



**Peter Van Daele**

*imec*

# Digital around the World

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*20 October 2020*

# Introduction

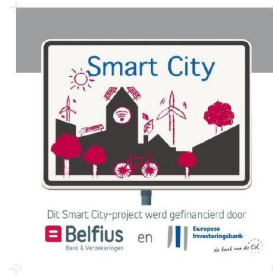
## Our society gets “Digital”

- Everything connected
- Always connected

“Digital” has huge socio-economic impacts

“Digital” is still at early stage

“Digital Society” is on the agenda at all levels of public authority



# Introduction

**“Digital Society” is supported by a wide range of technologies**

- Wide range of technologies (wireless, wired, cloud, Big Data, 5G, IoT, ...)
- Linking & interaction between heterogenous technologies



# Introduction

## To be implemented in a

- Highly competitive environment with
- Rapidly evolving requirements

## Research, Innovation, Development, ...

## Calls for

- Up-to-date testing facilities
- Skilled support



**Too expensive for many players ...**



# Fed4FIRE+



EU H2020 Funded project (2017 – 2021)

has the objective to

- serve the **community** and to
- support **digital transformation**

by

- offering **low threshold** access to
- a **top-quality** Research Infrastructure
- for a **broad spectrum** of activities in the IT domain
- covering a **wide range of technologies**
- and supporting application across **multi-technology** networks



## allowing:

- academia, research groups, SME's, start-ups, industry to
- research, develop, test, valorize, benchmarking,...
- new concepts, new technologies, new products,...
- in a trustable and reproducible manner

1. New system needs to be tested, but not on operational trains!
2. New system must be scalable (is software stable for multiple countries / 10 000 cars?)
3. Network changes (WiFi in stations / 4G on tracks)

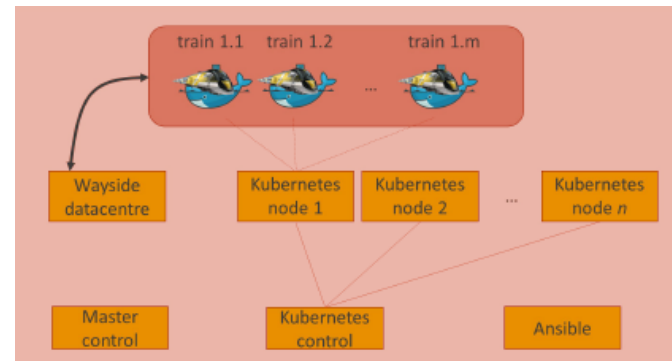
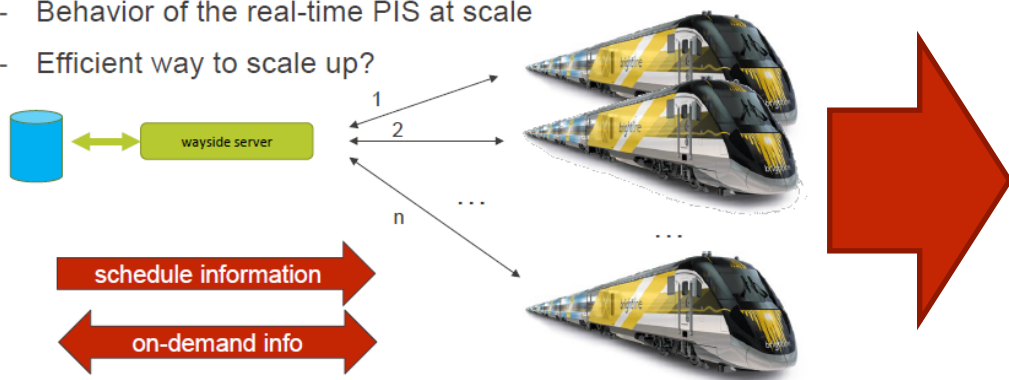


Destination	Due	Status	Platform	Feasibility
BOCKSTAEI	12:55	12:57	40	✗
BOCKSTAEI	12:56	12:57	40	✗
BOCKSTAEI	12:58	12:59	40	✗
LOT STATION	13:01	On time	50	✓

# Problem that Fed4FIRE+ solved

Scaling up to n systems in a single/multiple countries – how does the software behave ?

- Behavior of the real-time PIS at scale
- Efficient way to scale up?

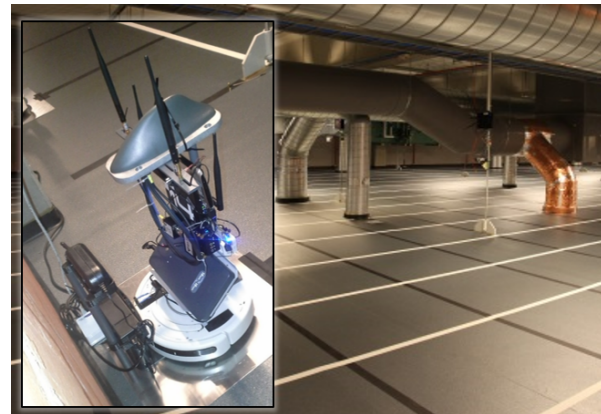
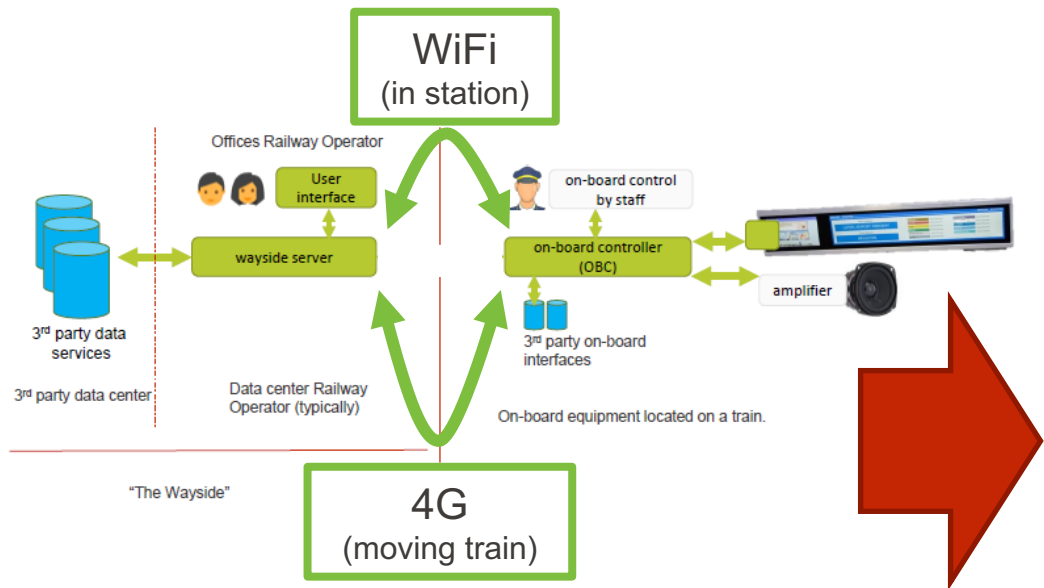


Virtual Wall testbed allows emulation and scalability testing in near-real life / realistic environment



# Problem that Fed4FIRE+ solved

Wireless handover between wifi (station) and 4G (moving)



Reproducible experimentation on w-iLab testbed with mobile robots

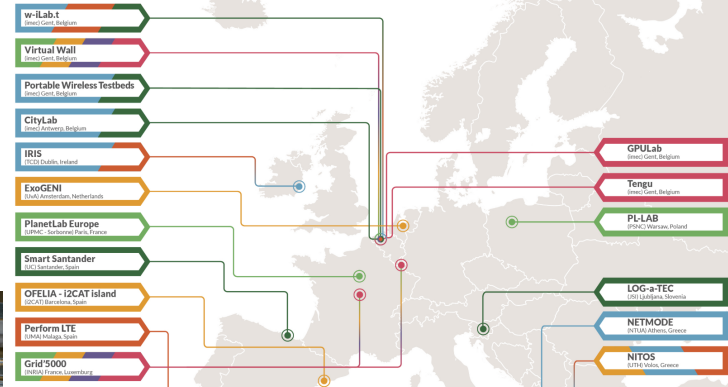


# Fed4FIRE+ - Expertise



## Based on FP7 Fed4FIRE

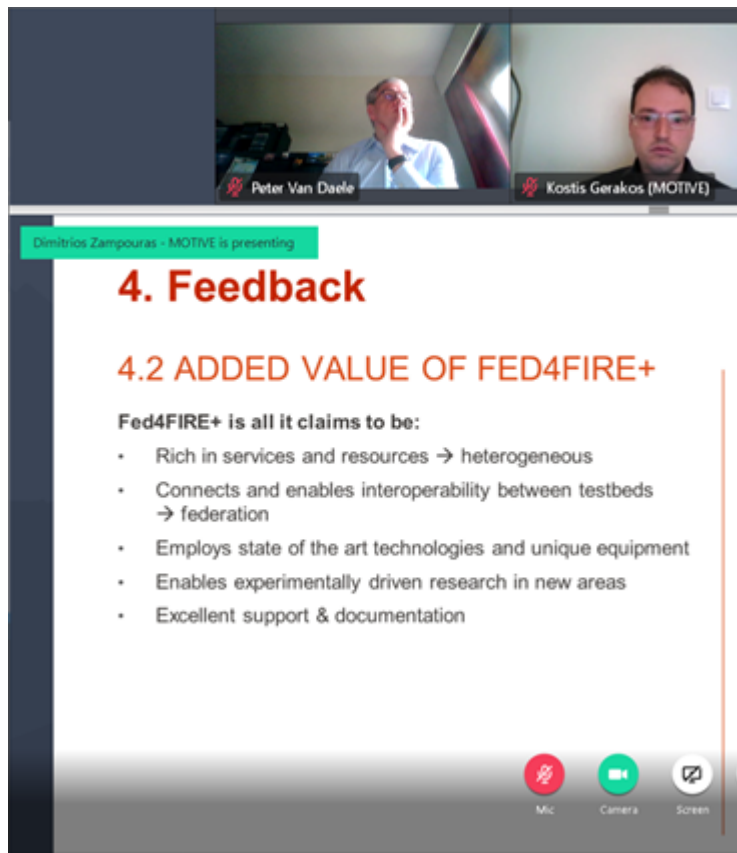
- IMEC took 4 (FP7) + 5 (H2020) years role as project coordinator
- offering the largest federation worldwide of Next Generation Internet (NGI) testbeds
- providing open, accessible and reliable facilities
- supporting a wide variety of different research and innovation communities



# Fed4FIRE+ is used for

- Testing of concept / Upscaling of product / tool
- Move from emulation- and lab-based evaluation to field testing
- Near-real life / realistic environment testing
- Validation / quality-label / creating trust / demo to customers
- Comparison / benchmarking of equipment / techniques
- Access to real devices
- Vender-neutral
- Show / exhibit expertise / visibility





Zoom meeting interface showing two participants: Peter Van Daele and Kostis Gerakos (MOTIVE). A presentation slide titled "4. Feedback" is displayed, featuring a sub-section "4.2 ADDED VALUE OF FED4FIRE+" and a bulleted list of Fed4FIRE+ features.

**4. Feedback**

**4.2 ADDED VALUE OF FED4FIRE+**

Fed4FIRE+ is all it claims to be:

- Rich in services and resources → heterogeneous
- Connects and enables interoperability between testbeds → federation
- Employs state of the art technologies and unique equipment
- Enables experimentally driven research in new areas
- Excellent support & documentation

Zoom controls at the bottom: Mic, Camera, Screen.

**We are proud  
on the comments  
we receive from  
our users !!**