” was the title of session C, where Prof. Takayuki Nishio (Tokyo Institute of Technology) gave a presentation on “Distributed machine learning in IoT networks” followed by Helmut Leopold (AIT – Austrian Institute of Technology) who spoke about “IoT and AI for a sustainable digital future”. In the parallel session entitled “Digital governance, ELSI, and AI”, Prof. Minao Kukita (Nagoya University) gave a presentation “AI is the message: How AI can affect our view of the humans” and Prof. Alexander Schatten (SBA Research) discussed the question “Is the extended mind embracing artificial intelligence? Ethical and social consequences and responsibilities.”

In the following panel session, the speakers of the parallel sessions summarised the role of the researchers in the development of autonomous algorithms and the impact of AI on the society.

More information:

<https://sites.google.com/view/jstercim2021>

Computational and Methodological Statistics

The Working Group Computational and Methodological Statistics (CMStatistics) focuses on all computational and methodological aspects of statistics. Of particular interest is research in important statistical applications areas where both computational and/or methodological aspects have a major impact. The aim is threefold: first, to consolidate the research in computational and methodological statistics that is scattered throughout Europe; second, to provide researchers with a network from which they can obtain unrivalled sources of information about the most recent developments in computational and methodological statistics as well as its applications; third to edit quality publications of high impact and significance in the broad interface of computing, methodological statistics and its applications.

The Elsevier journals Computational Statistics and Data Analysis (CSDA) and Econometrics and Statistics (EcoSta) are the official journals of the CMStatistics network. The CMStatistics also publishes the Annals of Statistical Data Science as a supplement to the CSDA.

Coordinator:

Erricos Kontoghiorghes, School of Computer Science and Information Systems, Birkbeck, University of London

Organised event:

- 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2021) at King's College London and online, 18-20 December 2021.

<http://www.cmstatistics.org/>

Dependable Software-Intensive Embedded Systems

Coordinator:

Erwin Schoitsch, Austrian Institute of Technology/SBA

Co-organised event:

- The Working Group (Erwin Schoitsch, AIT, and Amund Skavhaug, NTNU, organised the 16th International ERCIM/EWICS/ARTEMIS Workshop on Dependable Smart Embedded Cyber-Physical Systems and Systems-of-Systems (DECSoS)” colocated at SAFECOMP 2021, online, 7 September 2021. Papers and presentations have been published in Springer LNCS 12853, Computer Safety, Reliability, and Security, Safecomp 2021 Workshops DECSoS, MAPSOD, DepDevOps, USDAI, and WAISE, Proceedings

Working Groups

The activities of a Working Group can be divided into several areas: workshops to build the community and maintain its vibrancy, projects designed to advance research and innovation in the particular area of the group, and human mobility to assure the appropriate trained human capital. ERCIM provides some financial support to the Working Groups.

A major activity of an ERCIM Working Group is to search actively for project funding that crosses national borders. ERCIM Working Groups contribute many of the articles in ERCIM News.

The purpose of an ERCIM Working Group is to build and maintain a network of researchers in a particular scientific field. The Working Groups are open to any researcher in the specific scientific field.

Working Groups with activities in 2020

- Computational and Methodological Statistics
- Dependable Software-Intensive Embedded Systems
- Formal Methods for Industrial Critical Systems
- Multimedia Understanding through Semantics Computation and Learning - MUSCLE
- Trust and Security Management.

Ethics - Beyond Compliance

The ERCIM Ethics Working Group held regular meetings in 2021 to prepare the organisation of a 2-day event, in October 2022 targeted at researchers and Research Ethics Boards (REBs). The event will consist of keynotes, presentations, tutorials and interactive sessions, and will provide ample time for open discussions. Different outcomes are envisioned, including some which may be directed towards policy makers.

Formal Methods for Industrial Critical Systems

Formal methods have been advocated as a means of increasing the reliability of systems, especially those which are safety or business critical, but the industrial uptake of such methods has been slow. This is due to the perceived difficulty of mathematical nature of these methods, the lack of tool support, and the lack of precedents where formal methods have been proven to be effective. It is even more difficult to develop automatic specification and verification tools due to limitations like state explosion, undecidability, etc. The FMICS Working Group brings together researchers of the ERCIM consortium and beyond in order to promote the use of formal methods within industry.

Coordinator:

Jaco van de Pol, Aarhus University, Denmark

Co-organised event:

- FMICS, the ERCIM Working Group on Formal Methods for Industrial Critical Systems, is held its annual conference as part of the QONFEST series on 23-28 August.

<http://fmics.inria.fr/>

MUSCLE - Multimedia Understanding through Semantics Computation and Learning

MUSCLE (formerly Image and Vision Understanding) is the ERCIM Working Group on multimedia understanding through semantics, computation and learning. It gathers teams from both ERCIM and non-ERCIM institutions whose expertise ranges from machine learning and artificial intelligence to image, video and audio processing, and multimedia database management.

Coordinator:

Davide Moroni, ISTI-CNR

Joint Publication:

A joint special issue on "Intelligent Sensors for Monitoring Physical Activities" with two members of the working group (CNR-ISTI & Digital Signal and Image Processing Research Group, Department of Computing and Control Engineering) was published (<https://kwz.me/hj1>)

A new special issue call was issued in "Frontiers in Digital Health" and in "Frontiers in Bioengineering and Biotechnology" on the research topic "Artificial Intelligence in Point of Care Diagnostics" (<https://kwz.me/hj2>).

Organised event:

The Working Group held the 9th International Workshop on Computational Intelligence for Multimedia Understanding (IWCIM) on Rhodes, Greece and online on 29 September - 1st October 2021.

<https://wiki.ercim.eu/wg/MUSCLE/>

Security and Trust Management

The topics of interest for the Working Group include , rigorous semantics and computational models for security and trust; security and trust management architectures, mechanisms and policies; networked systems security; privacy and anonymity; identity management; ICT for securing digital as well as physical assets; cryptography.

Coordinator:

Pierangela Samarati, University of Milan

Co-organised events

- 2021 ERCIM STM Best PhD Thesis Award for Jo Van Bulck, KU Leuven for his thesis "Microarchitectural Side-Channel Attacks for Privileged Software Adversaries"
- 17th International Workshop on Security and Trust Management STM2021, online, 8 October, 2021. The ERCIM STM Best PhD Thesis Awardee gave a keynote and ten papers were presented.

<https://www.iit.cnr.it/STM-WG/>

Projects

In 2021, ERCIM participated in nine research projects funded by the European Commission either as coordinator or as a partner, as well as in one national French research project.

A European project can be a richly rewarding tool for pushing your research or innovation activities to the state-of-the-art and beyond. Through ERCIM, our member institutes have participated in more than 100 projects funded by the European Commission in the ICT domain, by carrying out joint research activities while the ERCIM Office successfully manages the complexity of the project administration, finances and outreach.

Horizon Europe: How can you get involved?

The ERCIM Office has recognized expertise in a full range of services, including:

- Identification of funding opportunities
- Recruitment of project partners (within ERCIM and through a strategic partnership with Ideal-IST)
- Proposal writing and project negotiation
- Contractual and consortium management
- Communications and systems support
- Organization of attractive events, from team meetings to large-scale workshops and conferences
- Support for the dissemination of results.

How does it work in practice?

Contact the ERCIM Office to present your project idea and a panel of experts within the ERCIM Science Task Group will review your idea and provide recommendations. Based on this feedback, the ERCIM Office will decide whether to commit to help producing your proposal. Note that having at least one ERCIM member involved is mandatory for the ERCIM Office to engage in a project.

If the ERCIM Office expresses its interest to participate, it will assist the project consortium as described above, either as project coordinator or project partner.

For more information, please contact:

Peter Kunz, ERCIM Office
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Project acronym	Project Type	ERCIM's role	ERCIM members involved
Data Market Services	EU H2020 Coordination and support action	partner	ERCIM EEIG/W3C
GateKeeper	EU H2020 Innovation Action	partner	ERCIM EEIG/W3C
MOSAICrOWN	EU H2020 Research and Innovation Action	partner	ERCIM EEIG/W3C
SDN-microSENSE	EU H2020 Innovation Action	partner	NTNU, ERCIM EEIG/W3C
TERMINET	Horizon Europe Research and Innovation Action	partner	ERCIM EEIG/W3C
TRAPEZE	EU H2020 Innovation Action	partner	ERCIM EEIG/W3C
WAI-COOP	EU H2020 Coordination and support action	coordinator	ERCIM EEIG/W3C
WAI-Guide	EU H2020 Research and Innovation Action	coordinator	ERCIM EEIG/W3C
WAI-Tools	EU H2020 Innovation Action	coordinator	ERCIM EEIG/W3C

Funded projects with participation of ERCIM EEIG in 2020.



DMS Accelerator

DMS Accelerator aims at overcoming the barriers of data-centric SMEs and start-ups in Europe in data skills, entrepreneurial opportunities, legal issues and standardisation. Over three years, the project offers a comprehensive range of support and services to a total 150 European startups and SMEs: interactive webinars, mentoring, free entry to accelerators and incubators in four European countries, direct connections to top-tier investors, personalised training sessions (GDPR, IP, etc.), as well as getting a sponsored booth at the The Next Web conference.

DMS Accelerator offers to startups:

- *Webinars* - More than 50 online courses with one hour duration about GDPR, intellectual property, how to pitch in front of investors, how to find customers and much more.
- *Mentoring* - Support and advice from different experts on demand in a variety of areas to meet your most specific needs.
- *Content* - Guides developed by our partners based on their expertise and adapted to the selected startups needs easily at hand to support the acceleration process.
- *Promotion* - Attendance of relevant events in Europe, being part of the exhibition area or the protagonist of a pitch session. Additionally, a personal video to promote the startup.
- *Mobility Programme* - Access to other entrepreneurial ecosystems through a stage in one of our accelerators located in The Netherlands, Germany, Romania and Portugal.
- *Bootcamp* - participation at a final exclusive event with workshops and one-to-one sessions given by DMS experts in the field. An opportunity to growth, linkbuilding and increase experience.

DMS Accelerator - Supporting the European data market providing free support services to data-centric SMEs and start-ups

EU funding: € 2 993 961

ERCIM's role:
ERCIM EEIG project partner

ERCIM/W3C contact:
Rigo Wenning

ERCIM members involved:
ERCIM/W3C

Coordinator:
Zabala, Spain

Duration:
January 2019 – December 2021

<https://www.datamarketservices.eu>



GATEKEEPER

The rising population of elderly in the EU member states is giving rise to new challenges in relation to independent living. The EU-funded GATEKEEPER project (Innovation Action) aims to ensure healthier independent lives for the ageing populations. It will connect healthcare providers, businesses, entrepreneurs, elderly citizens and the communities they live in. The goal is to create an open, trust-based arena for matching ideas, technologies, user needs and processes. The project will also incorporate data protection while underpinning value creation using advanced marketing patterns. The solutions deployed will involve 40 000 elderly citizens, as well as authorities, institutions, companies, associations and academics, and eight regional communities from seven EU member states.

By 2022, GATEKEEPER will be embodied in an open source, European, standard-based, interoperable and secure framework available to all developers, for creating combined digital solutions for personalised early detection and interventions that (i) harness the next generation of healthcare and wellness innovations; (ii) cover the whole care continuum for elderly citizens, including primary, secondary and tertiary prevention, chronic diseases and co-morbidities; (iii) straightforwardly fit “by design” with European regulations, on data protection, consumer protection and patient protection (iv) are subjected to trustable certification processes; (iv) support value generation through the deployment of advanced business models based on the VBHC paradigm.

Gatekeeper applies the Web of Things to healthcare. This will help to support further work by ERCIM on the Web of Things. ERCIM/W3C contributes to the project with work on the Web of Things, data, semantics, security, privacy, accessibility and standardisations and also contribute to dissemination and communication activities.

GATEKEEPER - Smart Living Homes - Whole Interventions Demonstrators for People at Health and Social Risks

EU funding: € 19 598 327

ERCIM's role:

ERCIM EEIG project partner

ERCIM/W3C contact:

Dave Ragett (W3C)

ERCIM members involved:

ERCIM/W3C

Coordinator:

MEDTRONIC IBERICA SA

Duration:

October 2019 – March 2023

<https://www.datamarketservices.eu>



MOSAICrOWN

MOSAICrOWN - Multi-Owner data Sharing for Analytics and Integration respecting Confidentiality and OWNeR control - is a Horizon 2020 project that aims at enabling data sharing and collaborative analytics in multi-owner scenarios in a privacy-preserving way, ensuring proper protection of private, sensitive, and confidential information. MOSAICrOWN provides effective and deployable solutions allowing data owners to maintain control on the data sharing process, enabling selective and sanitized disclosure providing for efficient and scalable privacy-aware collaborative computations.

The application of data analysis techniques over large data collections provides great benefits, to the personal, business, research, and social domains. The availability of large data collections recording actions and choices of individuals and organizations can lead to great improvement in the understanding of how the world operates. The continuous evolution of ICT is enabling the realization of such vision at a fast pace, supporting the realization of architectures enabling collaborative data sharing and analytics. Clear obstacles towards the realization of such potential and vision are security and privacy concerns. Indeed, the loss of control over data and potential compromise of their confidentiality can have a strong detrimental impact on the realization of an open framework for enabling the sharing of data from multiple independent data owners.

The goal of providing effective data protection in multi-owner scenarios entails several challenges. MOSAICrOWN tackles such challenges with a gradual approach, addressing first policy specification and data governance, and then developing enabling technologies providing data wrapping and data sanitization techniques for enforcing data protection.

The result of MOSAICrOWN is a set of modular tools providing for an enriched data market scenario and protection to data across the whole life-cycle.

MOSAICrOWN - Multi-Owner data Sharing for Analytics and Integration respecting Confidentiality and OWNeR control

EC Funding: € 3 203 750

ERCIM's role: Project partner

ERCIM members involved: EEIG ERCIM

ERCIM/W3C contact: Rigo Wenning

Scientific coordination:
Pierangela Samarati, University of Milan

Duration:
January 2019 - December 2021

<https://mosaicrown.eu/>



TERMINET

The vision of TERMINET is to provide a novel next generation reference architecture based on cutting-edge technologies such as SDN, multiple-access edge computing, and virtualisation for next generation IoT, while introducing new, intelligent IoT devices for low-latency, market-oriented use cases. TERMINET's primary intention is to bring (more efficient and accurate) decisions to the point of interest to better serve the final user targeting at applying distributed AI at the edge by using accelerated hardware and sophisticated software to support local AI model training using federated learning. Our solution aspires to reduce the complexity of the connecting vast number of heterogeneous devices through a flexible SDN-enabled middleware layer. It also aims to design, develop, and integrate novel, intelligent IoT devices such as smart glasses, haptic devices, energy harvesting modules, smart animal monitoring collars, AR/VR environments, and autonomous drones, to support new market-oriented use cases. Great expectation of the proposal is to foster AR/VR contextual computing by demonstrating applicable results in realistic use cases by using cutting-edge IoT-enabled AR/VR applications. By designing and implementing an IoT-driven decentralised and distributed blockchain framework within manufacturing, TERMINET aims to support maintenance and supply chain optimisation. TERMINET's solution intends to apply a vertical security by design methodology by meeting the privacy-preserving and trust requirements of the NG-IoT architecture. To foster standardisation activities for the IoT ecosystem, TERMINET will provide novel disruptive business models. For the evaluation of its wide applicability, TERMINET will validate and demonstrate six proof-of-concept, realistic use cases in compelling IoT domains such as the energy, smart buildings, smart farming, healthcare, and manufacturing.

TERMINET - Next Generation Smart Interconnected IoT

EC funding: €3 991,389

ERCIM's role:
ERCIM EEIG project partner

ERCIM members involved:
ERCIM/W3C

Scientific coordination:
University of Western Macedonia

ERCIM/W3C contact:
Philipp Hoschka

Duration:
November 2020 - October 2023

<https://terminet-h2020.eu/>



TRAPEZE

TRAPEZE – Transparency, Privacy and Security for European Citizens – is a European Innovation Action with the ambitious goal of driving a cultural shift in the protection of the European data economy. It aims to achieve this by reconstructing the concepts of control, transparency and compliance through technical and methodological, citizen-first, innovations. The project will lead the way in putting often-misplaced cutting-edge technologies to practical use for the citizens.

TRAPEZE is aiming to become a lighthouse for European and global initiatives that aspire to deliver citizen-first, cyber-resilient, innovation.

To make this goal a reality, TRAPEZE aims to put citizens’ security and privacy into their own hands by providing them, first of all, with innovative dashboards that will enable fine-grained and dynamic control of their data protection preferences across all relevant controllers. These will be accompanied by transparency and feedback mechanisms that will allow data subjects to comprehend the complex flows of their data and actively participate in the prevention, detection, and reporting of legal noncompliance or incidents, and in exercising their legal rights. Furthermore, to ensure citizens of all groups, skills, and physical abilities can manage and monitor their data flows, TRAPEZE will place a special emphasis on usability, but also privacy preferences and sociological aspects across different member states, seeking to establish a feedback loop with its end-users internationally.

TRAPEZE is significantly different from existing approaches in that it does not attempt to protect the citizen by abruptly reshaping the European digital economy. Instead, it seeks to empower the data subject, while enabling a realistic, steady, transition to a more trustworthy data ecosystem that extends beyond online services and deep into the controllers’ data silos. TRAPEZE aims to enable privacy-aware and privacy-preserving data value chains by leveraging the concepts of linked data graphs and distributed ledgers (blockchain). Linked data will be used to control the handling of the payload data (actual personal data relating to the citizen) stored and processed by controllers’, or processors’ systems, even downstream (re-sharing from controller to controller/processor) in the data value chain. Blockchain technology will ensure compliance and decentralisation of records of processing activities, as well as immutability and non-repudiation of said records (with GDPR compliance in mind).

TRAPEZE’s proposed architecture and tools will be developed and evaluated under real-world conditions in three pilot scenarios in government, telecommunication and IT services, and banking. All three pilots involve the processing and aggregation of large amounts of personal data from various data sources, with policies specified at different levels of granularity.

TRAPEZE is not starting from scratch, but builds on a decade of EU-funded research in security and privacy, as well as on proprietary solutions and know-how, towards marketable innovations.

TRAPEZE - TRAnsparency, Privacy and security for European citiZEns

EC Funding: € 4 995 812

ERCIM's role:

Project partner, administrative coordination

ERCIM/W3C contact:

Jessica Assoumou

Coordinator:

TENFORCE BVBA

ERCIM members involved:

ERCIM EEIG/W3C

Duration:

September 2020 - August 2023

<https://www.trapeze-project.eu>



SDN-microSENSE

The smart energy ecosystem constitutes the next technological leap of the conventional electrical grid, providing multiple benefits such as increased reliability, better service quality and efficient utilization of the existing infrastructures. However, despite the fact that it brings beneficial environmental, economic and social changes, it also generates significant security and privacy challenges, as it includes a combination of heterogeneous, co-existing smart and legacy technologies. Based on this reality, the SDN-microSENSE project intends to provide a set of secure, privacy-enabled and resilient to cyberattacks tools, thus ensuring the normal operation of EPES as well as the integrity and the confidentiality of communications. In particular, adopting an SDN-based technology,

SDN-microSENSE will develop a three-layer security architecture, by deploying and implementing risk assessment processes, self-healing capabilities, large-scale distributed detection and prevention mechanisms, as well as an overlay privacy protection framework. Firstly, the risk assessment framework will identify the risk level of each component of EPES, identifying the possible threats and vulnerabilities. Accordingly, in the context of self-healing, islanding schemes and energy management processes will be deployed, isolating the critical parts of the network in the case of emergency. Furthermore, collaborative intrusion detection tools will be capable of detecting and preventing possible threats and anomalies timely. Finally, the overlay privacy protection framework will focus on the privacy issues, including homomorphic encryption and anonymity processes.

ERCIM/W3C is involved in the project's pilot and demonstration scenarios, energy ecosystem standardization, and dissemination. Interoperability testing from ERCIM/W3C will strengthen the proposed SCADA & ICS standardisation activities and also consider aspects of accessibility, privacy, security, and internationalization. ERCIM participates in the Security Advisory Board.

SDN-microSENSE - microgrid reSilient
Electrical eNergy SystEm

EC Funding: € 7 992 463

ERCIM's role:
Project partner

ERCIM/W3C contact:
Philipp Hoschka

Coordination:
AYESA ADVANCED TECHNOLOGIES SA

ERCIM members involved: E
NTNU, EEIG ERCIM/W3C

Duration:
May 2019 - April 2022

<https://www.hradio.eu/projects/>



WAI-COOP

The power of the World Wide Web is in its universality. Websites and web tools should work for all people. This means they should be designed and coded so that people with disabilities can use them. However, this is not the case with all sites. The WAI-CooP project will provide a unique model to support implementation of the international standards for digital accessibility. Specifically, it will establish vendor-neutral overviews of available training, tools and resources internationally. It will also analyse technological advances and provide opportunities for key stakeholders to share resources and exchange best practices. The project will support EU public bodies in the process of implementing the Web Accessibility Directive.

The objectives of the WAI-CooP projects are to:

- Establish vendor-neutral overview on available training, tools, and resources internationally
- Analyse technological advancements and coordinate with relevant research and development
- Provide opportunities for key stakeholders to share resources and to exchange best practices.

WAI-CooP achieves this by building on the existing wealth of authoritative guidance available from the W3C Web Accessibility Initiative (WAI), to provide a one-stop shop for the broad spectrum of key stakeholders involved in the implementation of digital accessibility, including public bodies and private entities; organisations representing people with disabilities; product, service and training providers; researchers; and policy makers.

WAI-CooP is uniquely positioned to establish necessary dialogs with key stakeholders to help exchange best practices in the community, provide technical clarification and guidance, and refine the authoritative guidance from W3C. WAI-CooP is also uniquely positioned and qualified to help ensure coordination and harmonisation of accessibility standards and practices, raise awareness and build technical capacities in Europe and internationally.

WAI-CooP maximises its impact by utilising transparent and open processes of the W3C to invite all key stakeholders, and by integrating project results into relevant W3C standardisation and EDF networks, to ensure longer-term sustainability beyond the project. WAI-CooP provides direct support for European Union (EU) public bodies in the process of implementing the Web Accessibility Directive (WAD), while using a non-exclusive approach that benefits organisations and governments internationally wanting to implement digital accessibility.

WAI-CooP - Web Accessibility Initiative – Communities of Practice

EC funding: € 1 499 987

ERCIM's role:

Project coordinator

ERCIM members involved:

ERCIM/W3C

Scientific coordination:

Shadi Abou-Zahra, W3C

Administrative coordination:

Jessica Michel Assoumou, ERCIM Office

Duration:

January 2021 – December 2023

<https://www.w3.org/WAI/about/projects/wai-coop/>



WAI-GUIDE

WAI-Guide, Authoritative Implementation Guidance and International Cooperation to Support Training, Awareness Raising, and Capacity Building, is an H2020 coordination and support action that drives sustainable impact for more scalable and affordable digital accessibility solutions. WAI-Guide aims to:

- Provide authoritative implementation guidance and training, thereby growing capacities of available accessibility experts;
- Accelerate tooling support for accessible content authoring, thereby making it more cost efficient to create accessible content;
- Identify and address gaps in accessibility standardisation, thereby increasing the coverage of digital accessibility requirements.

WAI-Guide achieves these objectives by conducting its work as an integral part of the vendor-neutral environment of the World Wide Web Consortium (W3C). WAI-Guide draws together key expertise from industry, end-user representation, public bodies, research, and other fields, to develop core accessibility solutions that are internationally consensed and recognised as authoritative references.

WAI-Guide develops open, royalty-free resources for a variety of audiences, each having a role in digital accessibility. This includes accessibility trainers and educators, consultants and service providers; vendors, developers, and integrators of authoring tools and content management systems; and designers, developers, procurers, project managers, and others involved throughout accessibility implementation processes. WAI-Guide is uniquely positioned and qualified to develop best practices for digital accessibility that are rigorously vetted through the open collaborative W3C Process, and that are harmonised with the authoritative interpretation of the internationally recognised W3C standards for accessibility. WAI-Guide comes at an opportune time to support implementation of the European Directive on Web Accessibility. It strengthens the European Digital Single Market and supports its alignment with global standards on digital accessibility.

WAI-GUIDE - Authoritative Implementation Guidance and International Cooperation to Support Training, Awareness Raising, and Capacity Building

EC funding: € 1 499 743

ERCIM's role:
Project coordinator

ERCIM members involved:
ERCIM/W3C

Scientific coordination:
Shadi Abou-Zahra, W3C

Administrative coordination:
Jessica Michel Assoumou, ERCIM Office

Duration:
January 2019 – December 2021

<https://www.w3.org/WAI/about/projects/wai-guide/>



WAI-TOOLS

WAI-Tools, Advanced Decision Support Tools for Scalable Web Accessibility Assessments, drives innovation with sustainable impact on the entire field of web accessibility evaluation and repair through:

- Building on the on-going international standardisation efforts on web accessibility conformance testing;
- Ensuring consistent accuracy across automated, semi-automated, and manual web accessibility testing;
- Pursuing leading edge technologies for website testing, including dynamic and mobile web applications;
- Leveraging the existing market of commercial, free, and open source web accessibility evaluation tools;
- Demonstrating large-scale web accessibility monitoring built on open standards and open source tools.

WAI-Tools achieves this by carrying out key efforts in the vendor-neutral environment of the World Wide Web Consortium (W3C). WAI-Tools draws together key expertise from industry, public bodies, and research to develop common understanding of web accessibility requirements in exchange with the existing community and networks of the W3C Web Accessibility Initiative (WAI).

WAI-Tools is uniquely positioned and qualified to develop authoritative resources that are coordinated and aligned with the on-going European and international efforts on web accessibility standardisation, including W3C Web Content Accessibility Guidelines (WCAG) 2.1, the expected revision of EN 301 549, and upcoming EC definition of mobile requirements and monitoring methodology in light of the EU Directive on web accessibility.

WAI-Tools maximises the impacts while minimising the use of project resources by building on existing open source tools from leading market vendors, rather than investing in teething troubles of less mature tools. WAI-Tools deploys testing tools in existing web accessibility monitoring observatories and integrates these differing national approaches using open data, to demonstrate easier and more cost effective assessment of web accessibility requirements at scale.

WAI-TOOLS - Advanced Decision Support Tools for Scalable Web Accessibility Assessments

EC funding: € 1 999,812

ERCIM's role:
Project coordinator

ERCIM members involved:
ERCIM/W3C

Scientific coordination:
Shadi Abou-Zahra, W3C

Administrative coordination:
Jessica Michel Assoumou, ERCIM Office

Duration:
November 2017 – October 2020

<http://www.w3.org/WAI/Tools/>

Human Capital

Human Capital (HC) is a central concern within all organizations. In ERCIM its main focus is the European cooperation of different entities with their own HC policies. To this end we are currently building on two key activities. The first is the ERCIM post-doctoral fellowship programme that has been in existence since 1991. This programme facilitates the participation of young scientists in research teams within ERCIM member institutes by organizing postdoctoral fellowships. In addition to mobility in high quality teams, it helps participants further their understanding of the European research environment and career capabilities. The second key activity is the Cor Baayen Young Researcher Award that acknowledges the achievements of young research scientists from European teams in informatics or mathematics.

There is scope for further development of both of these tools, but we would also like to create new schemes for mobility between ERCIM members. In particular, in addition to post-docs, we would like to foster mobility of all scientists, including PhD students, engineers and management and administration professionals.

ERCIM's Human Capital Task Group is in charge of supervising these actions and proposing new directions.

Participants of the Task Group:

- Monica Divitini, NTNU, (chair)
- Adriana Lazzaroni, CNR
- Harald Lenschow, NTNU
- Emma Lière, ERCIM Office
- Laszlo Monostori, SZTAKI
- Jerzy Tiuryn, University of Warsaw
- Bettina Touré, Fraunhofer-Gesellschaft
- Edgar Weippl, SBA Research
- Leon van der Torre, FNR.



*Monica
Divitini, chair
of the ERCIM
Human Capital
Task Group.*



“Alain Bensoussan” Fellowship Programme

The PhD Fellowship Programme has been established as one of the premier activities of ERCIM. Since its inception in 1991, over 650 fellows have passed through the programme. In 2021, 26 young scientists have started an ERCIM PhD Fellowship and 54 fellows have been hosted during the year. This represents 325 person-months.

The ERCIM Fellowship Programme is open to young researchers from all over the world. It focuses on a broad range of fields in Computer Science and Applied Mathematics. The fellowship scheme also helps young scientists to improve their knowledge of European research structures and networks and to gain more insight into the working conditions of leading European research institutions. In 2021, many of the hosted fellows were native of countries outside the European Union. This reflects ERCIM’s contribution to make Europe not only the world’s biggest ‘brain factory’ but also a large ‘brain magnet’ in the field of informatics and applied mathematics. The fellowships are of 12 months duration (with a possible extension), spent in one of the ERCIM member institute. Fellows can apply for second year in a different institute.

Conditions

Candidates must:

- have obtained a PhD degree during the last eight years (prior to the application deadline) or be in the last year of the thesis work with an outstanding academic record
- be fluent in English
- have completed their PhD before starting the grant.

Deadlines for applications are currently 30 April and 30 September each year.

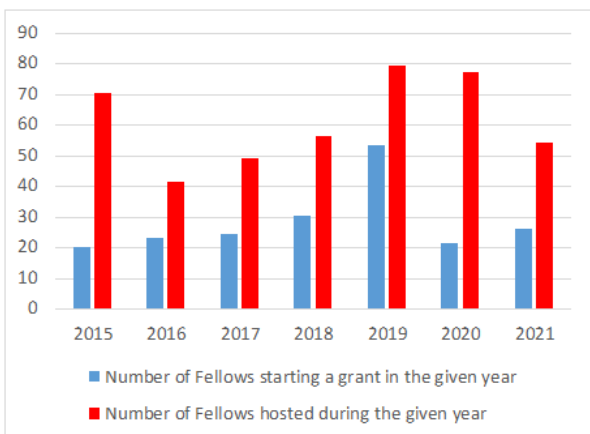
Since 2005 the Fellowship Programme has been named in honour of Alain Bensoussan, former president of Inria, one of the three ERCIM founding institutes.

<http://fellowship.ercim.eu>

“The ERCIM program changed me as a professional, it has made me grow in many ways, it has taken me from junior to almost senior. Working under the supervision of prestigious researchers in prestigious research institutes changed my perception of what applied research is. I acquired many skills that now allow me to respond to the problems of the industry in a scientific way.”



Enislay RAMENTOL
Former ERCIM Fellow



Number of fellows hosted from 2015 to 2021.



Person-months equivalents for the fellows hosted from 2015 to 2021.

ERCIM Fellowship Community Event

ERCIM organized an online community event for its fellows and invited guests on November 9, 2021. 52 participants gathered online to present their work, exchange ideas and get to know each other.

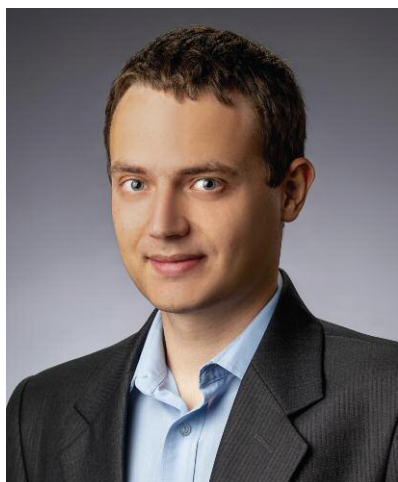
After a long period of difficult working conditions due to the pandemic, the main goal of this virtual event was to encourage interaction and sharing among fellows and reassure them that they are part of the same community. The centerpiece of the event was a poster session. It illustrated the outstanding scientific work of the fellows and helped to identify common research challenges even in different fields. In addition, Gabriel David (INESC) delivered a keynote address on “Data, Privacy, Ethics: Context for Research”, and two former fellows shared their personal experiences with the event. The event was organized on an innovative online platform called “Gather Town,” which allowed participants to freely move and interact with an avatar in a virtual space. The event received



overwhelmingly positive feedback from the participants. Most of them found the event helpful and would like to participate in more events of this kind. The event was organized by Emma Lière, ERCIM Fellowship Program Coordinator, and moderated by Monica Divitini, NTNU, Chair of the ERCIM Human Capital Working Group.

ERCIM Fellows hosted in 2021

- Firdausa Ahmed at VTT
- Basheer Alwaely at NTNU
- Hamidreza Arjmandi at NTNU
- Hamid Asgari at VTT
- Pritam Bose at NTNU
- Evren Catak at NTNU
- Alberto Dayan at NTNU
- Marta De León Contreras at NTNU
- Francesco De Pretis at VTT
- Sanchari Deb at VTT
- Christian Dremel at NTNU
- Urooj Fatima at NTNU
- Md Sadek Ferdous at Fraunhofer FIT
- Léo Françoso Dal Piccol Sotto at Fraunhofer SCAI
- Nimisha Ghosh at UnWAR
- Hong Guo at NTNU
- Hui Han at Fraunhofer IESE
- Seyed Reza Hosseini Raviz at NTNU
- Husain Khaleel at Fraunhofer IIS
- James Jackaman at NTNU
- Muhammad Atif Javed at RISE
- Pallavi Kaliyar (1) at NTNU
- Markus Arthur Köbis at NTNU
- Milosz Krupski at NTNU
- Meng Li at CNR
- Amir Maghoul at NTNU
- Purnachandra Rao Makkena at Fraunhofer IIS
- Sehrish Malik at Simula
- Fozia Mehboob at RISE SICS AB
- Purnedu Mishra at UNWAR
- Nitin Muchhal at Fraunhofer IIS
- Massa Ndong at Fraunhofer-IIS
- Vijay Kumar Neeluru at Fraunhofer IPA
- Trung Ky Nguyen at VTT
- Tamoghna Ojha at CNR IIT
- David Orellana Martín at NTNU
- José David Patón Romero at NTNU
- Sudhir kumar Pujahari at University of Warsaw
- Abdul Rauf at RISE SICS
- Asreen Rostami at RISE SICS AB
- Artur Jakub Rutkowski at NTNU
- Muhammad Sajjad at NTNU
- Shrutika Shankar Sawant at Fraunhofer IIS
- Eduardo Scarparo at NTNU
- Ali Sedaghatbaf at RISE
- Amin Shahraki at Fraunhofer IIS
- Mohammad Idrees Sheikh at NTNU
- Þorgeir Sigurðsson at NTNU
- Sima Sinaei at RISE
- Mahnaz Sinaie at VTT
- Douglas (Karl Johan) Svensson Seth at NTNU
- Piyush Swami at NTNU
- Philipp Terhörst at NTNU
- Cristina Trocin at NTNU



Tomasz Kociumaka, winner of the 2021 Cor Baayen Young Researcher Award.

Tomasz Kociumaka wins the 2021 ERCIM Cor Baayen Young Researcher Award

The ERCIM Cor Baayen Award selection committee has unanimously selected Tomasz Kociumaka as the winner of the competition for the 2021 ERCIM Cor Baayen Young Researcher Award. Tomasz Kociumaka was nominated by the University of Warsaw, which awarded him a PhD in 2019. Tomasz then worked at Bar-Ilan University, Israel, and he is currently a postdoctoral researcher at the University of California, Berkeley, USA.

In his short career as a young researcher, Tomasz has already published at the world's most important conferences in theoretical computer science such as STOC, FOCS, and SODA. His research concerns fundamental issues in computer science and solves conjectures and problems that have remained unsolved for many years. According to Google Scholar, his work has been cited more than 14 000 times, which is remarkable for a researcher working on theoretical aspects of computer science under three years after completing his PhD.

At a high level, Tomasz's research interests lie in designing efficient algorithms for processing strings (arbitrary sequences of characters) and exploring the underlying combinatorial problems. This is a classic research area with a number of problems central to computer science, such as pattern matching or compression. But this also means that, after half a century of research, new developments that significantly contribute to these very natural problems are extremely hard to come by, rare, and only accessible to elite researchers. There is no doubt that Tomasz has found his place in this category, with multiple groundbreaking results achieved in the last six years.

It is very likely that Tomasz's work will lead to algorithms that are used in practice, as algorithms for processing large and often compressed data are ubiquitous in many applications. For example, a data structure proposed by Kempa and Kociumaka for processing the Longest Common Extensions queries (STOC'19) was implemented with a team of algorithm engineers at TU Dortmund (Dinklage, Fischer, Herlez, Kociumaka, Kurpicz), and a resulting paper (ESA'20) shows the practicality of the approach with appropriate fine-tuning and simplifying heuristics.

In summary, Tomasz Kociumaka clearly stands out from his generation of computer scientists. In his short career, he has already (co)-authored more than 90 publications, many of which have been presented at high-level conferences. He was a member of the programme committee of nine conferences and also serves the scientific community as an organiser of conferences, workshops, and programming competitions for high school students. The selection committee for the ERCIM Cor Baayen Young Researcher Award is proud to present the 2021 award to Tomasz Kociumaka, one of the most promising young researchers in the field of computer science or applied mathematics.

2021 Award

Winner:

Tomasz Kociumaka (IEOR Department, University of California, Berkeley, USA), nominated by Łukasz Kowalik (University of Warsaw)

Honorary mention

- Clara Stegehuis (Twente University, Department of Mathematics, Electrical Engineering and Computer Science), nominated by Ton de Kok (CWI)
- Lucia Vadicamo (Institute for the Science and Technologies of Information, Italian National Council of Research - ISTI-CNR), nominated by Giuseppe Amato (ISTI-CNR)

Finalists

- *Giulio Ermanno Pibiri (CNR) nominated by Raffaele Perego (CNR)*
- *Christopher Krauß (Fraunhofer Institute for Open Communication Systems - FOKUS) nominated by Dieter Fellner (Fraunhofer ICT Group)*
- *Johannes Späth (Fraunhofer Institute for Mechatronic Systems Design IEM) nominated by Dieter Fellner (Fraunhofer ICT Group)*
- *Elena Gaburro (Inria Bordeaux Sud-Ouest) nominated by Mario Ricchiuto (Inria)*
- *Thomas Debris-Alazard (Inria) nominated by Jean-Yves Berthou (Inria)*
- *Chiara Sironi (Maastricht University) nominated by Ton de Kok (CWI)*

Evaluation Committee

The Evaluation Committee was composed of Monica Divitini (NTNU - chair of the ERCIM Human Capital Task Group), Thierry Priol (Inria), Fabrizio Sebastiani (ISTI-CNR) and Jerzy Tiurnyn (UWAW). The decision was unanimous.

The Cor Baayen Young Researcher Award

The Cor Baayen Young Researcher Award, given to a promising young researcher in computer science and applied mathematics, was created in 1995 to honour the first ERCIM President and is open to young researchers having completed their PhD thesis in one of the “ERCIM countries”. The Cor Baayen Award is a young researcher prize: The selection panel therefore considers the quality of the PhD thesis and all the achievements done up to the nomination date. The award carries a prize of € 5,000. The winner is invited to the ERCIM autumn meetings.

<https://www.ercim.eu/human-capital/cor-baayen-award>

Outreach

The ERCIM Outreach Task Group is responsible for the communication between ERCIM and its wide range of stakeholders. They include national and international funding bodies, the research community in informatics and applied mathematics, with a focus on both senior scientists and young researchers, as well as industrial R&D. ERCIM considers its outreach activities as an important tool for community building. These include publications such as the ERCIM News magazine, the ERCIM web site and the support and organisation of scientific events.

The well-established ERCIM News magazine, under the responsibility of the editorial board, has already successfully contributed to ERCIM's reputation in the scientific community. It is also a good example of the close cooperation between all ERCIM institutes. In addition to ERCIM News, a number of strategic reports have also been published.



*Andreas Rauber,
SBA Research, chair of
the ERCIM Outreach
Task Group*

ERCIM News

Since ERCIM's creation in 1989, the quarterly ERCIM News has been reporting on leading edge European research and developments in Information and Communication Science and Technology (ICST) and Applied Mathematics.

When Inria, CWI and former GMD founded ERCIM in 1989, the establishment of an 'in-house magazine' with the aim of reporting on joint activities was one of the first 'joint actions'. ERCIM rapidly evolved from an in-house magazine to a publication covering reports and news about scientific projects from all over Europe and even beyond.

Today, ERCIM News is published in print and online. In 2021 the printed edition had a circulation of 2000 copies and more than 8600 readers are subscribed to the online edition.

From the early issues on, each issue has focused on a special theme identified by the editorial board. The ERCIM News series has thus become a unique collection providing an overview on a wide range of research topics in ICST and Applied Mathematics. All articles in ERCIM News are written by the scientists themselves and professionally edited. The structure of the articles and the limited length also make them comprehensible for non-experts. Thanks to these unique characteristics, ERCIM News has become well-known in the world of scientific publications, and regular positive feedback from our readers has encouraged us to continue in this way. Indeed, our readership comprises not only scientists, but also students, decision makers, professionals within the industry, representatives from the European Commission, and politicians.

In 2021 ERCIM News published the issues nos 124 - 127. Since its creation, more than 2,000 articles have been published. The popularity of ERCIM News can be credited primarily to our authors to whom the ERCIM editorial board wants to express their warmest thanks on this occasion.

In 2021 ERCIM News issues covered the following special themes:

- ERCIM News 124: Pandemic Modelling and Simulation
- ERCIM News 125: Brain-inspired Computing
- ERCIM News 126: Privacy Preserving Computation
- ERCIM News 127: Smart and Circular Cities

<http://ercim-news.ercim.eu>



The four issues published in 2021.

ERCIM News Editorial Board

Central editor:

- Peter Kunz, ERCIM Office

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ERCIM Office

ERCIM has an office in Southern France, hosted by Inria and located in the Inria Sophia Antipolis - Méditerranée Research Centre premises, nestled amongst researchers (and surrounded by cicadas). The ERCIM Office manages the day-to-day business of ERCIM as well as the European branch of the World Wide Web Consortium (W3C).

With its team of experts, the ERCIM Office provides assistance to ERCIM members in managing European projects by performing the financial and administrative tasks, either as coordinator or partner. Member institutes can thus fully concentrate on scientific work, unburdened by time-consuming administrative tasks. The office has been involved in more than 100 successful projects. The projects in which the ERCIM Office was involved in 2021 are presented in the section “Projects” in this report. In 2021, they all include projects with participation of the W3C. They provide an example of how ERCIM can facilitate cooperation between research institutes and the W3C with its interest in Web standardization.

The ERCIM Office is under the responsibility of the ERCIM EEIG Board of Directors and also handles ERCIM AISBL financial matters. The Office supports the whole ERCIM community in administrative matters such as the management of the ERCIM Fellowship Programme, as well as in communications, for example by hosting and maintaining web sites and by producing and publishing ERCIM News.

Hosting and managing the European branch of W3C is another major task of the ERCIM Office.



The ERCIM office is located in the Inria Sophia Antipolis - Méditerranée Research Centre premises.

ERCIM Office Staff

(as of December 2021)

- Philipp Hoschka, manager
- Caroline Baron, finance and administration manager
- Laurent Carcone, systems engineer
- Peter Kunz, communications, ERCIM News central editor, project coordinator
- Vivien Lacourba, IT manager
- Alexandra Lacourba, event manager and W3C European members administration
- Emma Lière, project assistant and Fellowship Programme coordinator
- Jessica Michel Assoumou, project coordinator
- Pascale Peyrol, project controller
- Catherine Riou, administrative assistant



ERCIM and W3C

ERCIM hosts the European headquarters of the World Wide Web Consortium (W3C) since 2003. ERCIM and W3C aim to strengthen research relationships throughout Europe to better support the development of Web technology and to jointly share the results of their collaboration.

Three of the European Chapters are currently based at ERCIM institutes, namely at CWI (Benelux), FORTH (Greece) and SZTAKI (Hungary). Originally, W3C Offices were located at the ERCIM institutes CWI, Fraunhofer-Gesellschaft, FORTH, SZTAKI, CNR, RISE/SICS and STFC). W3C Chapters in Europe work with their regional Web communities to promote W3C technologies in local languages, broaden W3C's geographical base, and encourage international participation in W3C activities. Specifically, the W3C Chapters help organize meetings and workshops.

As a consortium of members from many European countries, ERCIM creates a balance between European diversity and necessary homogeneity by building bridges between different cultures and facilitating the movement of technical ideas within academia and across borders. W3C is steered by its members, having interests in the Web (such as HTML5, Web Privacy and Security, Web payments, Web of Things, etc.) whereas ERCIM jointly has widespread interest in many research fields where Web standards are rarely used. ERCIM then helps to gather those Web communities and make them work together.

Moreover, ERCIM members have strong ties with industrial partners and start-up companies. This is an excellent opportunity for W3C to enlarge its cooperation with European industry, which can broaden its participation in the making and adoption of standards.

Finally, hosting the W3C allows ERCIM members to benefit from the know-how and expertise of the W3C team, and to increase its visibility based on W3C's worldwide reputation. The joint efforts of ERCIM and the W3C have started to increase Web research cooperation in Europe.

The World Wide Web Consortium (W3C) is an international community where Member organizations, a full-time staff, and the public work together to develop Web standards. W3C's mission is to lead the Web to its full potential.

W3C does not have a single physical headquarters. There are four institutions that "host" W3C. ERCIM is the host of the European branch of W3C and part of the W3C staff is employed by ERCIM.

ERCIM Membership

ERCIM is one of the most recognized ICT Societies in Europe. By joining ERCIM, your research institution or university can directly participate in ERCIM's activities and contribute to the ERCIM members' common objectives to play a leading role in Information and Communication Technology in Europe:

- Building a Europe-wide, open network of centres of excellence in ICT and Applied Mathematics;
- Excelling in research and acting as a bridge for ICT applications;
- Being internationally recognised both as a major representative organisation in its field and as a portal giving access to all relevant ICT research groups in Europe;
- Liaising with other international organisations in its field;
- Promoting cooperation in research, technology transfer, innovation and training.

How to become an ERCIM Member

- Prospective members must be outstanding research institutions (including universities) within their country;
- Applicants shall address a request accompanied by short description to the ERCIM Office. The description must contain:
 - Name and address of the institute;
 - Short description of the institute's activities;
 - Staff (full time equivalent) relevant to ERCIM's fields of activity;
 - Number of European projects currently involved in;
 - Name of the representative and the alternate.
- Membership applications will be reviewed by an internal board and may include an on-site visit;
- The decision on admission of new members is made by the General Assembly of the Association, in accordance with the procedure defined in the Bylaws (<http://kwz.me/U7>), and notified in writing by the Secretary to the applicant;
- Admission becomes effective upon payment of the appropriate membership fee in each year of membership;
- Membership is renewable as long as the criteria for excellence in research and an active participation in the ERCIM community, cooperating for excellence, are met.

Benefit of ERCIM membership

Institutions, as members of ERCIM AISBL, benefit from:

- International recognition as a leading centre for ICT R&D. ERCIM, a European-wide network of centres of excellence in ICT, is internationally recognised as a major representative organisation in its field;
- More influence on European and national government R&D strategy in ICT. ERCIM members team up to speak with a common voice and produce strategic reports to shape the European research agenda;
- Privileged access to standardisation bodies, such as the W3C which is hosted by ERCIM as to other bodies with which ERCIM has also established strategic cooperation. These include ETSI, the European Mathematical Society and Informatics Europe;
- Invitations to join projects of strategic importance;
- Establishing personal contacts among executives of leading European research institutes during the bi-annual ERCIM meetings;
- Invitations to join committees and boards developing ICT strategy nationally and internationally;
- Excellent networking possibilities with more than 10.000 high-quality research colleagues across Europe. ERCIM's mobility activities, such as the fellowship programme, leverages scientific cooperation and excellence;
- Professional development of staff including international recognition;
- Publicity through the ERCIM website and ERCIM News, the widely read quarterly magazine.

For further information about how to join ERCIM AISBL, please contact the ERCIM Office (contact@ercim.eu)

Institutions member of ERCIM in 2021:



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