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SODA:
6TiSCH Open Data Action

FEC4

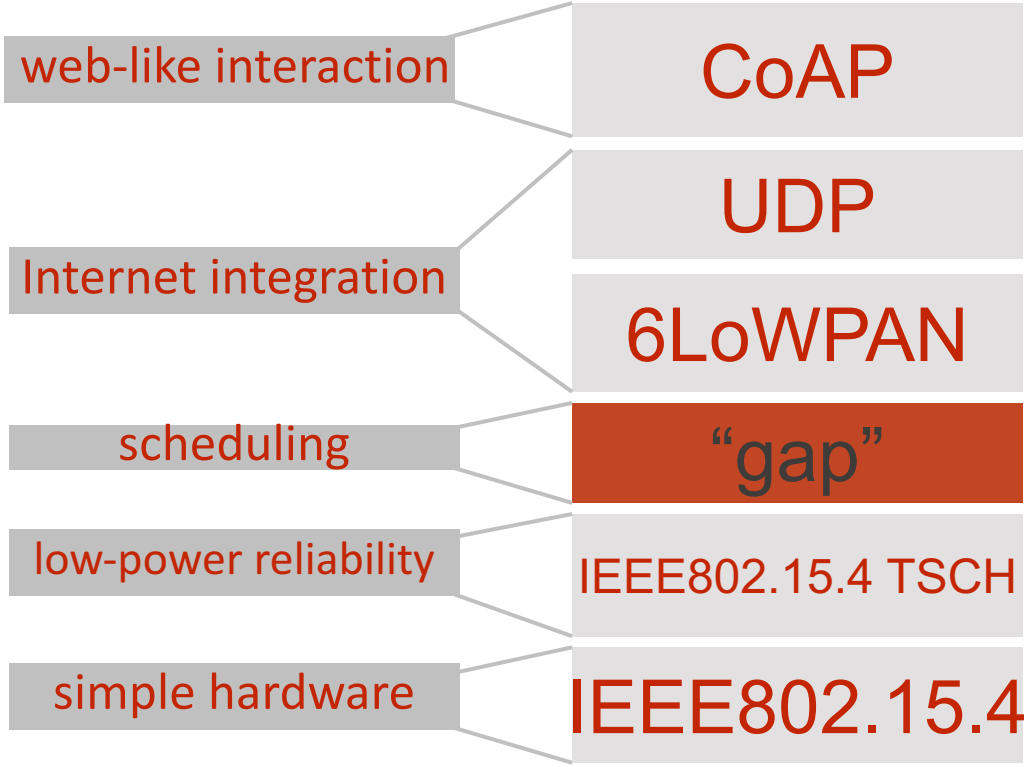
Bruges, 09/10/2018

SODA

6TISCH OPEN DATA ACTION

6TiSCH
A cornerstone technology of the Internet of Things

- IPv6 over Time-slotted Channel Hopping
- Scheduled communication
- Existing deployments of WirelessHart, ISA100.11a
- Wire-like reliability, deterministic latency, bounded duty cycle



About IoT performance evaluation in general

- Vast majority of academic papers evaluate incremental optimizations
- The evaluation methodology varies significantly
- Testbeds are there, everybody uses them differently!
- Industry lacks an unbiased performance benchmark of different IoT technologies

Standardizing how IoT networking technologies are evaluated:

IoT BENCH

iotbench.ethz.ch

18 institutions involved

UC Berkeley, ETH Zurich, RISE SICS, Inria, …

6TiSCH

ODA

6TiSCH OPEN DATA ACTION

SODA

6TiSCH OPEN DATA ACTION

Open Call 3
Large Experiment

UCG

FED4FIRE

www.soda.ucg.ac.me

- Automating 6TiSCH benchmarking
- Unbiased 6TiSCH benchmark needed
  - industry
  - standards bodies
  - academic community

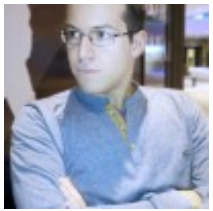
Testbeds:

FIT IOT-LAB

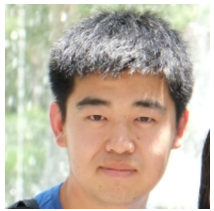
w-iLAB.t

Team at University of Montenegro



Research Associates

Standardizing a “Test Scenario”

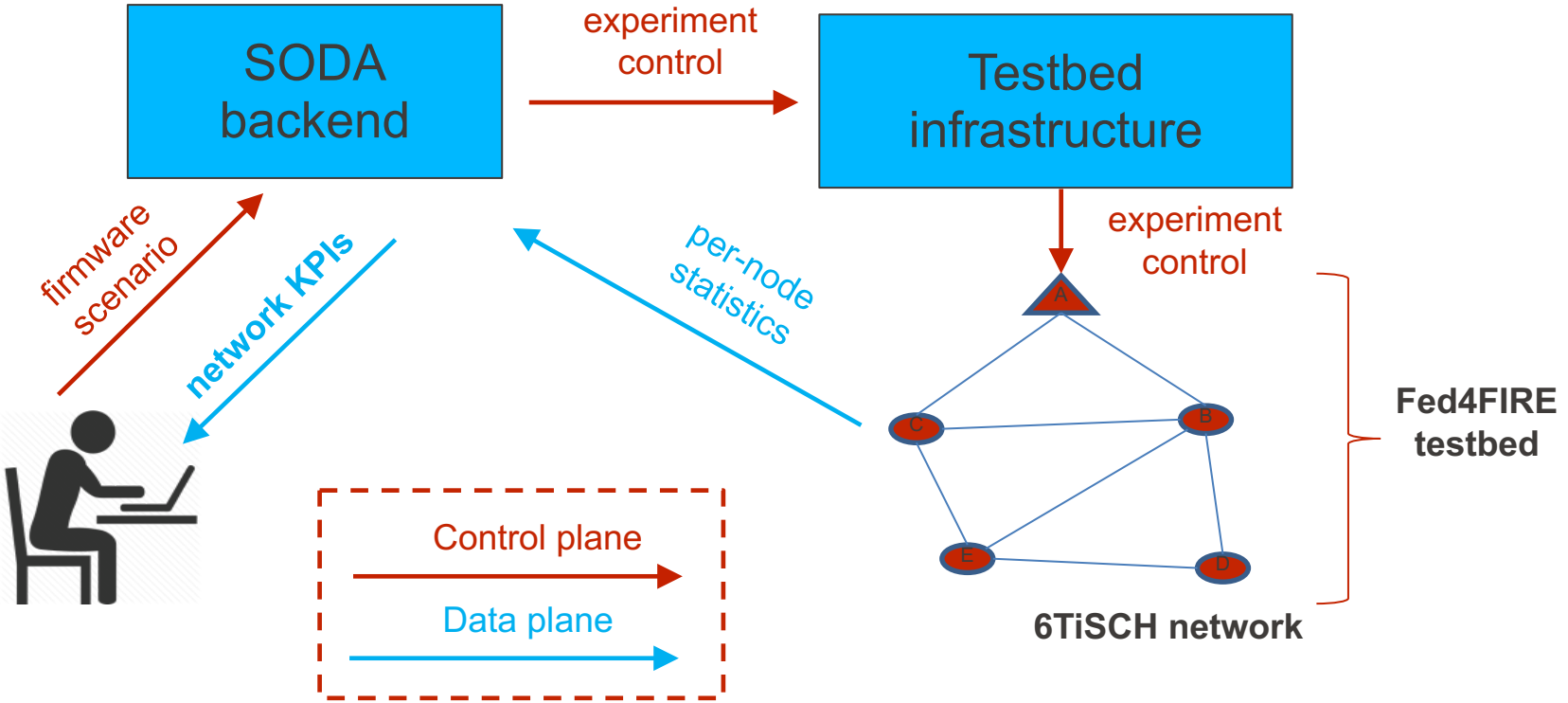
Parameter
Specific testbed nodes
Coverage requirements (number of hops)
Traffic pattern and load
Interference pattern and load
?

Challenges

- Industry relevant
- Future proof
- Community consensus

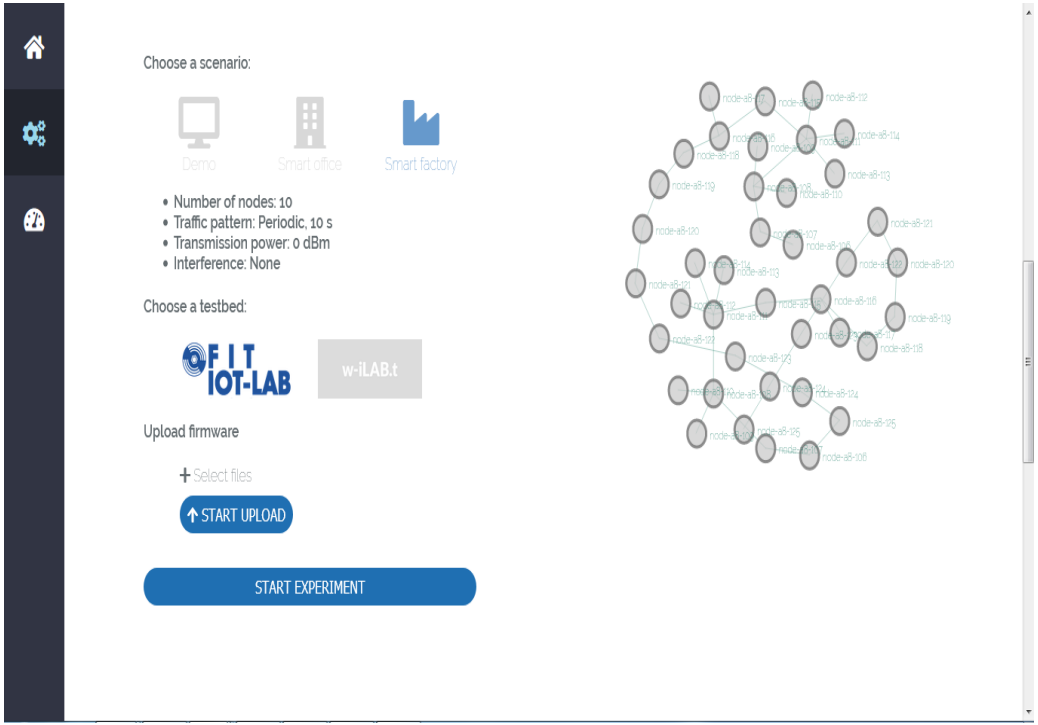
w-iLab.t

6TiSCH Benchmarking Platform



A First Prototype is Available!

- Complete workflow automated on IoT-lab Saclay
- Supports OpenWSN firmware
- Real-time metric monitoring



What we achieved so far…

Done

- Prototype, come see the demo!
- Project website: www.soda.ucg.ac.me
- Integration with OpenWSN software for statistics collection and logging
- Extensive dissemination as part of IoT Benchmarking Initiative

Work in progress

- Measuring and logging new metrics
- Definition of industry-relevant scenarios
- Support for **w-iLab.t**
- Making the SODA platform production-ready

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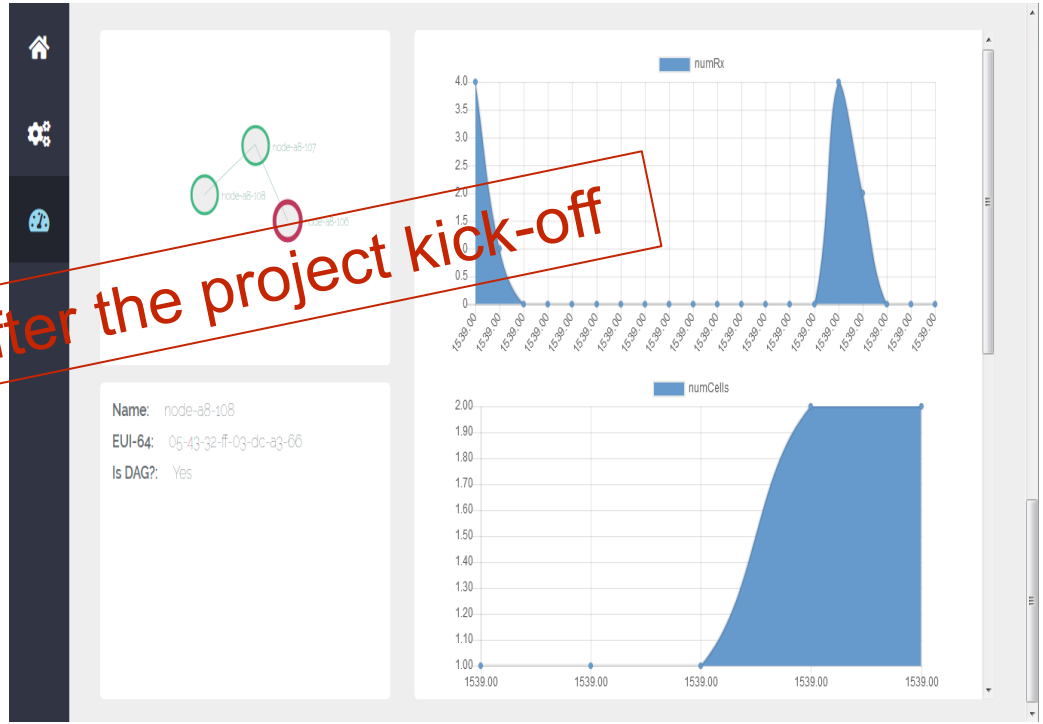

One month after the project kick-off

(Expected) Impact

iotbench.ethz.ch

Academic community

- Raising the bar in the quality of experimental data, published works
- Identifying performance bottlenecks
- New research proposal

Industry

- 6TiSCH standardization is nearing completion
- Industry stakeholders are approaching the group for performance results
- Multi-million dollar decision making!

IETF®

Standard bodies

- To evolve the next generation of standards, we need an unbiased benchmark

(Expected) Feedback

jFed

IoT-LAB REST API 0.1.0 OAS3

REST API documentation of IoT-LAB testbed.

- How can we make this easier?
- Bugs?
- New features…

We are building a production-ready tool that **depends** on Fed4FIRE resources

- How fit are the existing deployments to our ideal scenarios?
- Can we make them better?
- Buggy nodes


Co-funded by the European Union


Co-funded by the Swiss Confederation

This project has received funding from the European Union's Horizon 2020 research and innovation programme, which is co-funded by the European Commission and the Swiss State Secretariat for Education, Research and Innovation, under grant agreement No 732638.

WWW.FED4FIRE.EU