Supporting the experiment lifecycle with MySlice

Jordan Augé, Loïc Baron
joint work with Timur Friedman and Serge Fdida (UPMC)

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Overview of MySlice

- A user-centric tool to support users' interaction with the federation of testbeds
- tailored to support the full experiment lifecycle
- based on an open and extensible framework

In this talk: overview of its main characteristics + recorded demo

Overview of MySlice

Key aspects

- fully compatible with the GENI software architecture
- extensive support for slice management based on SFA
- rely on existing components and open standards
- integration of measurements and monitoring

Challenges

- leverage a large ecosystem of available complementary and overlapping services and tools (far beyond testbed borders)
- from our experience the UI is essential to users: need provide a transparent and consistent access
- Exploit commonalities in platforms and processes

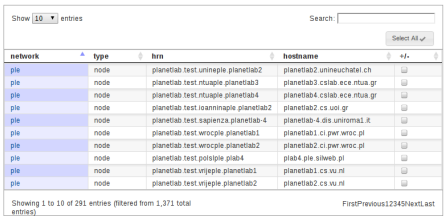
Design

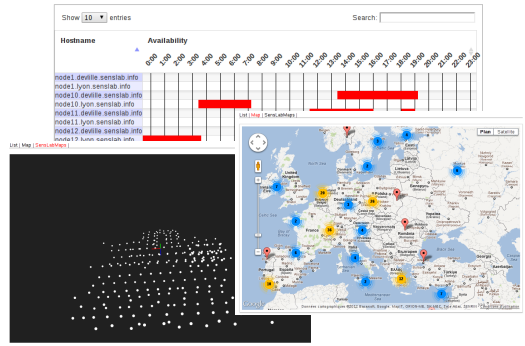
- A common abstraction to help the user browse through and interact with a large amount of data and sources
- Grounded on related work on data integration and large dataset navigation.
  - formulate semantic queries, requesting filtering and annotations
  - propose enhanced visualizations on received results
  - allow to balance homogeneity and heterogeneity in the GUI

generic display plugins

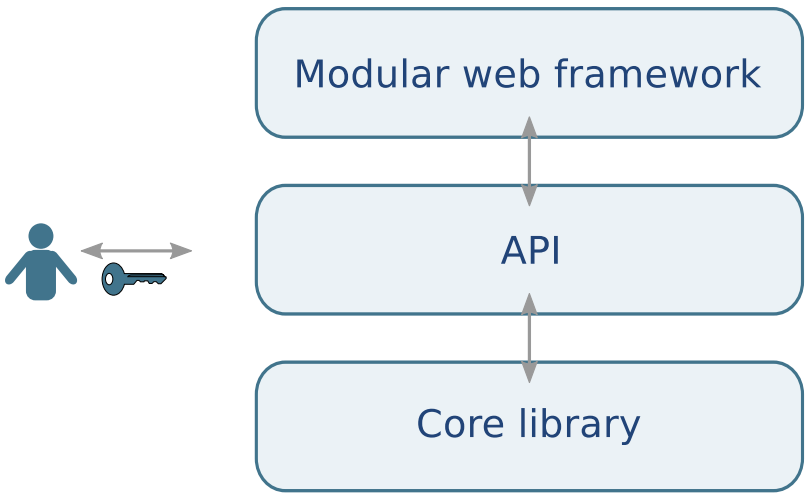
+

community developed specialized plugins



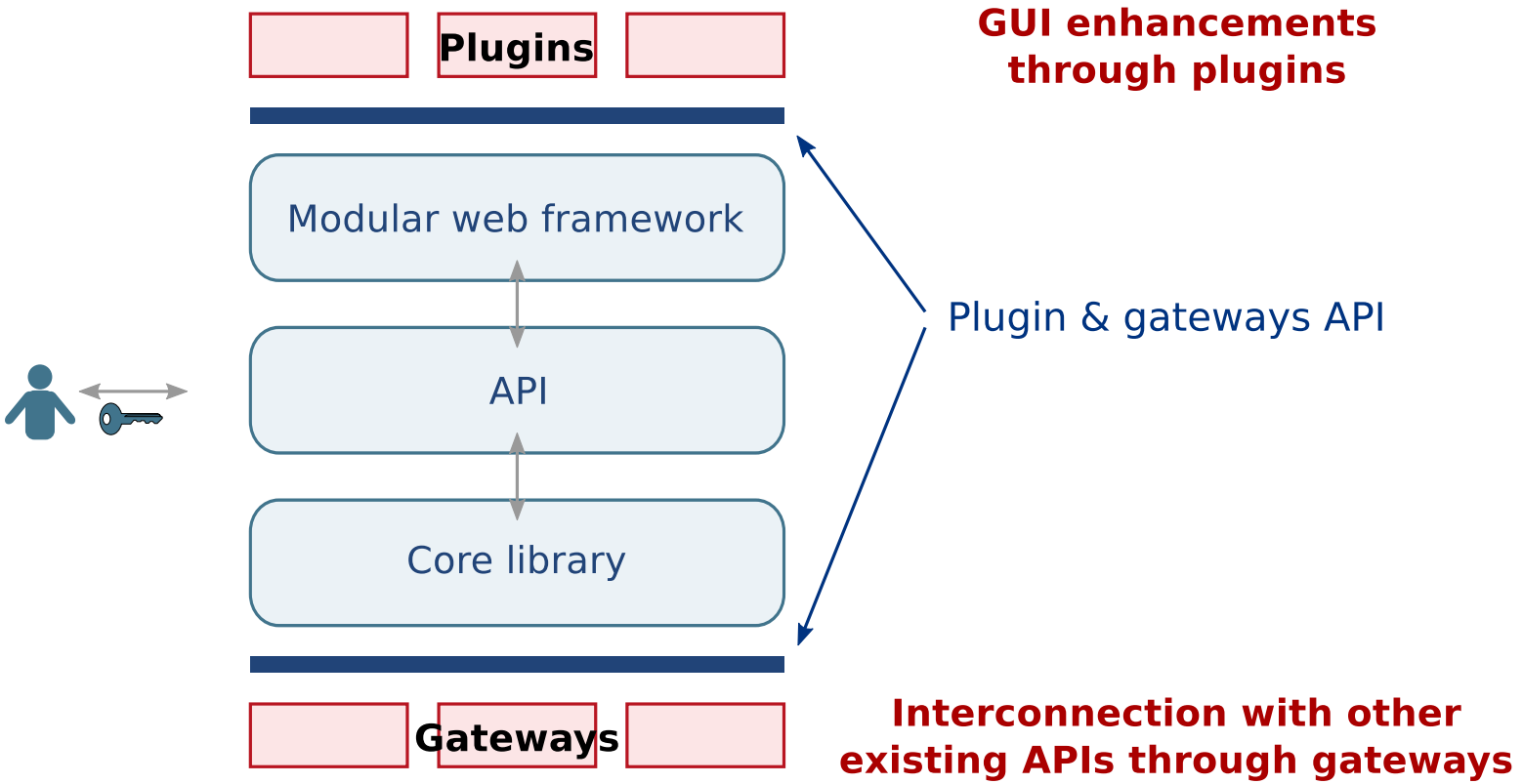


MySlice architecture

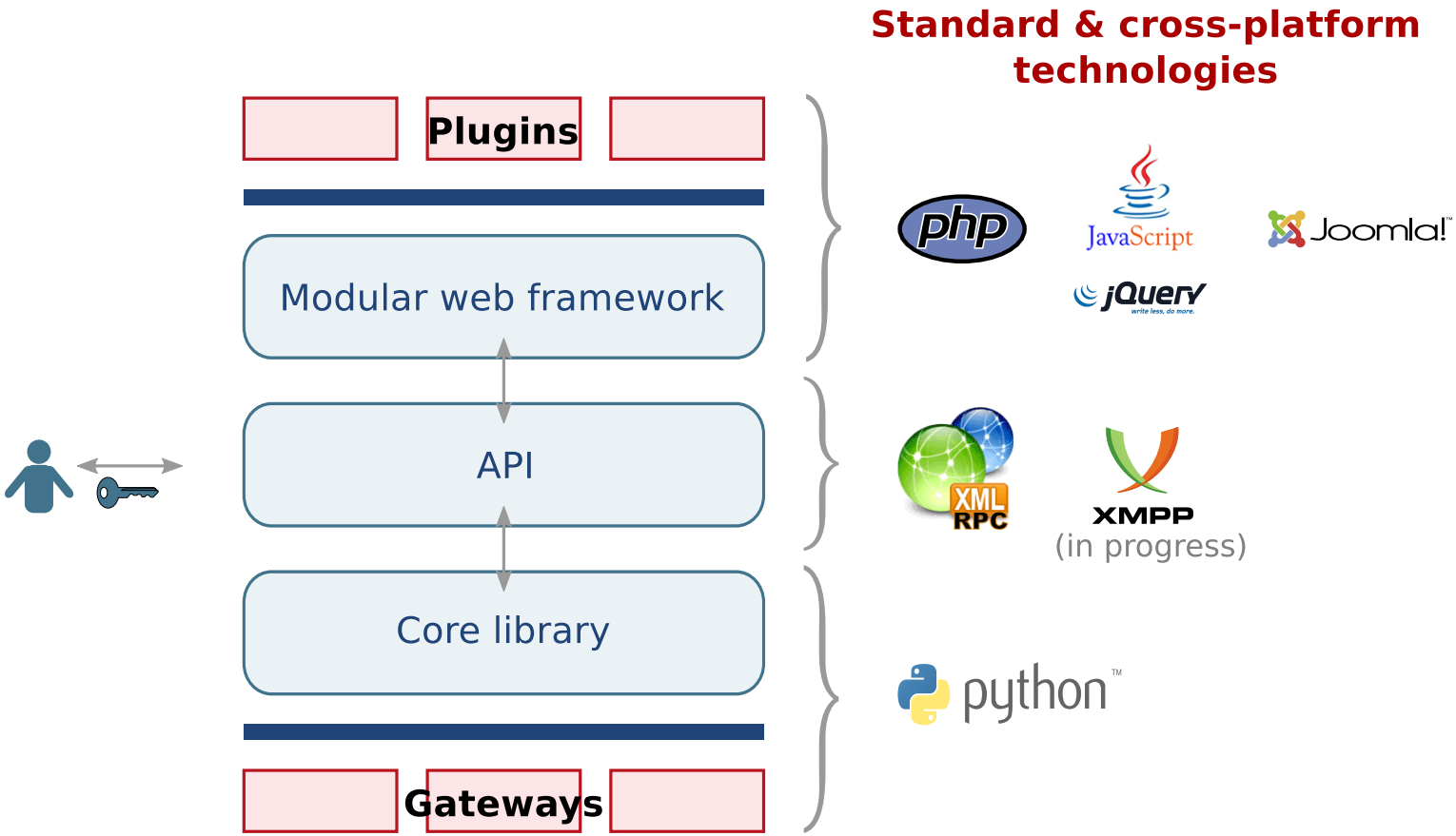


A wide-range of user access interfaces to accommodate the diversity of users' needs

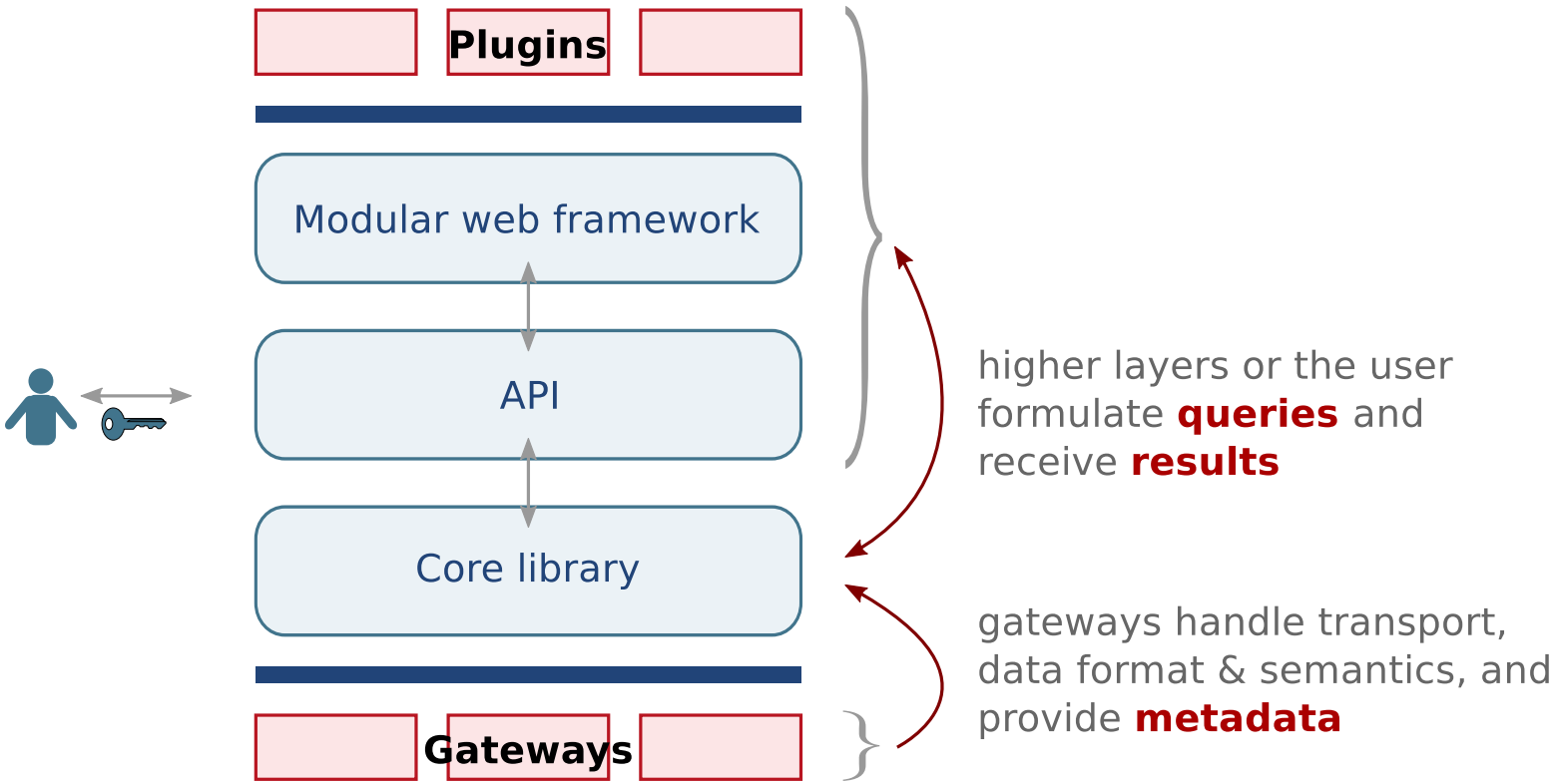
MySlice architecture



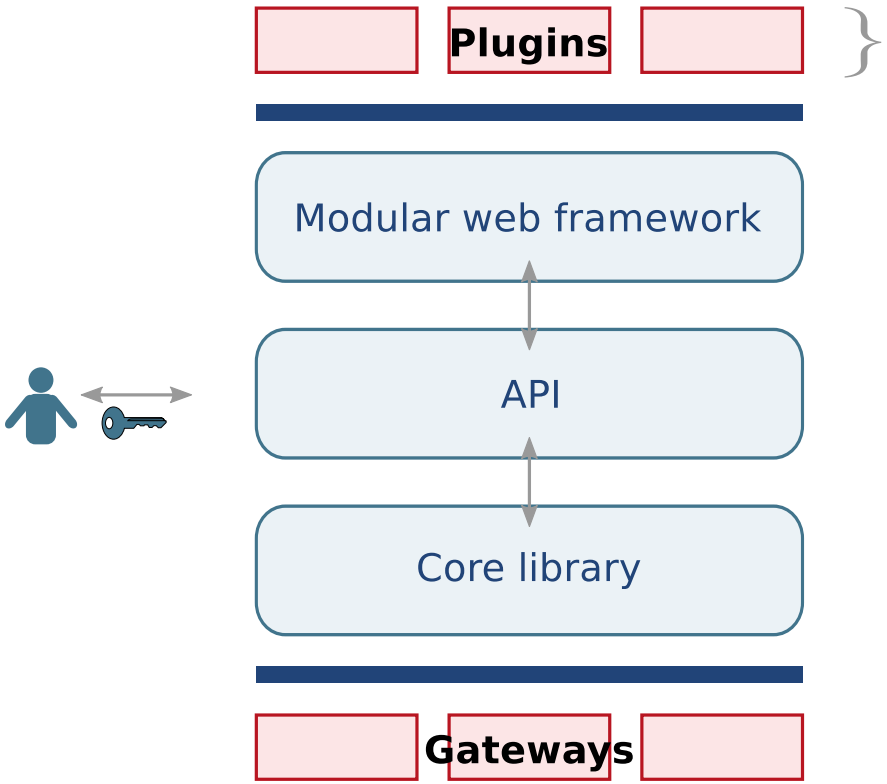
MySlice architecture



MySlice architecture



MySlice architecture

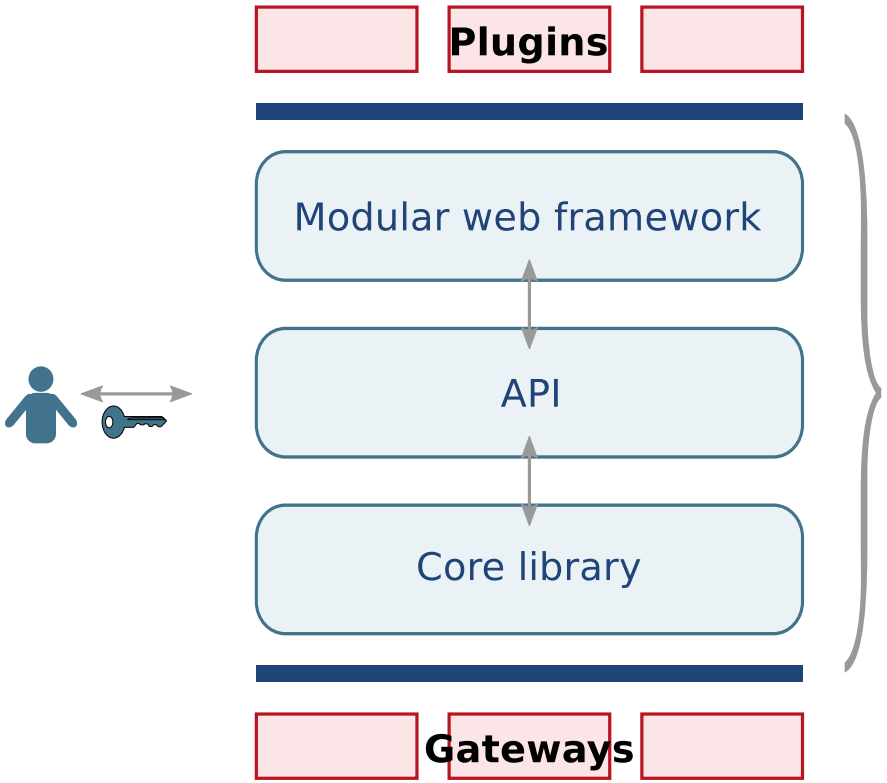


plugins are isolated from the gateways diversity thanks to the **query** abstraction

plugins remain **independent** one from each other thanks to a publish/subscribe communication framework.

They can for example
- *publish queries*
- *subscribe to results*

MySlice architecture

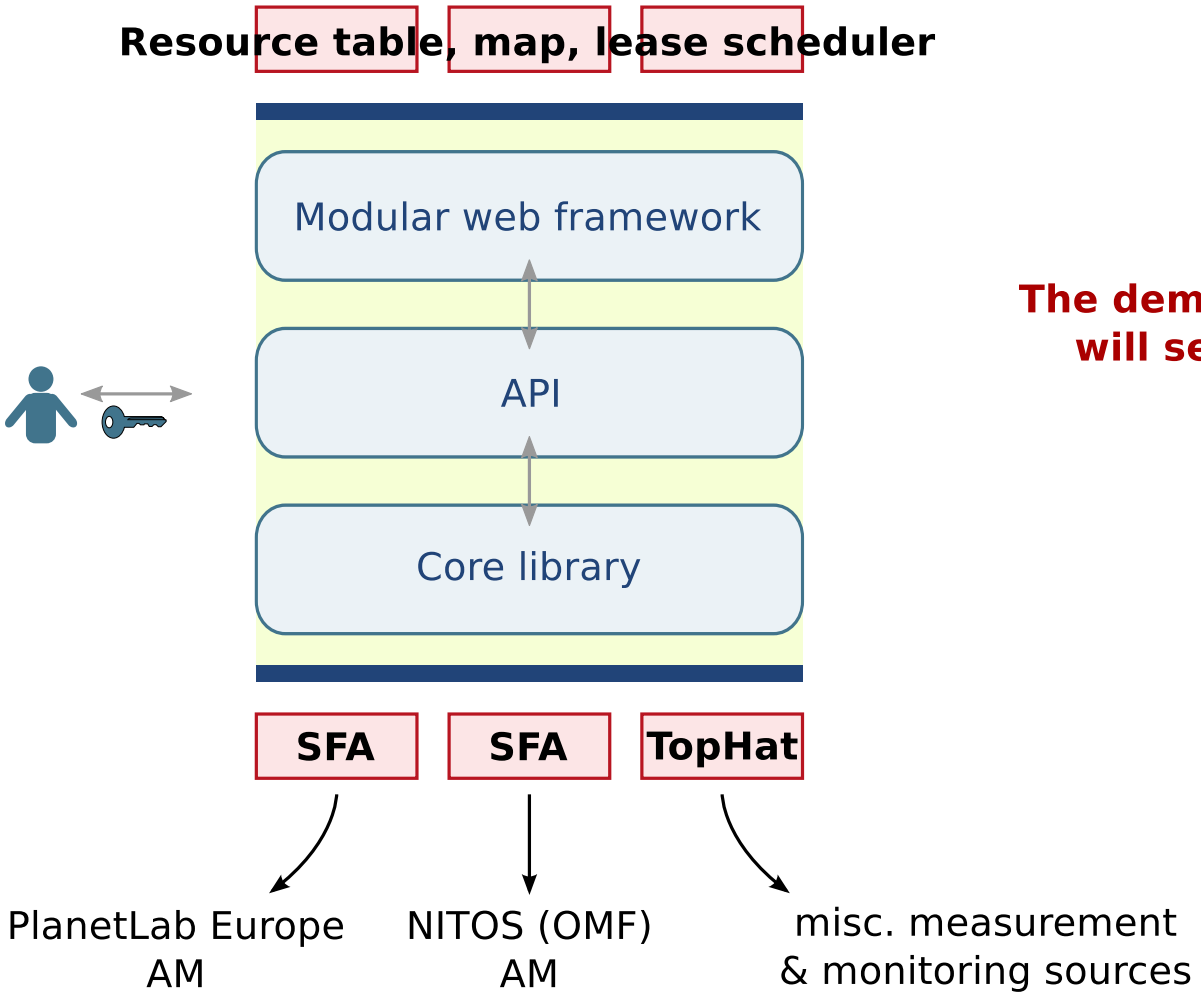


MySlice architecture provides a convenient **aggregation** and **interoperability** layer between the various services and the UI.

It provides plugins with:

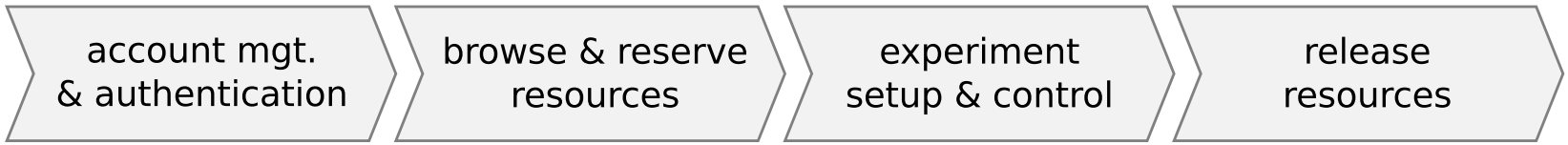
- an async. query mechanism
- transparent access to all data and functions
- authentication information
- caching and query optimization (work in progress)

MySlice architecture

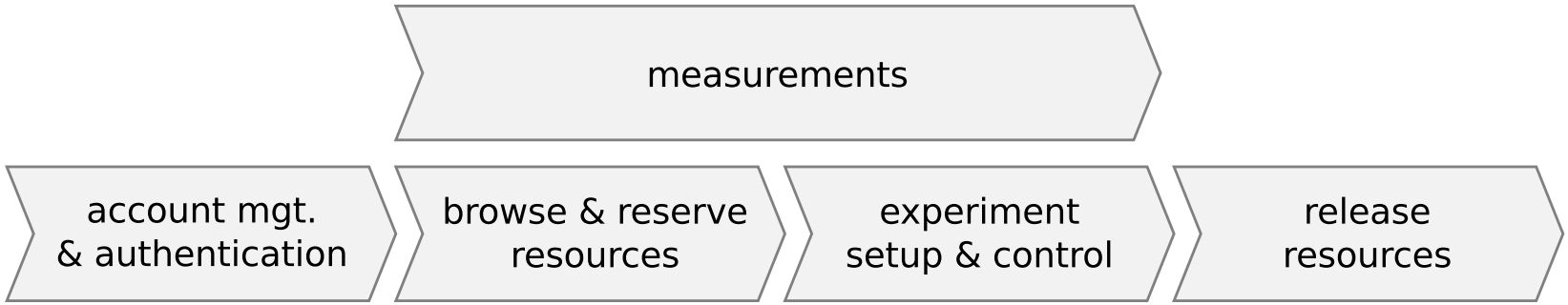


The demo you will see !

Hiding the complexity of the experimental lifecycle



Hiding the complexity of the experimental lifecycle



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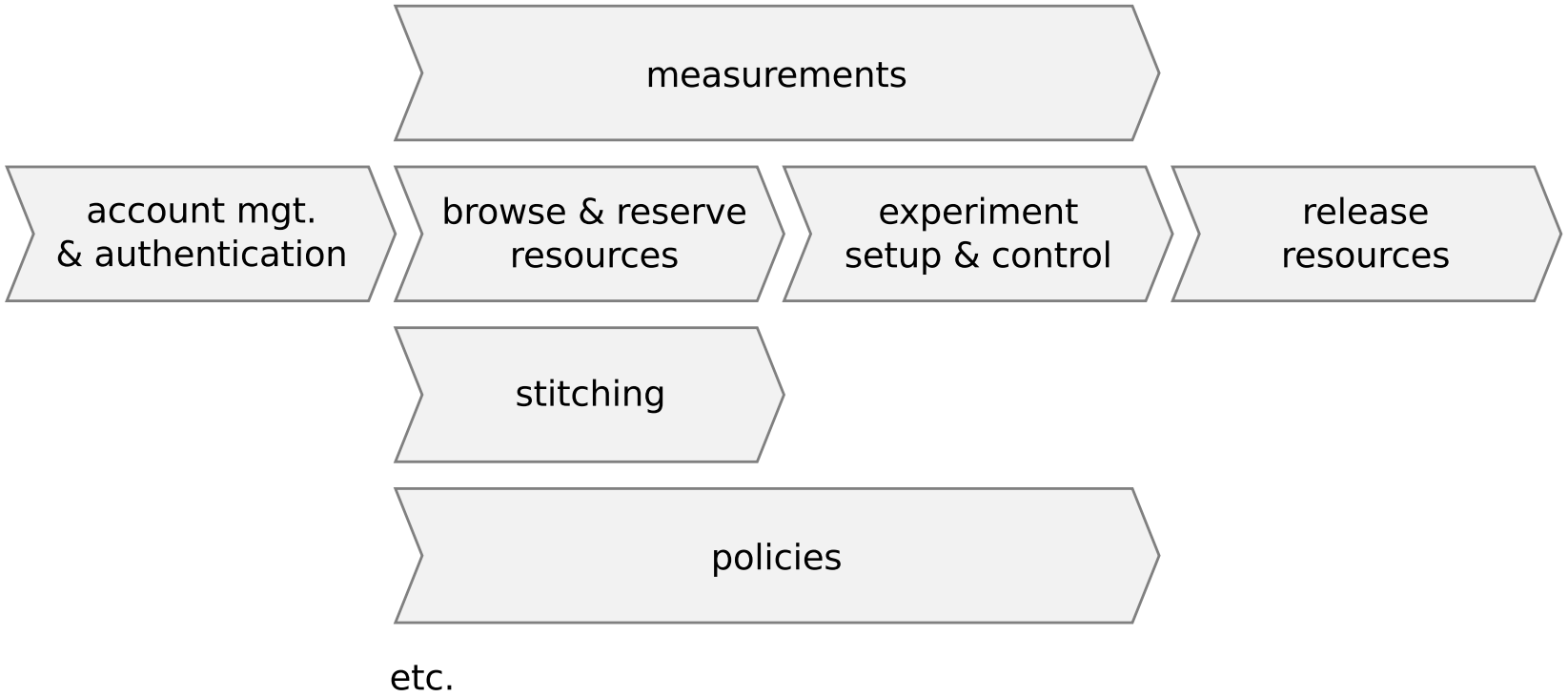

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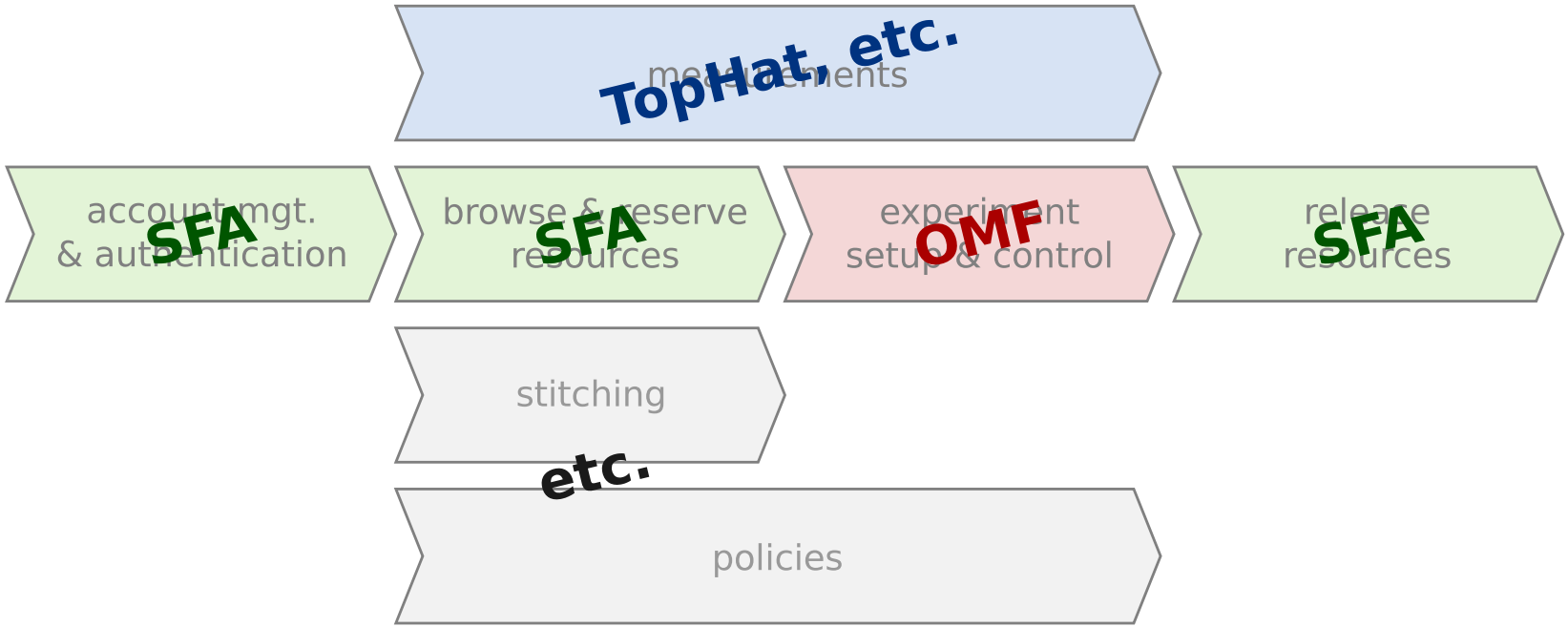
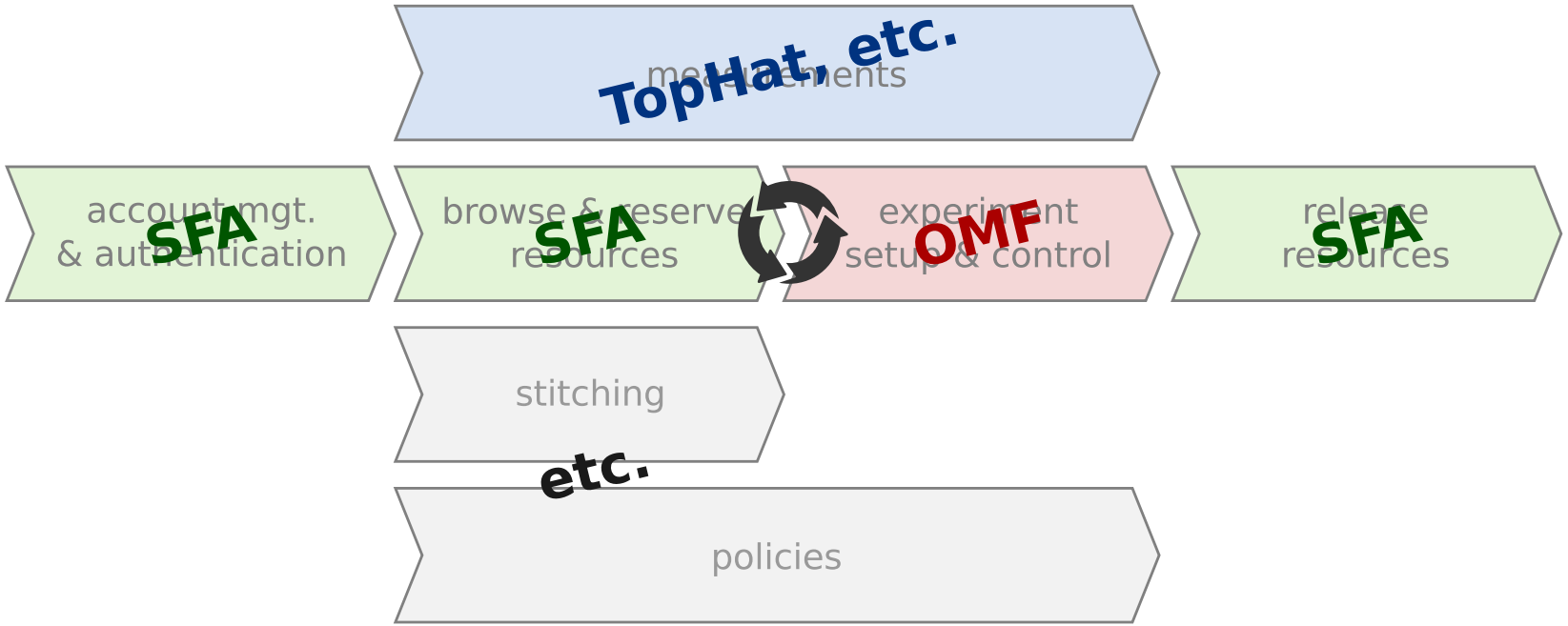


Hiding the complexity of the experimental lifecycle

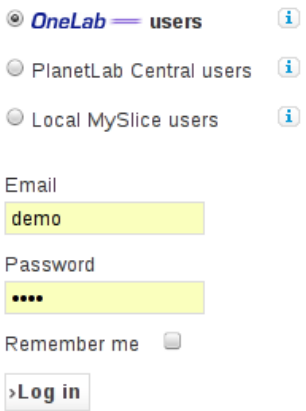


Authentication to MySlice

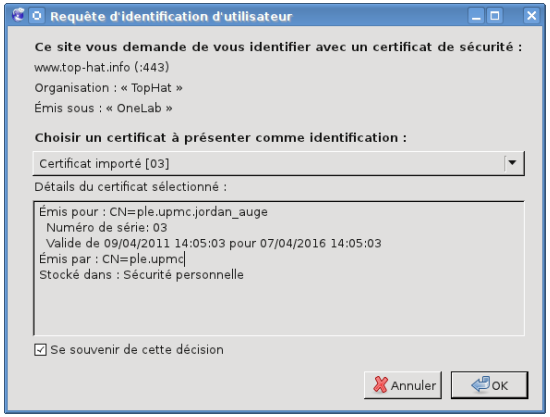
Through a local account or a trusted third party:

- OneLab or PLC token (login/password (weak), session, GPG, etc.)
- a SFA GID signed by a trusted peer
- (cf Shibboleth for GENI portal)

Third party authentication



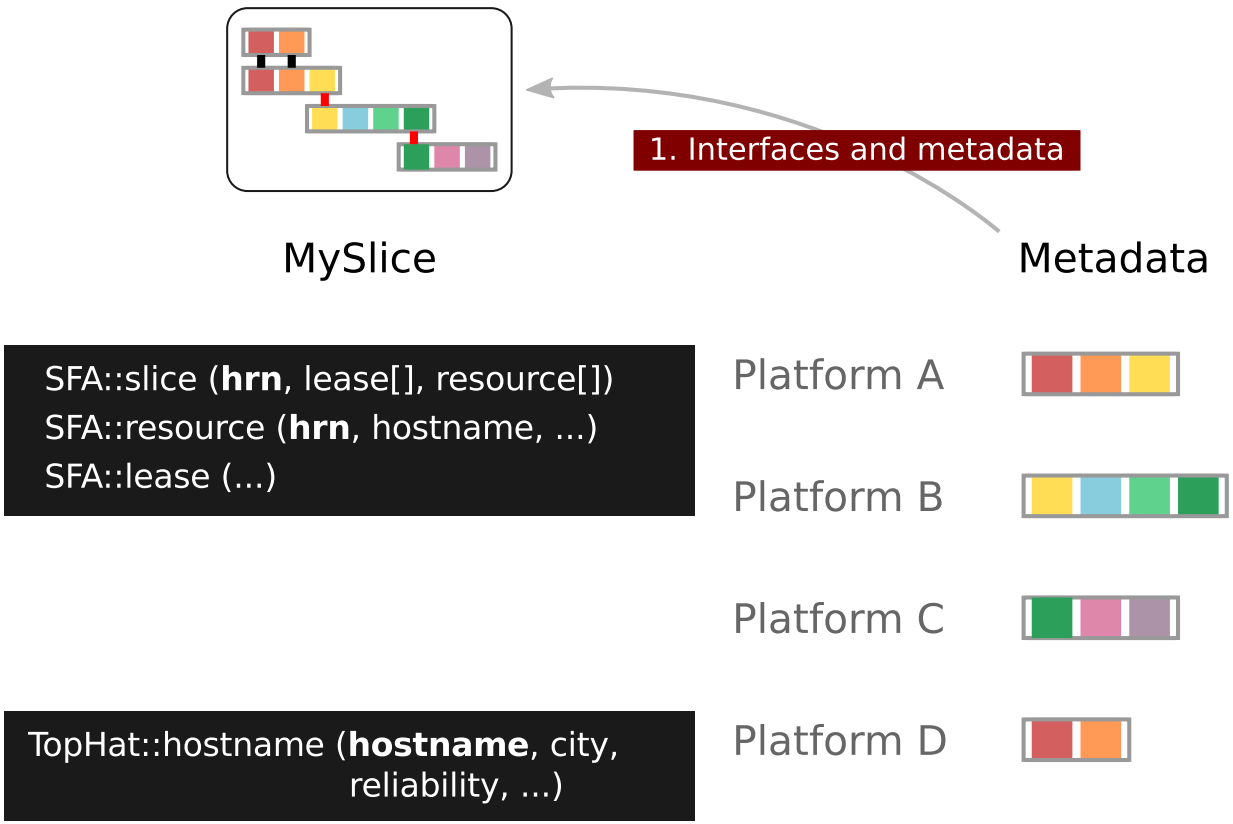
SFA certificate (GID)



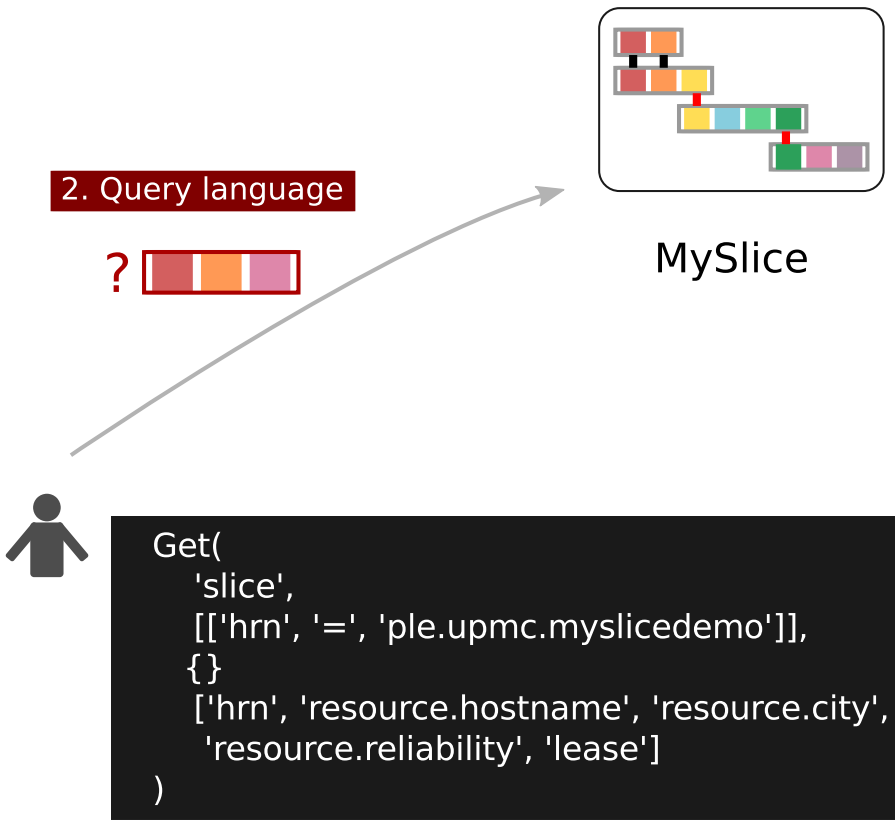
Demo

Dashboard & slice management

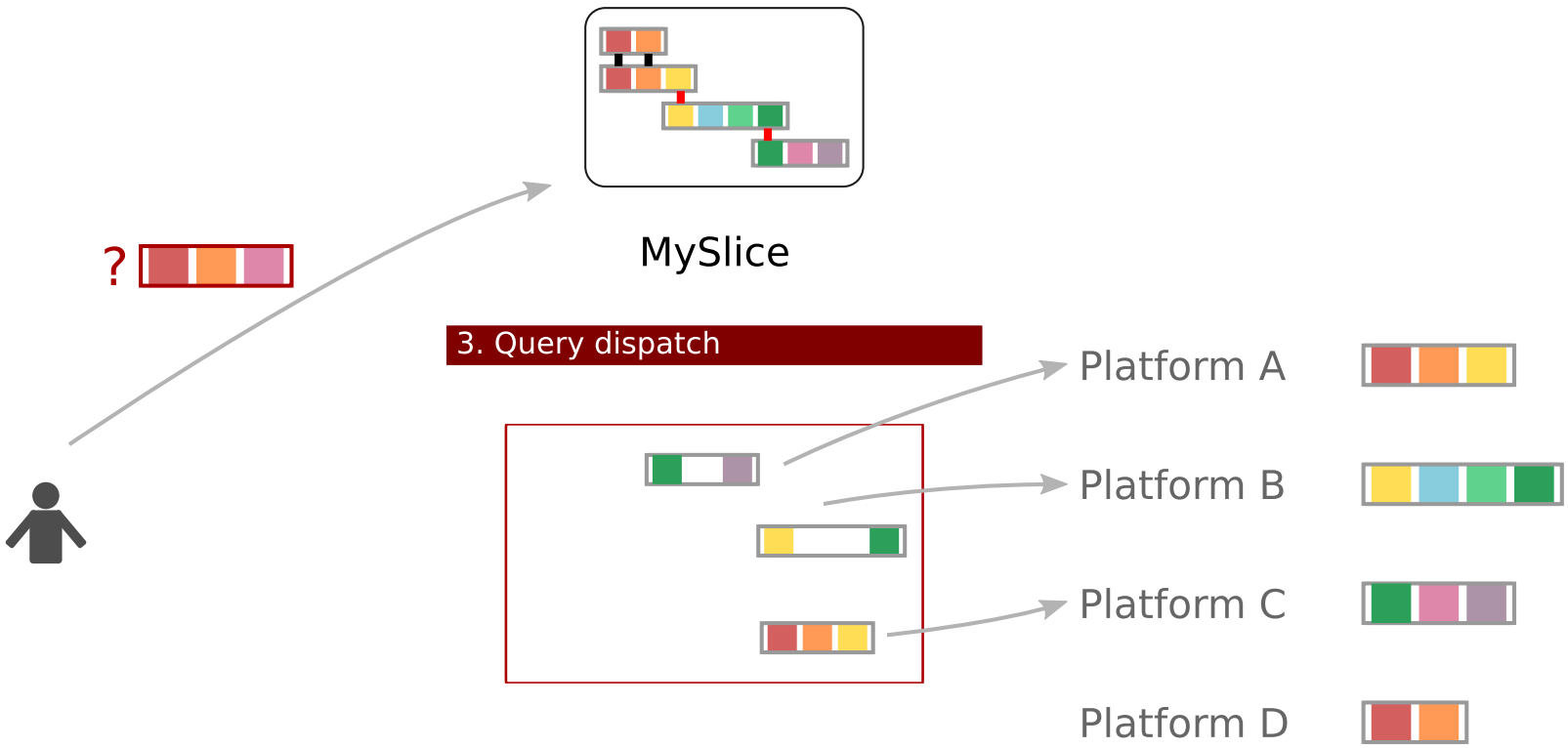
Interconnection framework



Interconnection framework



Interconnection framework



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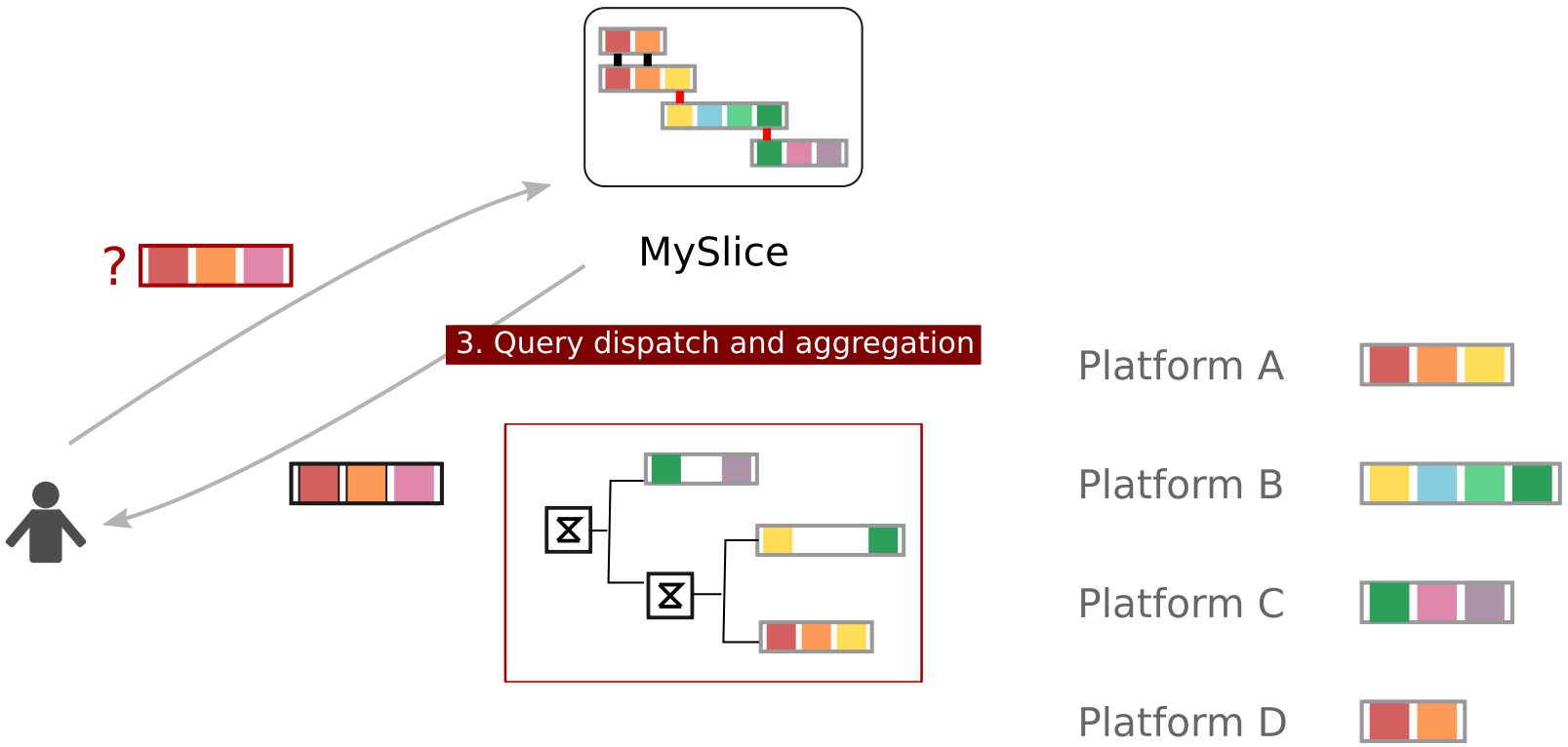

MySlice extensions: experiment control

Candidates:

- NEPI `http://nepihome.org/`
- OMF `http://mytestbed.net/`

- Add a gateway to a service API running an experiment controller:
  - Define the script as a new slice property
  - + support of upload and execution
  - Results can be retrieved through XMPP
- Develop/integrate appropriate visualization plugins

Pointers

For users

- Project website: `http://www.myslice.info`
- Demo website: `https://demo.myslice.info`
  - documentation and tutorials

For testbed owners and developers

- Debian packages
- GIT repository: `http://git.myslice.info`
- TRAC: `https://trac.myslice.info` (new)
- mailing lists, IRC channel, etc.

Community development: contributors

PRINCETON UNIVERSITY, 東京大学 THE UNIVERSITY OF TOKYO		architecture (GENI Understanding Federation)
PLANETLAB	Europe	INRIA Sophia (FR): architecture, scheduler
Senslab Very large scale open wireless sensor network t		INRIA Grenoble (FR): 3D map, scheduler
NITOS		UTH (GR) : scheduler (in progress)
ibbt		IBBT (BE) : measurement visualization (in discussion)

Community development: testbeds

OpenLab	(adopted)
PLANETLAB	Europe
NITOS	
FIT EQUIPEX	(in progress)
Senslab Very large scale open wireless sensor network t	
teagle A Pan-European Laboratory Project	(in progress)
fibre FUTURE INTERNET TESTBEDS EXPERIMENTATION BETWEEN BRAZIL AND EUROPE	(in discussion)

Conclusion

- An open solution for users to access the global federation of testbeds
- Support for the complete experimental lifecycle
- Available for download, deployment in progress

References

- J. Augé, T.Parmentelat, N. Turro, T. Friedman – Tools to foster a global federation of tesbeds – Computer Networks – Special issue Future internet testbeds (in submission)
- L. Baron, J. Augé, T. Friedman, S. Fdida – Towards an integrated portal for networking testbed federation: an open platform approach – FIRE Engineering workshop, Nov 6-7, 2012, Ghent, Belgium