Hands on experience building 5G lab for research and education

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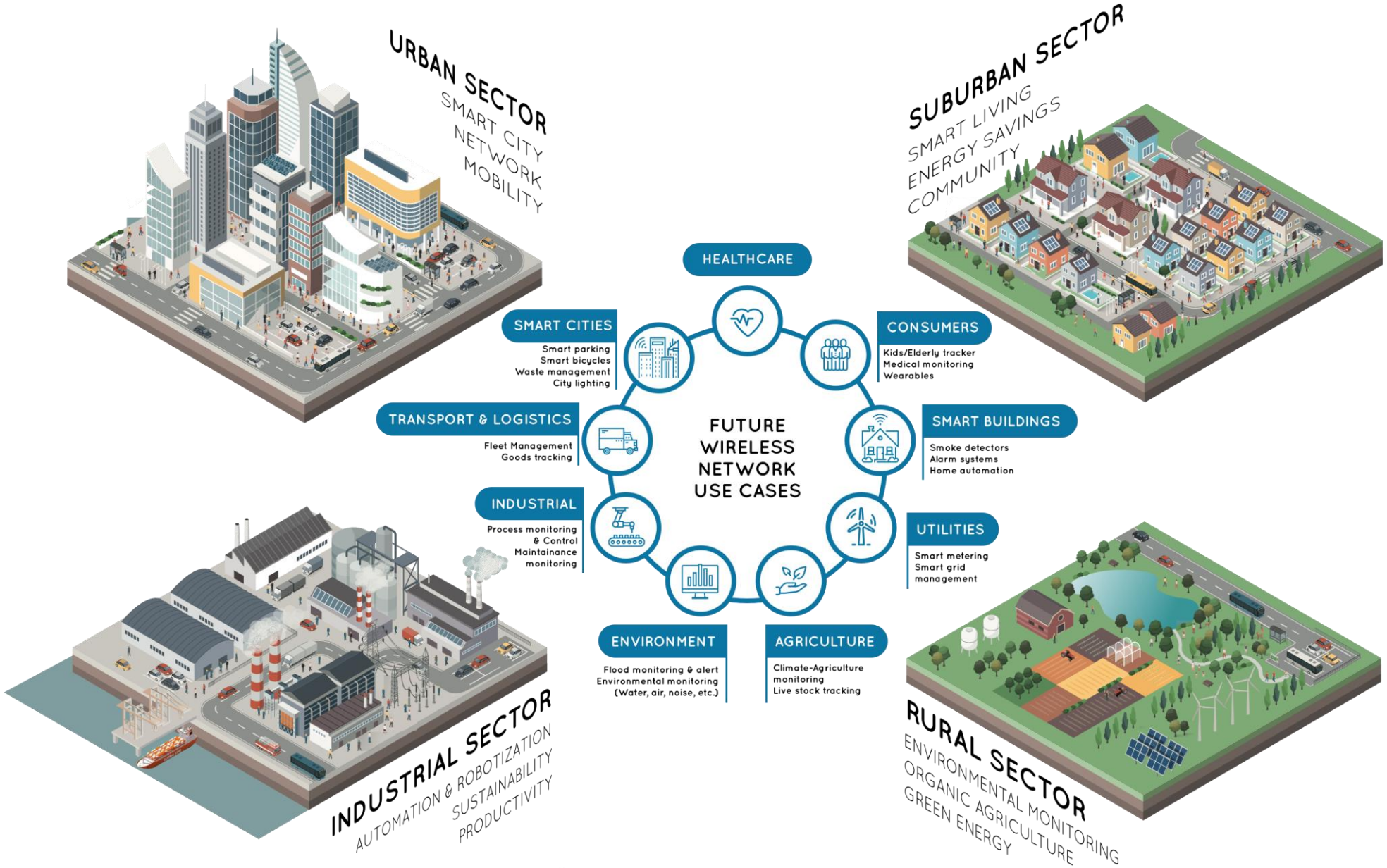


Designed by Tampere University of Technology

5G model network for research and education

- Once upon a time
  - All has started at SUT in St. Petersburg at Prof Koucheryavy's Lab
  - Thanks to ITU activities
- Which technologies to select vs what 5G actually is?
  - 3GPP + IEEE + LORA + etc
  - Cellular + WLAN + others
- Local vs distributed
- What type of research and education courses we can do?

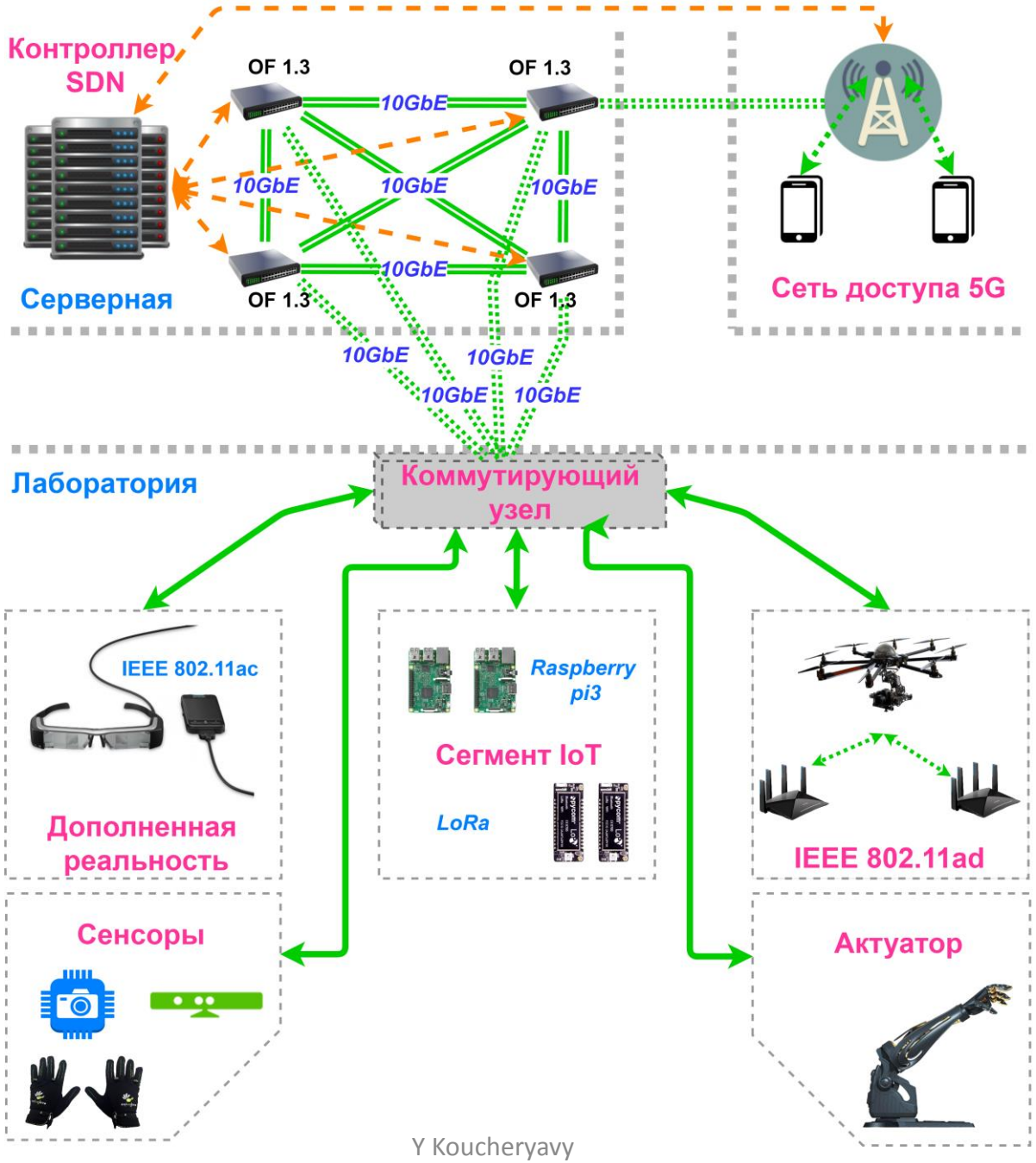
Partners

- SUT, St. Petersburg
- HSE and RUDN universities, Moscow
- Tampere University of Technology, Finland
- Brno University of Technology, Czech Republic

International partners

- SUT, St. Petersburg
  - 5G-grade core network + Tactile Internet + Flying network mmWave + LORAWAN
- HSE university, Moscow
  - Industrial IoT solutions based on LTE/WiFi/WiGig/NB-IoT
- RUDN university, Moscow
  - 5G-grade core network + LARAWAN + software-based LTE Rel 13 + core network by Amarisoft
- Tampere University of Technology, Finland
  - Nokia core network + LTE Rel 13 + NI mmWave 24GHz
- Brno University of Technology, Czech Republic
  - Fully functional LTE Rel 14 + core

Example on a partner segment



Research

- Standardization contributions: ITU, 3GPP, IEEE
- Over 50 conferences
- Over 40 journals incl. 15 top IEEE/ACM journals Q1
- Research visits
- Piloting of the new technology prototypes
- Attracts international attention
- Measurement repository
- Etc.

Education

- Used in MSc and PhD education programmes including joint
- Laboratory hands-on experience for the students
- Over 30 MSc thesis completed
- Over 10 PhD thesis completed
- Serves as a technological basis for H2020 ITN (Initial Training Network)

Conclusions

- Piloting of new developments
- Preparing new standards
- Extremely important item for education and research
  - However pretty expensive
- Shall be considered as must-have by the universities preparing wireless engineers