



Wireless & mobile tutorial

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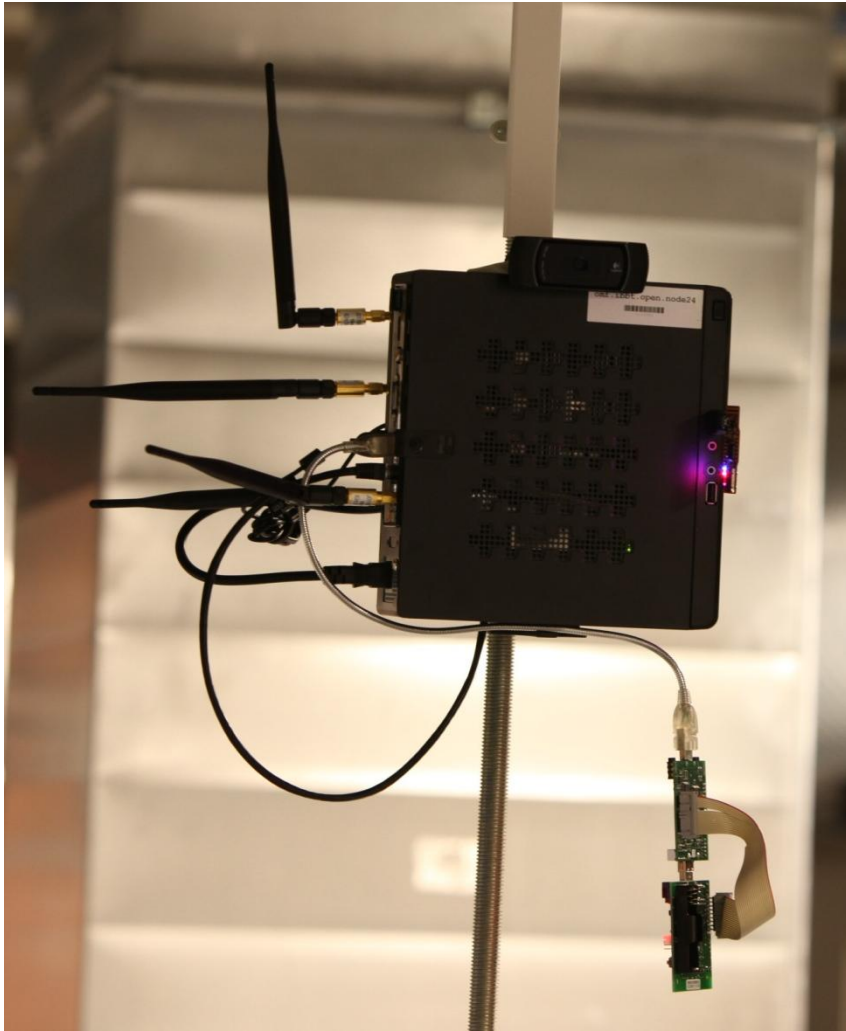
iMinds testbeds

- Wired
 - Virtual Wall 1 (Emulab)
 - Virtual Wall 2 (Emulab)
- Wireless
 - W-iLab.t Office (Motelab-based)
 - W-iLab.t Zwijnaarde (Emulab)

w-iLab.t Zwijnaarde



Hardware

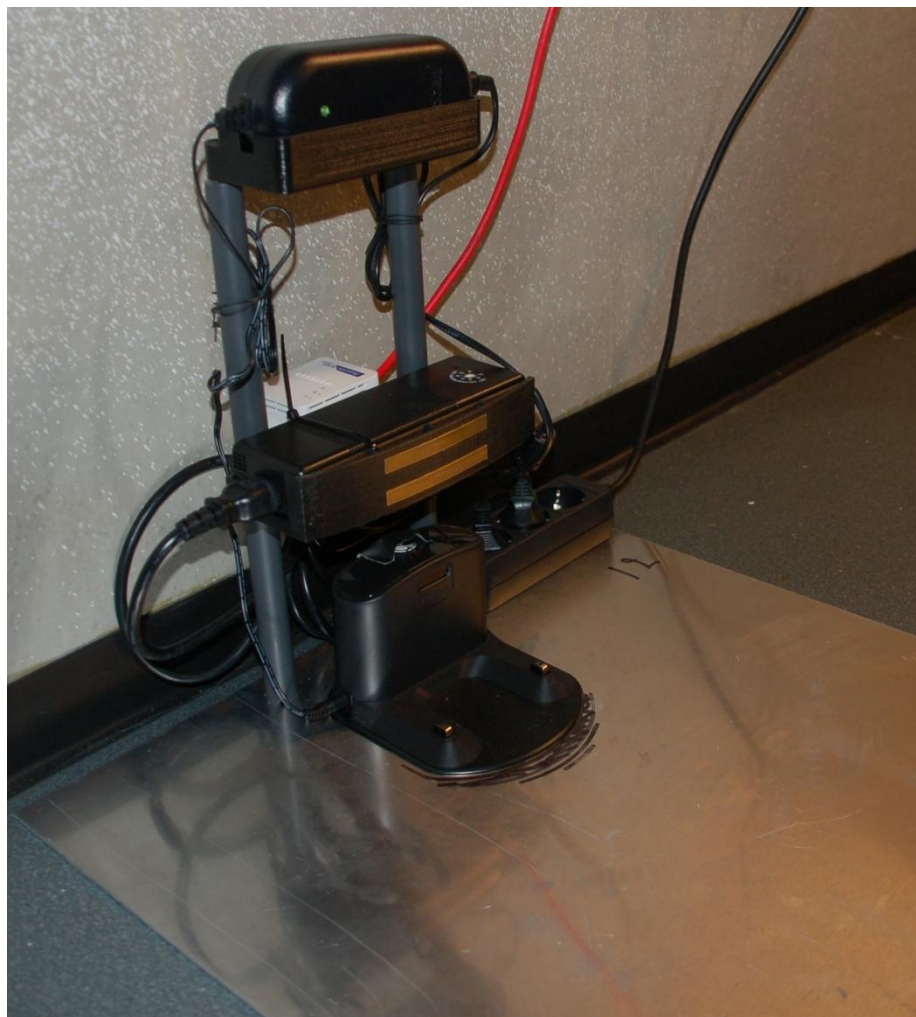


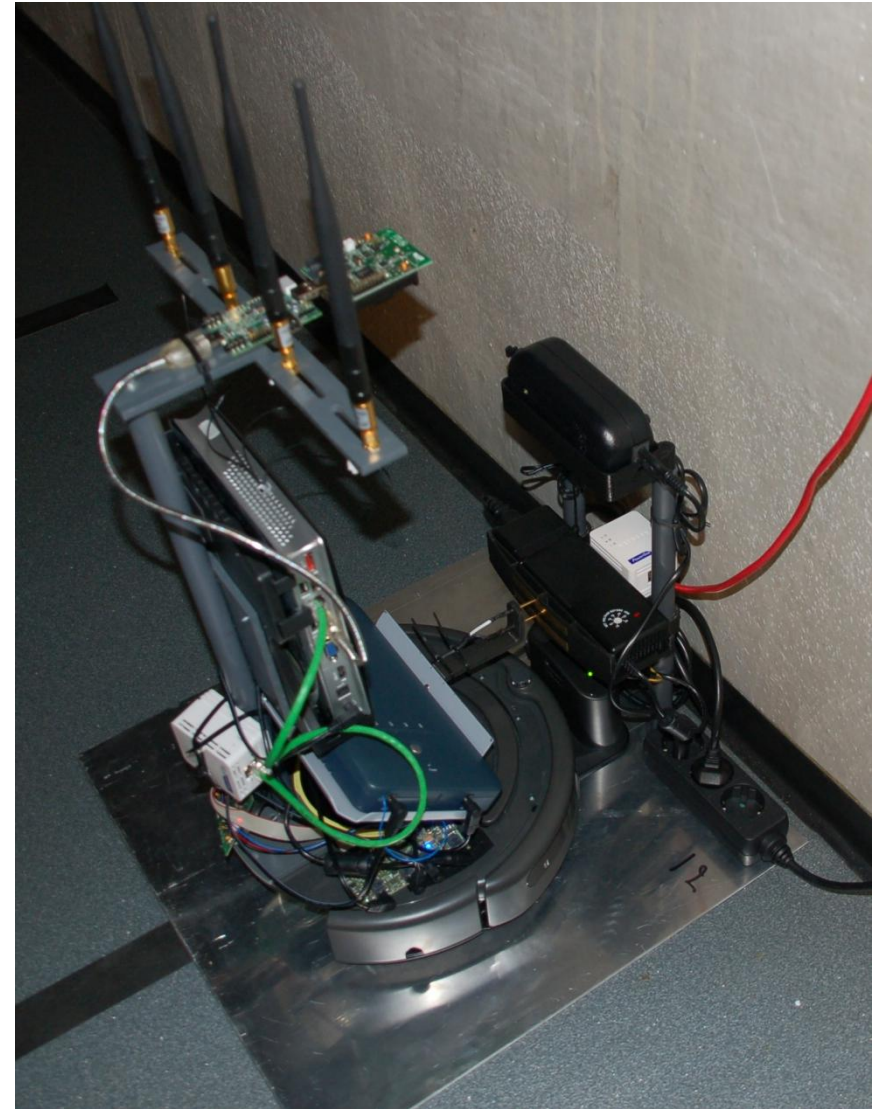
- Embedded PC (Zotac)
 - 2x WiFi 802.11 a/b/g/n(ac)
 - 802.15.4 sensor node
 - Bluetooth 3.0 EDR



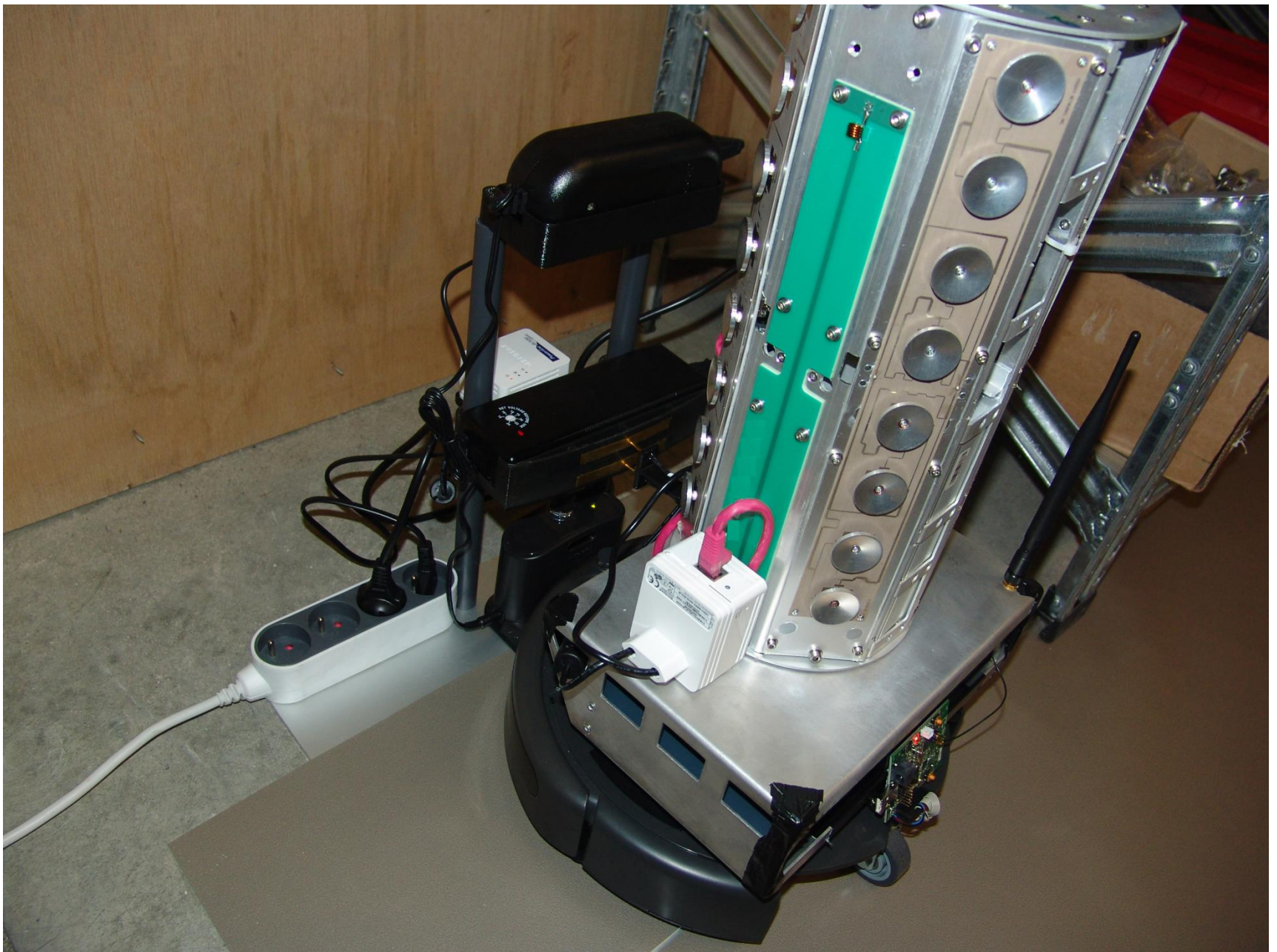












Tutorial

Access Point



iPerf server

Client



iPerf client

Mobile node control

The screenshot displays the Robot Dashboard interface for mobile node control. The top bar includes a menu with options like 'More', 'Save', 'Load', 'Options', 'Live', 'Stop', 'EMI', 'Initialize', 'Play', 'Play all', and 'Action'. Below this, a status bar shows 'World coordinates: [1480,70] Zoom: 2x. Snapping to: 10'. The main workspace features a grid with three nodes: '1: docked' (blue circle), 'fisheye4' (black circle), and '9: docked' (yellow circle). Each node displays its coordinates and status. A '7' label is on the left, and an '8' label is on the right. A 'fisheye5' node is also visible on the right. The bottom left corner has a 'Live info & actions' panel with icons for location, tail, limit, and refresh. The bottom right corner shows a video feed from 'axis2' with a 'Focus' button and a 'follow' button. The interface is overlaid with a large, semi-transparent grid and a large, semi-transparent pink circle.

Online 1 2 3 4 5 6 7 8 9 10 11 12 13 14 n/a

World coordinates: [1480,70] Zoom: 2x. Snapping to: 10

New Scene

Scene 1

1: docked
[1700,100] -80°
bot: 100% @robotap1 @14:45:35
LPE v- 34.0.2014-07-10:0

fisheye4
10.11.21.54

9: docked
[1500,100] -80°
bot: 99% @robotap1 @14:45:35
LPE v- 34.0.2014-07-10:0

7

8

fisheye5
10.11.21.55

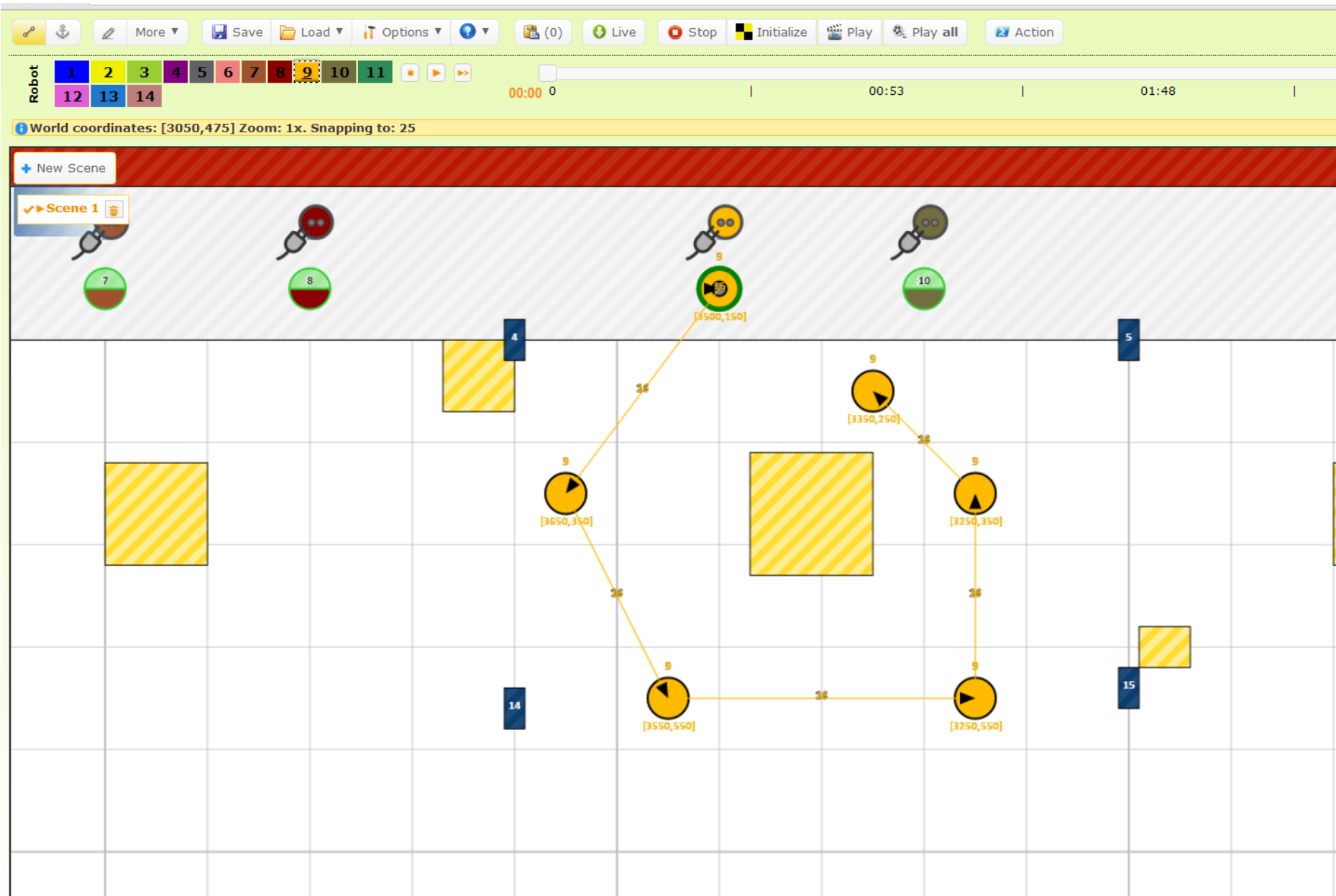
Live info & actions:

Location Tail: 1 Limit to: 50 datapoints Refresh Safe Return Autodock after Clear guides

Feed from: axis2. 04:19 remaining. (Renew)
Wilab2 Control #2 2014-07-07 14:45:35

Focus 1 follow

© [Robot Dashboard, RobotControl: Vincent Sercu | Comm: Robot Interface - LPE: Bart Jooris]



© [Robot Dashboard, RobotControl: Vincent Sercu | Comms, Robot Interface + LPE: Bart Jooris]

Tutorial outline

- Part 1 :
 - Manual setup of AP/Client
 - Manual start of iPerf streams
 - Manually operate the robot

- Part 2 :
 - Automated experimentation using Labwiki
 - OMF
 - Setup of AP/Client + start of iPerf streams
 - OML
 - collection of measurement data

Part 1: Manual experimentation

Tutorial outline

- Swap in 3 nodes with jFed
 - 2 fixed / 1 mobile (see table)
- Set up wireless AP on fixed node
- Connect to AP from mobile node
- Start iPerf stream
- Move the mobile node
 - Only SSH connection when docked!

Step-by-step (see wiki)

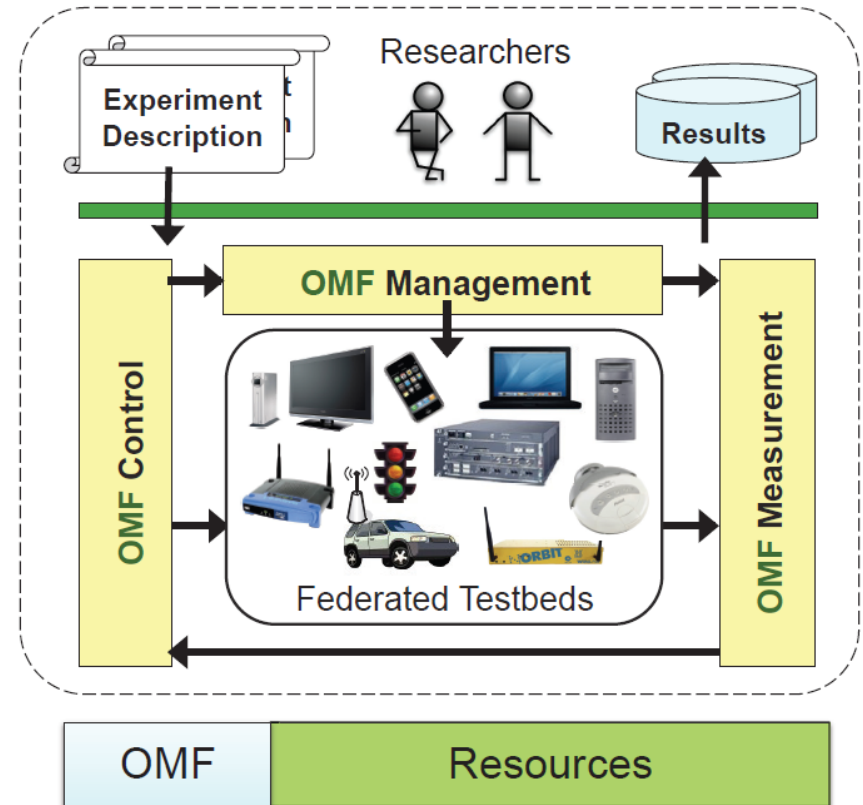
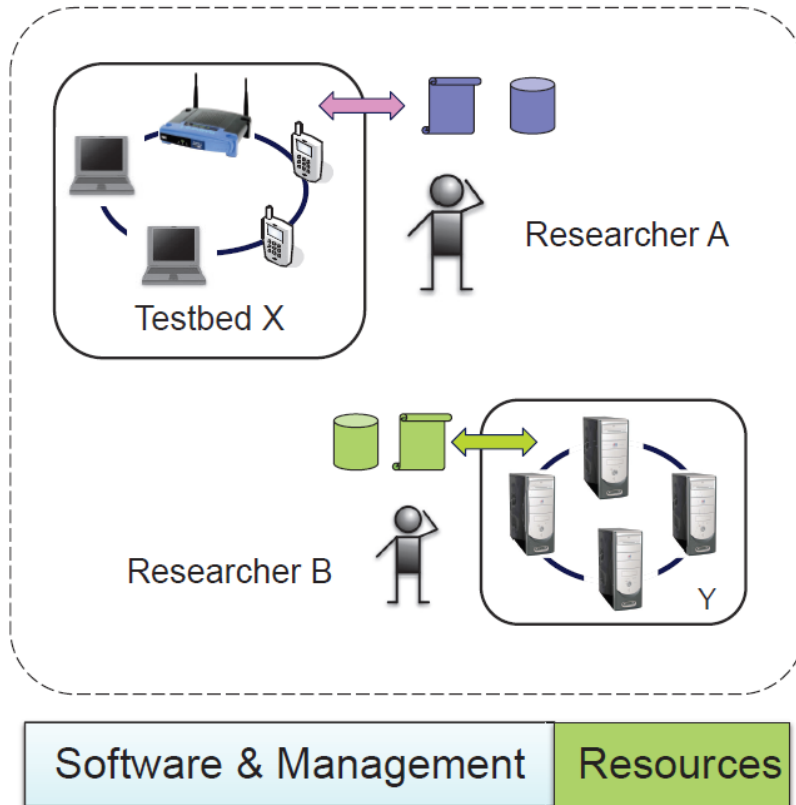
- Join ipv6project (GENI portal)
- Install Chrome browser
- Install Java7 (NO Java8)
 - See <http://jfed.iminds.be>
- Set proxy in jFed (Preferences -> Proxy)
- Download certificate from GENI portal (pem)
- Use jFed to generate pkcs12 (p12)
- Import p12 into your browser

Step-by-step (2)

- Reserve some nodes
- Swap in nodes with jFed
- Set up AP-client
- Start iPerf streams
- Move the robot!

Part 2: Automated experimentation

The Problem and Our approach



Support & share different resources
Federation of different testbeds

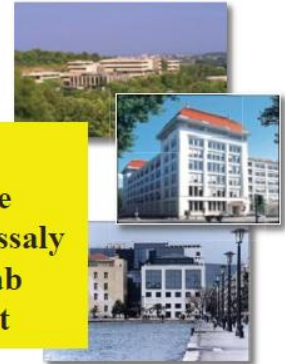
OMF deployment worldwide



**Rutgers University,
New Jersey**



**Europe
INRIA, France
University of Thessaly
Technicolor Lab
el-Lucent**



PlanetLab

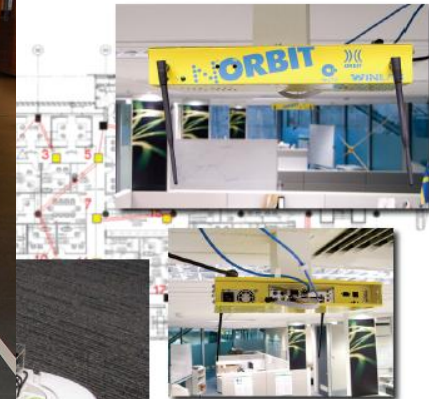
erry Rakotoarivelo



**iMinds
ILAB.T**

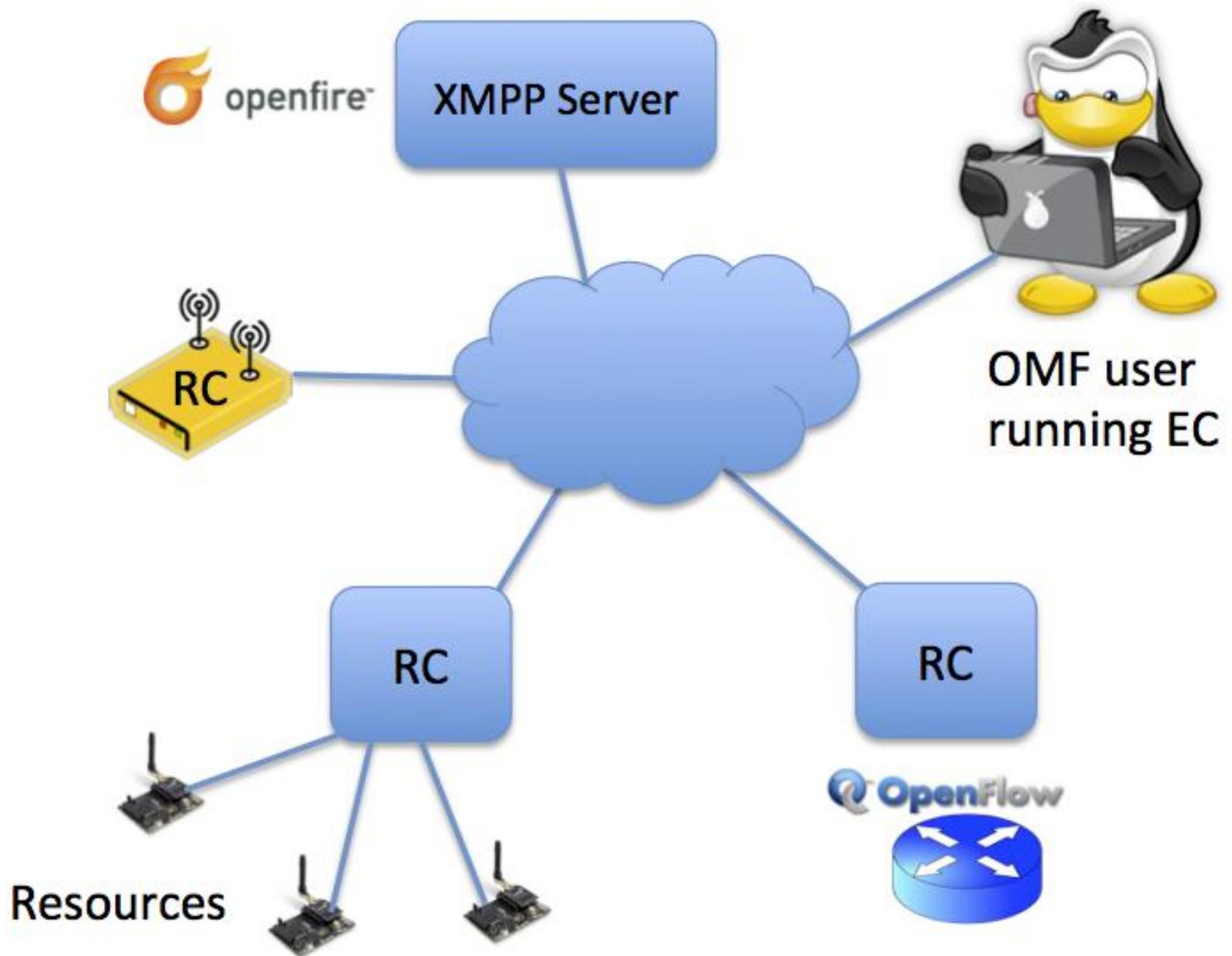


**NICTA, Sydney
Bridge Deployment**

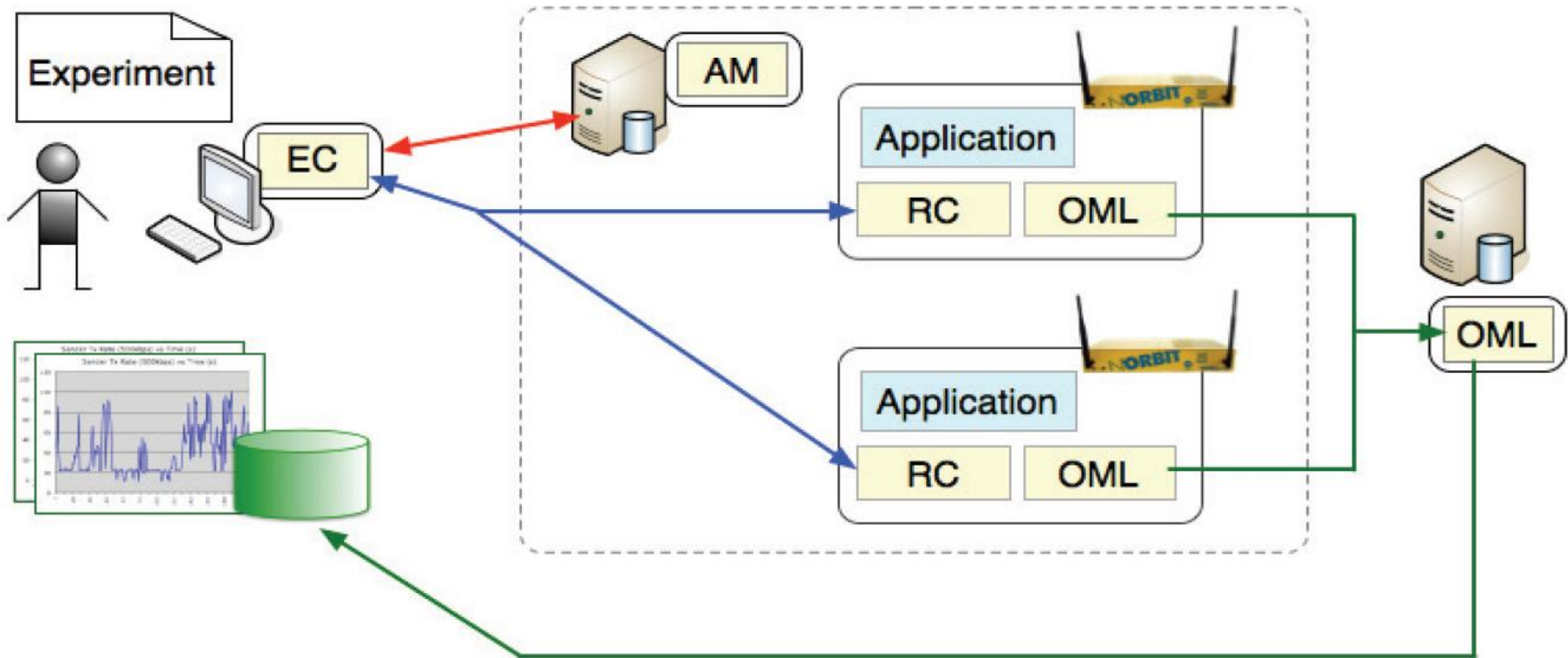


Experiment description

- OEDL language (ruby)
 - <http://mytestbed.net/projects/omf6/wiki>
- Uniform description of experiment
 - Which resources?
 - Which applications?
 - Entire flow of the experiment (timeline)
- Easy to map to other testbeds



How it works from a user's perspective?



Plan



Prepare



Execute





Thanks for attending !