



Methodologies for the IoT

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IoT: a visionary paradigm

“The next logical step in the technological revolution connecting people anytime, anywhere is to connect inanimate objects. This is the vision underlying the **Internet of things: anytime, anywhere, by anyone and anything**” – ITU, Nov. 2005

Each object can be addressed



Objects can be linked and communicate

New opportunities ...



Energy Saving (I2E)



Defense



Improve Productivity



Intelligent Building



High-Confidence Transport and assets tracking



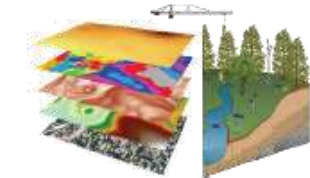
Enhance Safety & Security



Healthcare



Smart Home



Enable New Knowledge



Food & H2O Quality



Smart Grid

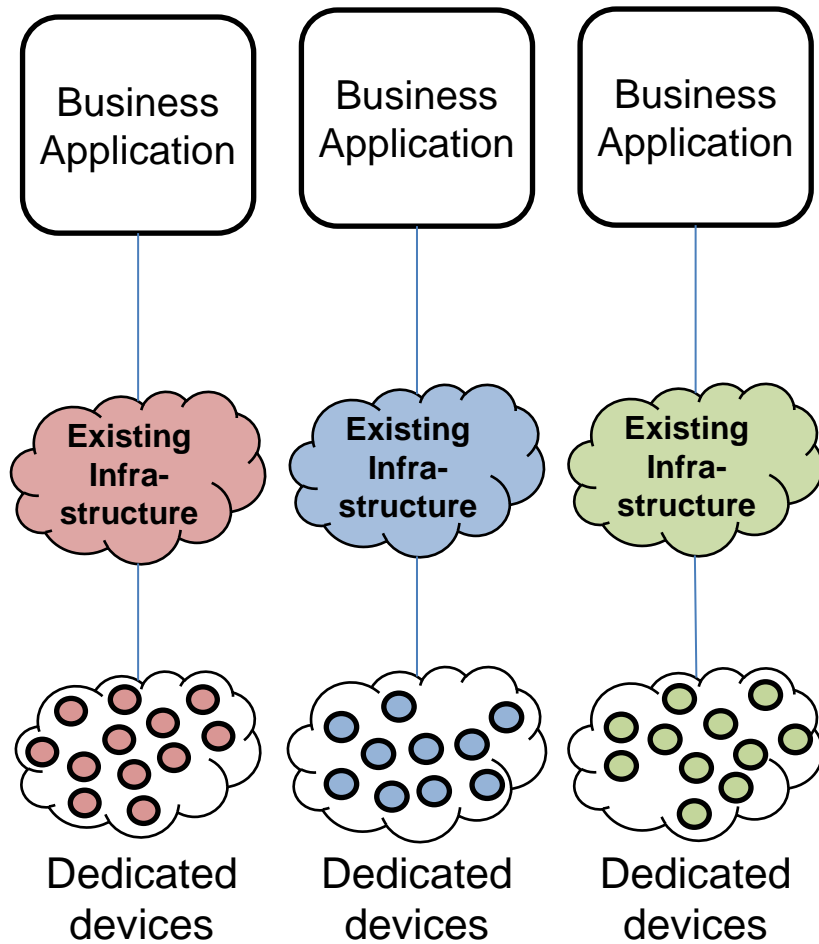




... but also new challenges

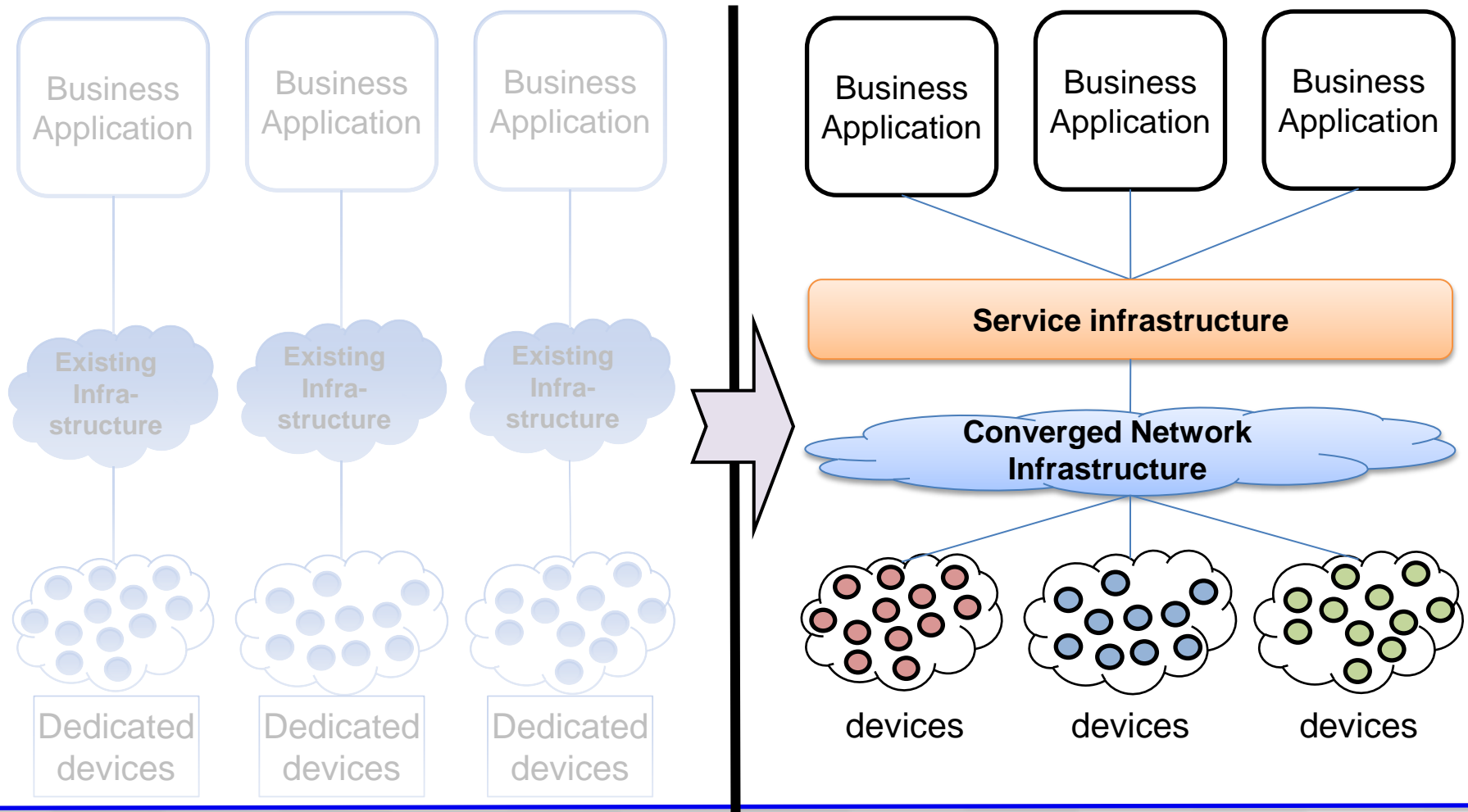
- Diversity of applications
- Scalability
 - Number of nodes in the system
 - Amount of data generated by each node
- Diversity of communication technologies
- Interoperability
- Location-awareness
- Content-awareness
- Cross-layer optimization
- [...]

Current approach: verticals

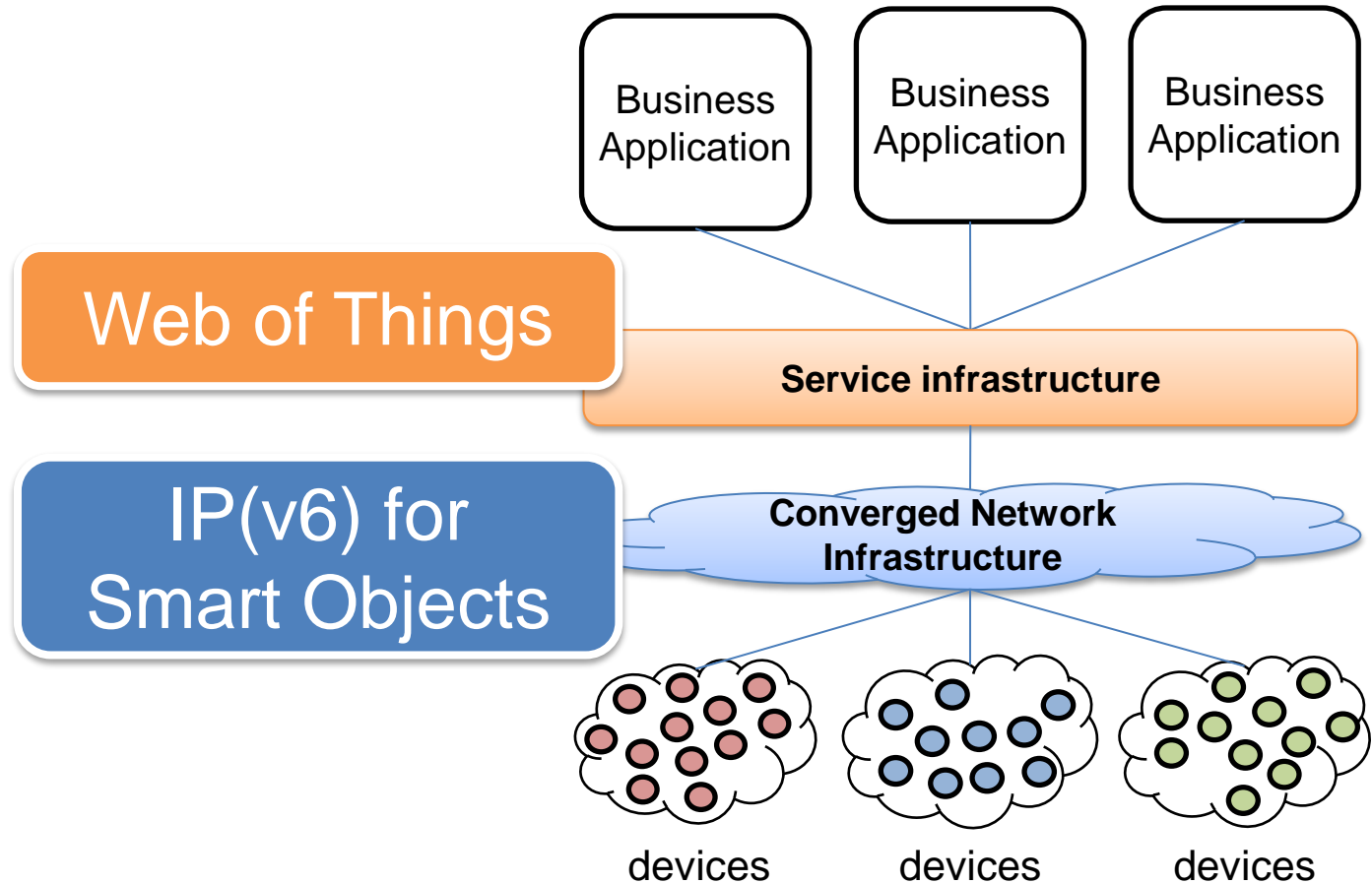


- Operate in isolation: no (or very limited) cooperation
- Inefficient: each device is dedicated to a single application
- Do not scale well

Next generation IoT: horizontal solutions

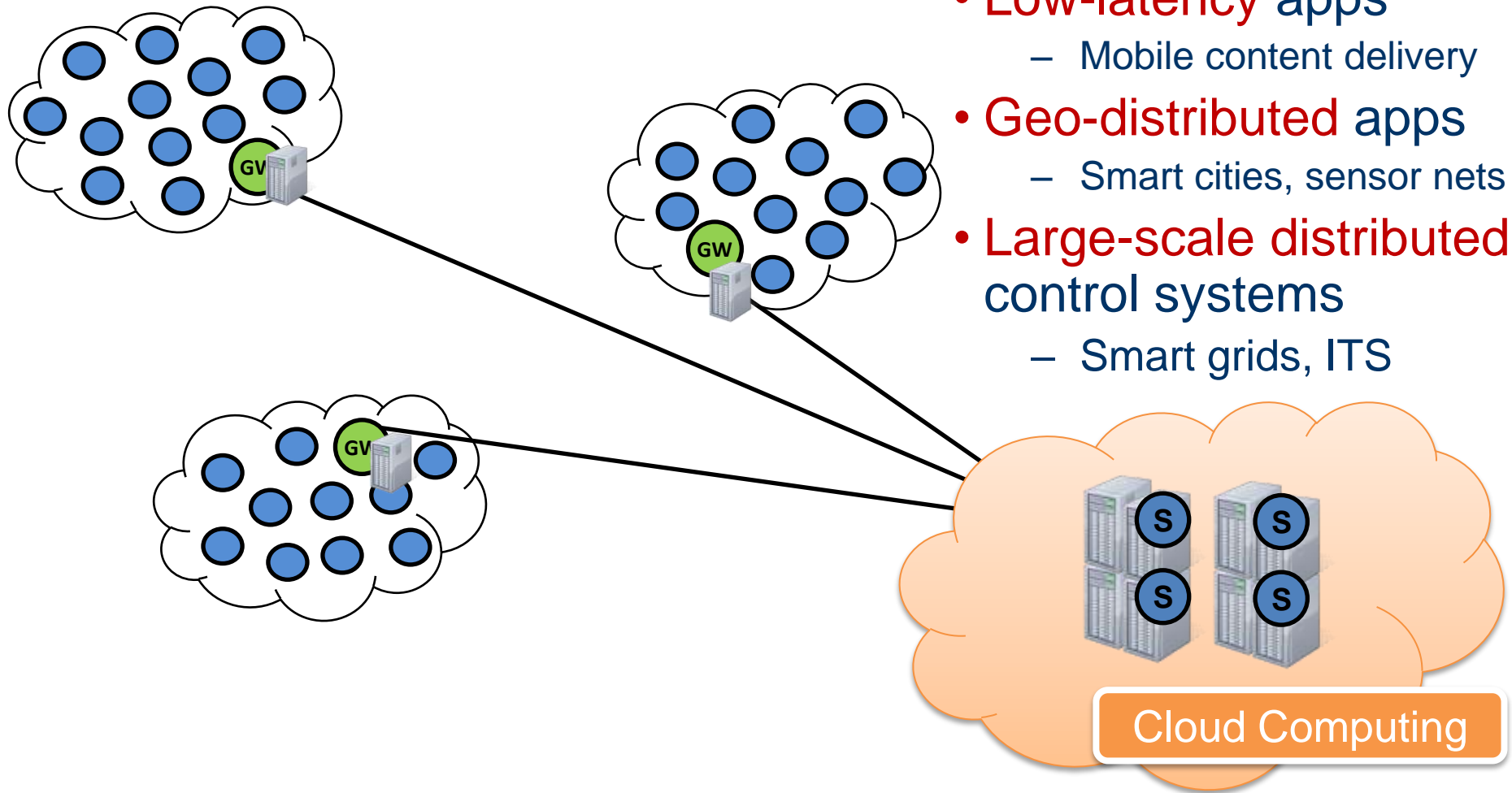


How to achieve that?

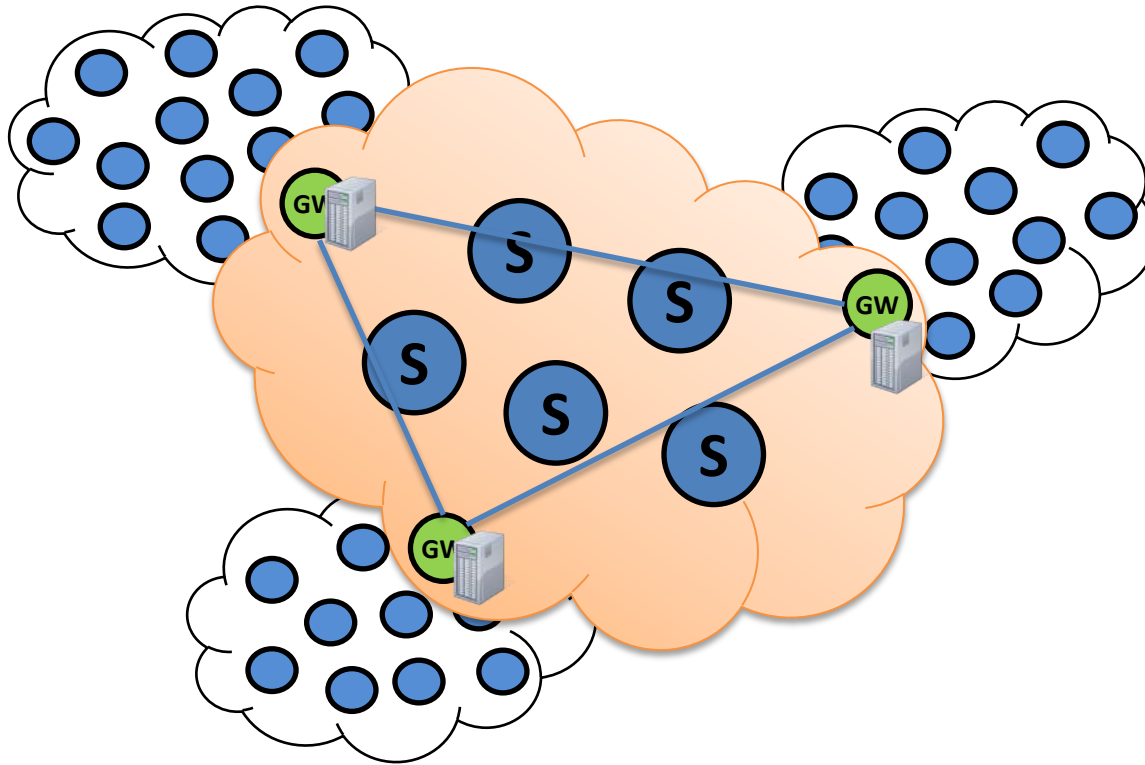


Ongoing research work (1)

- **Low-latency apps**
 - Mobile content delivery
- **Geo-distributed apps**
 - Smart cities, sensor nets
- **Large-scale distributed control systems**
 - Smart grids, ITS

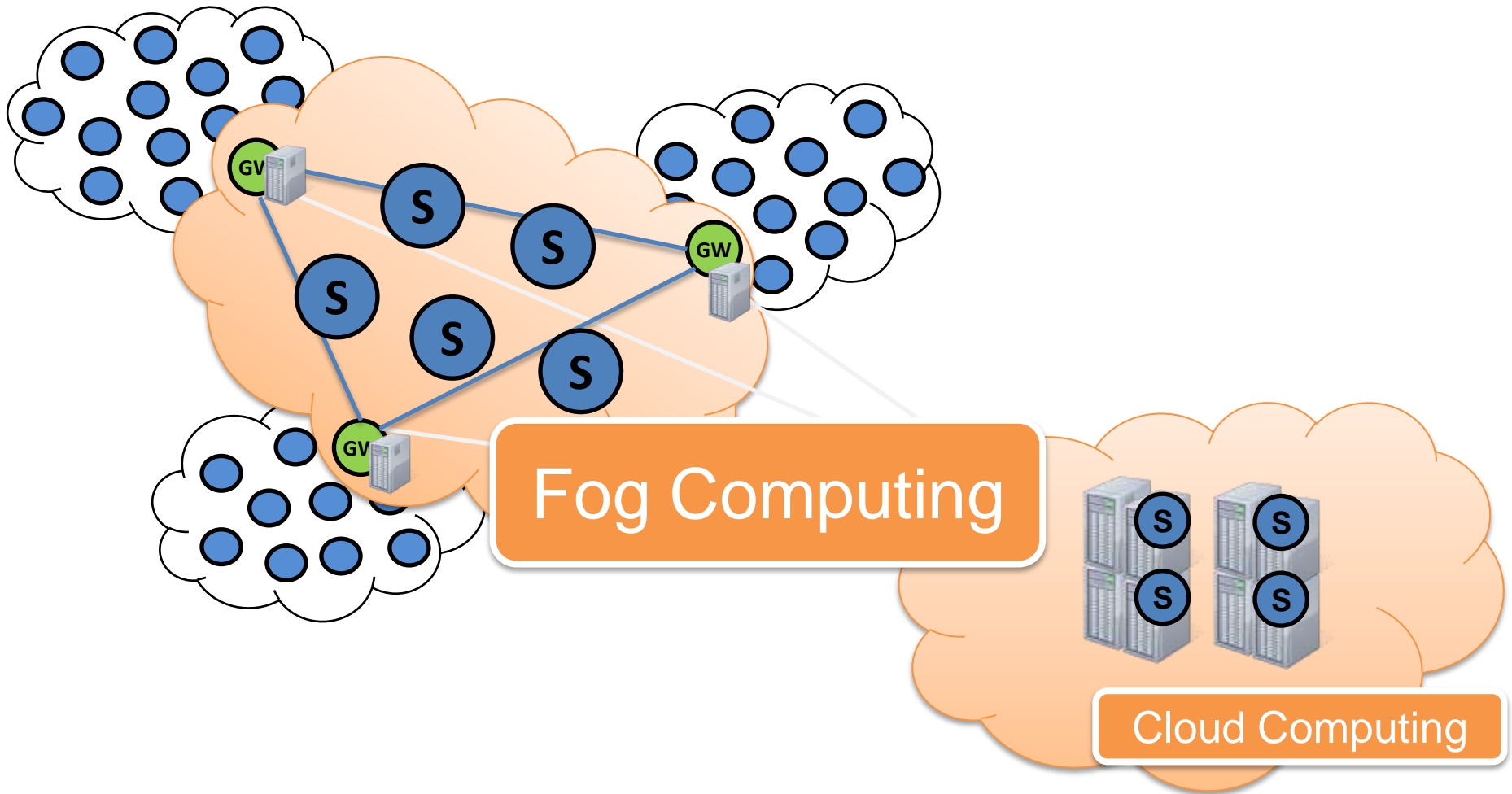


Ongoing research work (1)

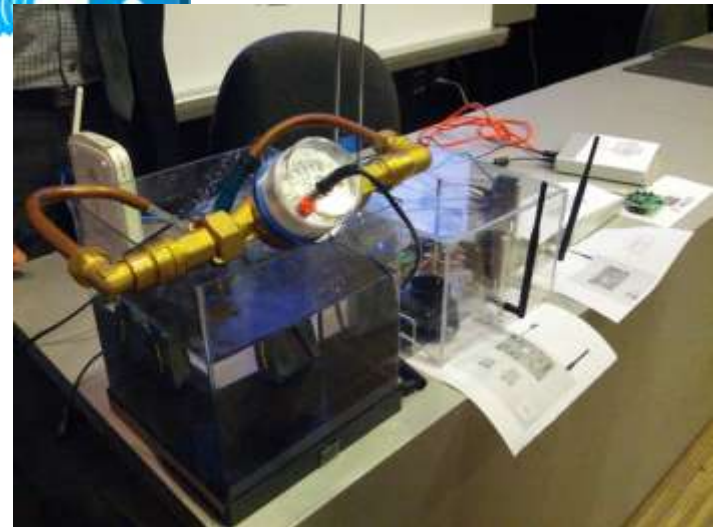
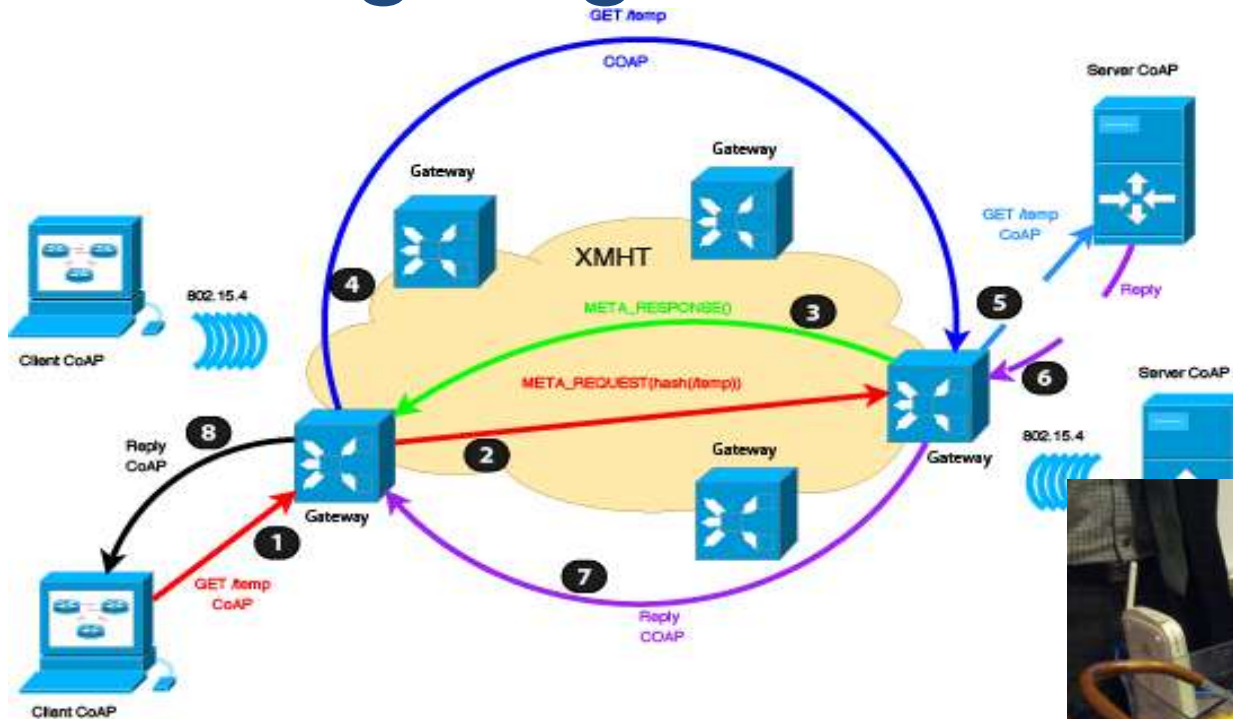


- Move the intelligence to the edge!!!
 - Data storage and processing close to where it is generated
 - Reduced latency
 - Resource optimization

Ongoing research work (1)



Ongoing research work (1)



- Things discovery and access
- QoS support
- GW virtualization



Ongoing research work (1)



"Building the Environment for
the Things as a Service"
(EU-FP7)



the Brainware company



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Ongoing research work (2)

- Providing support for non-functional requirements
 - Mobility
 - Quality of Service
- Public transportation systems (rails, mass transit)
 - On-board **Security Cameras**
 - **VoIP** for PA and emergency phones





Ongoing research work (2)

- "Second Life of the Public Services"
(MiSE – call "FIT Start-up")



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Thanks!

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