

# Webinar on SRIA



## Strategic Research and Innovation Agenda (SRIA) 2021-27 “Smart Networks in the context of NGI”

### Emerging Technologies and Challenging Trends (system views)

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Based on Networld2020 SRIAv3.0



## ❑ What is the ETCT chapter?

- ✓ A wide-ranged set of topics, which were identified as potential game changers
- ✓ Several points here identified were touched (often in a particular view) in different chapters
- ✓ Often topics very summarized, but mostly with strong overall impact at system level

## ❑ Contents

### ✓ The Physical Stratum: Communication and Computing Resources

- ✓ Nano- and Bio-Nano Things
- ✓ Quantum Networking
- ✓ AI/ML for the Physical Layer
- ✓ DSL
- ✓ The Air Mobility Network

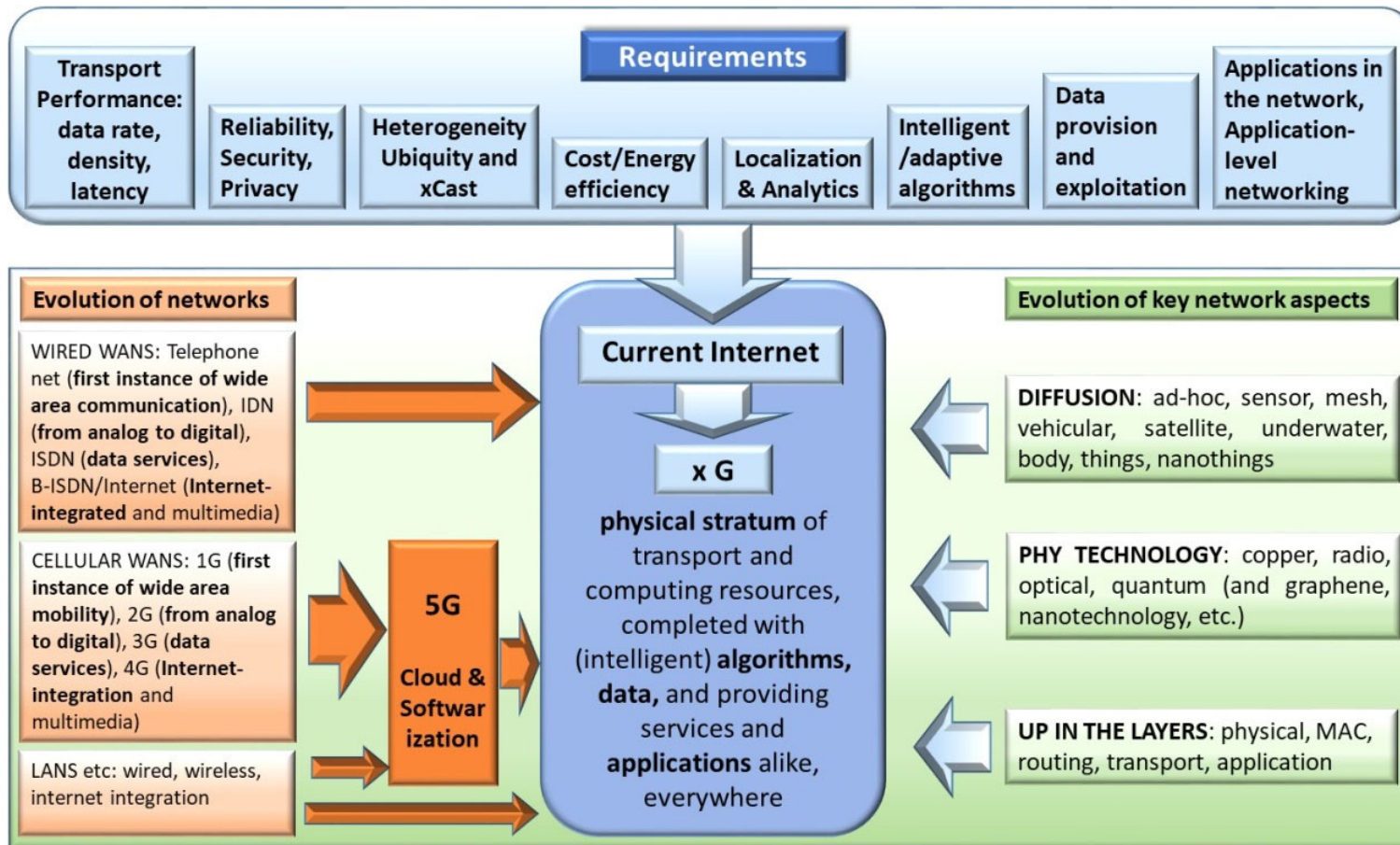
### ✓ Protocols, Algorithms and Data

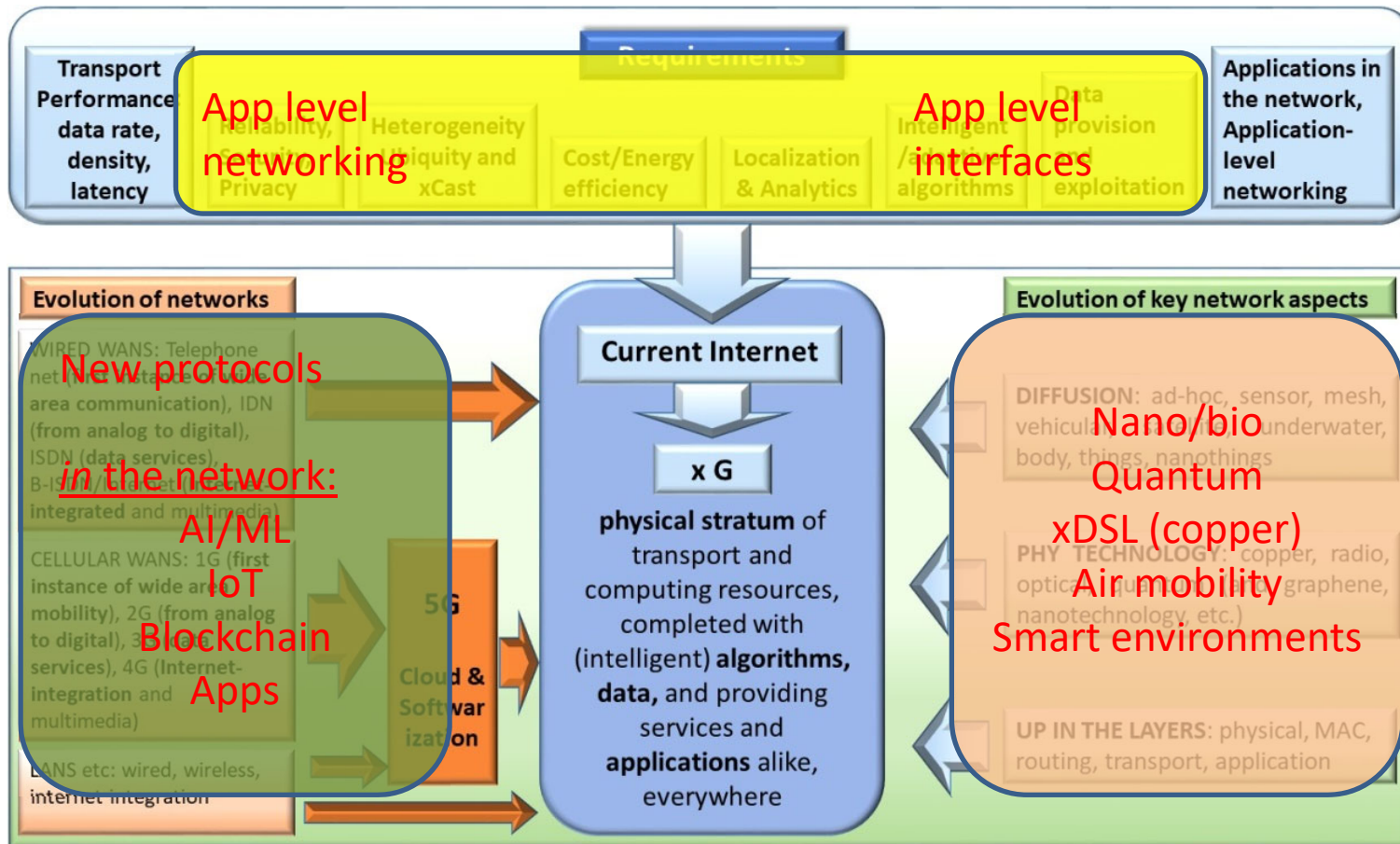
- ✓ Impact of AI/ML on the Network
- ✓ Impact of IoT on the Network
- ✓ Impact of Blockchain Technologies on the Network
- ✓ Evolution of Protocols
- ✓ Smart Living Environments

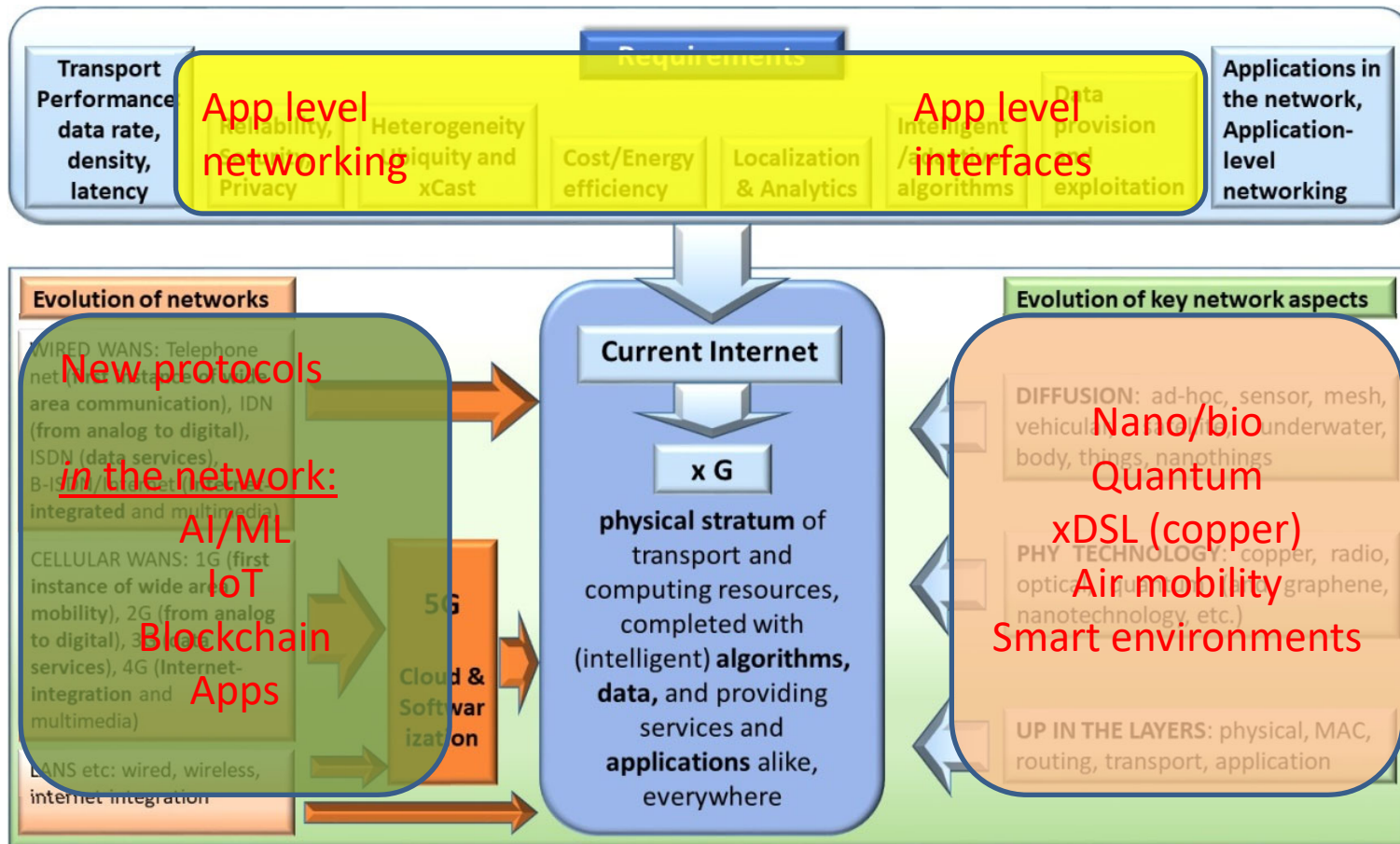
### ✓ Applications

- ✓ Application Level Networking
- ✓ Applications (Components) in the Network
- ✓ Applications Making Specific Demands to the Network









# Addressing the applications



- Interfaces and applications have been neglected today until now
  - Different aspects need to be considered
    1. Networking for applications (video, broadcasting, distributed content, etc.. not only IoT)
    2. Applications in the network (pushing edge computing concepts to the limits)
    3. Applications interfacing with the network (interfacing a real service customized network)
  - All of them related with intertwining applications and the communication system
    - Challenges on business model(s), trust, multi-stakeholder, security, delegation, location (including high-precision), proximity tracing, real-time responsiveness, privacy and ethical usage..



# System trends to extremes



- AI/ML everywhere
  - Maybe a magic wand for everything
  - Applied everywhere, from management plane to control plane
- IoT everywhere
  - Impact on the intelligence of the communication system (extensive context aware)
  - Integrated IoT platforms
  - Extreme service automation and service injection loop
  - Information, data processing, control loops... all mixed up



# System trends to extremes



- Blockchain everywhere
  - Maybe a magic wand for fully autonomic, trusted environment
  - Enabler of smart contracts at multi-dimensions
- Protocol heterogeneity
  - The end of the “TCP/IP one size fits all”
  - Service-dependent protocols may be required for extreme performance challenges (e.g. energy **and** bitrate **and** latency and...)





# Merging apps and comms



- Smart Living Environments
  - Smart-X (city, homes, transportation) interconnected, specially for disable and elderly people.
  - Human as part of the living environment
  - Scoping nanothings and macroenvironments

