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INTRODUCTION

In the past twenty years, we witnessed dramatic changes in the way and abilities to perform communication. These changes significantly influenced all aspects of human activities. They had numerous positive impacts. Simple, cheap, reliable communication means are available, numerous attractive services are developed. Novel information and communication technology products are designed on more equal-footing than it was in the entire human history with any other industrial sector. Companies even from quite small and poor countries are now able to create highly competitive and even dominant products and services in the information and communication technology area. For the first time ever we have truly global market of knowledge and information. This is a background motivation for the beginning with, we hope, series of scientific meeting on this and related topics under the roof of the Montenegrin Academy of Sciences and Arts. Before presenting short introduction to the core topic of this meeting, it is worth to emphasize that ongoing revolution in the field of information and communication technology has also some negative impacts. It becomes a weapon in the hands of criminals, adversaries, and terrorists, new technologies allowed access and abuse of our privacy, they allowed distribution and access to illegal contents, and breaking copyright laws and access to fruits of intellectual work without paying royalties etc. One of the next related meetings probably would be about social aspects of the information and communication technologies.

The topic of this scientific meeting is the state-of-art in the mobile and wireless communications with perspectives for future developments. This technology already significantly influenced all aspects of business environment but also everyday activities. As it is common for technologies with so wide (even comprehensive) impacts, end-users and business community set new requirements for the research and scientific community. Some of these challenges are very complex since they are sometimes approaching achievable communication limits for com-

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munication channels and environments of interest. The other problem is that we still have to develop new data and signal processing techniques for these novel communication strategies. These new communications techniques will require development in hardware, novel or upgraded modulations schemes, changes in communication protocols, modification of the techniques for protection of communications, etc. It is even very difficult to predict all challenges that will be met in development of new modulations, technical means, and protocols at this stage.

Currently we have three large communication providers for mobile and fixed-line telephony services (including broadband) operating in Montenegro, but also several smaller providers especially in the area of Internet telephony and cable television are established. In addition, research activities on several topics in the wireless and mobile communications are conducted at the University of Montenegro. Then we decided to organize this scientific meeting in this very important area.

The first keynote lecture has been delivered by eminent scientists in this area. Prof. George K. Karagiannidis from the Aristotle University Thessaloniki. The lecture has been related to the Wireless Communications: Present, Future and Research Challenges. The lecture is focused primary on two very promising research areas in the field: cognitive and cooperative networks. These networks allow access to broadband wireless communication channels and/or usage on unlicensed spectrum for diverse communications. These systems would require large number of antennas and very sophisticated algorithms. However, advantages of their implementation is significant both in urban and other environments in term of availability of broadband services, but also in reducing negative impact of the radiation due to decreasing emitting power of antenna systems. Prof. Karagiannidis has presented numerous remaining research challenges in the field.

Prof. Gorazd Kandus from the Institute Jožef Štefan, Ljubljana, Slovenia has delivered the speech about Mobile Communications via Stratospheric Platforms. These platforms have some properties of standard land mobile transmitters/receivers units but also of the satellite platforms. Commonly the platforms are light weight planes and drones but also zeppelins. Several countries including Japan have implemented these systems for commercial purpose but also for fast providing of communication means in the case of disasters. Design of these platforms and communication means is topic of several ongoing European FP 7 and ESA projects.

The third keynote lecture has been delivered by Prof. Miroslav Dukić from the Faculty of Electrical Engineering, University of Belgrade. The topic is the WiMAX – Technology and Challenges. This presentation was quite attractive since one of the first commercial WiMAX networks in region was launched

in Montenegro several years ago and Prof. Đukić was involved in its implementation.

Due to comprehensive content of keynote lecturers' presentations they are printed in this issue as appendices to the corresponding papers.

In addition, three papers reflecting current state of the art in the research in this field at the University of Montenegro are presented. They are related to the bounds on interferences and adjustment of the OFDM systems for various environments; relay-based OFDM systems and the LPF Based VOQ Crossbar Switches.

