

The OneLab facility and intercontinental federation

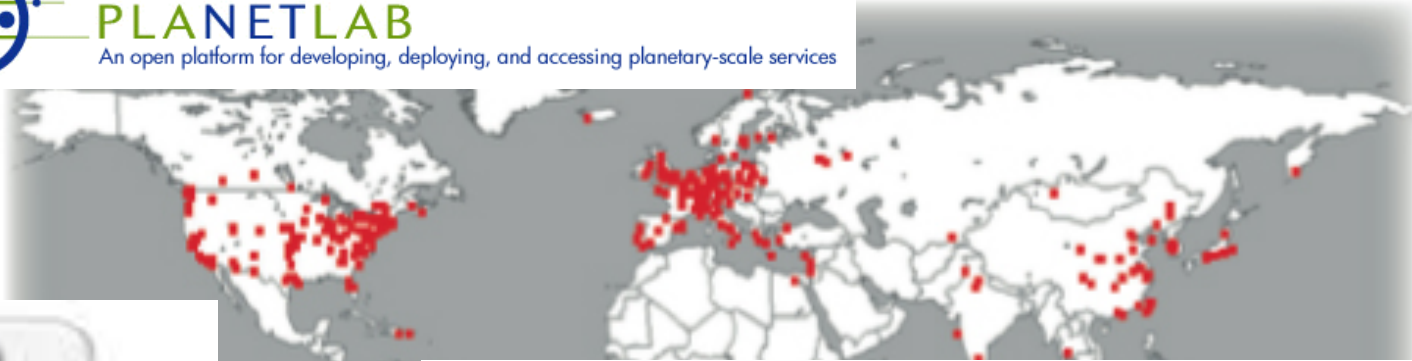
Federation Tool Support Session

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<http://www-rp.lip6.fr/~sf/>

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Laboratoire LIP6 – CNRS
France**



Building International Federation



OneLab Experimental Facility



<http://www.onelab.eu>

Federates testbeds from different projects



(EU FP7)



(FR)



(FR)



FUTURE INTERNET TESTBEDS
EXPERIMENTATION BETWEEN
BRAZIL AND EUROPE

(EU FP7 / BR)

A Legal framework: OneLab Consortium Agreement.

OneLab Experimental Facility

Opening planned for Dec.2013

- **Experimenter's portal open by end 2013**
- **Register users for the OneLab authority**

Fully supported testbeds



PlanetLab Europe: Wired servers mostly across Europe



NITOS: Wireless mesh nodes



IoTLAB: Large scale WSN (Internet of Things)



WiLab.t: Wireless testbed



USER PROFILE

Email: loic.baron@lip6.fr

Modify



TESTBEDS

omf
ple
wilab



SLICES

ple.upmc.tophat
ple.upmc.myslicedemo

OneLab Federation

- Architecture
- Software components
- Governance

Testbed Interoperability: SFA, a common API at testbed level

The different objects involved



users



resources



slices



authorities

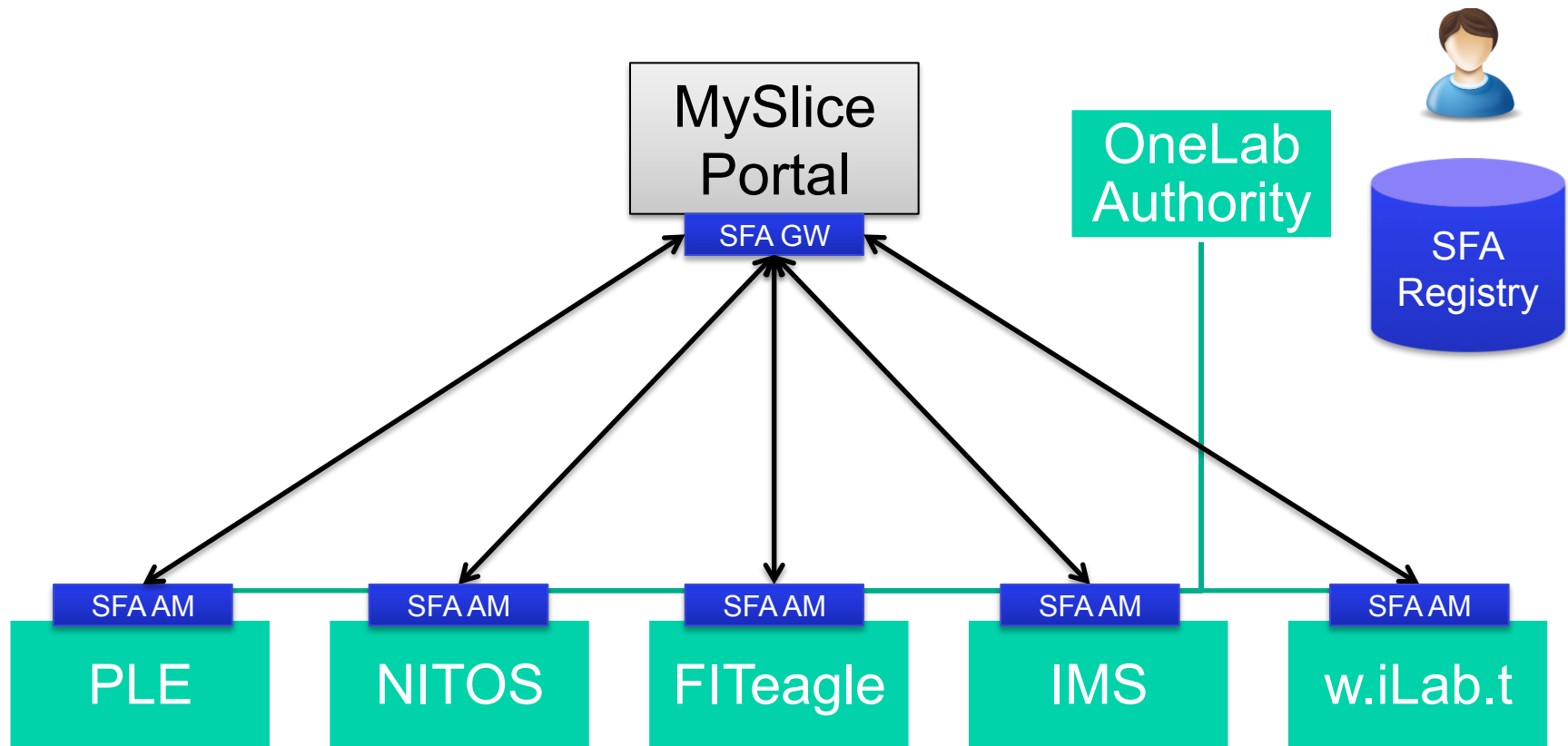
For testbed owners

- definition of trust relationships
- object management

For users

- experiment setup: browse and acquire resources
- No experiment control, No federation policies, No measurements

How to Federate with SFA?



Software components

- **Control plane**



SFAWrap: A generic SFA wrapper to expose testbeds with minimal effort from testbed owners (+ client libraries)

URL: <http://www.sfawrap.info>

- **Experimental plane**



NEPI: experiment control tool, NS3, FRCP(OMF) and SSH

URL: <http://nepsi.inria.fr>

- **Measurement & monitoring plane**



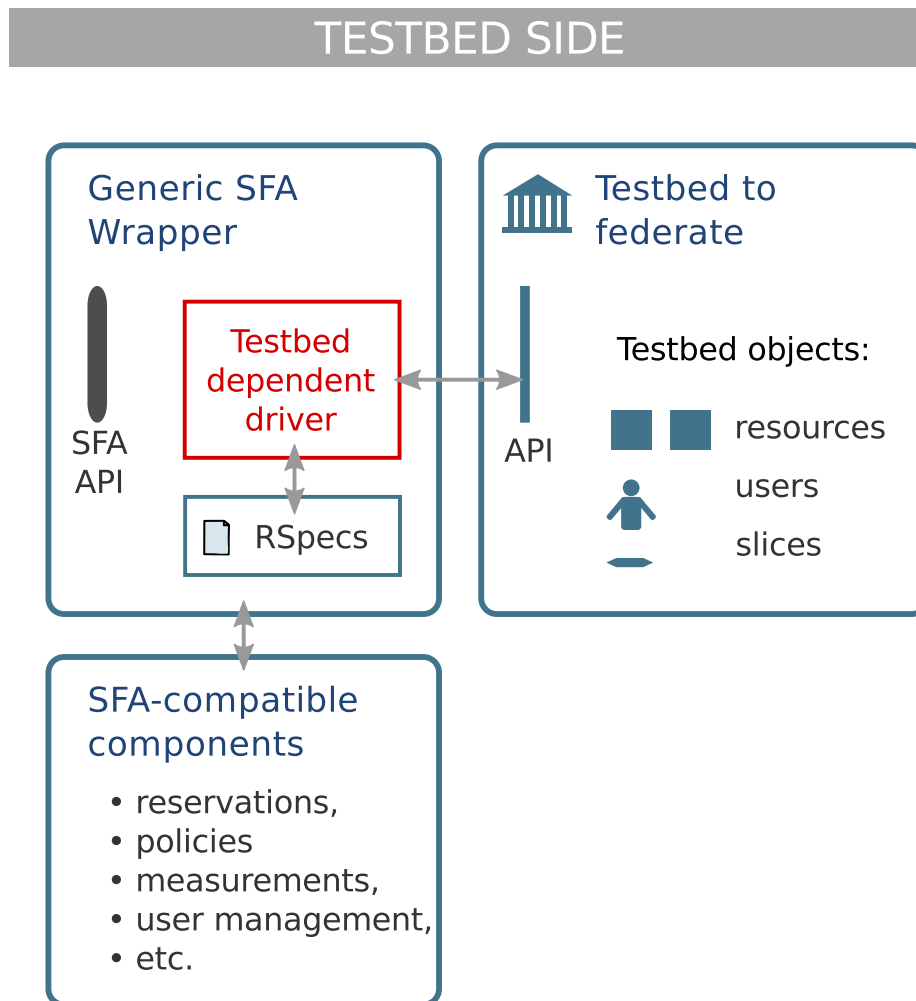
TopHat: A measurement and monitoring aggregation service, compatible with PostgreSQL, OML, perfSONAR (in progress)

SFA for OneLab testbeds

Wrap the testbed to support common API



- PlanetLab Europe
- NITOS
- FITeagle
- IMS
- SmartSantander



Software components

Experimenter's portal

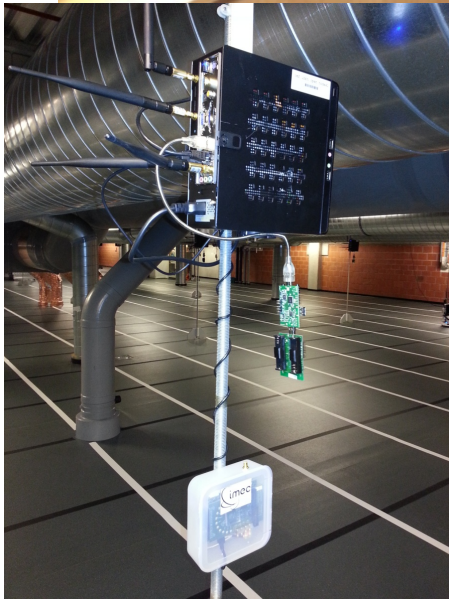


Integrated user portal supporting users' experiments from setup through completion

- User and slice management
- Advanced SFA client
- Tight integration of measurement and monitoring
- Open and extensible framework

Talks and demos at GEC 13, 15 and 18.

The OneLab NOC



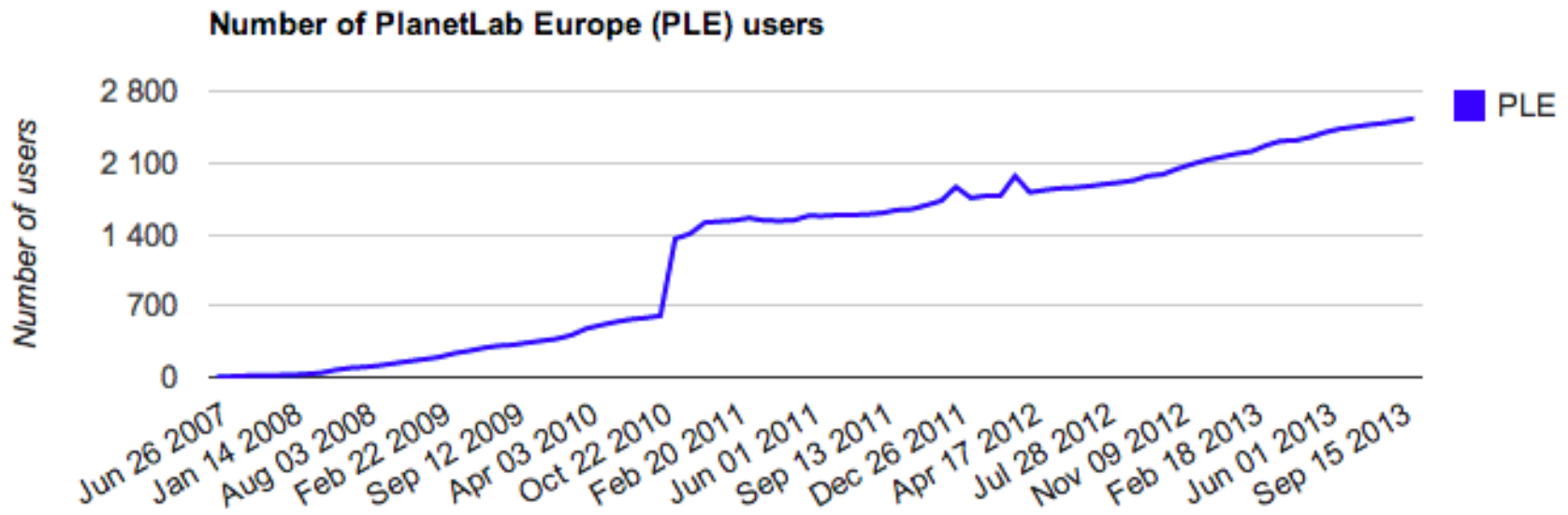
- **Sustainability**
 - Separate the project from the Authority
 - OneLab is the Authority
 - Legal framework
 - In progress (v1 available)
- **OneLab should be open end of 2013**
 - Most resources will be made accessible through the OneLab portal
 - Experiment with Operation and Education
 - Maturing and plan for sustainability

Utilization of OneLab resources

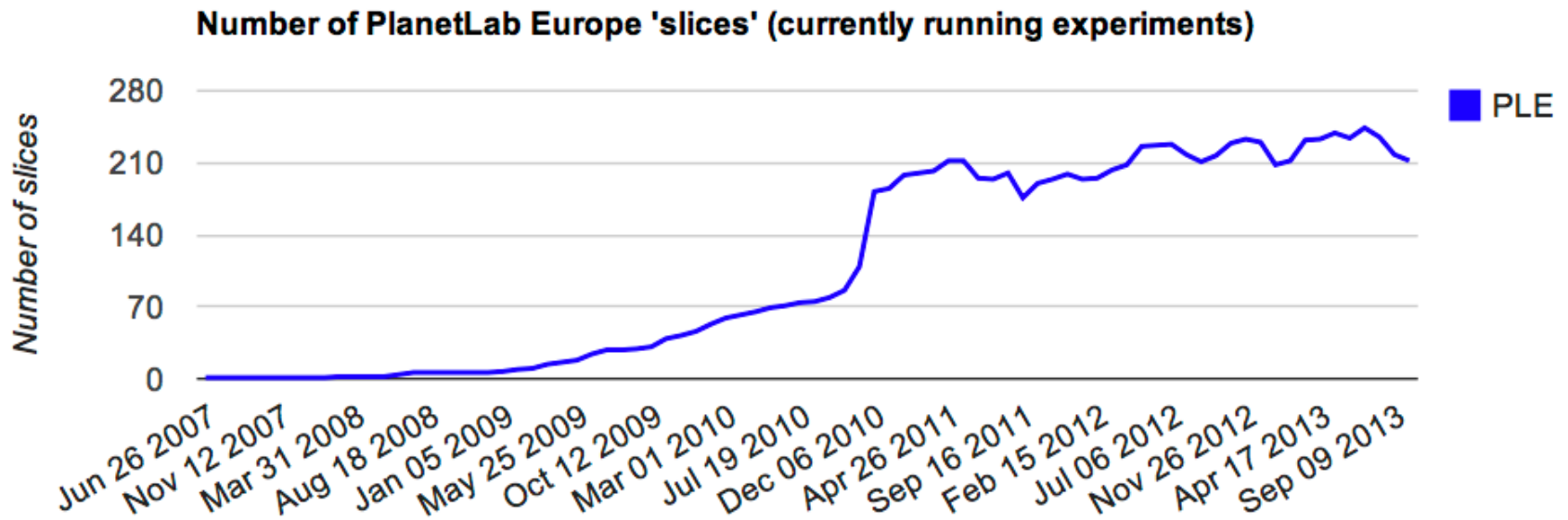
OneLab utilization

- Testbed utilization
- SME & Industry

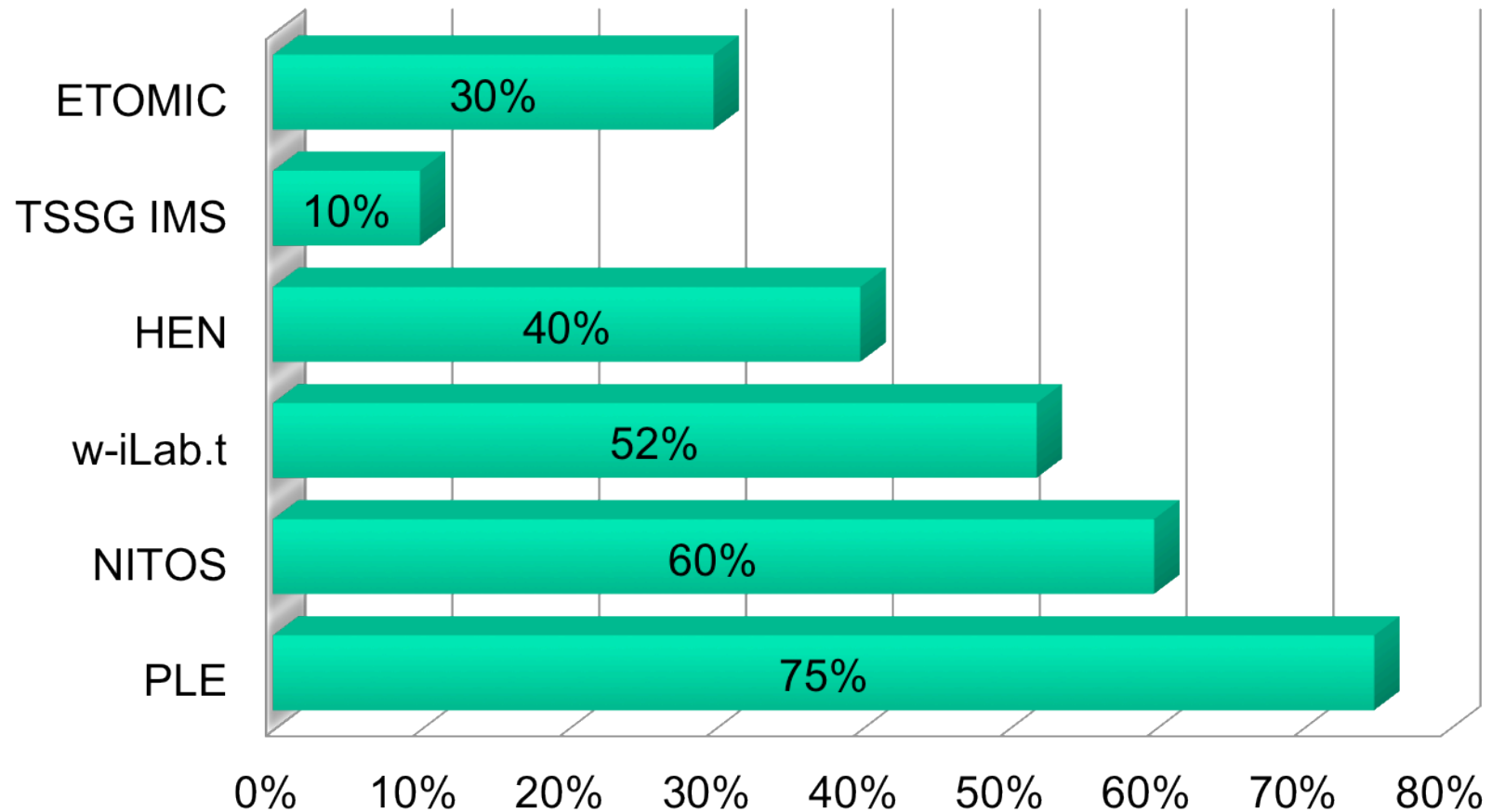
OneLab usage /PLE



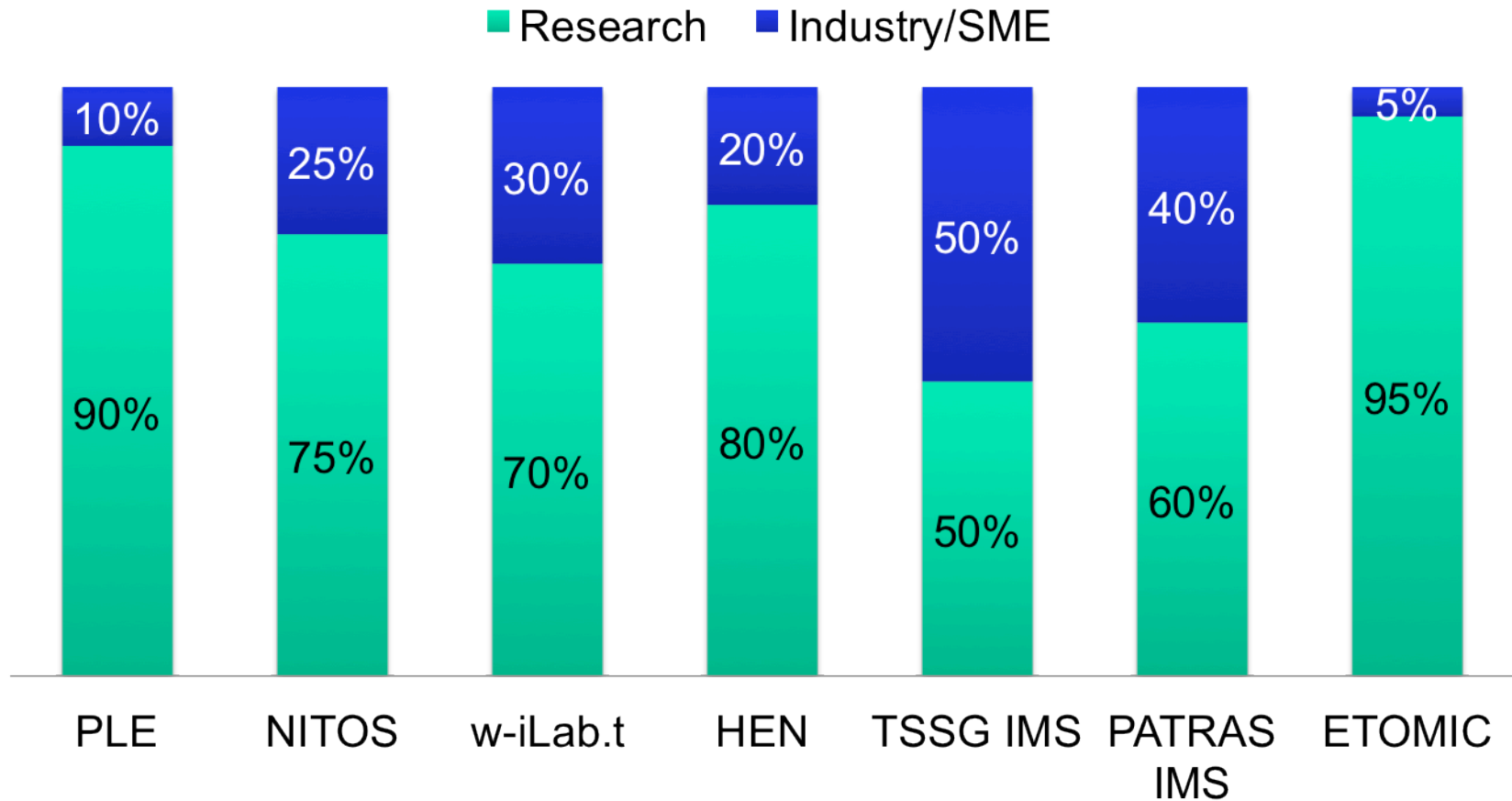
OneLab usage /PLE



OneLab usage of Resources



Users' profile



An International Outreach

- **Cooperation with EU and national partners**
 - Fed4Fire, IoT6 and IoT Lab, Hobnet, FIRE and FIT etc.
 - Cooperation with ICTLabs (Education & Sustainability)
- **Cooperation with US GENI**
 - Various partnership since long
- **Cooperation with South America**
 - Brazil: FIBRE project
- **Cooperation with Asia**
 - MoU signed with CAS and Industry Innovation Center for Future Network
 - SmartFire with Korea
 - Kick-Off meeting scheduled in January



FED4FIRE



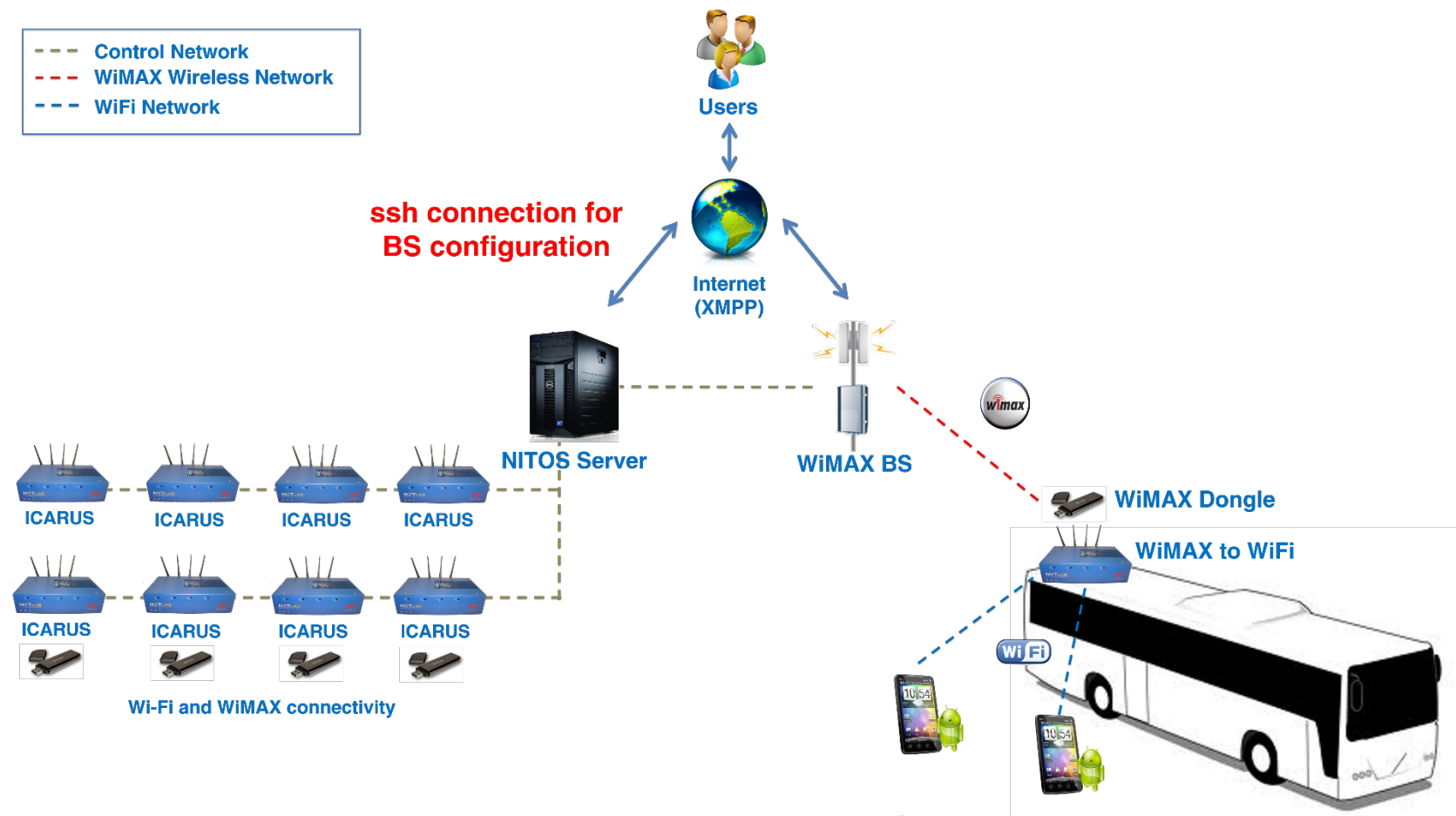
Usage scenario

OneLab Usage

- Use Cases
- Demos

OpenLab use mixing wireless techs Demonstration

- - - Control Network
- - - WiMAX Wireless Network
- - - WiFi Network

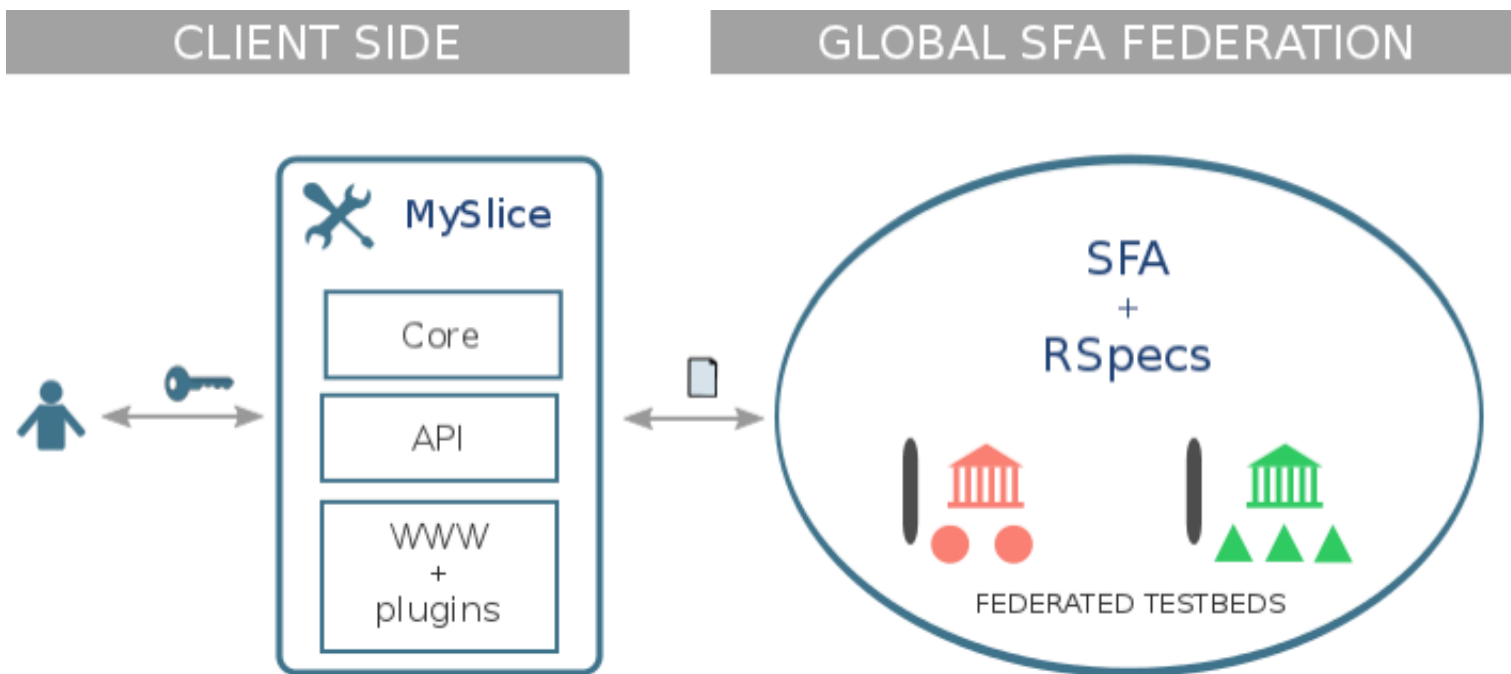


Android Smartphone equipped with microcontroller featuring environmental sensors and running UTH's Android RC

MySlice

- Short intro
- Demonstration

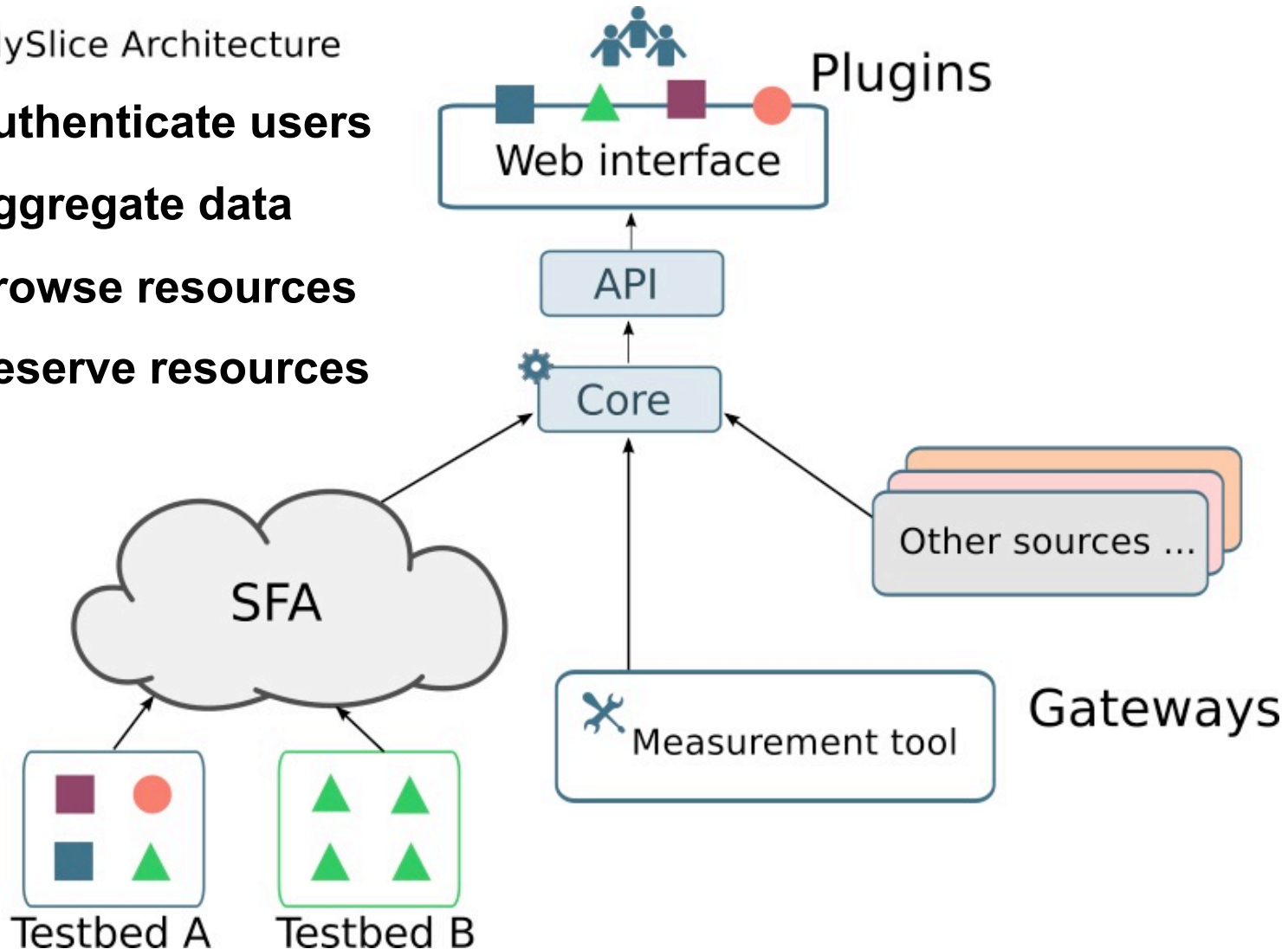
- **Access resources through a Portal**



OneLab Portal in Federation

MySlice Architecture

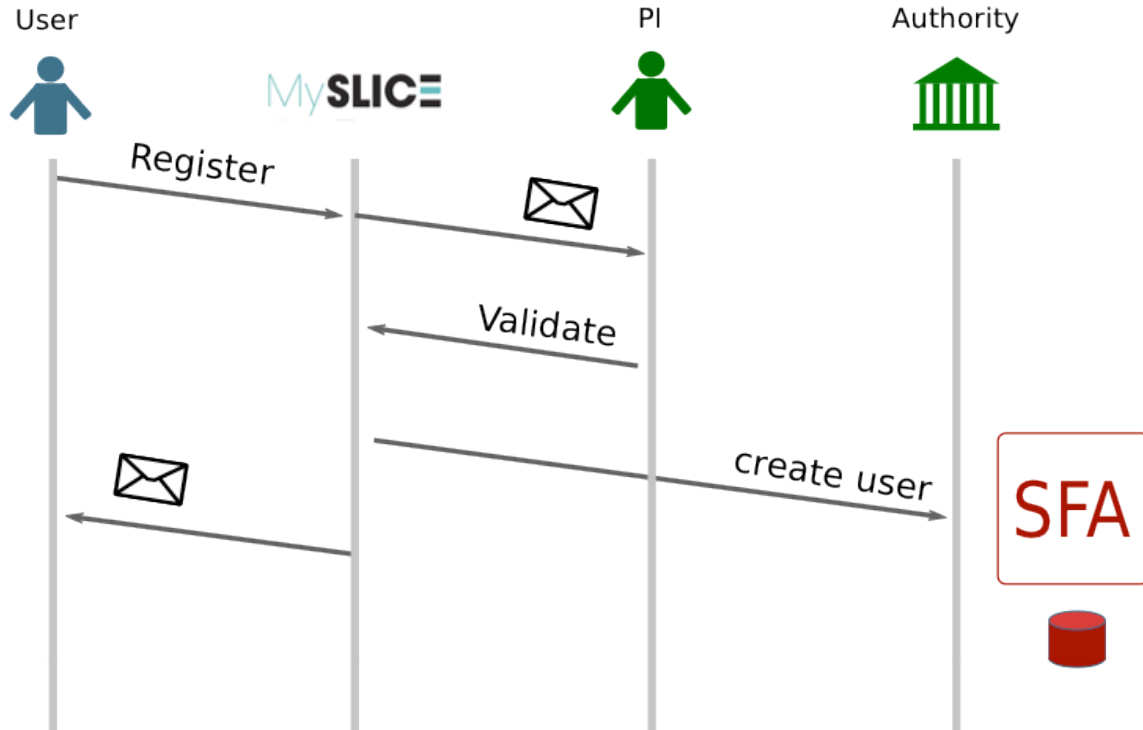
- **Authenticate users**
- **Aggregate data**
- **Browse resources**
- **Reserve resources**



Control plane using MySlice

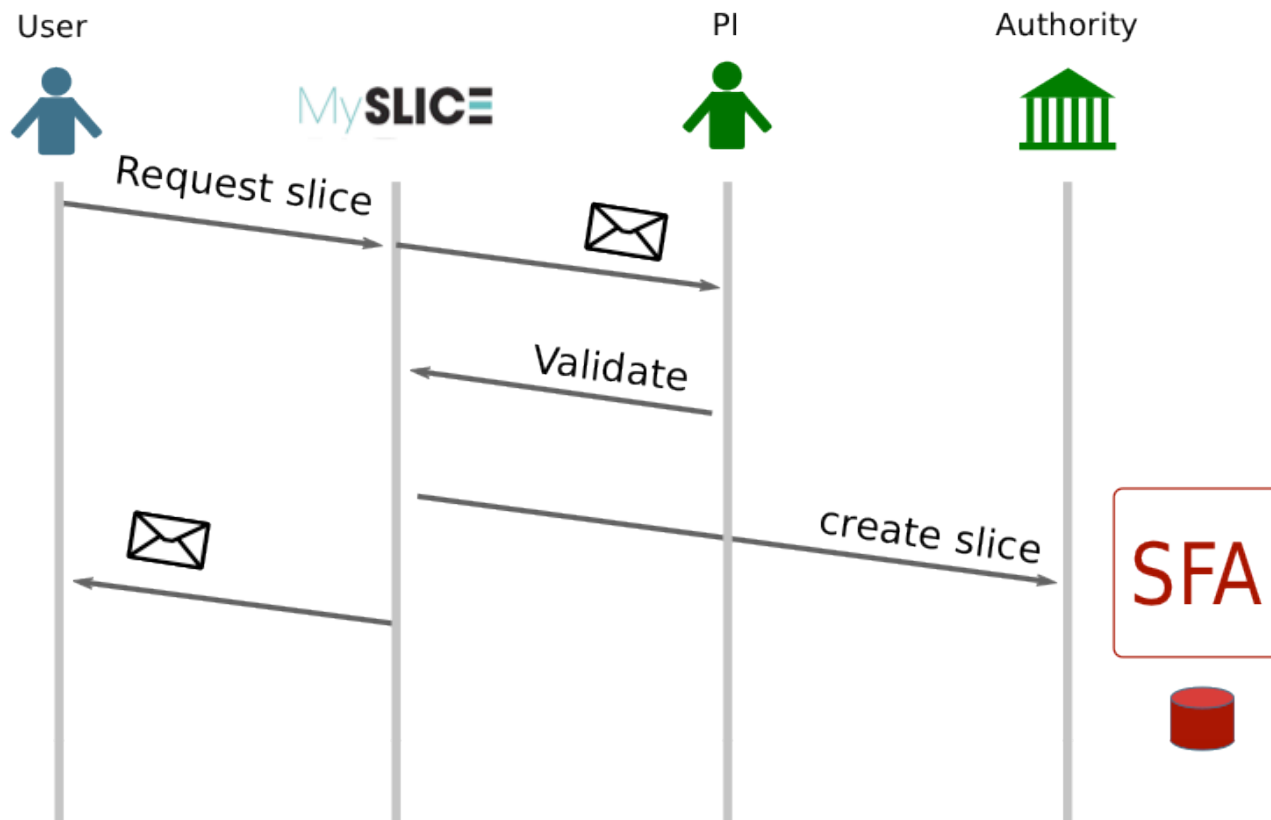
- **User registration**
- **Account validation**
- **Request slice**
- **Manage your account**
- **Browse testbeds**
- **Browse resources**
- **Reserve resources**
- **Aggregated Measurements**

Account registration / validation



Principal Investigator (PI)

Request / Validate slice



Manage your account

MySlice Account

Personal Details

Email	loic.baron@lip6.fr	?
Password	*****	<input type="button" value="Edit"/>
Full Name	Loic Baron	<input type="button" value="Edit"/>
Authority	ple.upmc	?
Generate Keys		<input type="button" value="Generate a new Key Pair"/>
Public Key	*****	<input type="button" value="Upload"/> <input type="button" value="Download"/>
Private Key	*****	<input type="button" value="Delete"/> <input type="button" value="Download"/>

Tradeoff: Ease-of-use vs Security.
Ease-of-use: Automatic account delegation. Don't delete private key.
Security: Manual account delegation. Download & Delete private key.

Browse testbeds

Platforms

10 records per page

Search:

PLATFORM	PLATFORM_LONGNAME	GATEWAY_TYPE
omf	NITOS	sfa
ple	PlanetLab Europe	sfa
wilab	Wilab2	sfa

Showing 1 to 3 of 3 entries

← Previous 1 Next →

Browse resources

▼ Resources

Geographic view

List view

25 records per page

Search:

↑ NETWORK_HRN	↕ HRN	↕ TYPE	↕ HOSTNAME	↕ +/-
omf	omf.nitos.node001	node	node001	<input type="checkbox"/>
omf	omf.nitos.node002	node	node002	<input type="checkbox"/>
omf	omf.nitos.node003	node	node003	<input type="checkbox"/>
omf	omf.nitos.node004	node	node004	<input type="checkbox"/>
omf	omf.nitos.node005	node	node005	<input type="checkbox"/>
omf	omf.nitos.node006	node	node006	<input type="checkbox"/>
omf	omf.nitos.node007	node	node007	<input type="checkbox"/>
omf	omf.nitos.node008	node	node008	<input type="checkbox"/>
omf	omf.nitos.node009	node	node009	<input type="checkbox"/>
omf	omf.nitos.node010	node	node010	<input type="checkbox"/>
omf	omf.nitos.node016	node	node016	<input type="checkbox"/>
omf	omf.nitos.node017	node	node017	<input type="checkbox"/>
omf	omf.nitos.node018	node	node018	<input type="checkbox"/>
omf	omf.nitos.node019	node	node019	<input type="checkbox"/>
omf	omf.nitos.node020	node	node020	<input type="checkbox"/>
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omf	omf.nitos.node023	node	node023	<input type="checkbox"/>
omf	omf.nitos.node024	node	node024	<input type="checkbox"/>
omf	omf.nitos.node025	node	node025	<input type="checkbox"/>
omf	omf.nitos.node026	node	node026	<input type="checkbox"/>
omf	omf.nitos.node027	node	node027	<input type="checkbox"/>

Aggregated Measurements

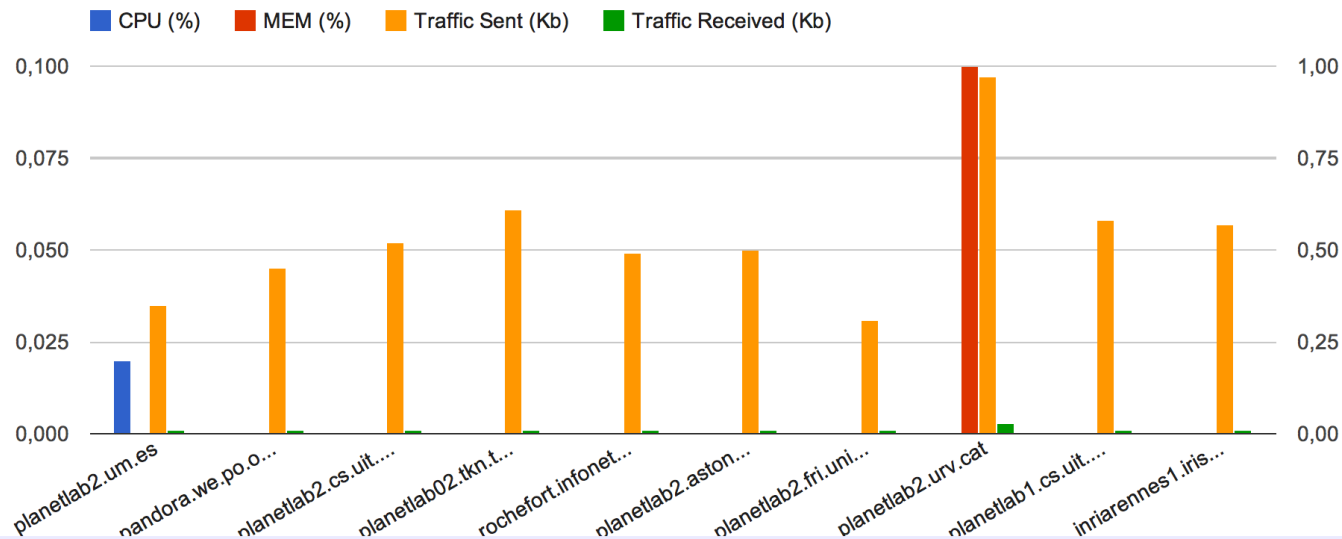
MEASUREMENTS

CPU Usage

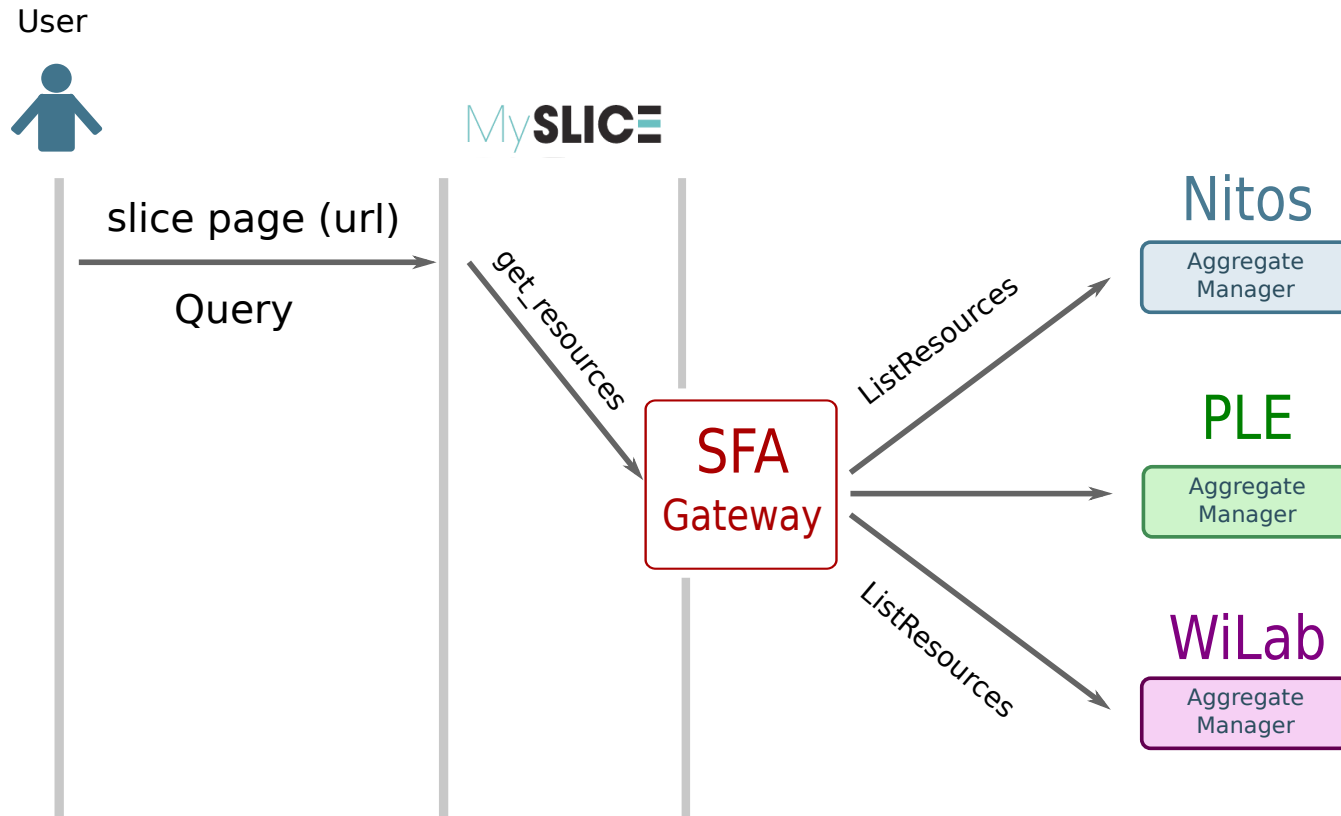
Memory Usage

Traffic Sent

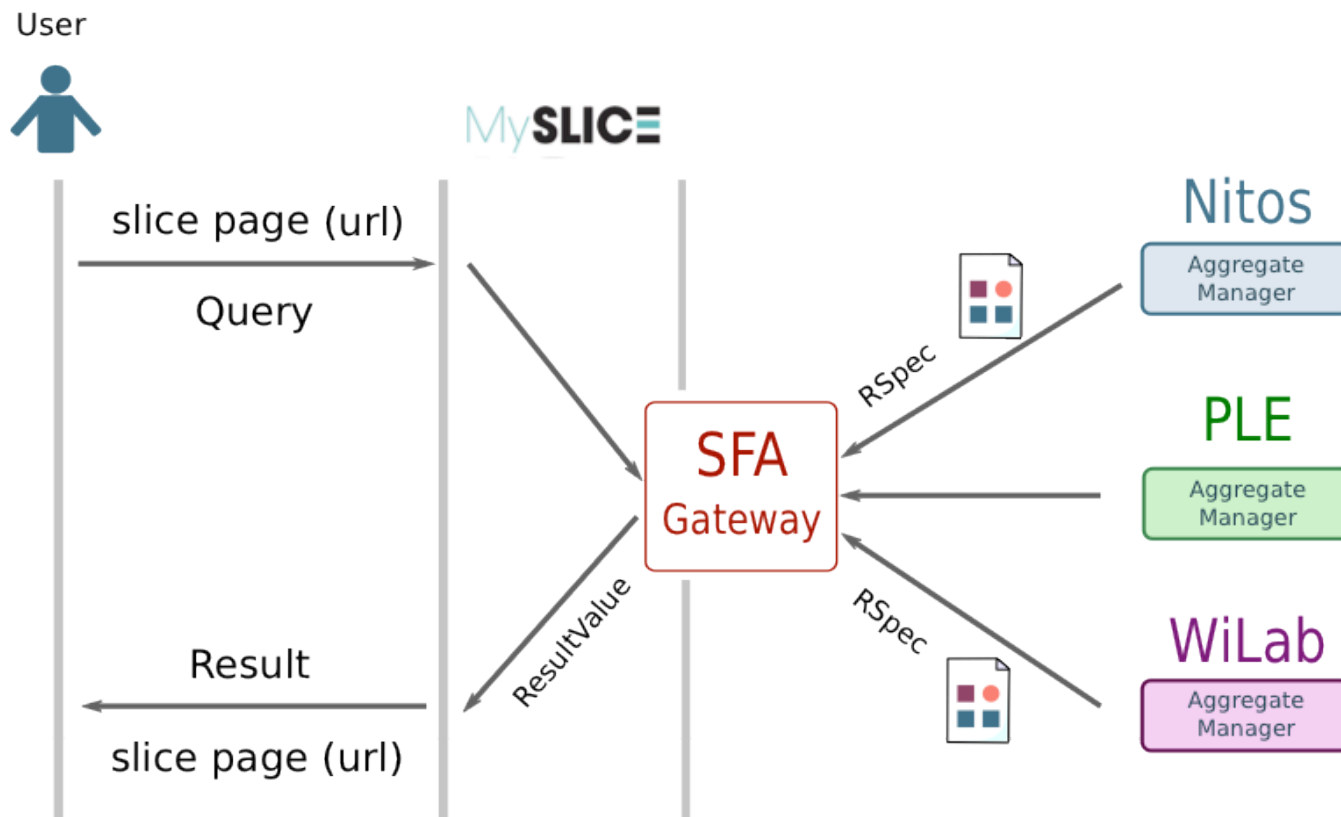
Traffic Received



Browse resources: Query



Browse resources: Result



GET METADATA

select table, column.name, column.qualifier, column.type, column.is_array, column.description, column.default, key, capability from local:object

GET RESOURCE METADATA

select column.name from local:object where table == "resource"

GET urn, type FROM RESOURCE

SELECT urn, type FROM resource

GET urn,type FROM a specific testbed

SELECT urn, type FROM iotlab:resource

SELECT urn, type FROM ple:resource

Get started with MySlice

- **<http://myslice.info>**
- **<http://trac.myslice.info/>**
- **<git://git.onelab.eu/myslice.git>**



<http://www.ict-openlab.eu/>

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More information

- <http://www.ict-openlab.eu/>
- <http://www.onelab.eu/>
- <http://nitlab.inf.uth.gr/NITlab/index.php/testbed>
- <http://www.ict-fire.eu/home.html>
- <http://www.fed4fire.eu/>
- <http://f-lab.fr/>
- <http://new.fit-equipex.fr/>
- <http://www.geni.net/>
- <http://www.ict-fire.eu/home.html>
- <http://fibre-ict.eu>
- <http://www.iiu.edu.cn/>