GCN GLOBAL COMMUNICATIONS NEWSLETTER

Highlights from RNDM 2022
12th International Workshop on Resilient Networks Design and Modeling
by Dritan Nace, France, Jacek Rak and Artur Tomaszewski, Poland

After a break caused by the COVID-19 pandemic, Compiegne in France was the venue location for the 12th International Workshop on Resilient Networks Design and Modeling (RNDM 2022). This edition of RNDM was organized on September 19-21, 2022 by the University of Technology of Compiegne (UTC), France in co-operation with Gdansk University of Technology (GUT), Poland. Technical co-sponsorship was provided by IEEE France Section and by IFIP TC6 WG 6.10.

In 2022, RNDM was a hybrid event offering on-site as well as on-line participation possibilities. It followed eleven successful editions organized annually starting from 2009 at locations such as Barcelona (Spain) — 2014, Munich (Germany) — 2015, Halmstad (Sweden) — 2016, Alghero (Italy) — 2017, Longyearbyen (Svalbard, Norway) — 2018, and Nicosia (Cyprus) — 2019, accordingly.

RNDM 2022 was attended by about 20 researchers on-site and 15 on-line, and selected sessions were also attended by UTC students. Following the tradition of all previous RNDMs, the workshop program offered only single-track sessions. It included presentations of 11 regular papers organized into four following technical sessions:
- Theory of Network Resilience,
- Resilience of Optical Networks,
- Resilience of Virtualized Systems,
- Survivability Strategies.

A particular focus of presentations was on theoretical and practical aspects of disaster-oriented resilience of networked systems, failure management, survivability and traffic-aware protection schemes of optical networks, resilience of virtualized communication environments, smart grid resilience, as well as recovery strategies for 5G networks.

Regular papers were selected after a detailed review process with more than 5 delivered reviews per a submitted paper on average. The program was enriched by one invited paper, two keynote talks (by Bertrand Decocq from Orange, France, entitled: "Network Resilience: Stakes and Challenges" and by Carmen Mas-Machuca from Technical University of Munich, Germany, entitled "Impact of Software Availability on System Reliability") as well as by two tutorials (by Omran Ayoub from Scuola Universitaria Professionale della Svizzera Italiana and Francesco Musumeci from Politecnico di Milano, Italy, entitled "On the Application of Explainable Artificial Intelligence for Trusted Failure Management in Communication Networks", and by Armin Stocker and Hermann de Meer from University of Passau, Germany, entitled "A Tutorial on Resilience in Smart Grids").

Two awards were given, namely the Best Paper Award for the paper "On Joint Primary and Backup Controllers Placement Optimization against Node-targeted Attacks" presented by Amaro de Sousa from Portugal, and the Best Student Paper Award for the paper "Spatially-Jointed Flexible Waveband Routing Optical Networks Adopting Shared Path Protection" presented by Ryuji Munakata from Japan.

RNDM 2022 was a successful scientific event accompanied by two social events: the Gala Dinner at the Chalet du Lac in Pierrefonds (preceded by the Compiegne city tour), and the Welcome Reception following the Compiegne palace visit. All RNDM 2022 papers are already available in IEEE Xplore. For the extended versions of selected RNDM 2022 papers, a special issue of Networks journal, to be published by Wiley, is also being prepared.

A group photo of on-site and on-line participants of RNDM 2022

The 30th International Conference on Software, Telecommunications and Computer Networks (SoftCOM 2022)
3 Decades of Academy & Industry Meetings

by Dinko Begusic, Nikola Rozic, Josko Radic, Matko Saric, Katarina Rados, Croatia; Sinisa Krajnovic, Pascal Lorenz, France; Joel J. P. C. Rodrigues, Portugal

The 30th International Conference on Software, Telecommunications and Computer Networks — SoftCOM 2022 was held in a hybrid format, including live and virtual participation in *Radisson Blu Resort Split*, Croatia, 22 to 24 September, 2022. The Conference has been technically co-sponsored by the *IEEE Communications Society (ComSoc)* with the support of *the Technical Committee on Communications Software (CommSoft) and the IEEE Croatian Section*. The Conference was organized by the *University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture (FESB)* and *Croatian Communications and Information Society (CCIS)* under the auspices of the Croatian Academy of Engineering.

This years' SoftCOM conference completes three decades of continuous activities in joining together academy and industry to share the experience and ideas with the aim to advance the science, technology and education in the area of ICT. The locations for all these conference events have been selected between the most beautiful resorts on the Croatian and Italian coasts. Attractive ambiance of the Adriatic sea coasts has been a perfect location for such a meeting. The continuous support of the IEEE ComSoc was a key factor in reaching high standards and establishing a worldwide recognized event. A number of academic and industrial partners joined their efforts and built their contributions into the collaboration.

The technical conference program featured sixteen conference sessions, including seven special sessions dedicated to: *QoS in Wired and Wireless Networks, Ad Hoc & Sensor Networks and Internet of Things, Security and Digital Forensics, Green Networking and Computing, Robotics and ICT Assisted Wellbeing, Environmental Electromagnetic Compatibility*, and *Advanced Educational Technologies*. Three half day tutorials in the area of electromagnetics have been held by recognized experts. The interdicsiplinary *Symposium on Information Security and Intellectual Property* has been organized in collaboration with the University of Split, Faculty of Law, and the University of Zagreb, Faculty of electrical engineering and computing. 96 papers have been submitted for inclusion in the IEEE Xplore database. The authors of selected papers have been invited to extend their papers and submit for the publication in the *Journal of Communications Software and Systems (JCOMSS)*.

The keynote talk titled: "*Yes!, Agile for Hardware R&D Really works*" was given by Elia Berteletti, Ph.D. Partner, McKinsey & Company, The aspeaker shared his perspective on the application of the agile approach for hardware R&D and the adjustments that have to be made to the textbook Agile-for-software to make it work. The keynote talk titled "*5G Networks, Impact on the Industry and Cloud-Native Transformation*" was presented by Ante Mihovilovic, VP and Head of Product development Unit Packet Core, Ericsson AB, Sweden. The speaker presented an overview of the emerging cloud technologies, where the networks of today are becoming cloud-native. He emphasized the impact on the R&D organizations and the expectations on the telecom products in such an environment. At the beginning of the plenary session the audience has been addressed by assoc. prof. Petar Solic, Vice Dean of the Faculty of electrical engineering, mechanical engineering and naval architecture (FESB), prof. Pascal Lorenz, University of Upper Alsace, France, prof. Mario Kusek, Member of the Executive Committee of the IEEE Croatia Section, Faculty of electrical engineering and com-

The plenary session has been chaired by prof. Dinko Begusic, prof. Maja Matijasevic, and prof. Pascal Lorenz. The keynote talks have been moderated by Sinisa Krajnovic, Ph.D., McKinsey & Company.

The SoftCOM 2022 participants enjoyed a Wine&History tour in the pleasant ambiance of the Kastela bay nearby Split. They had a special opportunity to hear the story about Crljenak/Zinfandel sort of wine and taste it at the origin. The tour was completed with a historic storytelling walk along the seaside in the town of Kastela.

puting, University of Zagreb. In the occasion of the 40 years of the succesful activity in Split prof. Darko Huljenic addressed the audience in the name of the Ericsson Nikola Tesla company.

The accompanying *SoftCOM 2022* Business Forum featured professional workshops with participation of experts and institution representatives. A professional 27th *Workshop on ICT* featured a set of presentations of professional contributions in the area of ICT. The *11th Workshop on Software Engineering in Practice* has been organized by Darko Huljenić, Ph.D., Ericsson Nikola Tesla, Croatia. A Workshop an Process Compliance and Control focused on the research results of the project *System for Real-Time Monitoring and Control of Distributed Processes, Anomaly Detection, Early Warning and Forensic Transaction Analysis* — PCC funded by the European Regional Development Fund was organized by prof. Boris Vrdoljak, Luka Humski, Ph.D. and Dalibor Krleza, Ph.D. (University of Zagreb).

SoftCOM 2022 conference featured two events aimed to master and doctoral students in the area of ICT. *Ericsson Nikola Tesla Summer Camp 2022 Workshop* has been aimed to present the achievements of the 21th Ericsson Nikola Tesla Summer Camp. Student projects presentations and discussions have been moderated by prof. Darko Huljenić, Ericsson Nikola Tesla, Zagreb, and Ivana Nizetić Kosovic, Ph.D., Ericsson Nikola Tesla, Split. The *SoftCOM 2022 Ph.D. Forum* for doctoral students in the area of ICT was organized as a poster session, preceded by a fast-paced introduction by each student. The organization has been coordinated by prof. Maja Matijasevic (University of Zagreb) and prof. Dinko Begusic (University of Split), and moderated by assoc prof. Maja Skiljo (University of Split), prof. Drago Zagar (University of Osijek), and Petar Krivic (University of Zagreb).

More information about the *SoftCOM 2022* conference may be found at the address http://softcom2022.fesb.unist.hr/

IEEE ComSoc Bahrain Chapter
IoT&AI Challenge 2022
by Mohab Mangoud, IEEE ComSoc Bahrain Chapter Vice-Chair, Mohammed Jassim, Amnah Ebrahim, Bahrain

Under the organization and patronage of the University of Bahrain, College of Engineering, Bahrain IoT and AI Challenge was organized as a part of a greater regional challenge known as the Arab IoT and AI Challenge which was hosted by 12 Arab Countries (Algeria, Egypt, Jordan, Kuwait, Lebanon, Morocco, Oman, Palestine, Qatar, Tunisia, And United Arab Emirates) alongside Bahrain.

The mission of the challenge was to adopt a national and regional capacity-building and pre-incubation program for Senior University Students and Startups that have creative ideas in the areas of Internet of Things (IoT), Artificial Intelligence (AI) and related fields. The main aim of the challenge is to enable and support the local youth and to build qualified calibers in the field by developing strategies to encourage innovation and entrepreneurship in the fields of IoT, AI and their applications.

In the first edition of the Bahrain IoT and AI Challenge, 17 of graduation projects and 12 startups participated in the local challenge. In the first phase of the competition, the organizing committee organized a training program for all registered participants which focused on developing soft skills of participants to pitch their idea professionally.

During the pitching day which was held at University of Bahrain premises, participant showcased innovative projects and solutions, and presented in front of a judging team formed by expertise in the field of IoT and AI. Bahrain IoT and AI Challenge winners qualified for the next phase of the challenge:

Bahrain IoT&AI Challenge Winners with Members of Organizing Committee, Judges and Sponsors Representatives

Arab IoT and AI Challenge in GITEX GLOBAL 2022, Dubai, UAE and won third place in the Startup track.

IEEE ComSoc Bahrain Chapter involved in organizing the challenge as a technical partner which was led by very active and enthusiastic IEEE ComSoC Bahrain Chapter members represented by Vice Chair Prof. Mohab Mangoud as a Challenge Chairman, and both Eng. Amna Ebrahim (PMO: Publicity/Multimedia Officer) and Eng. Mohammed Jassim (MDO & Webmaster) as Project Managers. Representatives from the chapter participated in the judging team as well by Dr. Zuhair Khalifa AlBahri (PAO), Dr. Sarah Al-Shareeda (TAO), and Dr. Mohamed AlJerjawi (Treasurer). During the closing ceremony, Eng. Wafeeq Ajoor, the Chapter Chair received an Award on behalf of IEEE ComSoc Bahrain Chapter and its contribution to the challenge.

IEEE Buenaventura ComSoc Chapter Talk: Perspective of Pluggables vs. CPO For New Optics in Next 5-10 Years
by Victor Lin, IEEE Buenaventura ComSoc Chapter Chair, USA

In December 2022, Dr. Frank Chang, senior member of IEEE and OSA Fellow, presented a talk at the Hub 101 (an Cal Lutheran University incubator) in Ventura County, Southern California on pluggable optics vs. co-packaged optics (CPO) for high-speed optical communications. Dr. Chang is Source Photonics' Chief Engineer and CTO for advanced and next-generation transceiver design.

The optics Communication industry is at a crossroad once again driven by the post pandemic huge BW demand for lower cost/power Ethernet optics from hyperscale data centers for networking and AL/ML applications. While in telecom space, the industry is pushing higher bandwidth requirements for high performance fronthaul, midhaul and backhaul optics. Several optical transceiver products are now targeted specifically for this high-volume market driven by 5G/6G deployments.

One key question to address is what technologies can provide the optimum solutions to solve the problem of massive bandwidth scaling for cloud, AI/ML and HPC applications? Dr. Chang's talk examined this new optics landscape for datacom and telecom space. He first described the fundamental architectural difference between pluggable optics and CPO. He then discussed how data center operators view the future path of photonics integration with switch electronics and their preferred technology choices and timelines.

Major data center operators are investing in CPO, which promises to transform today's pluggable optics industry with

Victor Lin thanking Frank Chang after the talk.

regards to cost and performance. This talk highlights some of technical challenges to be resolved before CPO technology can be fully embraced. It also discusses the synergies and differences between today's mobile transport and future optical 6G networks.

This is the first hybrid technical talk hosted by IEEE BV COMSOC since the start of the COVID-19 pandemic. COMSOC chapters from Seattle, Texas, Atlanta, Florida and Texas co-hosted the hybrid event. The advantage of the hybrid format is that members from the local COMSOC chapter can enjoy face-to-face networking while members from other COMSOC chapters are able to participate virtually to gain timely technical knowledge from experts around the world. Several students from

Loyola Marymount University in Los Angeles joined the virtual session and appreciated how the concepts they are learning in their electronics class are directly applicable to the fast-growing datacom and telecom industry.

The debate on pluggable vs co-packaged optics (CPO) will likely continue to be a hot topic in the next few years and Dr.

Chang's talk provided a good perspective on some of the issues behind the debate, eliciting many interesting discussions with the attendees. The photo below was taken after the talk of Dr. Lin, the IEEE BV ComSoc Chapter Chair, presenting a certificate of appreciation to Dr. Chang.

IEEE ComSoc Panama: The 2022 Chapter of the Year

by Yessica Sáez, IEEE ComSoc Panama Chapter Chair, Universidad Tecnológica de Panamá

On December 5, 2022, the ComSoc Panama chapter received the 2022 Chapter Achievement Award (CAA) from IEEE ComSoc for the Latin America Region (R9), acknowledging Chapter activities throughout 2021. Upon receiving the CAA, the ComSoc Panama chapter was also granted with the 2022 ComSoc Chapter of the Year Award (CoYA), which honors the highest ranked ComSoc chapter among the Regional Chapter Achievement Award recipients. Dr. Yessica Sáez was present at the ComSoc Awards Luncheon held within Globecom 2022, in Rio de Janeiro, Brazil, where she accepted both awards on behalf of the ComSoc Panama chapter.

Dr. Sáez mentioned that the ComSoc Panama chapter feels honored to receive these awards and that both awards belong to all the ComSoc Panama volunteers, the IEEE Panama section, and the entire technical community of Panama.

During 2021, ComSoc Panama actively promoted the presentation and exchange of information among its members and the technical community in the country. The chapter organized discussion panels, technical dinners, workshops, webinars, and hosted two virtual DLTs. The pandemic was not an impediment for restructuring the format of the activities and the chapter carried them out virtually and free of charge. An activity that this chapter can highlight that had a great impact on the recruitment of members was ComSoc Panama Awards for Outstanding Telecommunications Professionals in Panama during COVID-19, to distinguish Panamanians, both young and those more experienced, who made outstanding contributions in the field of tele-

Yessica Sáez, IEEE ComSoc Panama Chapter Chair, receiving the 2021 Chapter of the Year Award from the ComSoc President Sherman Shen and the VP MGA Ana Garcia Armada at Globecom 2022, Madrid, Spain.

communications in relation to COVID-19 during 2020. Another important activity was the creation of the Awards to "The Best Three Telecommunications-related Projects of the National Jornada de Iniciación Científica (JIC) 2021". The JIC is an initiative that seeks to promote research among undergraduate students at the national level. It is based on the professor guiding a research project related to the course he/she is teaching. It is important to mention that these two awards were carried out thanks to the funds received during the regular 1Q 2020 and the Special 4Q 2020 Chapter Funding Program. These awards helped the chapter to have a better engagement to both the professional and student community and helped to strengthen ties of collaboration and support with companies and public and private institutions.

Also, virtuality was used to promote discounts on ComSoc memberships on social networks. As a result of this and many other efforts, the membership grew by 59.61% compared to 2020. Something that can be highlighted from these data is that graduate student member also grew exponentially. Also, undergraduate student membership grew by an astonishing 94%. Regarding professional membership, the percentage of growth was 42.1% and that of senior members grew by 33%.

ComSoc Panama chapter also organized many collaborative events with other societies and affinity groups, including YP, PES, and WIE. The ComSoc Panama's chair participated of the Regional Chapter Chairs Congress 2021, where the chapter achievements, activities, challenges, and plans for 2022 were presented. The chapter also attended the monthly Executive Meeting of the IEEE Panama section, and the chapter chair and treasurer are also member of the Board of Directors of ComSoc Latin America. ComSoc Panamá has at least one formal meetings per month and informal meetings every week. Other information supporting the chapter's exceptional achievements are the following:
- IEEE ComSoc Young Professional (YP)- Latin America Regionl 2021. (Yessica Sáez)
- IEEE Panamá Section Oustanding Chapter of the Year 2021.
- IEEE Panamá Section Manuel López Spla to Oustanding Volunteer (Yessica Sáez)