Dialogues between 5G/B5G and Vertical Domains: AI for Intelligent Services

IEEE 5G World Forum, Oct-15-2021

Event Report

1. Introduction

5G/B5G systems aim to provide personal and professional services that will shape future connected society. These services will incorporate artificial intelligence techniques in the full-service stack by spanning different vertical domains such as agriculture, health, and industry. Cooperation between vertical domains specialists and the ICT community is mandatory to ideate, design, prototype, and roll out these services.

The "Dialogues between 5G/B5G and Vertical Domains: Towards Intelligent Services" session goal is to put together specialists from vertical domains and specialists from 5G and ICT to shed light on possible intelligent services that will arise, unleashing the potential of 5G/B5G systems.

The vision from practitioners and specialists from different verticals enhances the knowledge about these areas inside the 5G/B5 G-related community. It contributes to a better understanding of what each vertical requires or expects from 5G/B5G systems.

During the IEEE 5G World Forum 2021, the online session happened on October 15, 2021.

2. Event Program

The "Dialogues between 5G/B5G and Vertical Domains: Towards Intelligent Services" started with an introduction by Prof. Flávio presenting the session goal providing the overall context. Then two sessions happened: Session 1, called "What can be achieved?" and Session 2, called "What will we expect in the future?".

In each session, the panelists did a 20-minute oral presentation. A 30-minute discussion between the vertical domains and ICTs specialists followed by the presentations. Prof. Alexandros Kaloxylos chaired the first session, and Prof. Rui Aguiar chaired the second session. Prof. Flávio did the event wrap-up and presented some concluding remarks.

The first session focused on use cases realized with the obstacles and achievements. The panelists were:

- Sjaak Wolfert – Wageningen University, Netherlands
- Manuel Lorenzo – Ericsson, Spain
- Konstantinos Trichias – WINGS ICT 5G Mobix Project, Greece
- Francisco Fernandez – International Telemedical Systems (ITMS), Chile

The second session focused on new use cases with a closer look at the role of AI in future networks and services and the opportunities. The panelists were:

- Artur Hecker, Huawei Munich, Germany
- Luciano Mendesit'snatel, Brazil
- Daniel Camp, i2CAT, Spain
- Guilherme Spina, Director, V2COM/WEG, Brazil

A short biography of the panelists is available on the session website: https://ieee-wf-5g.org/dialogues-between-5g-b5g-and-vertical-domains-ai-for-intelligent-services/

3. Concluding Remarks

Session 1 key messages can be summarized as the following.

- AI solutions over 5G networks apply to multiple verticals such as agriculture, connected and automated mobility, health, and industry 4.0, among others – it seems of general interest in society at this moment. Several available AI solutions presented and discussed during the first session demonstrate the considerable potential of combining 5G networks with AI for verticals and telecom operators.
- A better dialogue is needed between telecom service providers and verticals to identify and appropriately address real verticals' needs.
- Another key takeaway of Session 1 is that data must be available to train the AI systems properly.

Session 2 brought the following key messages.

- AI will provide measurable improvements on the performance of radio links and overall OAM operation.
- Non-Public Networks (NPN) is a suitable environment where innovation can be easily pursued and developed.
- AI will bring new challenges for the upcoming distributed 6G environments, and there is no established path on how to handle these trends.

Overall, the new services expected are more complex and need several actors from different areas to bring them to life. These new services require deep knowledge from the vertical, which is mandatory to succeed. New approaches for services ideation, design, prototype, rollout, management, and billing will arise. 5G/B5G & AI will also bring a high impact to society and the ICT area.

Organization

The organization of the event relied in the support of the Ministry of Science, Technology, and Innovation (Brazil) and NetworldEurope, the European Technology Platform for communications networks and services.

The event organizers were:

- Prof. Rui Luis Andrade Aguiar is a full professor at the University of Aveiro in Portugal and responsible for networking. He coordinates a research line nationwide in Instituto de Telecomunicações, in Networks and Services. He is the chair of the Steering Board of the Networld Europe ETP.

- Prof. Flávio de Oliveira Silva is an associated professor at the Federal University of Uberlândia (UFU) in Brazil. Currently, he is the coordinator of the project "BRASIL5G and Beyond," funded by the Brazilian Ministry of Science, Technology, and Innovation (MCTIC). Also, he is the local coordinator at UFU of the project "BRASIL 6G," a consortium with other Brazilian members institutions also funded by MCTIC.
- Prof. Alexandros Kaloxylos is an associate professor at the University of Peloponnese in Greece. Currently, he is the executive director of the 5G Infrastructure Association and the chairman of the Technology Board of the 5G PPP.