Federal Ministry
Republic of Austria
Transport, Innovation
and Technology

MISSION INNOVATION AUSTRIA WEEK 2019
STEGERSBACH UND OBERWART
6. BIS 10. MAI

avantsmart

Wien, 15. May 2019

Summary of the Mission Innovation Austria Week Pre-Event:

"Artificial Intelligence and 5G Technologies in future Integrated Energy Systems"

On April 29th 2019 the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT) invited to a workshop organized and chaired by Hemma Bieser, founder of the Innovation Company avantsmart.
Michael Hübner, representing the Austrian Ministry, pointed out the relevance of AI and 5G for the technology roadmap in his opening remarks. The goal of the workshop was to give an overview of the state of the art of Artificial Intelligence (AI) and 5G technologies. Ongoing projects were presented and discussed by several experts from different market segments. Energy suppliers, mobile network providers, researchers and representatives of the federal ministry of transport, innovation and technology came together to look for future potentials of AI and 5G technologies in Austrian markets.

Figure 1: International experts listening to the keynote of Mario Dionisio (European Commission)

Mario Dionisio, ambassador of the European Commission, stated that the energy sector will be one of the main segments for 5G technologies with high requirements according to latency (1ms – 1s) and data speed (1kbps – 1Gbps). In the meantime consumers on the

avantsmart e.U. | DI Hemma Bieser, MSc | A-2522 Oberwaltersdorf | Seepark B6
T +43 664 35 661 35 | hemma.bieser@avantsmart.at | www.avantsmart.at

energy market become prosumers. For this new kind of market player innovative contracts are needed, so called “smart contracts”.
An important criteria for a successful market entry of 5G technologies, above from all technical requirements, is trust. Consumers want to trust in the mobile network providers and believe that their private data are handled carefully, especially when it comes to IoT-concepts.
Peter Dorfinger, leading researcher for intelligent communication technologies at Salzburg Research, defined four main potentials of 5G technologies:

- Enhanced mobile broadband
- Fixed Wireless Access
- Ultra-reliable low latency communication
- Massive machine type communication

But above all of them reliability as the key target for future 5G technologies. Reliability is critical because the spectrum that is used for reliable data-exchange cannot be used for high throughput.
Herbert Pairitsch, senior manager for technologies & innovation at Infineon Technologies Austria AG, also brought an economical input. He stated that although 5G technologies promise very high potential for future integrated energy systems, the costs for necessary hardware are too high at the moment. He predicted the use of 4G technologies for common area-wide needs while 5G technologies will be used for specific needs and concepts.
In a following panel discussion experts talked about the AI and 5G strategy, that will soon be released by the BMVIT. To anticipate changes and opportunities in the Austrian energy sector was declared as one of the main targets

Figure 2: Panel discussion with M. Hübner (BMVIT), I. Hegny, (BMVIT), A. Ruzicka (Executive Department Information and Communication Infrastructure, BMVIT), M. Dionisio (EC), E. Prem (Eutema)

Eric Prem, founder and director of EUTEMA, described the potential of 5G technologies not only as a single technology itself, but as a framework for future services. New innovative players, such as Startups, will enter the market of energy suppliers and mobile network providers. Therefore new regulatory frameworks are needed to support innovative players,

to avoid the loss of know-how and added value when these players leave to enter markets in other countries.
Michael Hübner, expert for energy systems and environmental technologies at BMVIT, also mentioned the decentralization of energy systems as a current and future challenge in various markets. Finding solutions to manage decentralized systems while enabling local added value will be one of the main challenges in future integrated energy systems. Especially when considering the high quality of energy supply that consumers are used to today.
Energy suppliers, mobile network providers and research institutions should also look for new trends and customer needs in international markets. Developing countries, such as African countries or India, often offer market potentials for innovative concepts and new solutions because their energy systems are less stable.
In a final statement Georgios Chasparis, researcher for data analysis systems at the Software Competence Center Hagenberg, presented the role of AI in future integrated energy systems:

- Higher integration of consumers and prosumers
- More flexibility in demand and response management
- Higher absorption of renewable energy systems

The challenges for AI in future integrated energy systems lies in the bad accuracy of today's forecast models for long time horizons. To minimize the effect of forecast errors learning based optimization is needed. This could lead to an increased flexibility, by allowing real-time exchange of flexibility.

Figure 3: P. Dorfinger explaining the outcome of his working group

In the afternoon the experts got together in small groups to discuss use cases and future business models for AI and 5G in integrated energy systems. Although the collected use cases and possible solutions were different, the basic problems defined by the four groups have been quite similar. The main challenges for AI and 5G technologies in future integrated energy systems will be:

- New billing and pricing models for decentralized energy systems
- Customer empowerment and satisfaction to gain added value for all stakeholders

- Balancing market & public interests by optimizing the regulatory framework

Finally Michael Hübner closed the workshop with a big challenge everybody has to think about: “How can AI and 5G be the key to radical innovation for transactive energy?”

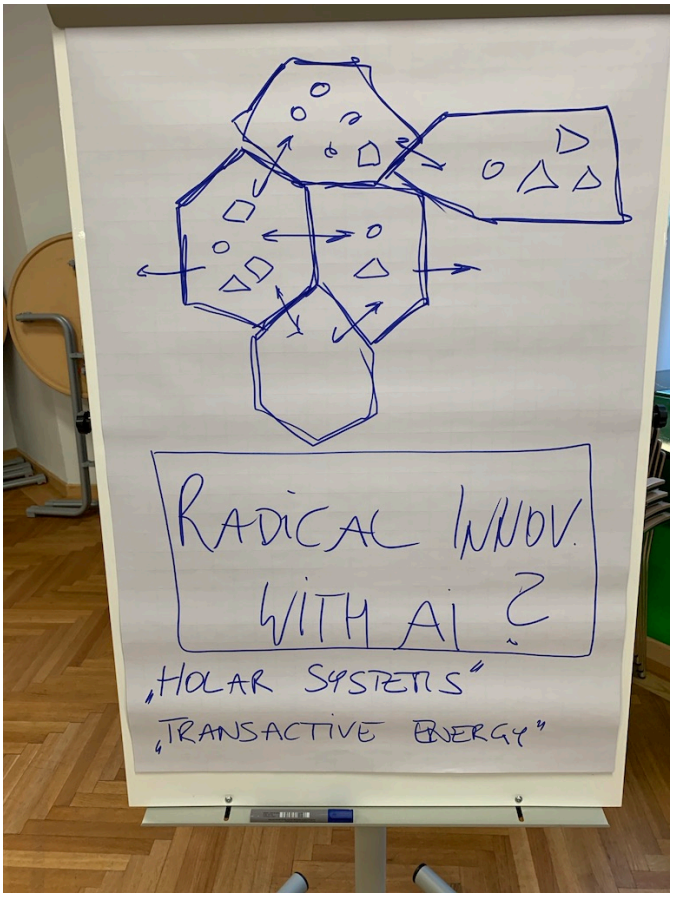

Figure 4: The final question "How will AI radically change the energy system?"

Mission Innovation Austria

Mission Innovation (MI) is an initiative of more than 20 countries and the European Commission, which joined forces at the Climate Conference 2015 in Paris (COP21) to substantially advance research on energy technologies. The aim of this international alliance is to combat climate change and significantly advance the development of clean energy technologies together with public authorities and private investors. Intelligent energy solutions and clean energy technologies are globally part of the largest growth market of the 21st century. This initiative is intended to accelerate such developments and increase participation in this future market.
A number of national activities will be organised under the title Mission Innovation Austria.

Workshop-Organization:

Austrian Ministry for Transport, Innovation and Technology
Michael Hübner
Co-Chair SET-Plan Action 4 Member States Workinggroup
E-Mail: michael.huebner@bmvit.gv.at
Web: www.bmvit.gv.at

Federal Ministry
Republic of Austria
Transport, Innovation
and Technology

avantsmart e.U.
Hemma Bieser
Managing Partner
Tel.: +43 664 35 661 35
E-Mail: office@avantsmart.at
Web: www.avantsmart.at