ETSI The Standards People

IoT Conference 2023

Adaptive Streaming of IoT Sensor Data in Mobile Networks

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Introduction

- Austrian research group - ROADMAP 5G @ CUAS
  Carinthia University of Applied Sciences
- Combining network & telecommunication engineering
  with strong focus on software development
- Knowledge of ad-hoc networks
- Technical administrators of a 5G campus network since 2019

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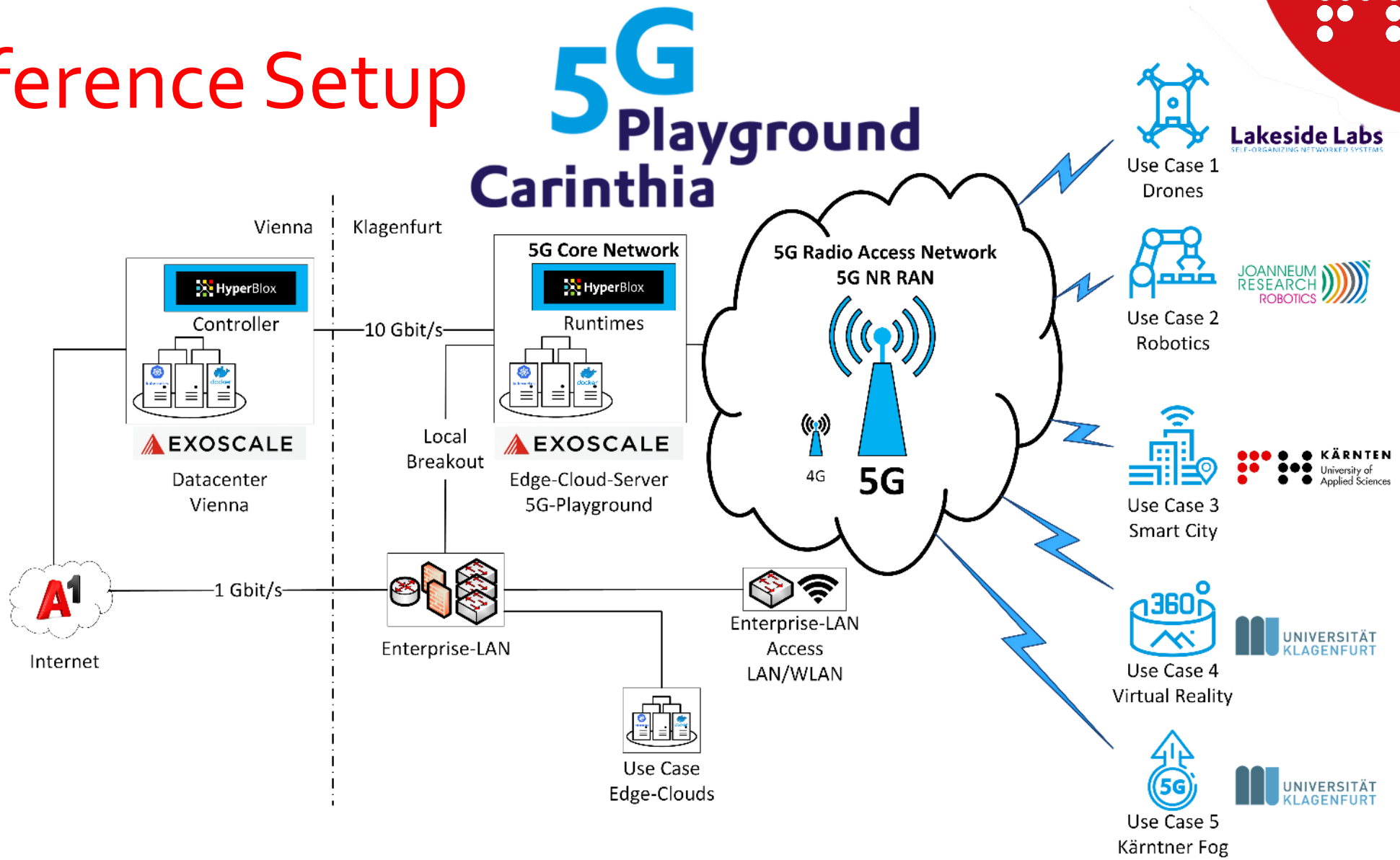
Overview

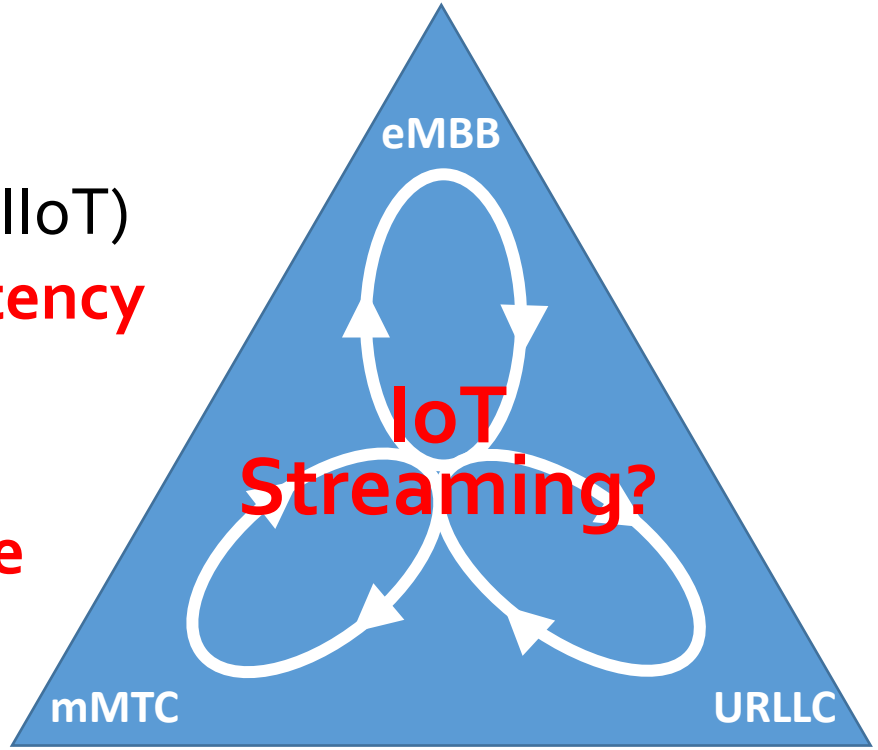
- 5G Playground Carinthia Campus Network
- Streaming of IoT Sensor Data
- Adaptive Streaming Framework (ASF)
- ETSI-MEC Integration
- Example – ASF usage in Smart Cities

Reference Setup



Streaming of IoT Sensor Data

- MQTT vs. RTSP? - Publisher/Subscriber vs. Point-to-Point?
- Google´s dictionary: Streaming is a method of transmitting or receiving data (…) over a computer network
  as a steady, continuous flow
- Strengthening the requirements for control loops (IIoT)
  reduce the delay down to the transport latency
- Optimized offloading
  efficient use of processing power in the computing continuum



Quality Options of IoT Sensor Devices

Sensor capabilities (Sensor dependent)

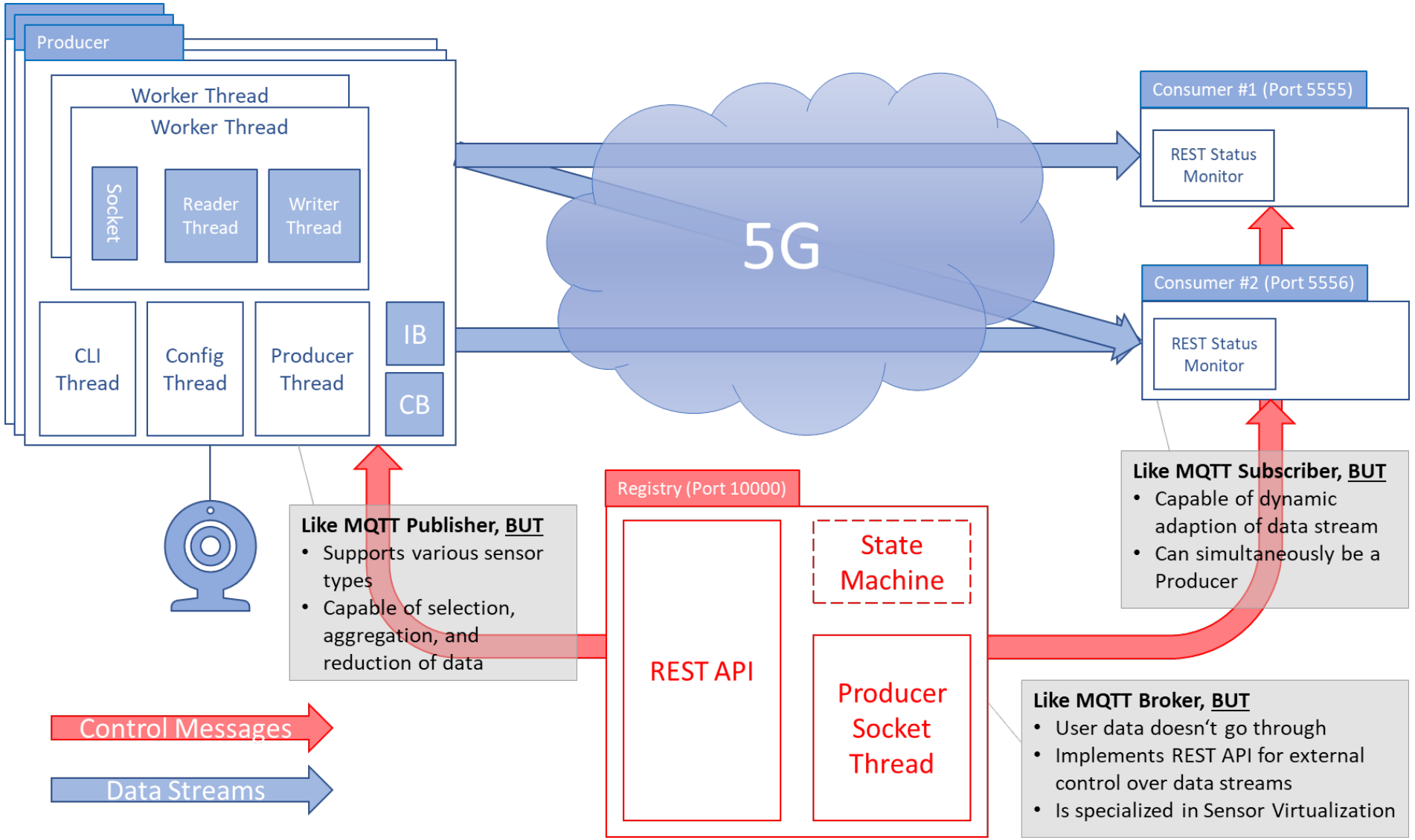
- Sampling rate / Frame rate
- Range / Resolution

Linear and non-linear processing capabilities (Processor dependent) :

- Aggregation (multidimensional, spatial)
- Filtering (temporal)
- Generic computational tasks

- Capabilities are announced as Qualities Sets

Adaptive Streaming Framework (ASF)



ASF Overview (1/2)

Communication:

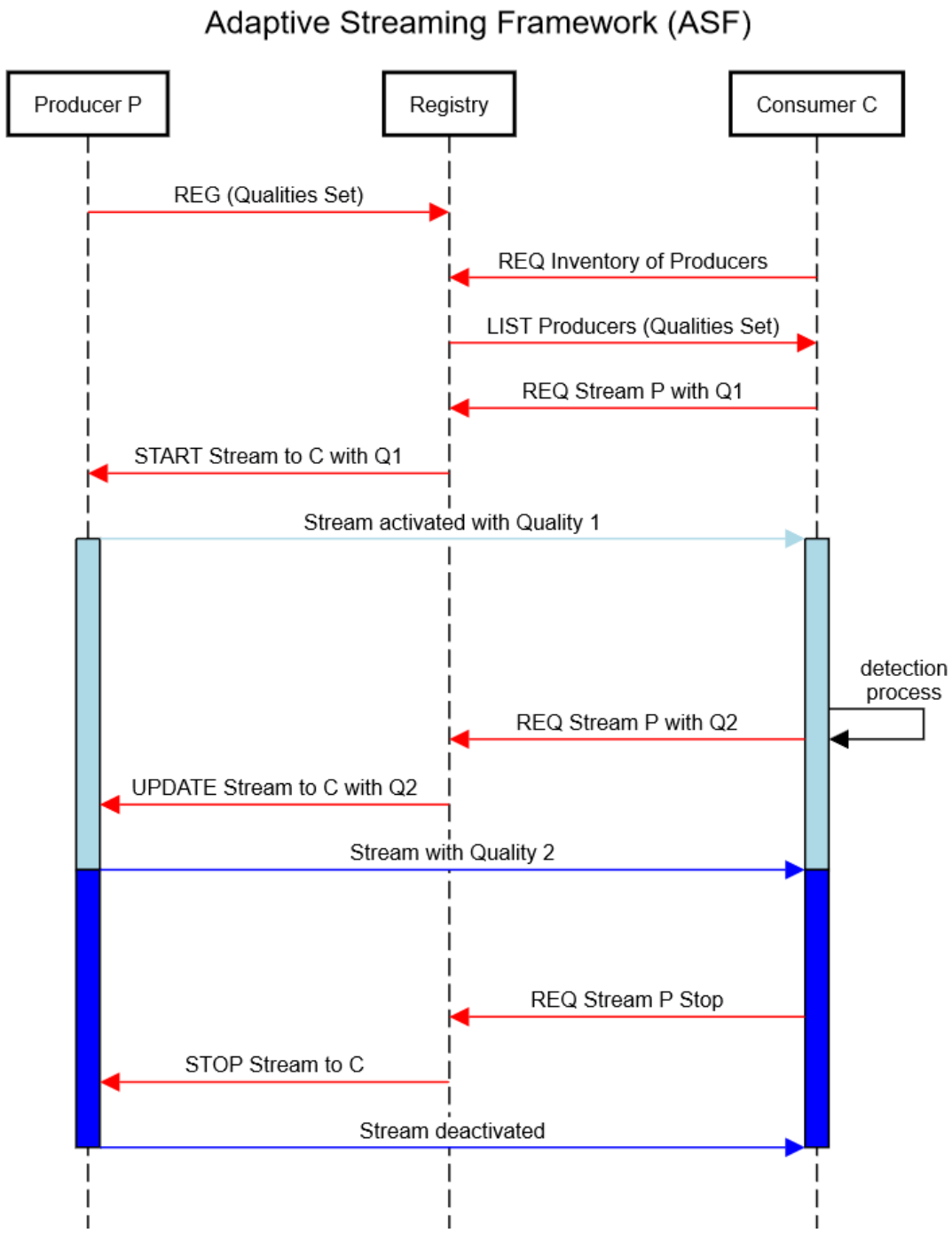
- **Control Messages** via REST
- **Data Streams** via TCP or UDP

Detection process:

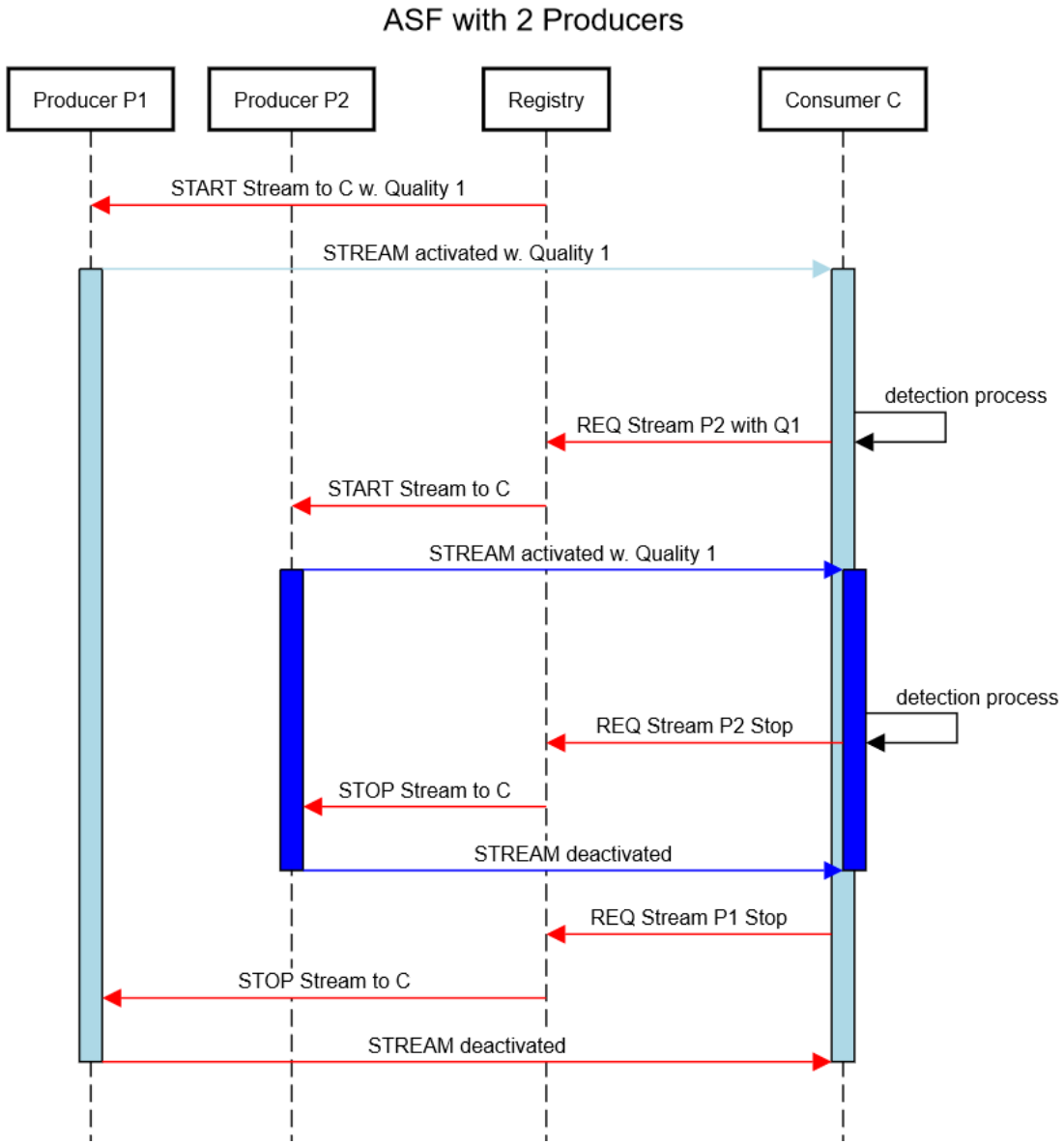
- Demand for other stream quality/ additional stream

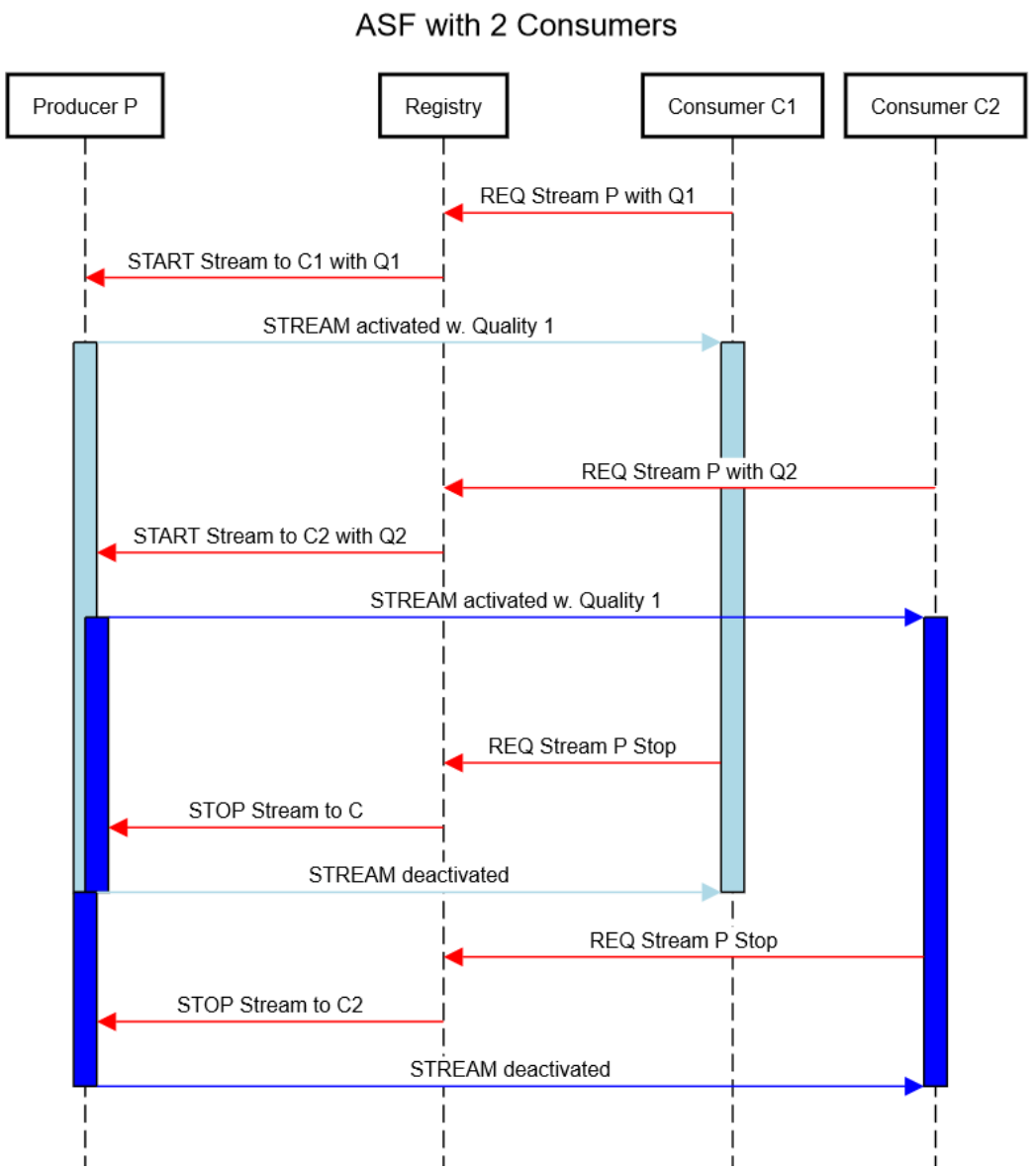
Additional:

- Acknowledgement
- Authentication
- Device management
- Life cycle management
- Request rejection
- Direct interaction

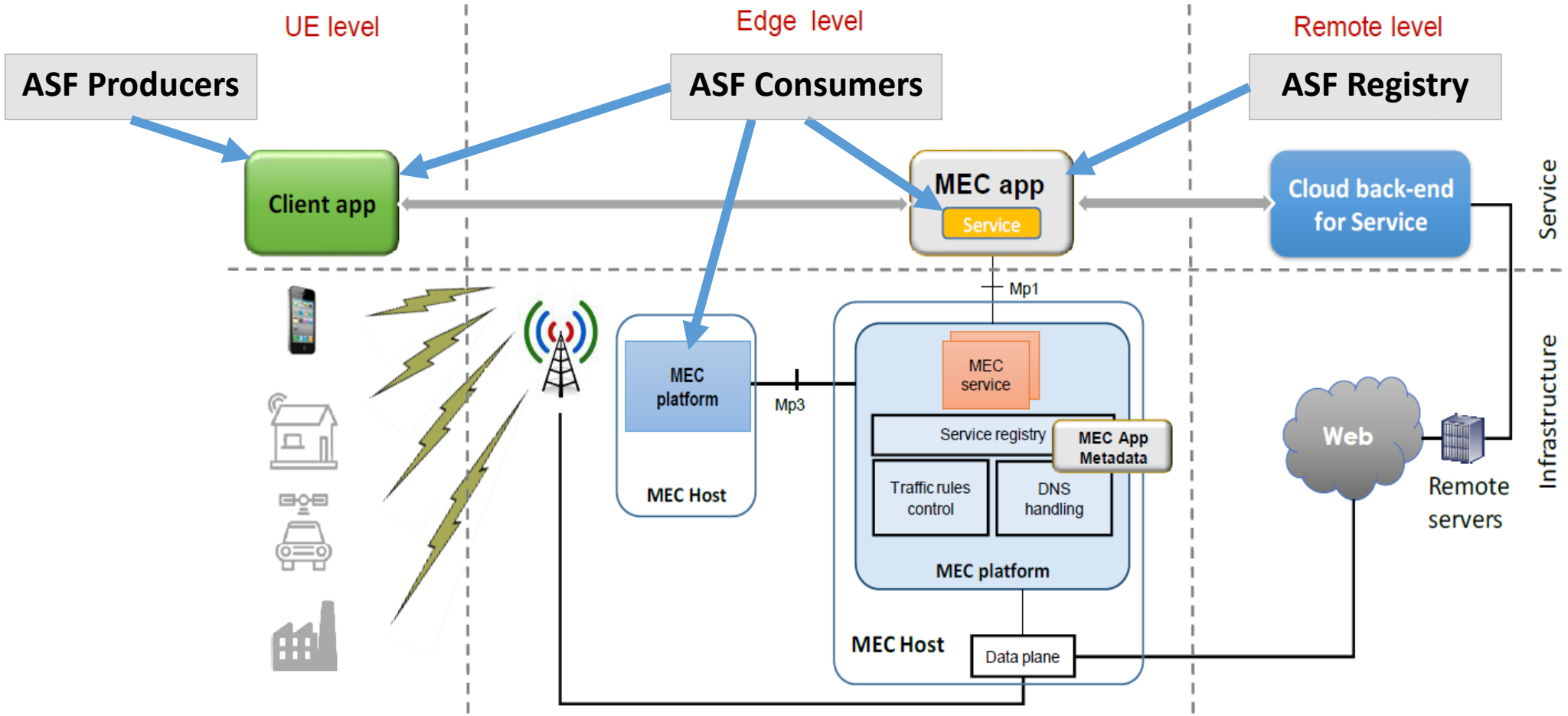


ASF Overview (2/2)





ETSI-MEC Integration

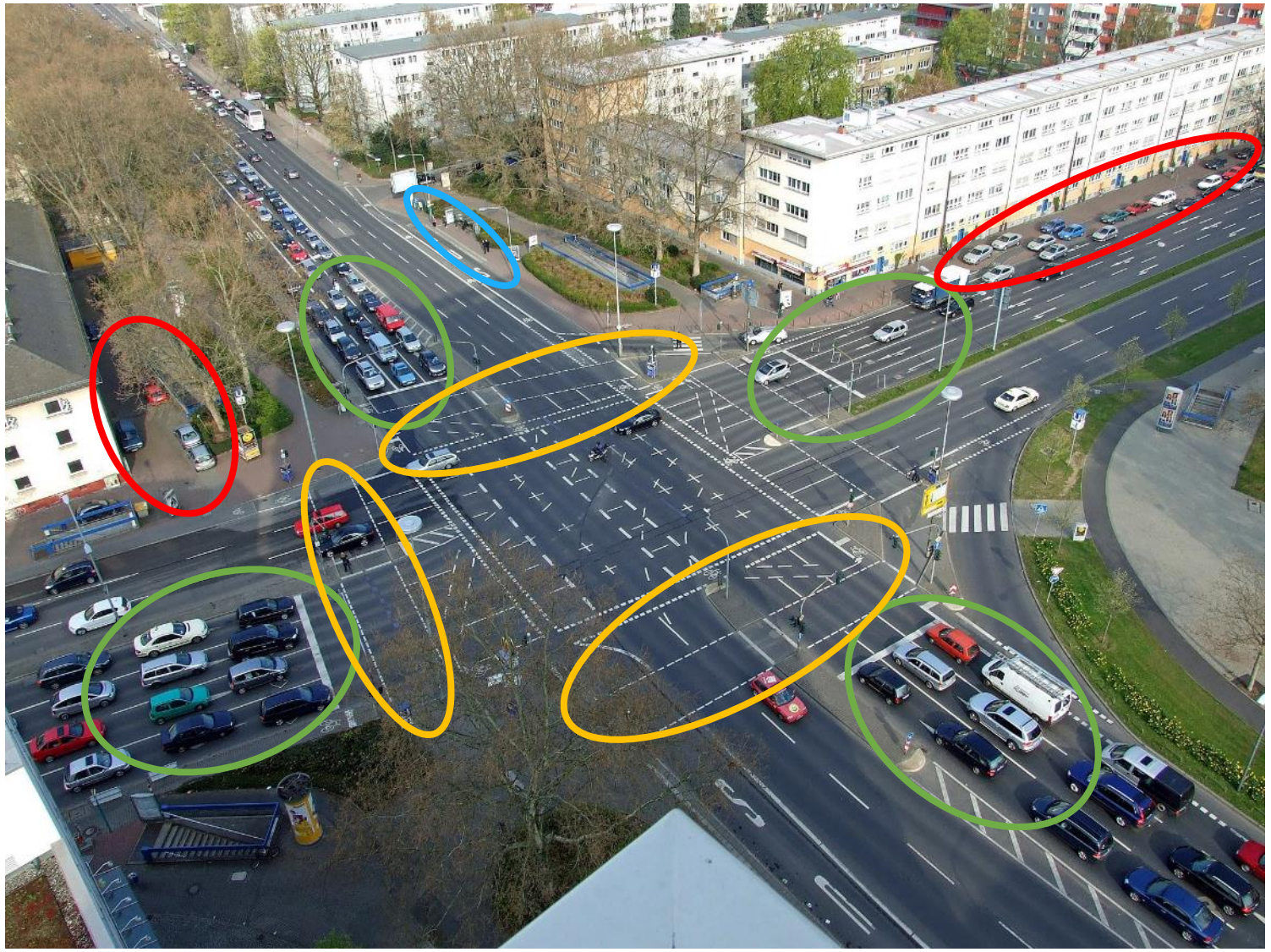


Source: ETSI White Paper No. 20

ASF usage in Smart Cities

- Traffic flow analysis
- Pedestrian monitoring
- Parking space control
- Public transport monitoring

- Detection of
  - Emergency situations
  - Defective components



ROADMAP-5G
R&D Center for 5G Use Case Integrations

5G Playground Carinthia

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Thank you!
Please visit also the demo