Project objective, activities and EU-JP 2030 challenges

7th EU-Japan R&D Symposium in Vienna on December 3rd

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Consortium and data

- **CNIT** (Italy)
- NEC (Germany)
- EGM(France)
- ODINS (Spain)

- **WASEDA** Univ.
  PANASONIC
- IIJ
- Kanazawa Institute of Technology

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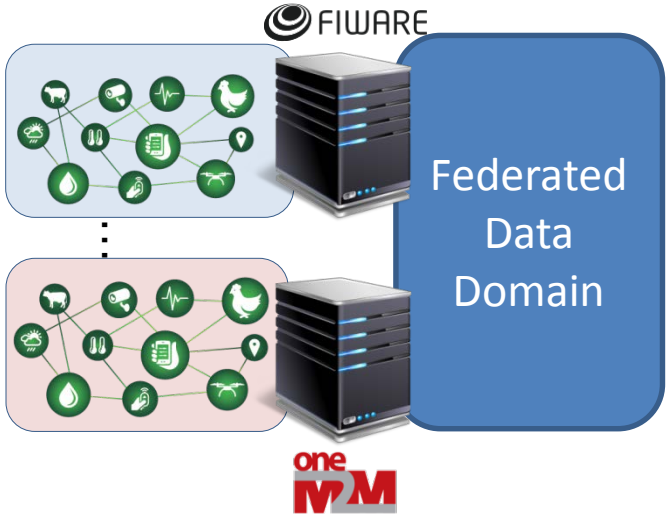
High Level Tech Objectives

Federate heterogeneous IoT systems to form a cross-domain shared data set



Heterogeneous
IoT Systems

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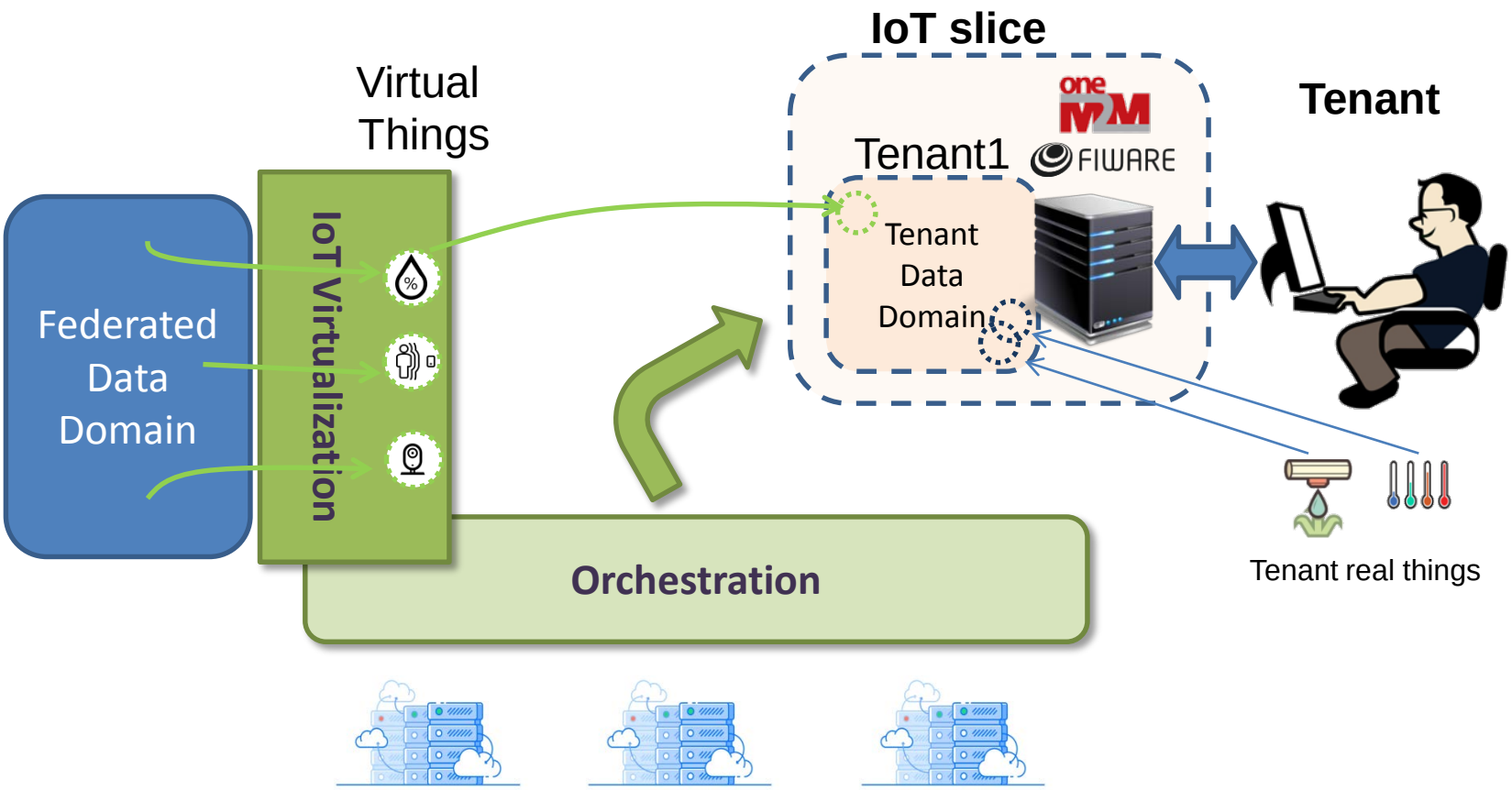
High Level Tech Objectives

Devise IoT virtualization technologies for providing
IoT systems as a service (IoT slicing)



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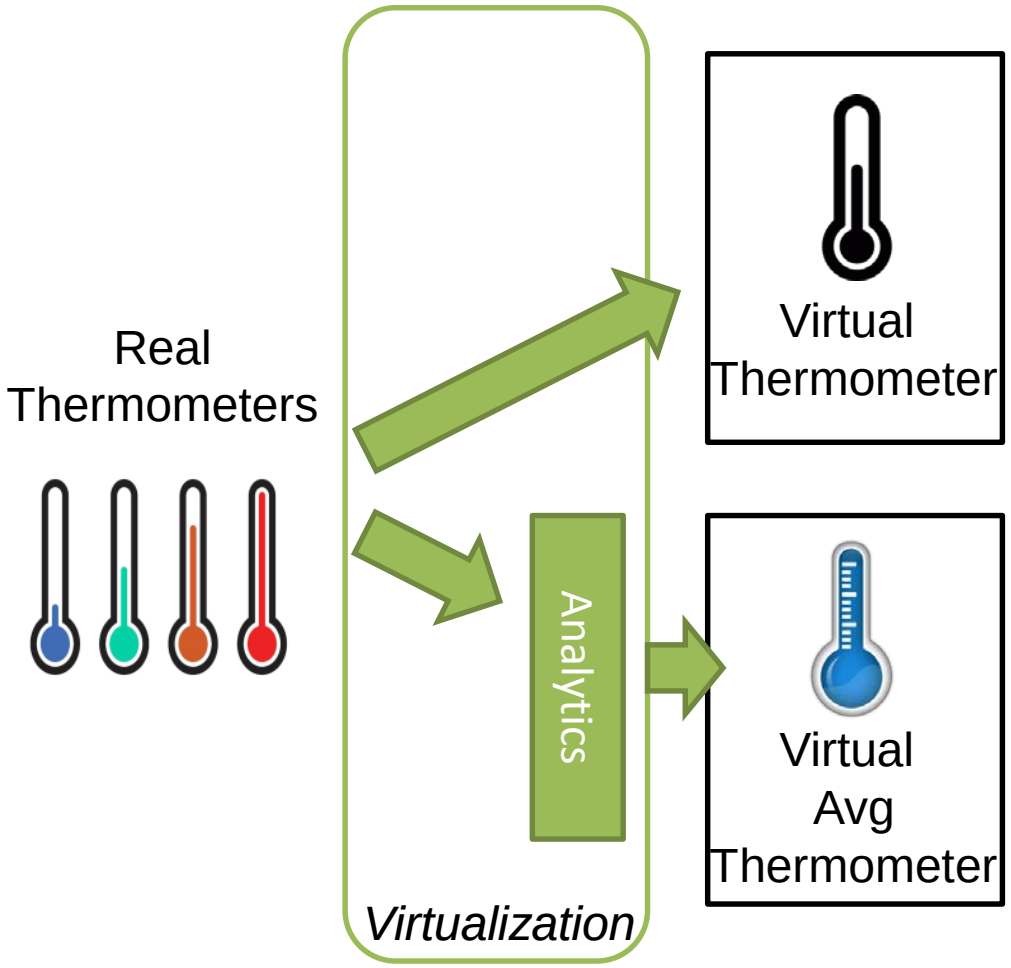
Virtual Things



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Analytics

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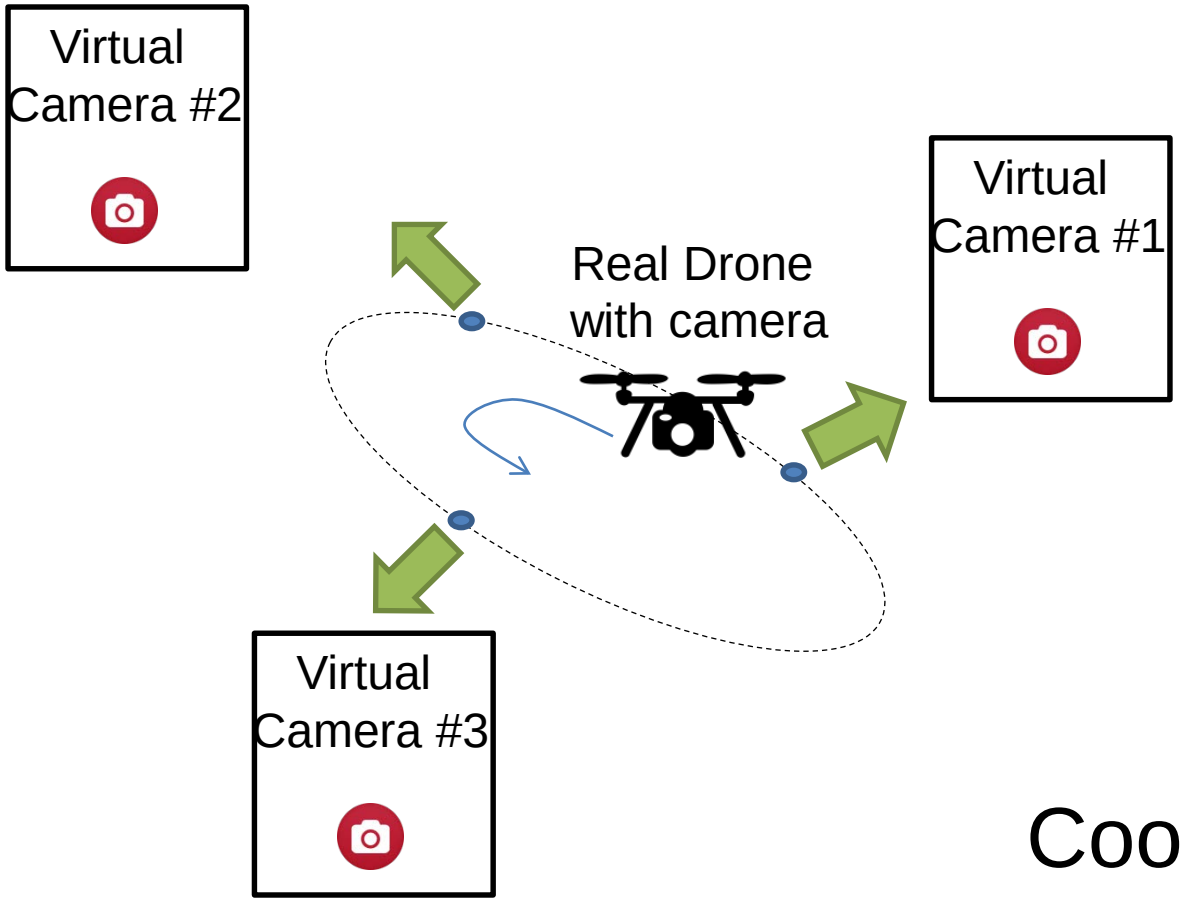
Virtual Things



Coordination

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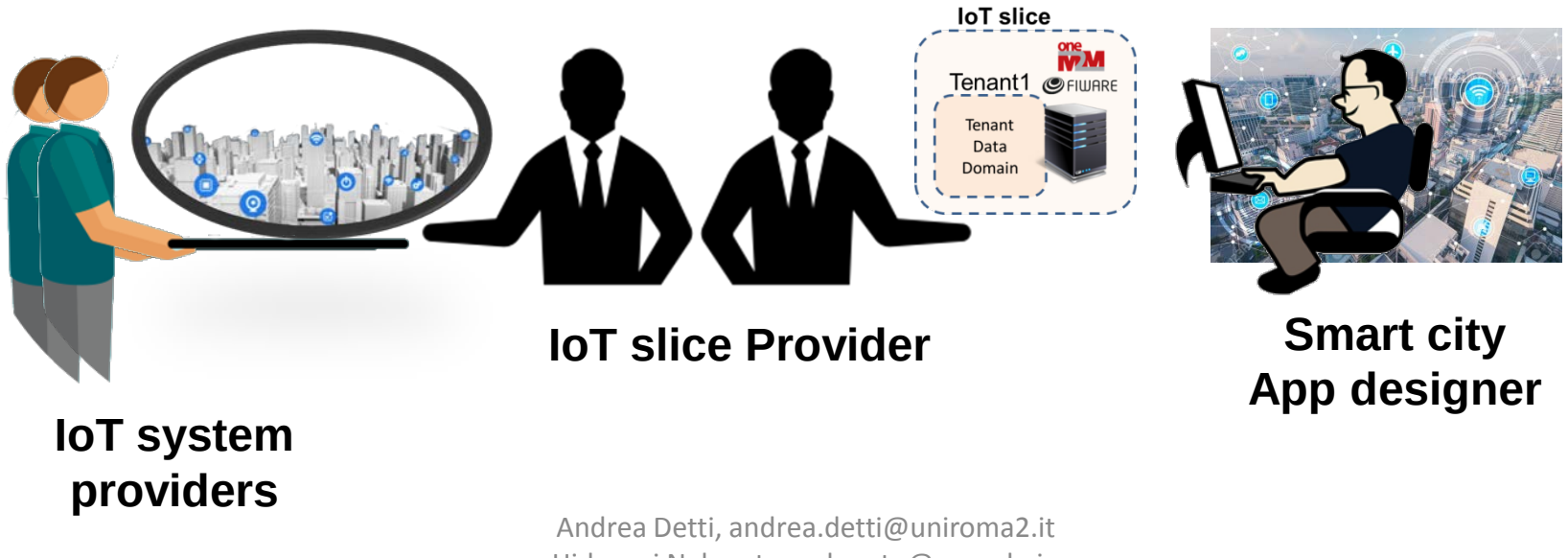
Use Cases: public services

- Decoupling of IoT application owner from IoT system owner
  - Important for large-scale, such as smart-cities
  - Application designer can rent an IoT System as a Service with thousands of embedded virtual things and preferred broker
  - IoT system providers can “sell” their things to a *slice provider*



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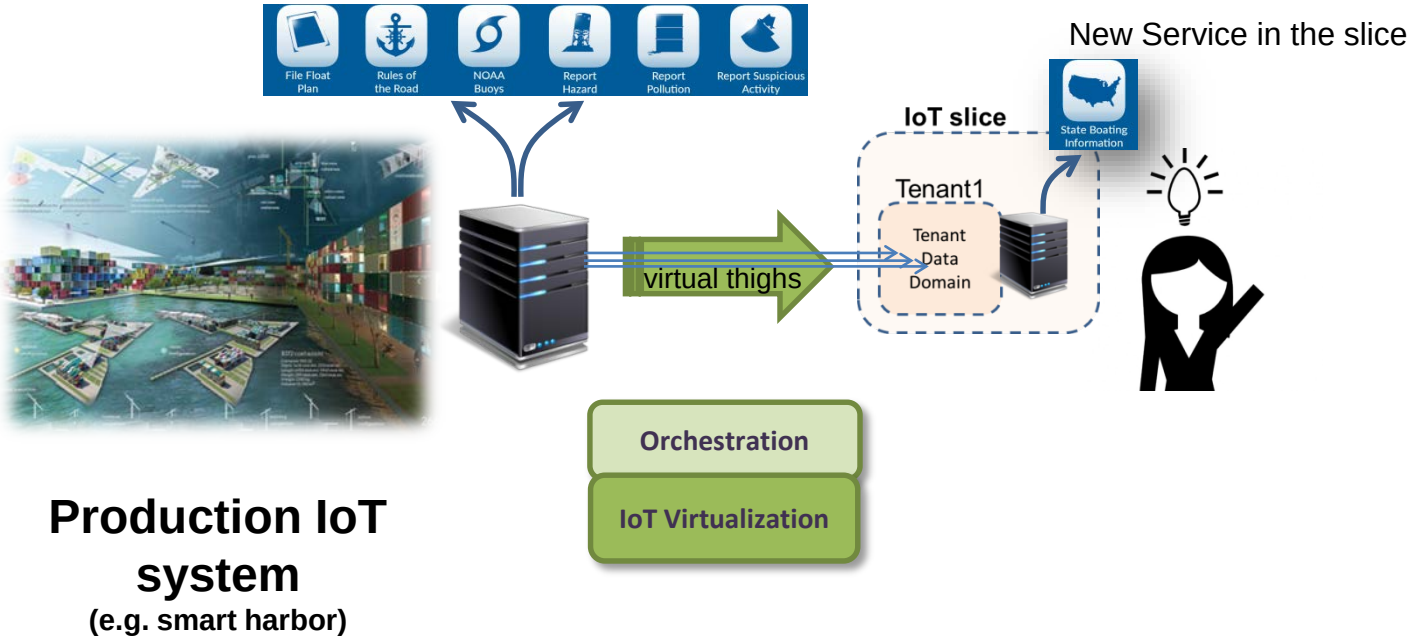
Use Cases: private service

- Decoupling development of new services from the production IoT system
  - Design and test system upgrade in a slice, where necessary production things are virtualized
  - Then safely deploy in the production system



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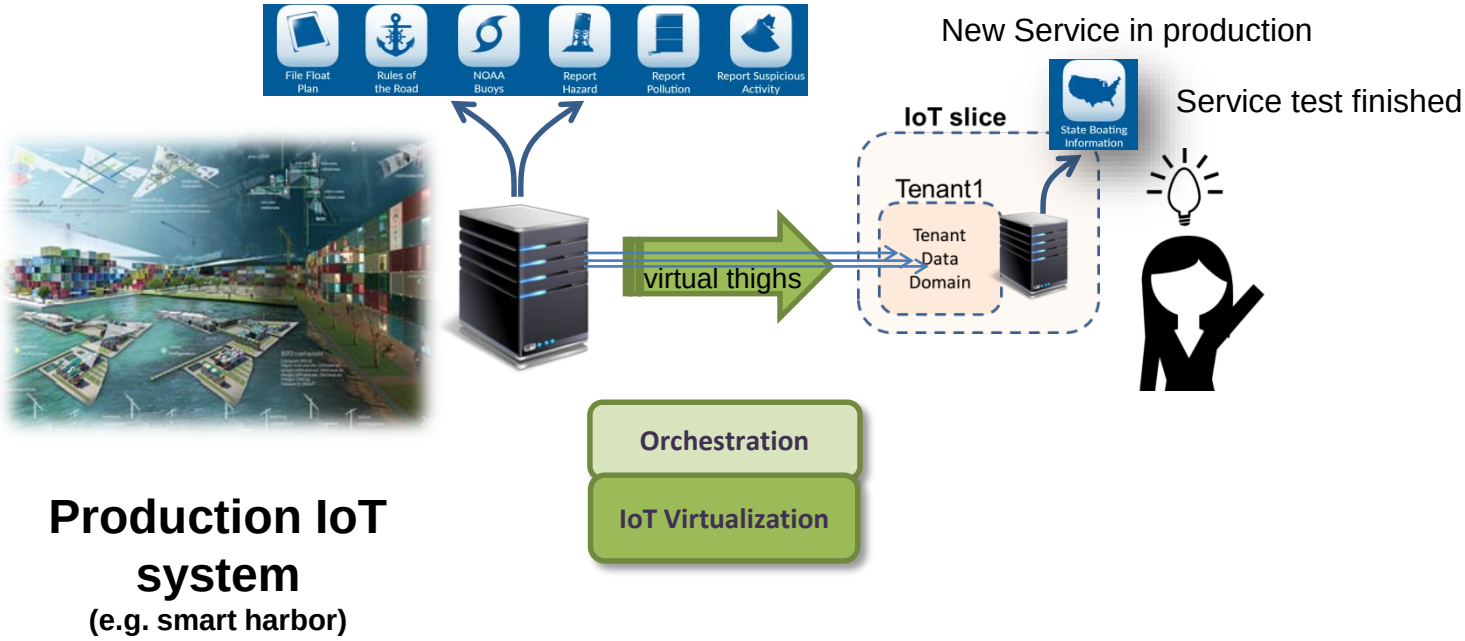

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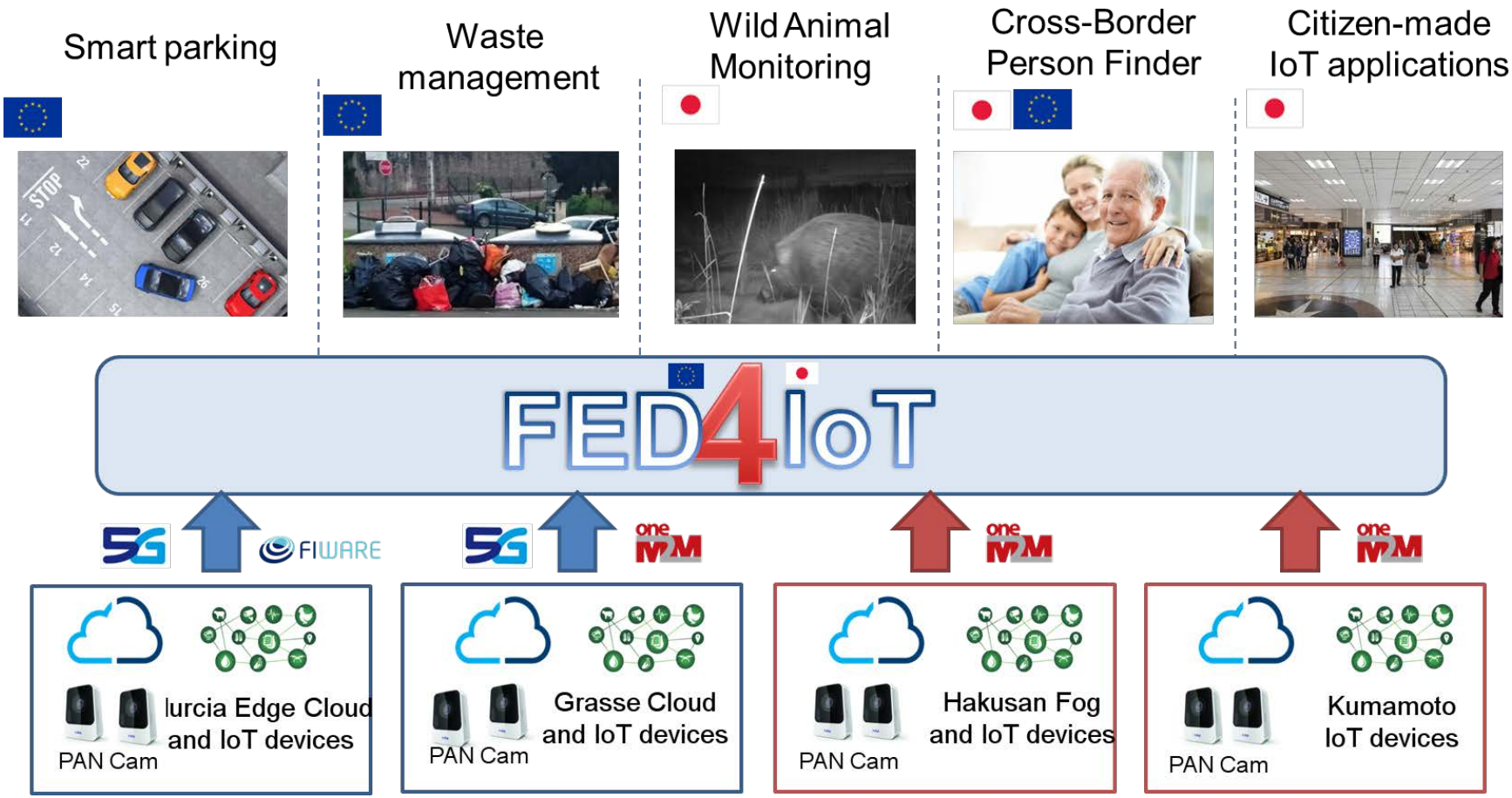
Sample applications



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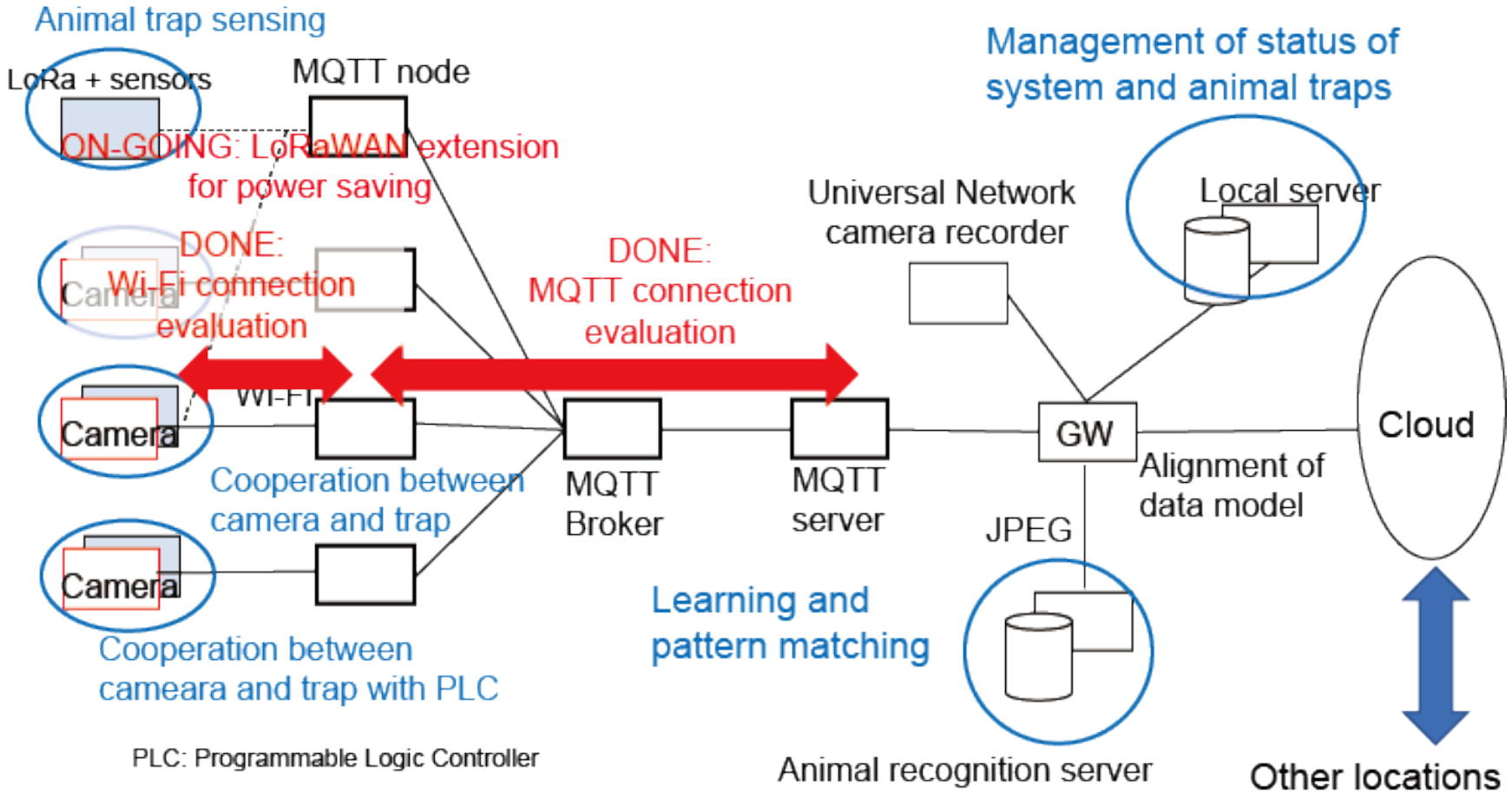
On going EU activities

- IoT Virtualization (CNIT)
  - oneM2M and FiWARE brokers
  - Dockers
- Secure and Semantic Data Federation (OdinS, NEC, EGM, CNIT)
  - NGSI-LD (ETSI ISG CIM)
  - oneM2M base ontologies
- Orchestration (NEC, OdinS)
  - FogFlow, Kubernetes
- Optimization of ICT virtual environment hosting the IoT slice components (NEC), e.g. Unikraft

On going JP activities

Wildlife monitoring (WP2/5,KIT)



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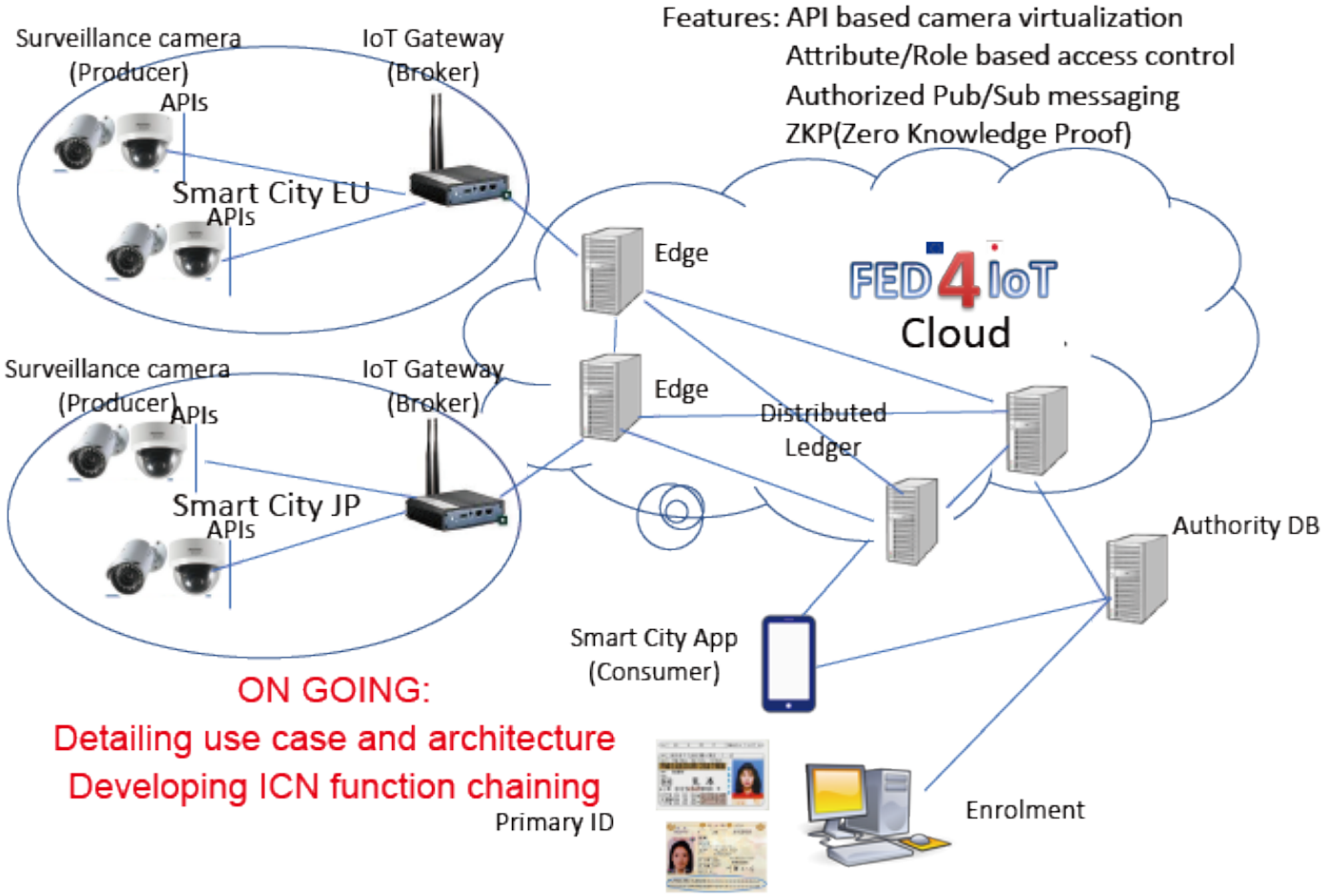
On going JP activities

Cross boarder person finder system (WP2/5, PAN/WAS)



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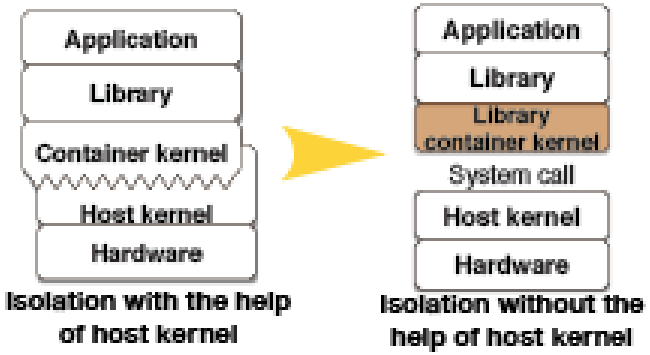
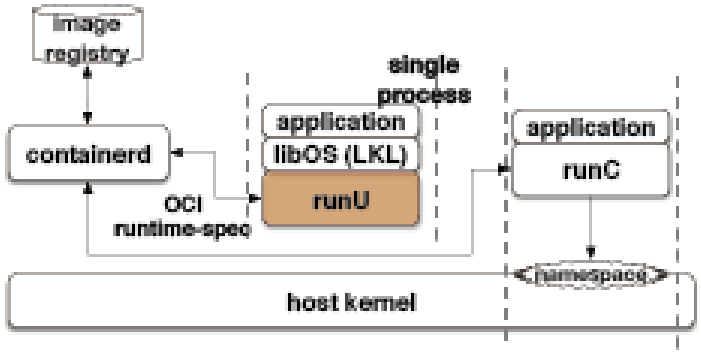
On going JP activities

☐ IoT Device Virtualization (WP3, IIJ) ☐

- Container architecture redesign
- Implementing OCI runtime to invoke Linux kernel library





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Future trends and challenges beyond 2020

- **Fixed network cloud-oriented upgrade** for supporting 5G edges and more
- **Beyond IPv4 best effort** for new cross-border applications demanding guaranteed huge bandwidth (Tbps) and microsecond latency

Remote surgery

Holographic society
(education, health care, communications)

Multi-Sensory App
(Smell, Taste, Touch, …)

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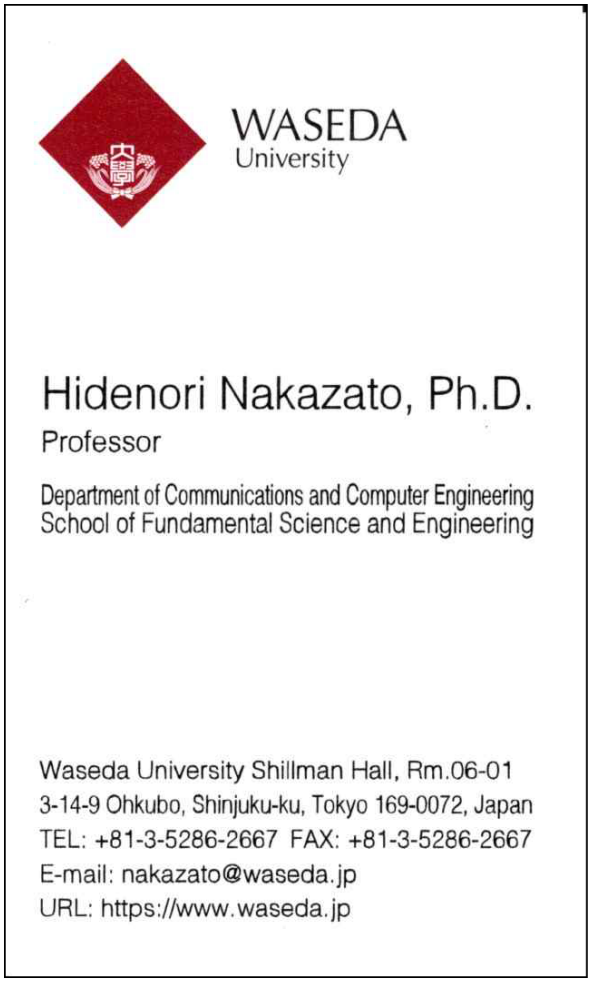
Future trends and challenges beyond 2020

- 3D space navigation systems for flying cars
  - Positioning/Definition of street/FV2X communications system/Routing/Flow control
- Data networking technology replacing IP
  - Minimum requirement on embedded authentication mechanism
- Bio-embedded sensors and their applications for agriculture and fishing industry for productivity and resource conservation

Thank you
Questions?



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