



# AUTOMated driving Progressed by the Internet Of Things

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# AUTOmated driving Progressed by the Internet Of Things

- ✓ Enhance driving environment perception with “IoT enabled” sensors
- ✓ Integrate IoT platforms in the vehicles
- ✓ Use Cloud and IoT platforms to
  - ✓ Share IoT sensor data
  - ✓ Create new Mobility Services with fully automated vehicles



# Project information

**5 Large Scale Pilots on IoT** are funded by the European Commission

- AUTOPILOT is the Pilot 5: autonomous vehicle in a connected environment
- Innovation Action - 3 Years: 01/01/2017 – 31/12/2019
- 44 beneficiaries – coordinator: Francois Fischer, ERTICO
- Project costs: €25.425.252 - EU contribution: €19.924.984
- European Commission: DG CONNECT unit E.4 – IoT / H.2 Smart Mobility & living / A.1 Robotics & Artificial Intelligence



The 5 Large scale pilots are cross coordinated and supported by 2 CSA:

- CREATE-IoT ([create-iot.eu](http://create-iot.eu))
- U4IoT ([www.u4iot.eu](http://www.u4iot.eu))



# Key performance indicators

Key Performance Indicator	Project Target
Number of IoT devices integrated	> 1000 IoT devices
Nr of Vehicles with IoT Platforms	> 20 cars
Number of in-car sensor connected to IoT	> 10 different sensors, > 100 sensors
Number of Federated IoT Platforms	> 10 platforms federated
External information sources used	> 100 data streams
Number of Smart Edge Devices	> 50
Number of Virtual Entities	> 1000 entities
Improved Perception/Local Dynamic Map	> 20 IoT data streams used
Number of hours in real traffic situations	> 500 hours
Demonstrations	> 20 demonstrations
Test rides	> 200 test rides
New IoT/AD services	> 7 IoT/AD services developed
Podium Discussion on business models	> 12 podium discussions
End Users tested AUTOPILOT solutions	> 1000 end users
Workshops organized	> 4 workshops organized
Contributions to Standards	> 5 contributions



# Driving modes and services

## Driving Modes



Urban Driving



Highway pilot



Platooning



Automated Valet  
Parking

## Automated driving Services



City chauffeur services for tourists



Real time car sharing



Driverless car rebalancing



HD maps for automated driving vehicles



6<sup>th</sup> sense driving



Dynamic eHorizon

### Brainport, NL

- Automated Valet Parking
- Highway pilot
- Platooning



### Tampere, FI

- Automated Valet Parking
- Urban Driving



### Versailles, FR

- Automated Valet Parking
- Urban Driving
- Platooning



### Daejeon, KR

- Urban Driving



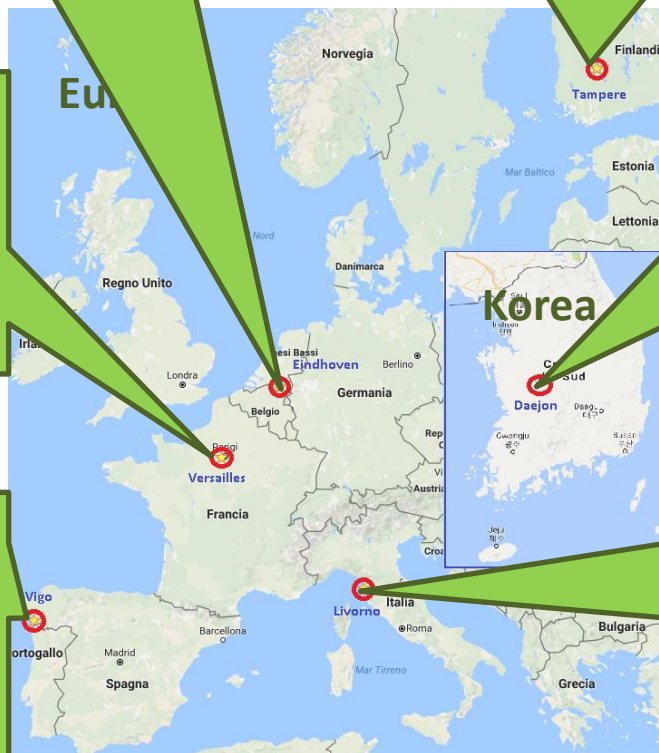
### Vigo, SP

- Urban Driving
- Automated Valet Parking

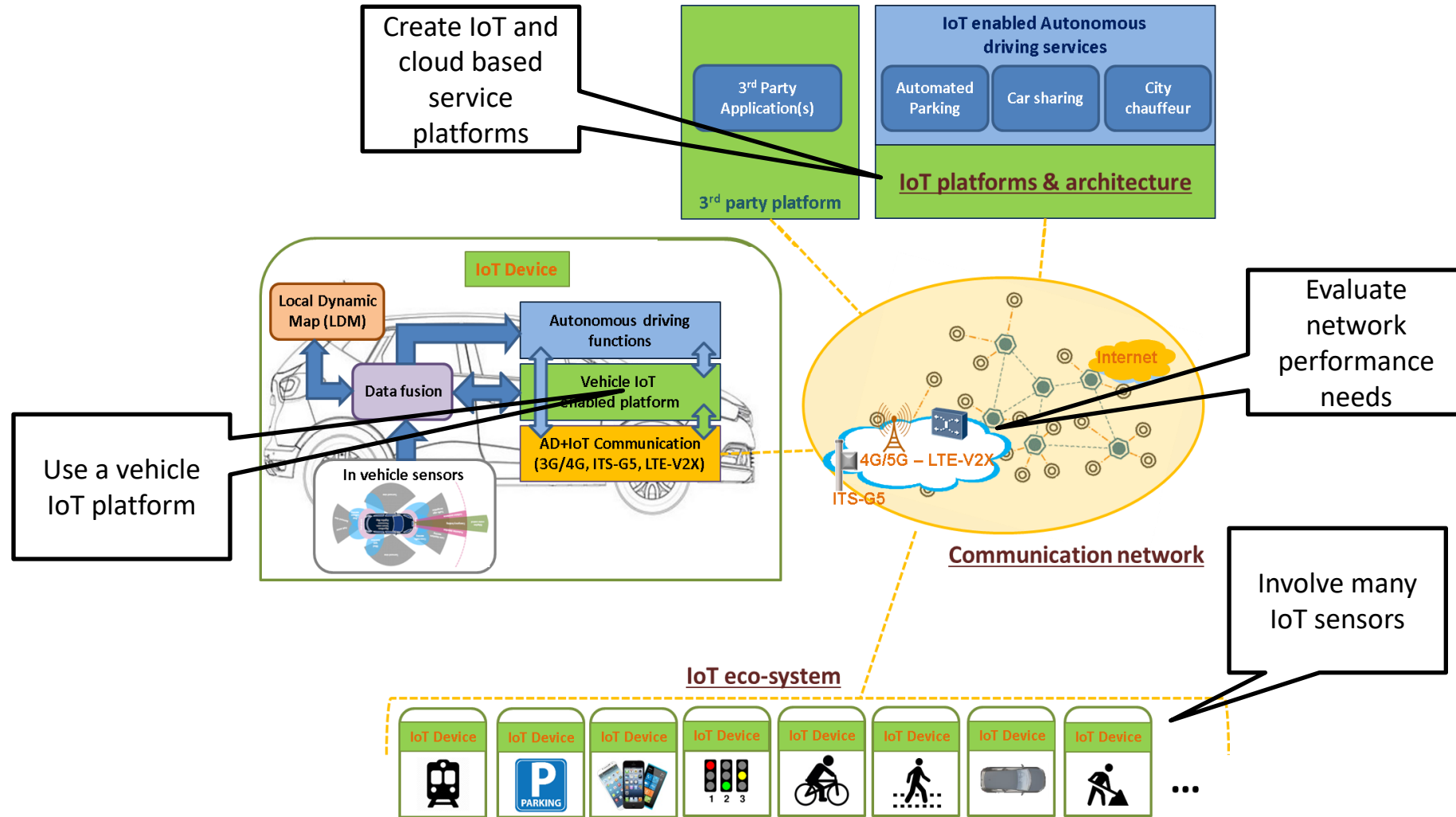


### Livorno, IT

- Urban Driving
- Highway pilot

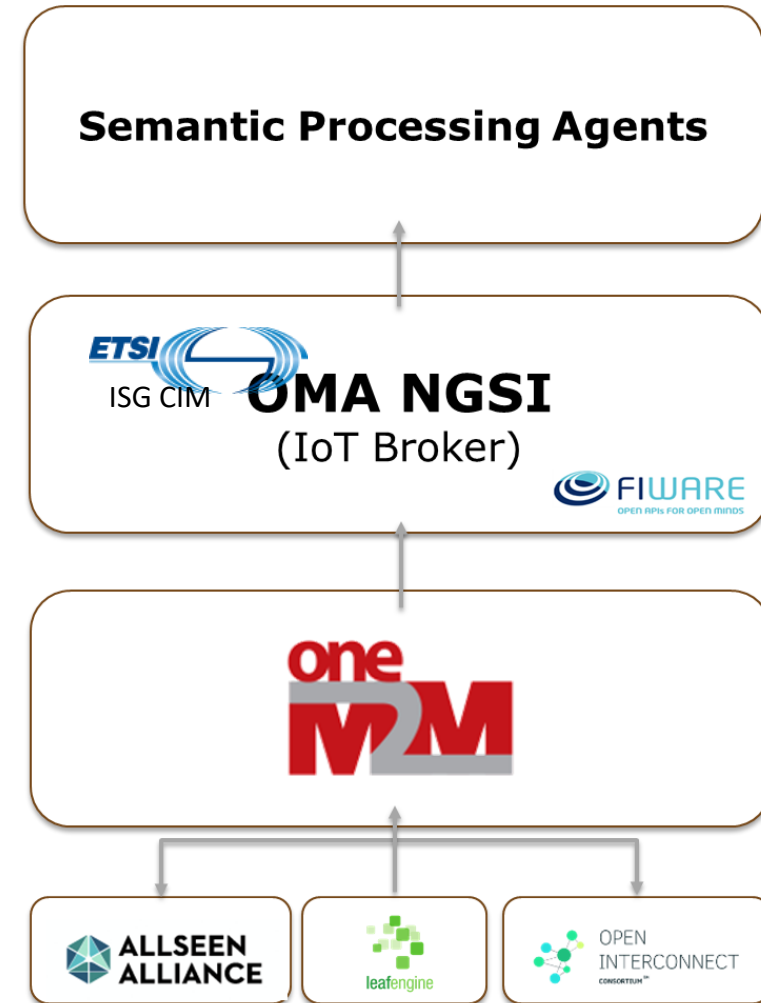


# IoT Overall concept



# IoT Key Features for Autonomous Driving

- OMA NGSI API (100 OASC cities)
- Brokering and Discovery (FIWARE)
- Hierarchical/Mesh-up Federation (NEC Contribution to FIWARE)
- Contextualized pub/sub (ETSI ISG CIM)
- Semantic Interoperability (building on oneM2M)
- Cloud-edge Orchestration
- Edge and network optimization



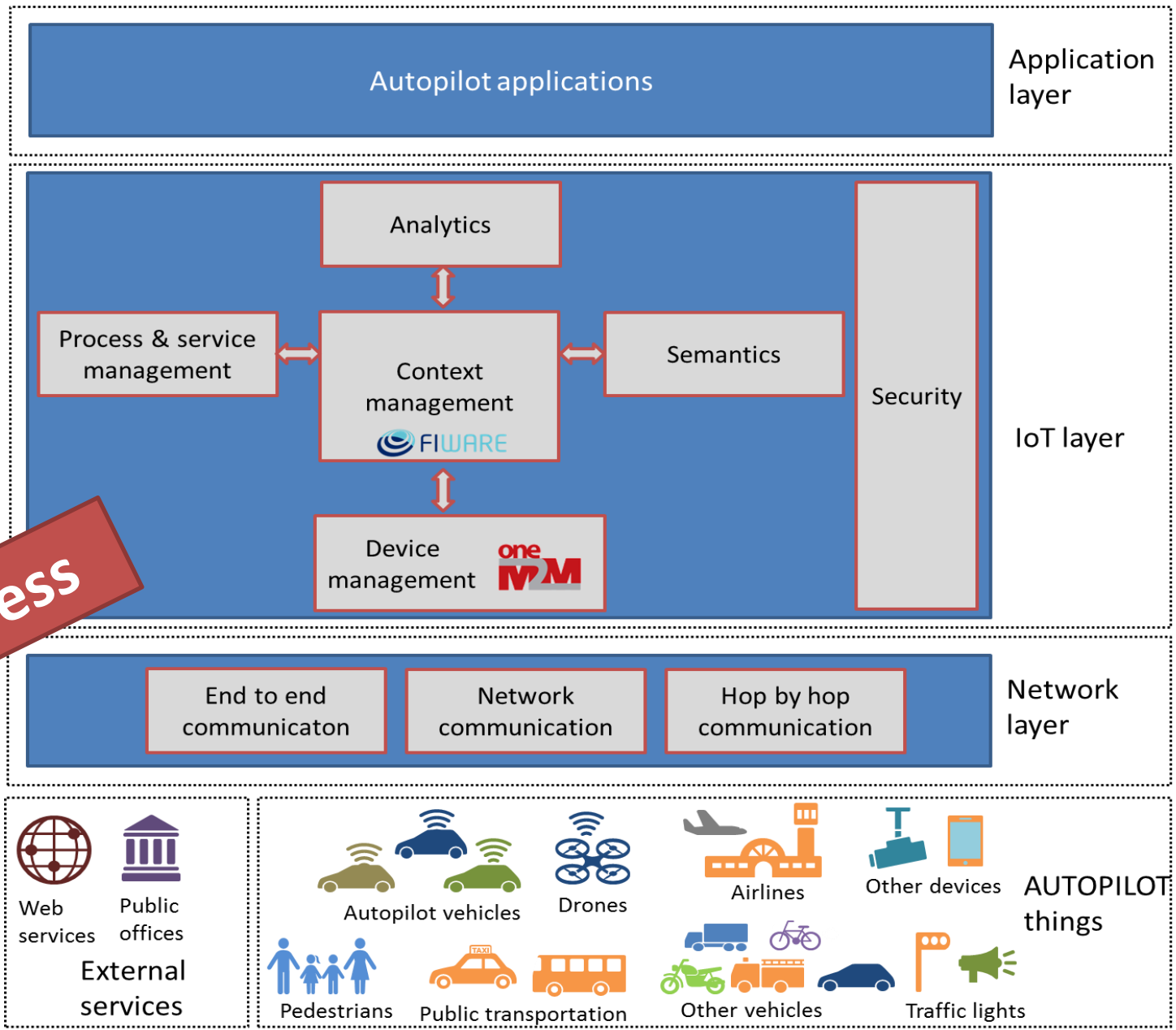
IoT Architecture Emerging from Previous Projects, Trials, Trends



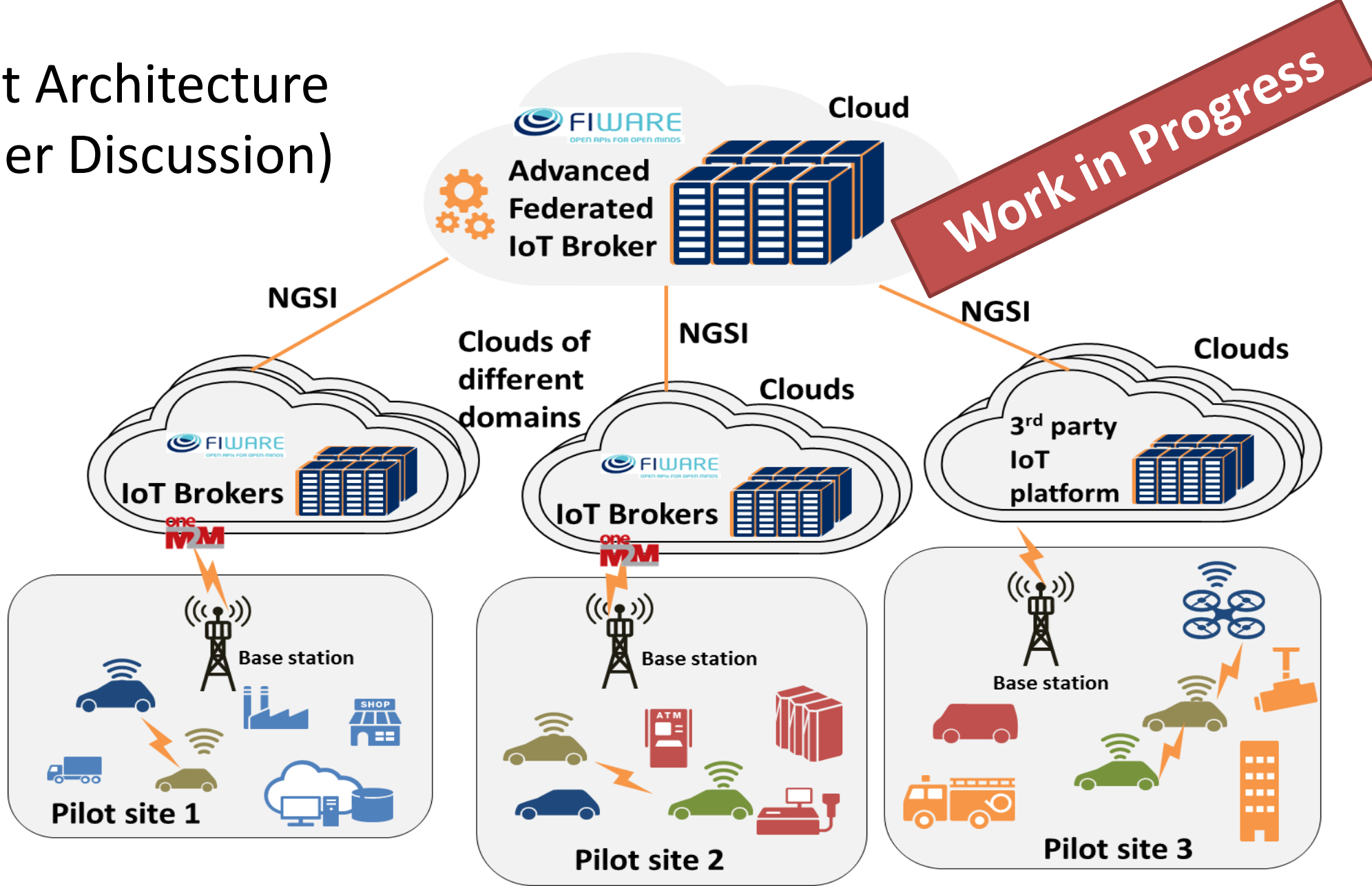


# Autopilot Functional Architecture (Under Discussion)

**Work in Progress**



# Target Architecture (Under Discussion)



# Thank you

**François Fischer**  
**AUTOPILOT project coordinator**



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