2020 INTERNATIONAL CONFERENCE

«ENGINEERING MANAGEMENT OF COMMUNICATION AND TECHNOLOGY» (EMCTECH)

IEEE Conference Record #49634

Vienna, Austria
October 20 – 22, 2020

FINAL INFORMATION AND STATISTICS

"Connecting Development of Technology,
Engineering Management and Personal Skills"

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International conference

**"ENGINEERING MANAGEMENT OF COMMUNICATION AND TECHNOLOGY"
(EMCTECH) was held on October 20-22, 2020 in Vienna (Austria)**

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On EMCTECH-2020 was invited researchers, educators, managers, and students, which research activity, case studies or best practices, shedding light on the theory or practice of engineering, technology, innovation management, or development of personal skills, business and entrepreneurship.

CONFERENCE ORGANIZERS:
▪ INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE);
▪ IEEE TECHNOLOGY AND ENGINEERING MANAGEMENT SOCIETY (TEMS) CHAPTER OF THE IEEE AUSTRIA SECTION;
IRIS ASSOCIATION (INSTITUTE OF RADIO AND INFORMATION SYSTEMS, VIENNA, AUSTRIA)

TEMS Focus Areas:
- Moving Product/Services from Idea to Market;
- Identifying and Implementing Successful Projects, and Systems;
- Integrating Technology for Capability and Productivity;
- Developing from Engineer to Leader;
- Balancing the Norms of Society, Government, and Regulator.

The most relevant TEMS Focus Areas were discussed at the conference EMCTECH-2020.

Technology evolution opens novel opportunities to employ the technology in many businesses. The internet opened e-commerce and marketing and that also changed global marketing strategies as well as discovery of new application areas. Now, Internet of Things devices (IoT) gives us information collected from billions of devices, the cloud lets store, process and forward this and AI gives tools to analyze information, predict and make smart decisions. Utilizing these technologies, new personal skills are necessary which can help build products that enable essentials so we can make advanced solutions for biomedical systems, transportation, education, manufacturing and many other areas.

The TEMS objectives: scientific, literary, and educational, directed toward the advancement of the theory of organizations management with engineering or technical content, and the allied sciences and the practice of engineering and technology management as a professional discipline.

Topics on social issues, corporate social responsibility, sustainability, and organizational ethics have generated considerable attention among a broad group of stakeholders including policy makers, industry, communities, employees, and managers. Environmental and social concerns, intertwined with economic development, make sustainability a complex issue requiring insightful strategic and operational management. Adding to the complexity of managing these issues, dimensions of sustainability go beyond the past or current study of organizations, and require consideration of inter-generational and inter-organizational issues. Thus, a balance of the 'triple-bottom-line' of social, environmental and economic issues is important for engineering managers.

Managers need to help their organizations to develop and build community ties, contribute to various social programs, manage in an evolving green technology policy environment, and maintain ethical practices in emerging and developing nations. Evolving competitive and socio-economic forces including social media, crowd sourcing, the internet of things and big data have caused emergent sustainability and social issues for engineering managers.

CONFERENCE EMCTECH-2020 WILL PRODUCE A PUBLICATION. All accepted and presented Papers following the conference will be submitted for inclusion into IEEE Xplore and will be submitted also for indexing in Scopus and Web of Science data bases.

MAIN AREAS OF THE CONFERENCE:
E-commerce and global marketing strategies as well as discovery of new application in this areas;
Internet of Things devices (IoT);
New personal skills which can help build products for enable essentials;
Advanced solutions for biomedical systems, transportation, education, manufacturing and other areas.

FIELD OF INTEREST ON EMCTECH-2020:
▪ Technology advancements in IoT devices, artificial Intelligence, Broadcasting, wire and optical communication;
▪ New opportunities using technology in BioMedical, Farming, Transportation, and Cyber Physical Systems;
▪ Digital Transformation and Data Risk Management in ICT/Telecommunication, smart cities, public policy;
▪ Developing personal skills for leading innovation initiatives.

STRUCTURE OF THE TECHNICAL PROGRAM COMMITTEE:
Chairman of the Program Committee – Mr **Oleg Varlamov,** Doctor of Technical Science, Chairman of "Institute of Radio and Information Systems" (IRIS) Association, Austria

Vice-Chairman of the Program Committee – DI **Gerald Fritz,** MSc. – Co-Chair TEMS (Technology and Engineering Management Society) Chapter Central Europe, Austria

Program Committee Coordinator – **Svetlana Dymkova** – conference manager in "Institute of Radio and Information Systems" (IRIS) Association, Austria

With support of **Prof. Dr. Michael Heiss,** Chair of IEEE Austria and Chair of the IEEE Technology and Engineering Management Society (TEMS), Chapter Central Europe

Prof. Dr. Michael Heiss make keynote from the "hosting country": "THE AUSTRIAN INNOVATION ECOSYSTEM OF THE PILOT FACTORIES". He also scheduled a **visit of the Pilot Factory Industry 4.0 in Vienna/Aspern**: http://pilotfabrik.tuwien.ac.at/en/, however, due to the on-line conference, this visit has been postponed to the next year.

Prof. Dr. Michael Heiss, *Principal for Digital Enterprise at Siemens AG Austria (responsible for the pilot factories in Austria) and Professor for Innovation at TU-Wien. He studied Electrical Engineering in Vienna, made a post-doc at Massachusetts Institute of Technology (MIT) in the field of self-learning systems, habilitated in the field of control engineering at TU-Wien, started his industry career at Bosch and is since 1996 with Siemens in various leading positions for Knowledge, Innovation and Technology Management, e.g. global Vice President for Knowledge, Innovation, and Technology Management at Siemens IT Solutions and Services, or Principal for Open Innovation and Scouting at the Siemens Chief Technology Office, where he was globally responsible for the Open Innovation Networks at Siemens. He is Chair of IEEE Austria and Chair of the IEEE Technology and Engineering Management Society (TEMS), Chapter Central Europe.*

MEMBERS OF THE PROGRAM COMMITTEE:

Valery Tikhvinskiy, *Deputy General Director of JSC NIITC, Doctor of Economics Science (2003), Ph.D. Degree in Radio engineering (1988), Professor of MTUCI and Plekhanov University of Economics (2013). Visit-Professor of Tunisian Telecommunication Institute (IsetCom, Tunisia) and International Information Technologies University (IITU, Kazakhstan), Actively participated in the work of International regulatory and standardization telecom bodies in ITU (ITU-R SG1), CEPT/ECC (ENC/WG RA, ENC/WG/FM), ETSI (TC/M2M, TC/ERM, TC/STQ) and oneM2M Partnership Project. ITU Field Expert ID: 06169. ITU-D Mission: Erevan-2001 (Armenia), Sana'a-2005 (Yemen) and Astana (2014).*

Petr Doucek, *Full Professor – Department of Systems Analysis (FIS). Independent scientist – Department of Banking and Insurance (FFU). Institute chief official – Department of Systems Analysis (FIS). Vice-dean – Faculty of Informatics and Statistics University of Economics, Prague.*

Bayram Ibrahimov, *Doctor of technical sciences, Professor (2007) of the department "Telecommunication systems and information security" of Azerbaijan Technical University. For one term, he worked as the head of the Department of Multichannel Telecommunication Systems (2016) and was twice elected dean of the Faculty of Radio Engineering and Communications (2010 – 2017). The author or co-author of more than 510 scientific works, which include 12 patents of the USSR, the Russian Federation and the Azerbaijan Republic. He completed a scientific internship through the TACIS line in the UK (1998), at the invitation of the telecommunications company ZTE in the People's Republic of China (2010), as well as in the USA (2014). Field of research – the basics of telecommunication theory, signaling systems and protocols telecommunication network, cryptography theory, analysis of multiservice communication networks of the NGN and FN, teletraffic, information security.*

Marcelo Sampaio de Alencar, *Bachelor Degree in Electrical Engineering, from Universidade Federal de Pernambuco (UFPE), Brazil, 1980, Master Degree in Electrical Engineering, from Universidade Federal da Paraiba (UFPB), Brazil, 1988 and his Ph.D. from University of Waterloo, Department of Electrical and Computer Engineering, Canada, 1993. Marcelo S. Alencar has more than 35 years of engineering experience, and 25 years as an IEEE Member, currently as Senior Member. For 18 years he worked for the Department of Electrical Engineering, Federal University of Paraiba, where he was Full Professor and supervised more than 40 graduate and several undergraduate students. Since 2003, he is Chair Professor at the Department of Electrical Engineering, Federal University of Campina Grande, Brazil.*

Marina Yashina, *Moscow State University M.V. Lomonosov (1979), PhD of Physics and Mathematics (1989) in differential equations and dynamical systems, Doctor tech. Sciences (2001) Head Department of Higher Mathematics Moscow Automobile and Road Construction State Technical University (MADI) and professor of the Department of Mathematical Cybernetics and IT MTUCI. Academician of the International Academy of Informatization, Specialist in the field of dynamic systems, mathematical modeling of complex socio-technical systems, analysis of flows on complex networks, intelligent systems in transport. IEEE member, member of the Expert Council on Mathematics and Mechanics of the Higher Attestation Commission of the Russian Federation, member of program committees of international conferences TGF (Traffic and Granular Flow), ICCMA (Control, mexatronics and automation), ICCMIT (Communication, management and IT), etc. Author of over 150 publications.*

Albert Waal, *Ph.D., CEO of RFmondial GmbH, Hannover, Germany*

Vladimir Dokuchaev, *Professor (2001), Doctor of Technical Sciences (1999), Senior Science Researcher Degree in Telecommunication Networks and Teletraffic (1992), Ph.D. Degree (1990), TEMIC Fellow (2000). Head of the Department of Multimedia Networks and Telecommunication Services, MTUCI. He is member of the Group on Capacity Building Initiatives ITU; member of Commission for Telecommunication and ICT of Russian Union of Industrialists and Entrepreneurs; member of Expert Council Committee of Information Politics, IT and Telecommunication of Parliament of the Russian Federation. He has the title of "Master of Communications". Full member of the the International Academy of Informatization (IAI). Author of more than 200 scientific and academic publications and two monographs in the field of Telecommunication Networks Management, Teletraffic, Information Security, Data Risk Management, Human Capacity Building.*

In the structure of IEEE events, management topics in engineering are presented much more narrowly than, for example, circuits and systems, antennas and radio wave propagation, or computer science. Nevertheless, research is also widely conducted in these areas, and scientists are faced with a lack of platforms for discussing their results. In addition to the scientific aspect, which consists in the exchange of views and discussions on the presented works, conferences are also of educational value. It is usually difficult for young scientists and graduate students to publish in top-rated journals - not only because of the immaturity of scientific results, but also because of a lack of experience in following all the rules for submitting them. On EMCTECH-2020 IEEE in cooperation with Institute of Radio and Information Systems (IRIS) provide various opportunities for publishing results of research, based on international scientific and technical cooperation of researchers, PhD students and students in the field of radio and information systems.

EMCTECH TOTAL STATISTICS
IEEE Conference Record # 49634

Year	Applications	Accepted papers	% of accepted papers	IEEE Members - Conference Participants	Conference participants	Conference authors	Organizations	Cities	Countries/ Continents
2020	**95**	**57**	**60**	**10**	**201**	**139**	**38**	**17**	**12/5**

57 papers were selected for participation in the conference, which was only 60 percent of the submitted ones. This is a good result for the first year of the conference.

Reports presented at the conference in 10 sections:

1. TECHNOLOGY ADVANCEMENTS IN IOT DEVICES
2. TECHNOLOGY ADVANCEMENTS IN ARTIFICIAL INTELLIGENCE
      PHILOSOPHY OF ARTIFICIAL INTELLIGENCE – MAN IN INTELLIGENT COMMUNICATION SYSTEMS
3. TRANSPORT AND COLLECTIVE SYSTEMS: SMART CONTROL TECHNOLOGY IN TRANSPORTATION, 4. BIOMEDICAL, FARMING AND CYBER PHYSICAL SYSTEMS (new opportunities using technology in biomedical, farming, transportation, and cyber physical systems)
      TECHNOLOGY ADVANCEMENTS IN CREATING SUSTAINABLE ENGINES
      SMART HIGHWAY MAINTENANCE: ADVANCED TECHNOLOGY OF CONTROL AND DESIGN
4. BROADCAST TECHNOLOGIES ADVANCEMENTS – RADIO, IP, CELLULAR, ON DEMAND, INTERACTIVE
5. TECHNOLOGY ADVANCEMENTS IN WIRE AND OPTICAL COMMUNICATION AND CONTROL SYSTEMS
6. INFORMATION PROCESS MANAGEMENT IN DIGITAL SOCIETY AND INDUSTRY 4.0
7. DIGITAL TRANSFORMATION AND DATA RISK MANAGEMENT IN ICT/TELECOMMUNICATION
9. DEVELOPING PERSONAL SKILLS FOR LEADING INNOVATION INITIATIVES
10. LEADING SOCIETAL CHANGE, E.G., SMART CITIES, PUBLIC POLICY AND, INTERACTIVE

38 companies took part in EMCTECH-2020:

1. Academy of law and management of the Federal penitentiary service of Russia, Ryazan, Russia
2. Academy of the Federal penitentiary service of Russia, Ryazan, Russia
3. Azerbaijan Technical University, Baku, Azerbaijan
4. Bharati Vidyapeeth Deemed University, Maharashtra, India
5. Central Scientific Design Institute of the Ministry of Construction and Housing and Communal Services of the Russian Federation, Moscow, Russia
6. College Of Engineering, Maharashtra, India
7. Federal Service for Veterinary and Phytosanitary Surveillance, Moscow, Russia
8. Federal University of Campina Grande (UFCG), Salvador, Republic of Brazil
9. Financial University under the Government of the Russian Federation, Moscow, Russia
10. FSUE NIIR, Moscow, Russia
11. IITU, Almaty, Kazakhstan,
12. Institute of economy and management, Simferopol
13. Ishlinsky Institute for Problems in Mechanics RAS, Moscow, Russia
14. JSC "National Research Institute of Technologies and Communications" (NIITC), Moscow, Russia
15. Keldysh Institute of Applied Mathematics RAS (KIAM), Moscow, Russia
16. Lomonosov Moscow State University, Moscow, Russia
17. Moscow Automobile and Road Construction State Technical University (MADI), Moscow, Russia
18. Moscow Pedagogical State University, MPSU, Moscow, Russia
19. Moscow Technical University of Communication and Informatics, Moscow, Russia
20. Museum of Russian culture in San Francisco, San Francisco, USA
21. National Research University "Higher School of Economics", Moscow, Russia
22. Laboratory of the IoT and Cyber Physical Systems, Moscow, Russia
23. Non-state private educational institution of higher education «Moscow Economic Institute» MEI, Moscow, Russia
24. Penza State University, PSU, Penza Russia
25. Plekhanov University of Economics, Moscow, Russia
26. Research part of MTUCI, Moscow, Russia
27. Russian New University (RosNOU), Moscow, Russia
28. Russian State University for the Humanities (RSUH), Moscow, Russia
29. Ryazan State Radio and Technical University, Ryazan, Russia
30. Transport Safety Fund, Moscow, Russia
31. University of Economics in Prague, Prague, Czech Republic
32. University of Queensland, Brisbane, Australia
33. North-Ossetian State University named after Kosta Levanovich Khetagurov, Vladikavkaz, Russia
34. Crimean Federal University, Simferopol
35. Volga region state university of telecommunications and informatics, Samara, Russia
36. Volga State University of Water Transport, Nizhny Novgorod, Russia
37. Volgograd State University, Volgograd, Russia
38. Yuri Gagarin State Technical University of Saratov, Saratov, Russia

Participants with reports from 17 cities took part in the conference:

1	Almaty, Kazakhstan,	10	Salvador, Republic of Brazil
2	Baku, Azerbaijan	11	Samara, Russia
3	Brisbane, Australia	12	San Francisco, USA
4	Maharashtra, India	13	Saratov, Russia
5	Moscow, Russia	14	Simferopol
6	Nizhny Novgorod, Russia	15	Vienna, Austria
7	Penza Russia	16	Vladikavkaz, Russia
8	Prague, Czech Republic	17	Volgograd, Russia
9	Ryazan, Russia		

Representatives from 12 countries and 5 continents took part in the conference as speakers and listeners:

Europe (Austria, Czech Republic, Germany, Russia,)
Asia (Azerbaijan, China, India, Kazakhstan, Turkey)
North America (USA)
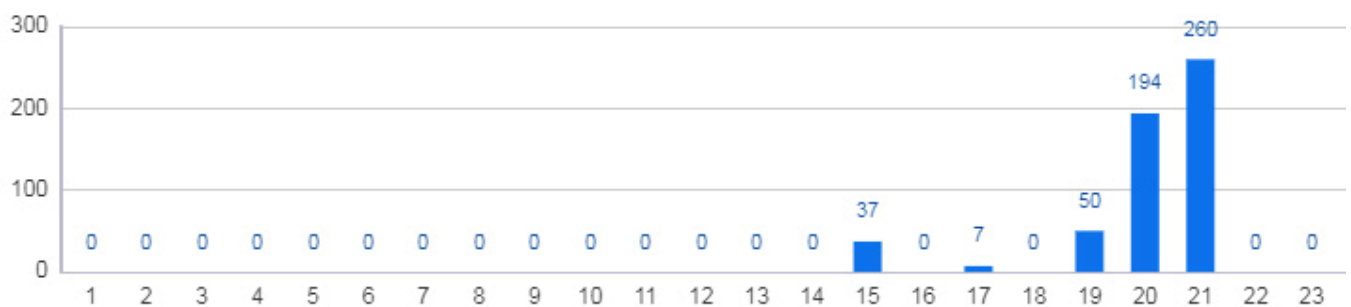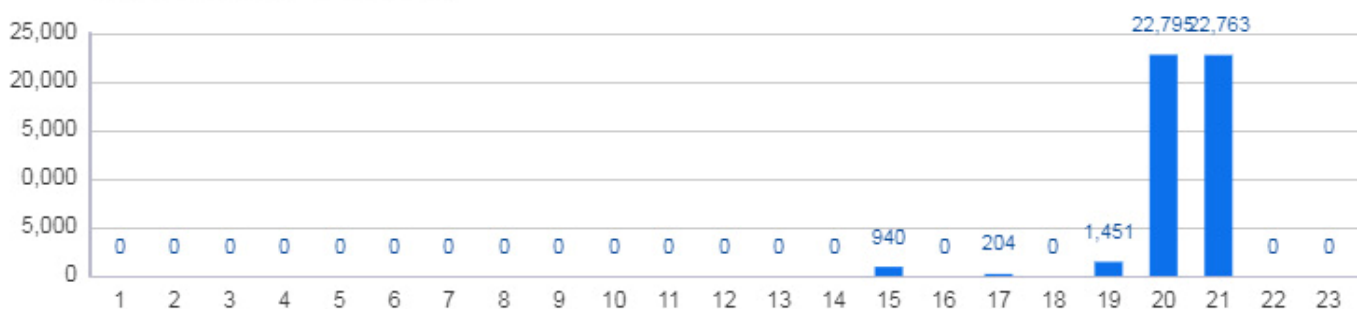**South America** (Republic of Brazil)
Australia

More than 200 scientists took part in EMCTECH-2020:

- **91** unique participants on the first conference day;

- **160** unique participants on the second conference day.

Total participants

Total conference minutes

Report by Prof. Dr. Michael Heiss, Austria
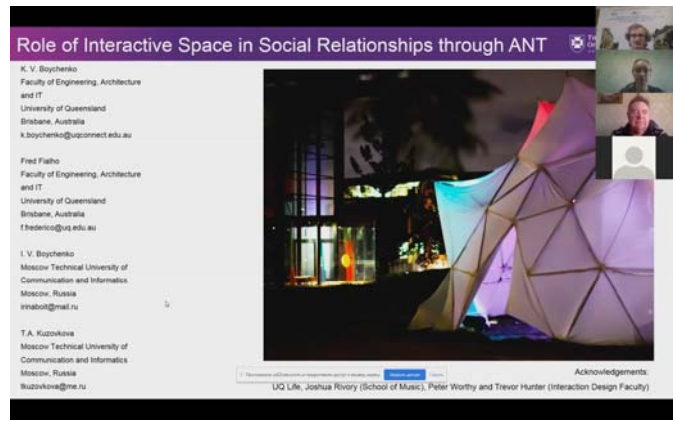
Invited report by Kristina Boychenko, Australia
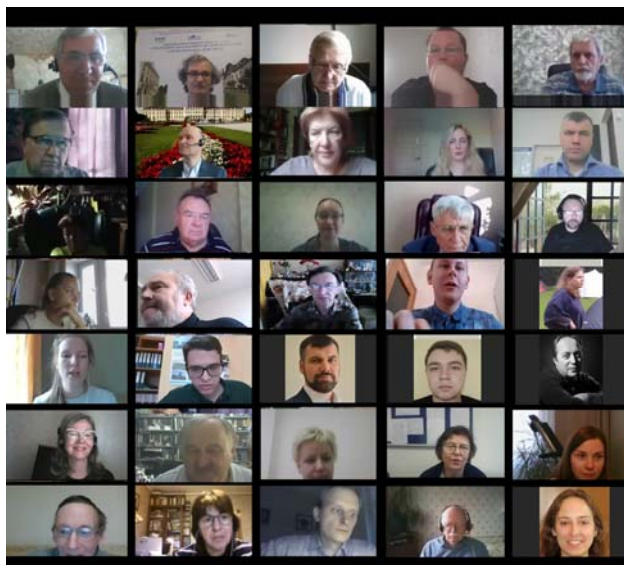
EMCTECH-2020 (first conference day)

EMCTECH-2020 (second conference day)

The conference received extensive media coverage and positive reviews from universities and scientific organizations. Including:

Penza State University, Russia

PSU scientists took part in a prestigious conference
10/23/2020 11:38 AM
On October 20-21 in Vienna (Austria) the international conference "2020 International conference" Engineering management of communication and technology (EMCTECH)" was held.

Scientists from Penza State University took an active part in the work of the scientific discourse, who made the following reports:
1. Schedule time-triggered ethernet authors Kirill Nikishin and Nikolay Konnov (Department of Computer Science).
2. Hardware-software complex for analyzing wireless networks using spread-spectrum signals authors Evgeny Gurin, Stanislav Tumasov (Department of Computing).
3. Metrology model of measuring channel in multi-channel data-measurement system authors Nikolay Yurkov, Alexey Proshin, Nikolay Goryachev, Alexey Grishko (Department of Design and Production of Radio Equipment).
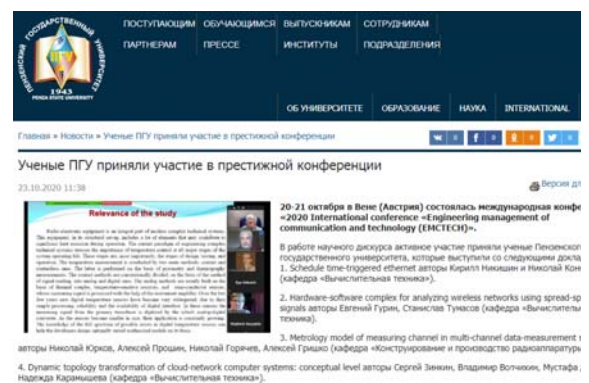
4. Dynamic topology transformation of cloud-network computer systems: conceptual level authors Sergey Zinkin, Vladimir Volchikhin, Mustafa Jafar, Nadezhda Karamysheva (Department of Computer Science).

"Unfortunately, the conference was held in an online format, but this did not diminish its scientific significance. The reports of our scientists took a worthy place during the sessions of the section, were highly appreciated by the international scientific community," the speakers note.

Federal State Unitary Enterprise Radio Research and Development Institute (NIIR)

Modern, multifunctional enterprise, possessing the unique experience and potential in the field of the development of information and communication technologies, navigation, satellite and terrestrial communication systems and broadcasting. NIIR takes a special place in the structure of the industry. The employees of the Institute develop and implement the most complicated projects which have a significant influence on the development of telecommunications and mass communications.

Professor, Dr. Tikhvinskiy and Dr. Evgeny Deviatkin on October 20-21 took part in the international conference "2020 International conference" Engineering management of communication and technology (EMCTECH)", Vienna (Austria) and made a presentation of report:
"PROVISION OF IOT SERVICES FOR CO-LOCATED 4G/5G NETWORKS UTILISATION WITH DYNAMIC FREQUENCY SHARING"

Lomonosov Moscow State University

The conference EMCTECH-2020 is indexed by Lomonosov Moscow State University in its "Intelligent System for Thematic Research of Scientometric Data" (Russian acronym ISTINA, translated as TRUE)

Following the conference the participants were awarded diplomas.

Diplomas were established in the following nominations:
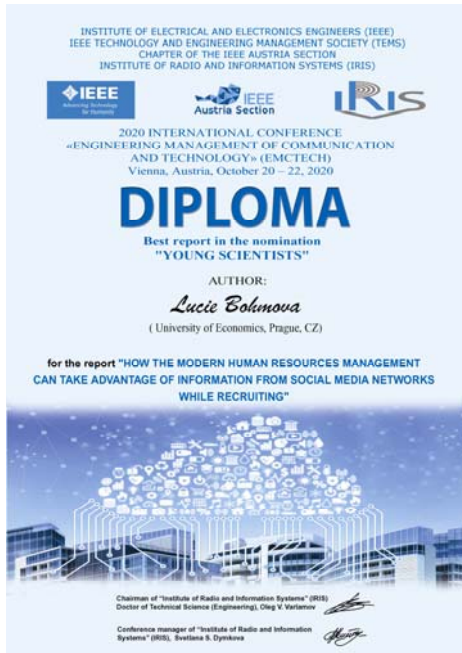
"YOUNG SCIENTISTS"

"MANAGEMENT IN ENGINEERING"

"TECHNOLOGIES OF THE FUTURE"

"WOMEN IN ENGINEERING"

Diploma for the best report in the nomination "**YOUNG SCIENTISTS**" is awarded to

Lucie Bohmová, *University of Economics, Prague, Czech Republic*

for the report

HOW THE MODERN HUMAN RESOURCES MANAGEMENT CAN TAKE ADVANTAGE OF INFORMATION FROM SOCIAL MEDIA NETWORKS WHILE RECRUITING

This section aroused great interest among the conference participants.

Diploma for the best report in the nomination "**MANAGEMENT IN ENGINEERING**" is awarded to a group of authors from several universities
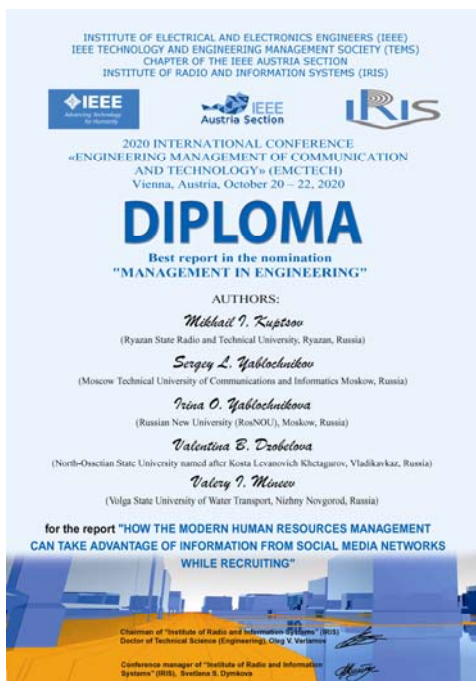
Mikhail I. Kuptsov, *Ryazan State Radio and Technical University, Ryazan, Russia*
Sergey L. Yablochnikov, *Moscow Technical University of Communications and Informatics Moskow, Russia*
Irina O. Yablochnikova, *Russian New University (RosNOU), Moskow, Russia*
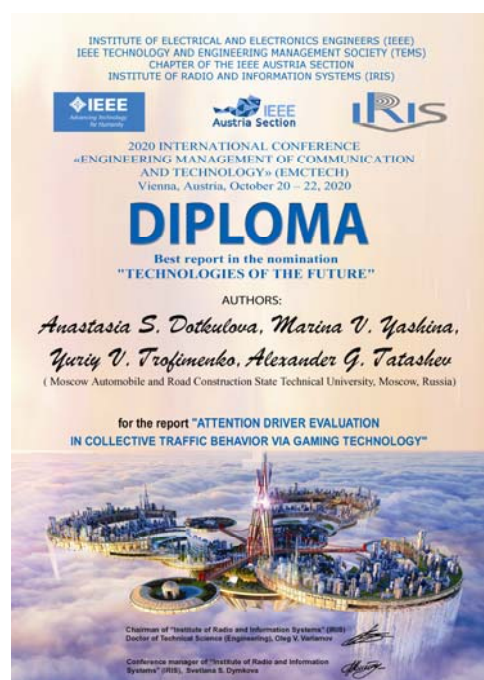**Valentina B. Dzobelova,** *North-Ossetian State University named after Kosta Levanovich Khetagurov, Vladikavkaz, Russia*
Valery I. Mineev, *Volga State University of Water Transport, Nizhny Novgorod, Russia*

for the report
MODELING INTERNET BUSINESS OPTIMIZATION PROCESSES

Diploma for the best report in the nomination **"TECHNOLOGIES OF THE FUTURE"**
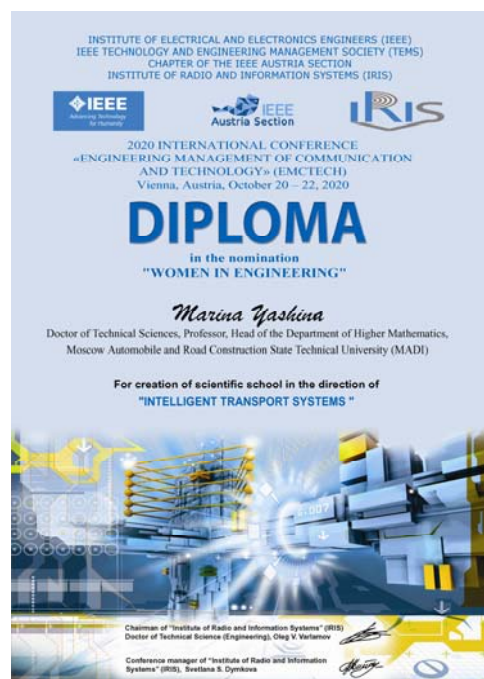is awarded to

Anastasia S. Dotkulova, Marina V. Yashina, Yuriy V. Trofimenko, Alexander G. Tatashev, *Moscow Automobile and Road Construction State Technical University, Moscow, Russia*

for the report

ATTENTION DRIVER EVALUATION IN COLLECTIVE TRAFFIC BEHAVIOR VIA GAMING TECHNOLOGY

Diploma for the best report in the nomination **"WOMEN IN ENGINEERING"**
is awarded to

Marina Yashina, *Doctor of Technical Sciences, Professor, Head of the Department of Higher Mathematics, Moscow Automobile and Road Construction State Technical University (MADI)*

For the creation of scientific school in the direction of:

INTELLIGENT TRANSPORT SYSTEMS

Diploma for the best report in the nomination **"WOMEN IN ENGINEERING"**
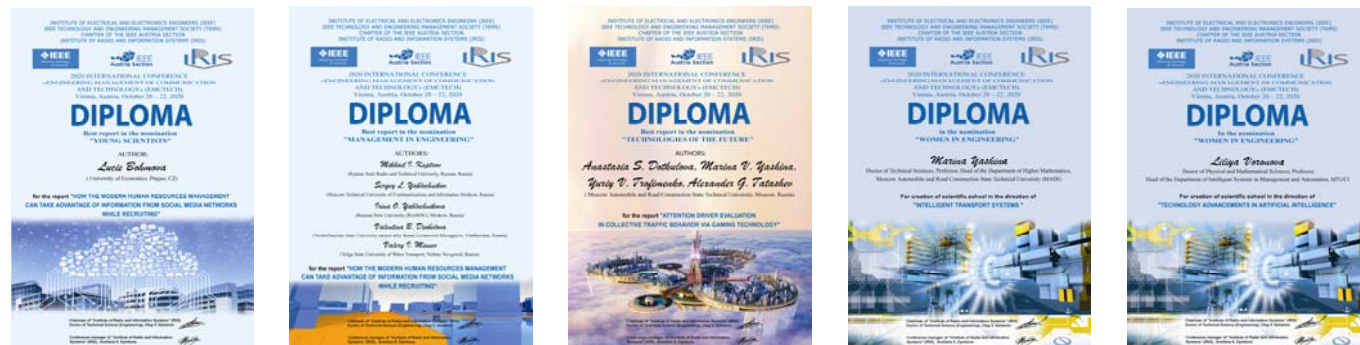is awarded also to

Liliya Voronova, *Doctor of Physical and Mathematical Sciences, Professor, Head of the Department of Intelligent Systems in Management and Automation, MTUCI, Moscow, Russia*

For the creation of scientific school in the direction of:

TECHNOLOGY ADVANCEMENTS IN ARTIFICIAL INTELLIGENCE

Awards ceremony

We hope to host the next EMCTECH conference in October 2021 in a traditional format and meet all the participants in beautiful Vienna!