MySlice overview

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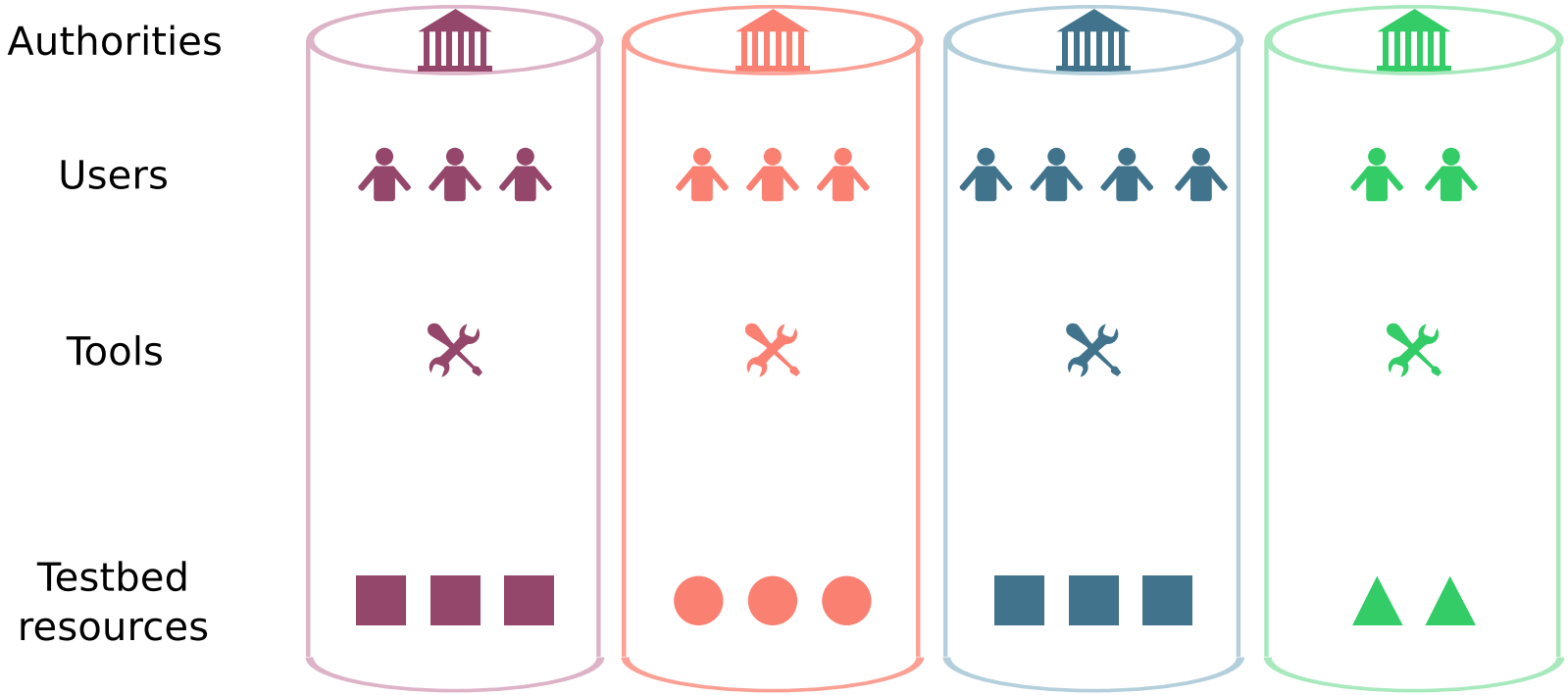
Outline

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

Where we were recently



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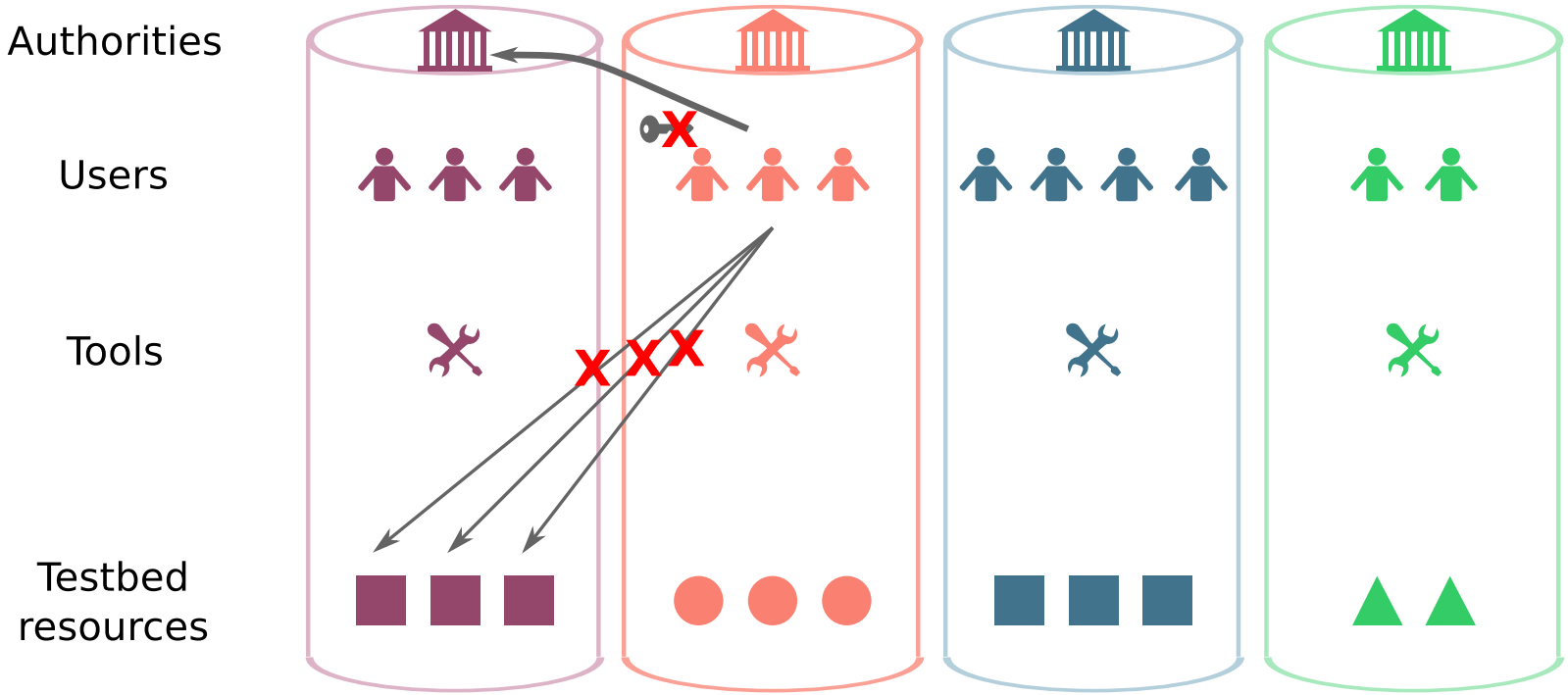

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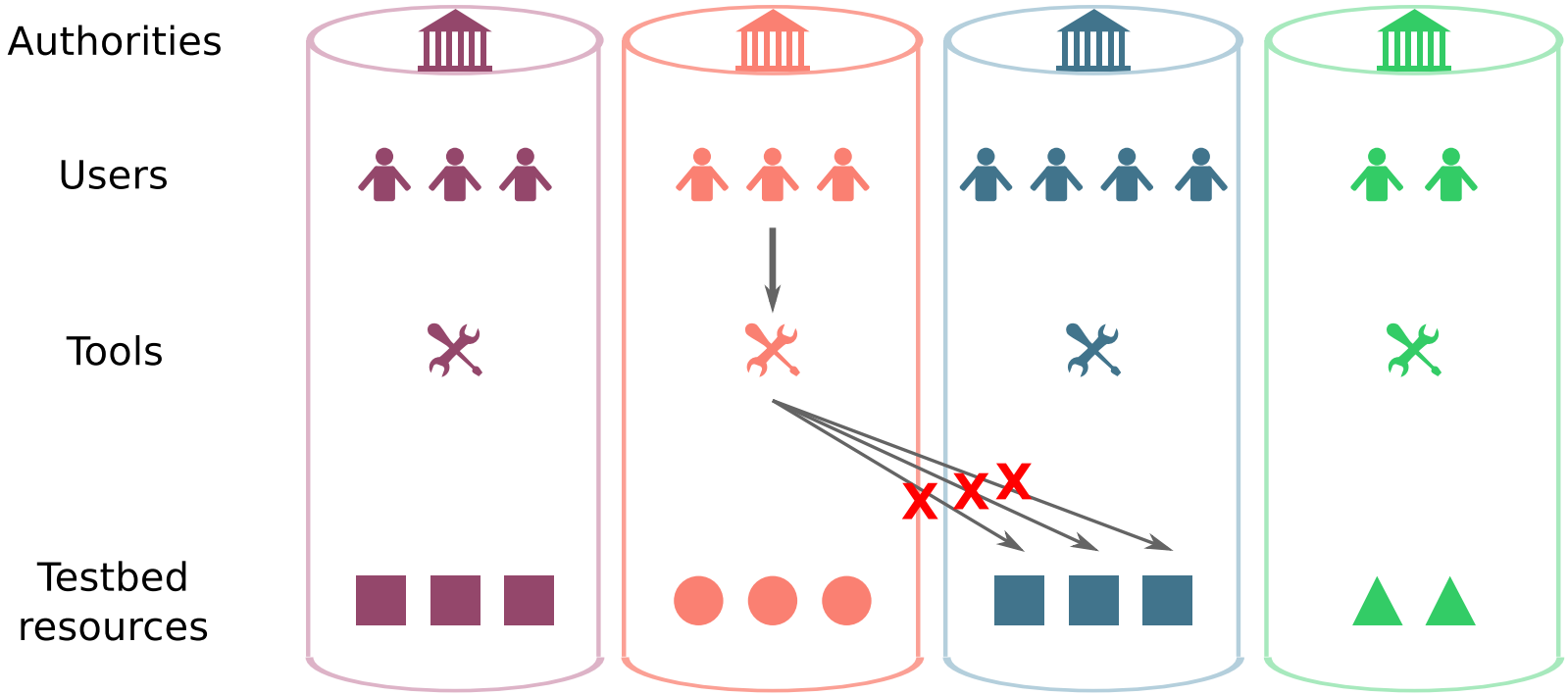

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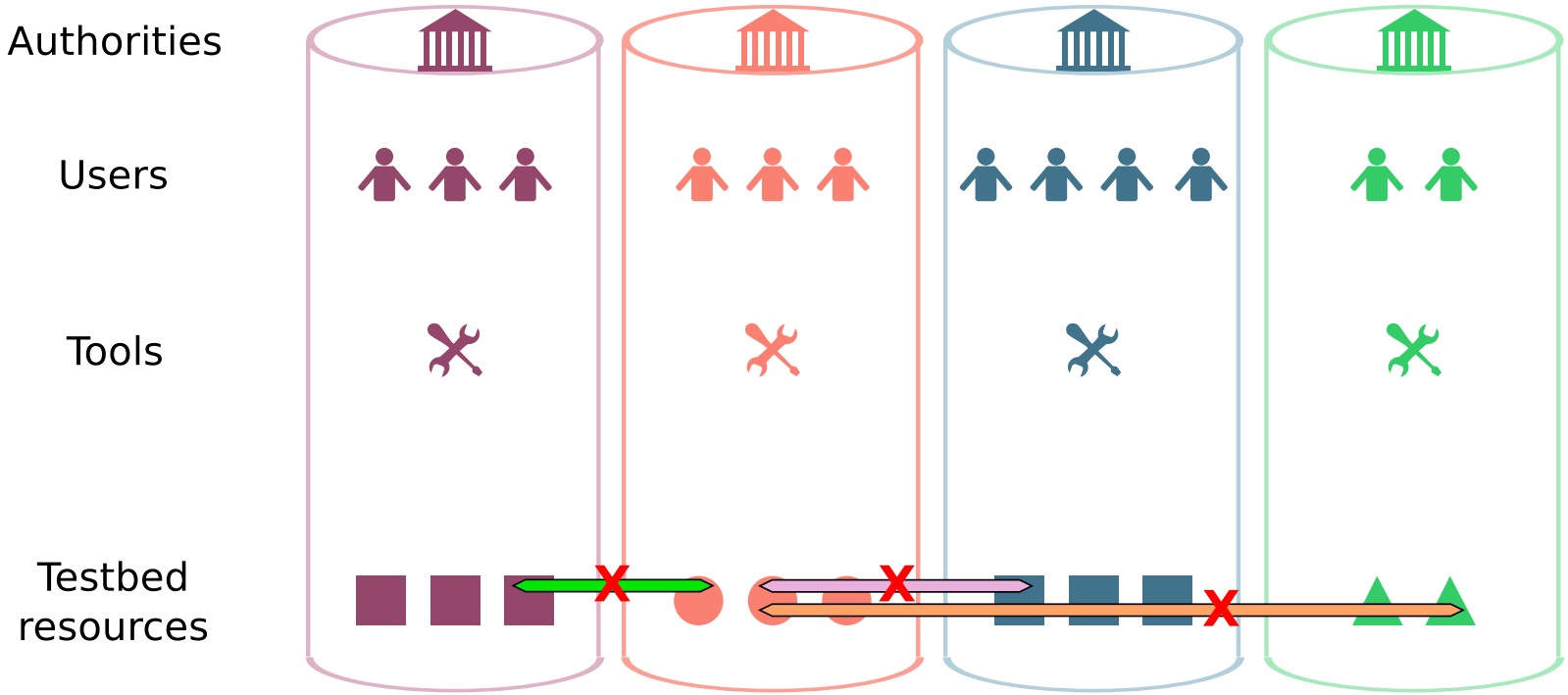

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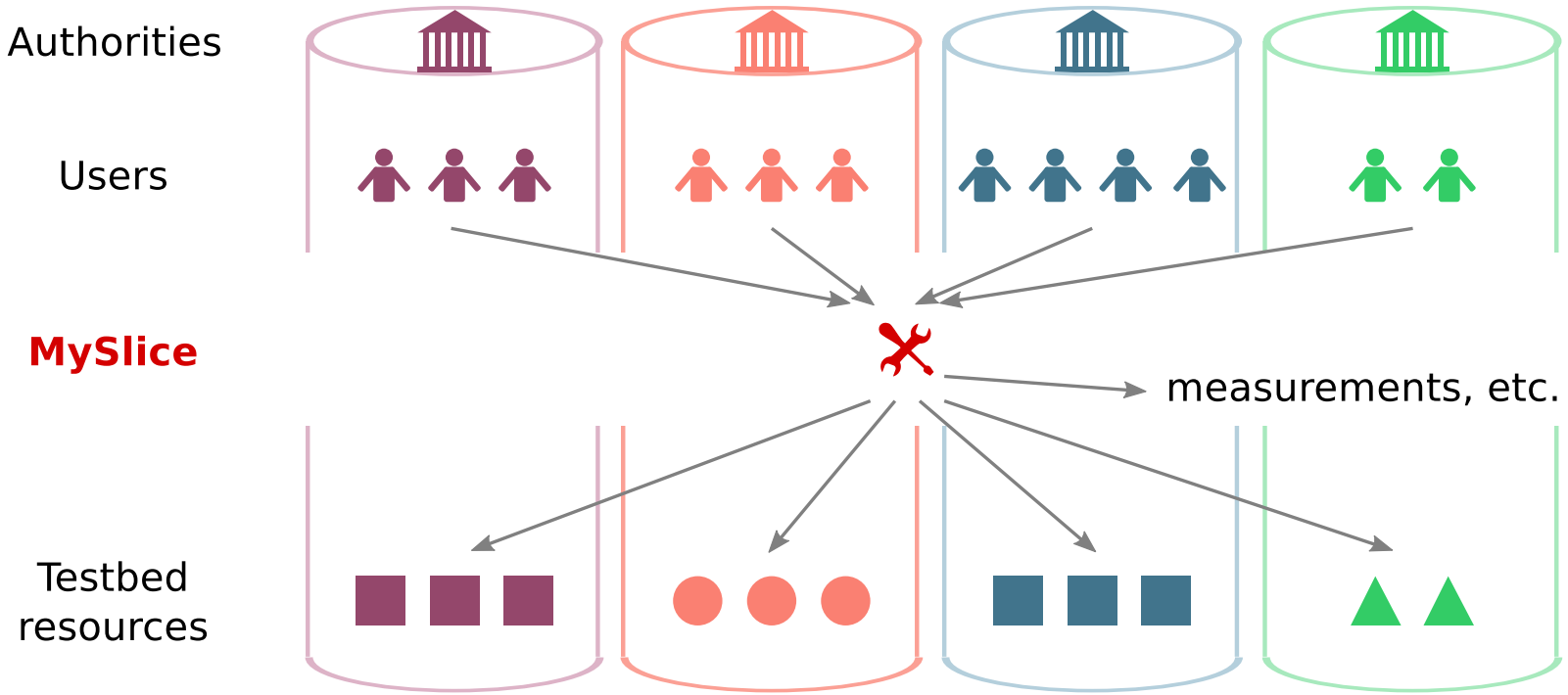
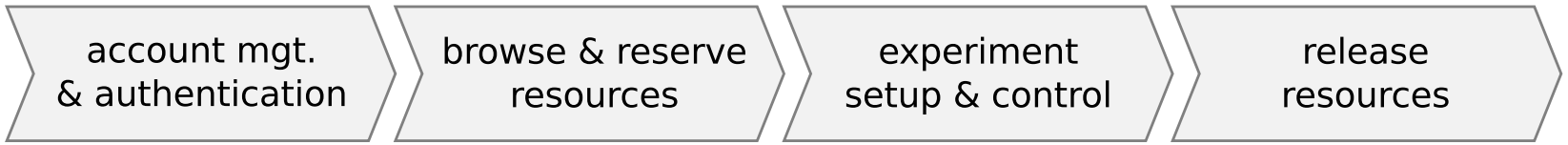


Hiding the complexity of the experimental lifecycle



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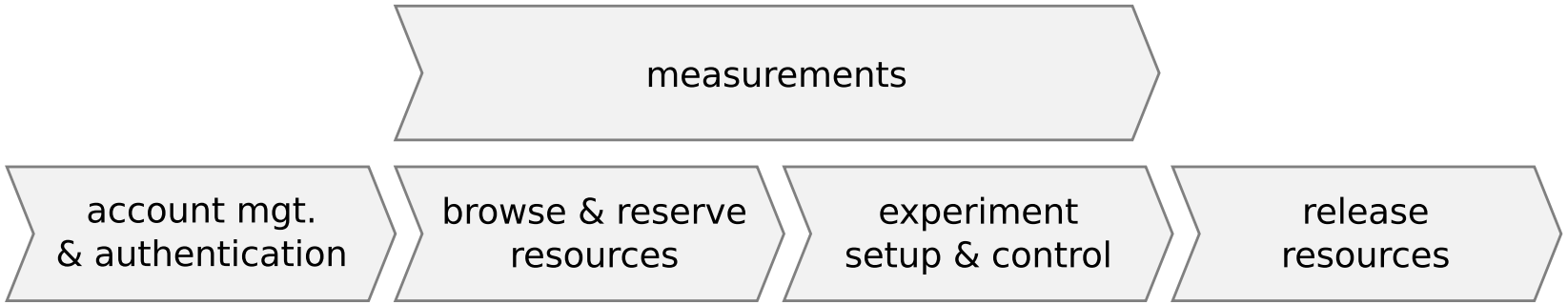

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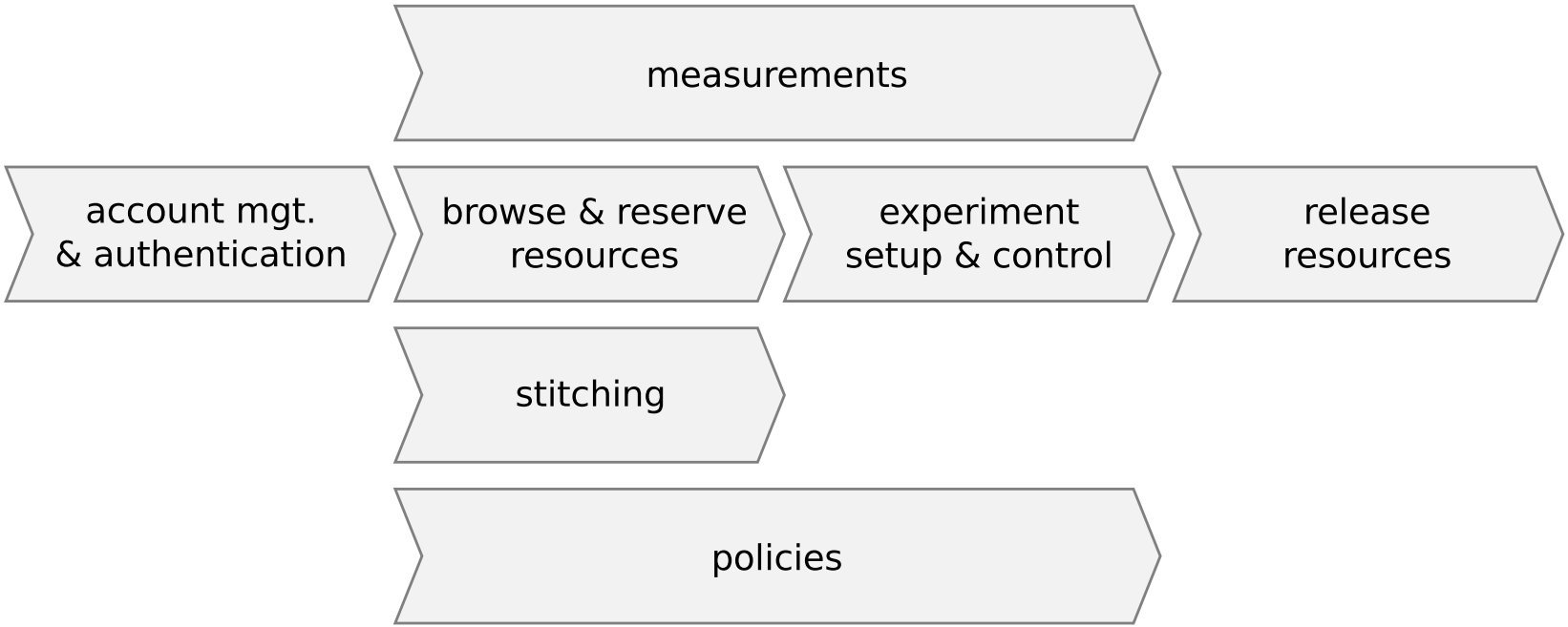

etc.

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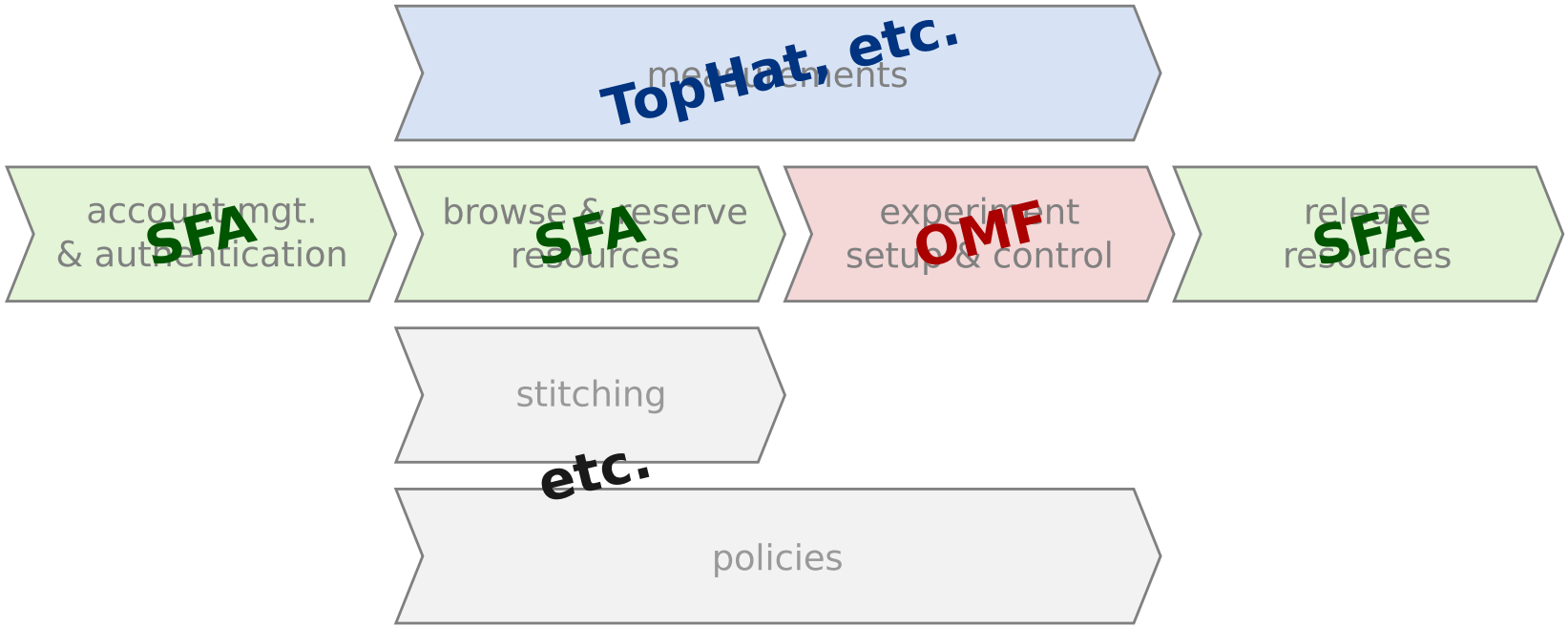

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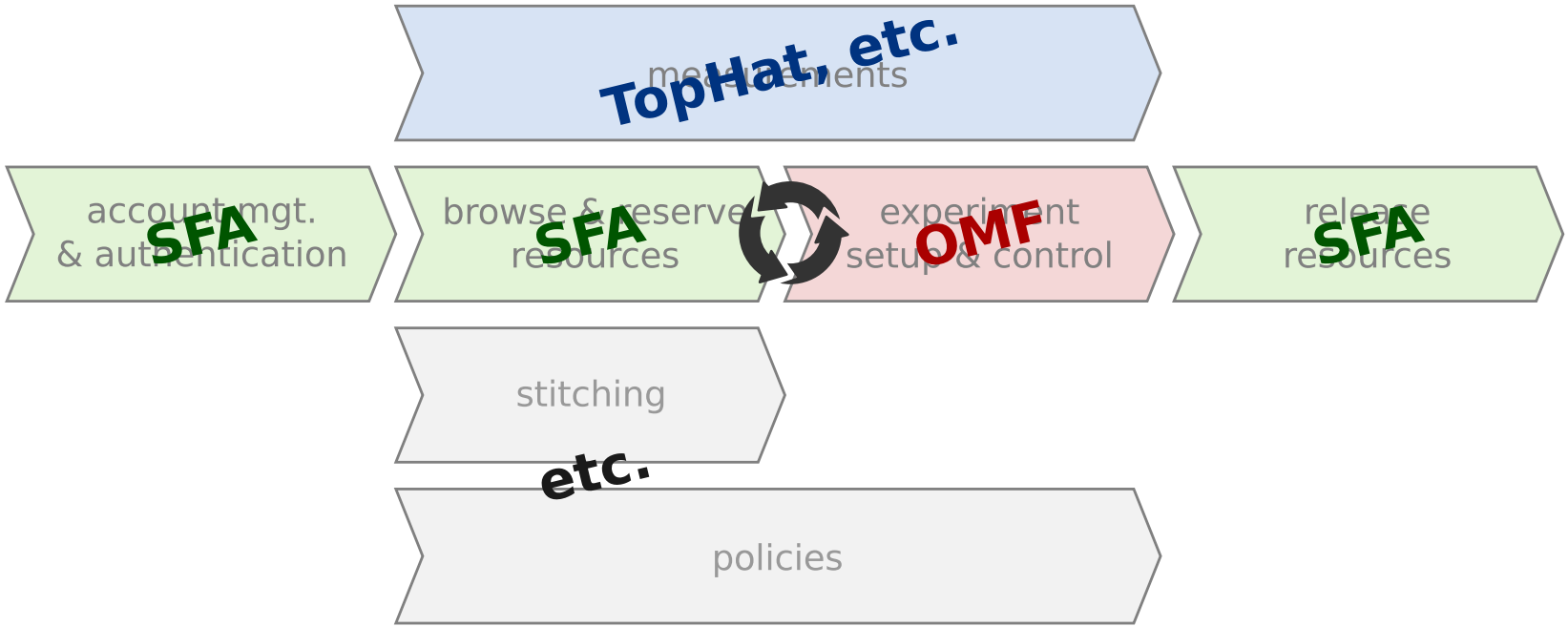
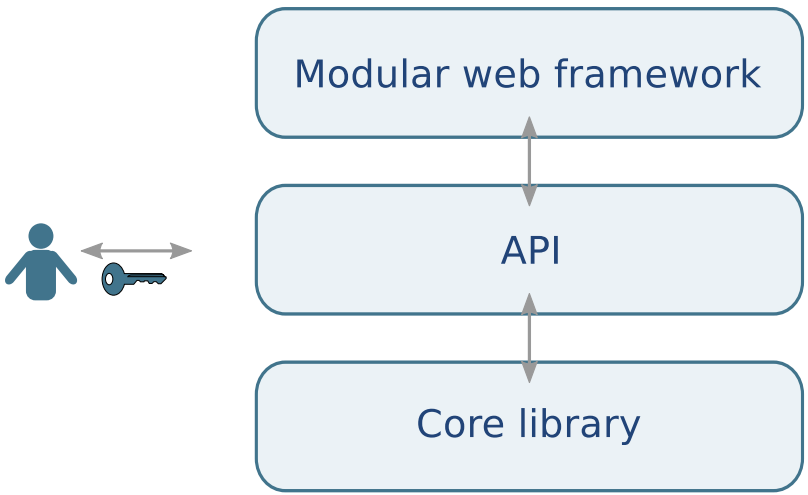
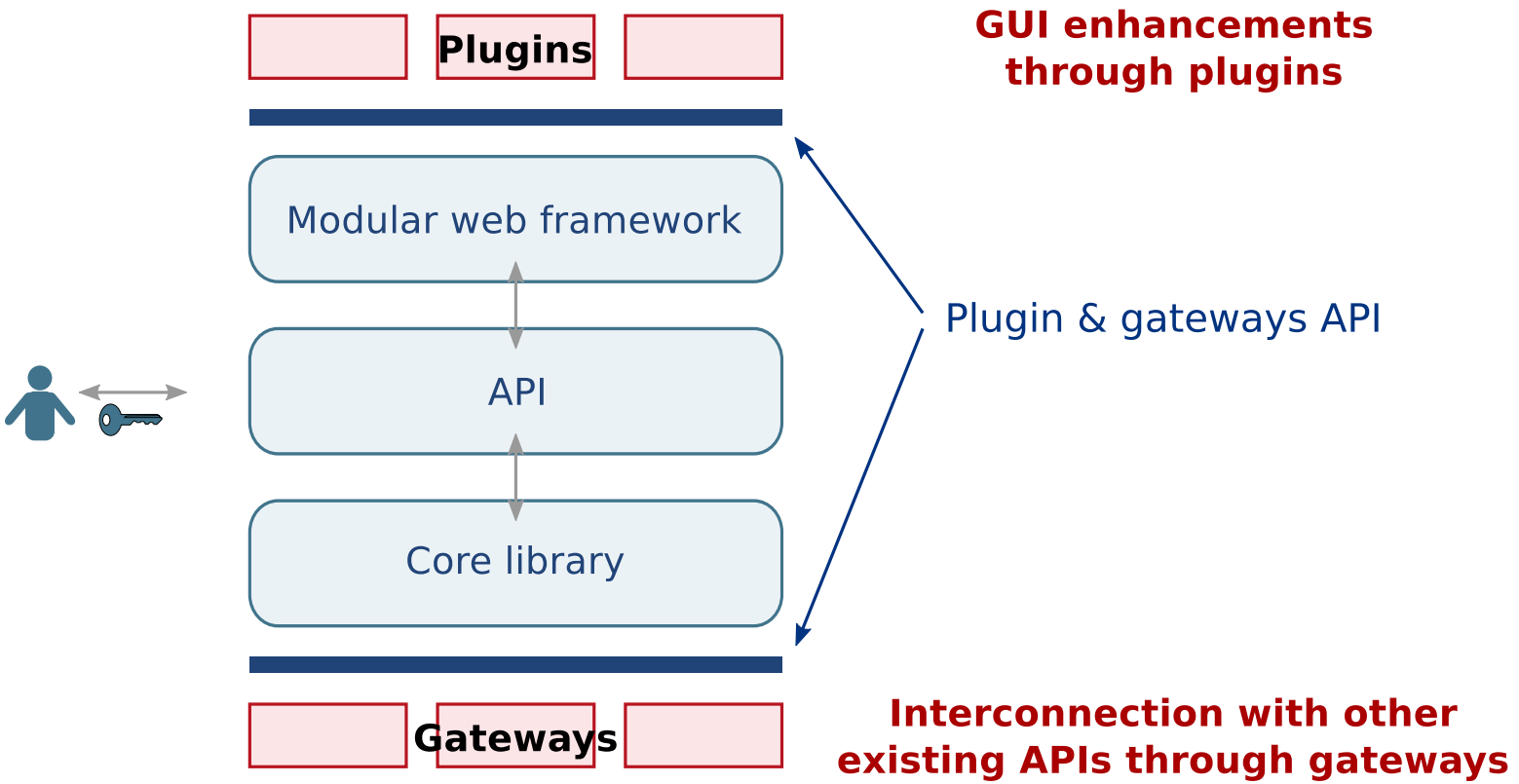


MySlice architecture



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

MySlice architecture



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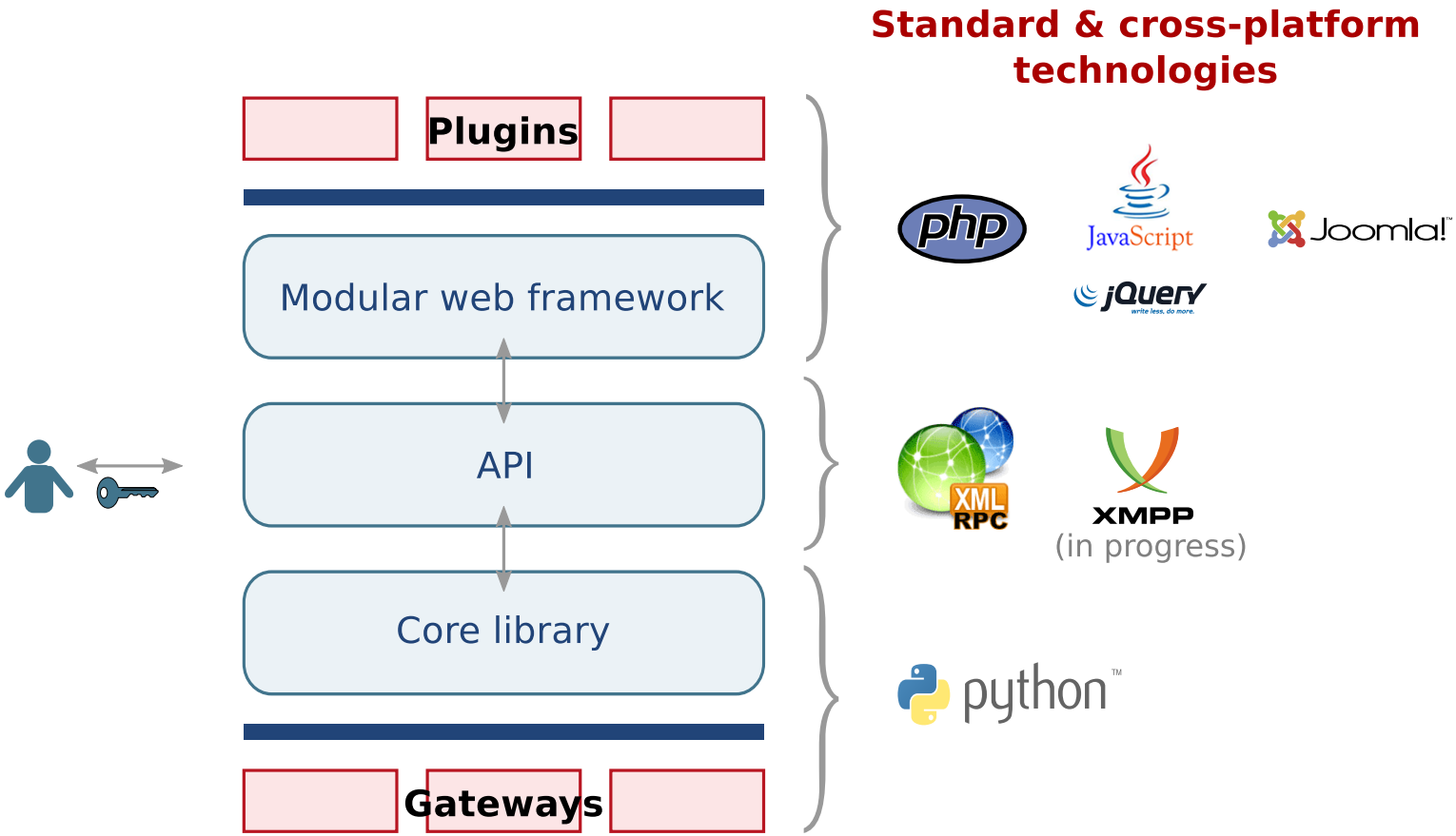

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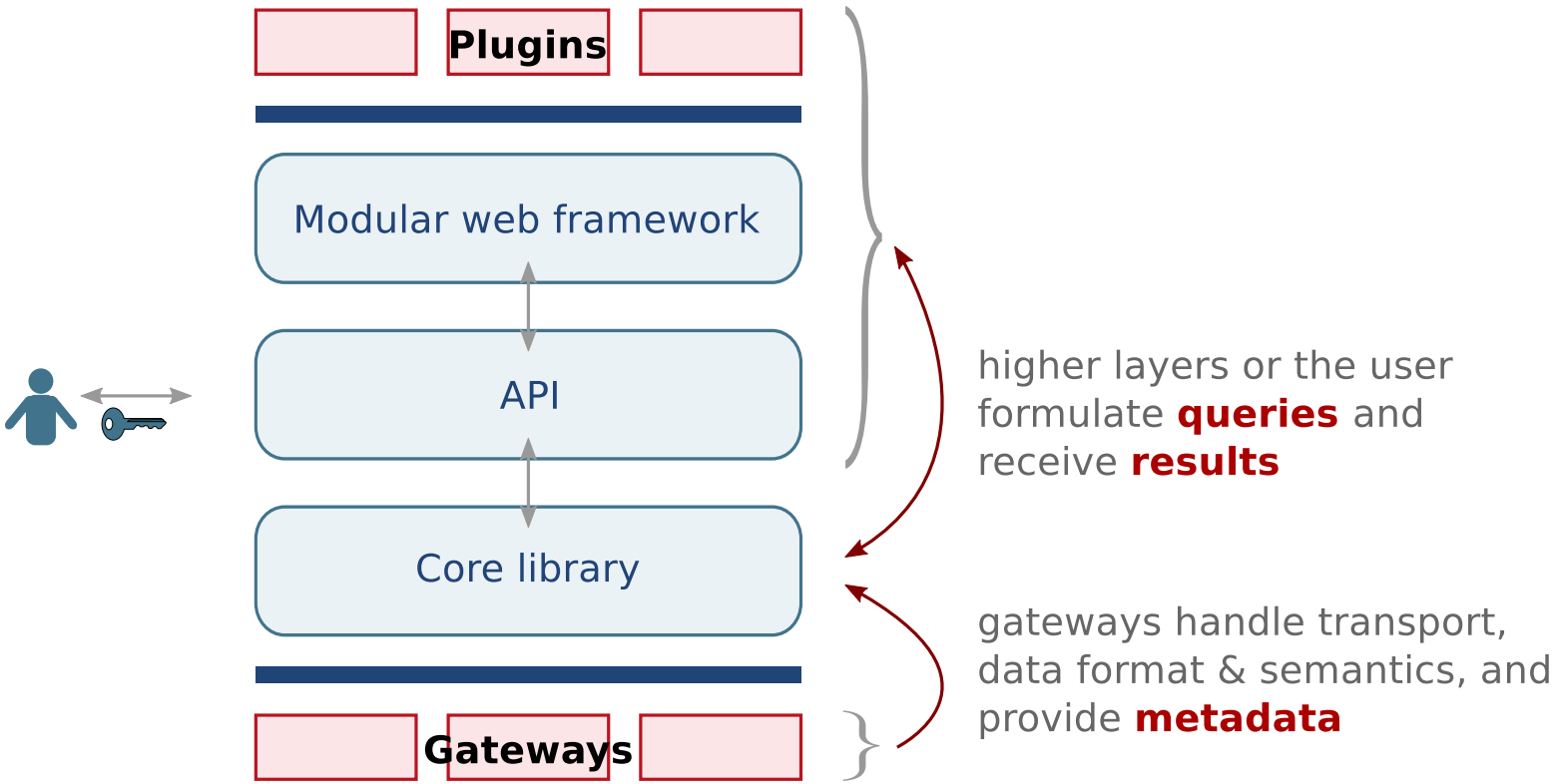

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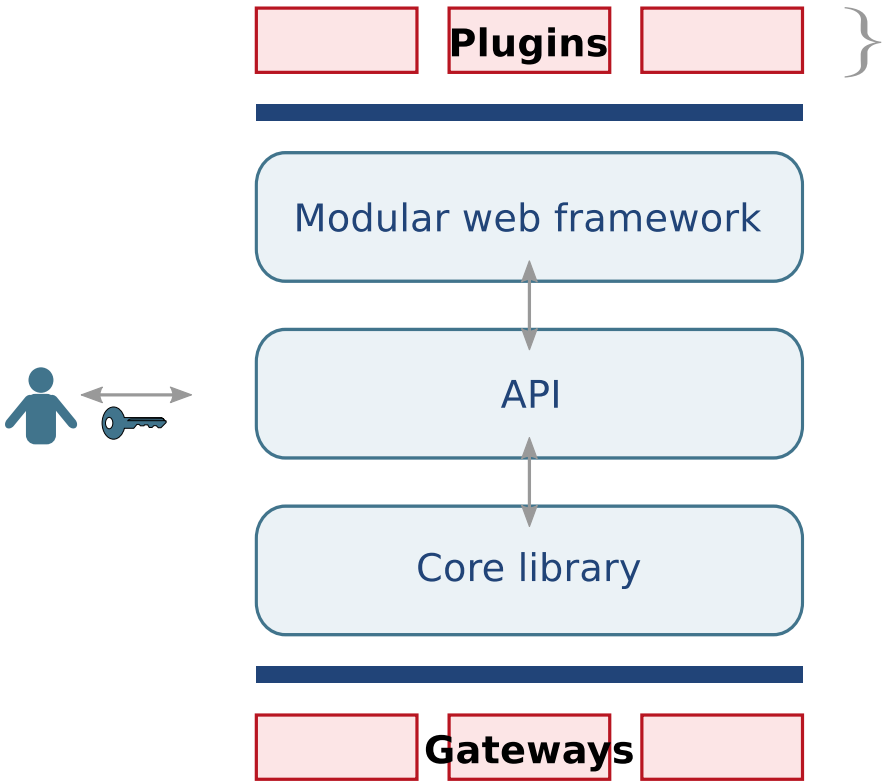
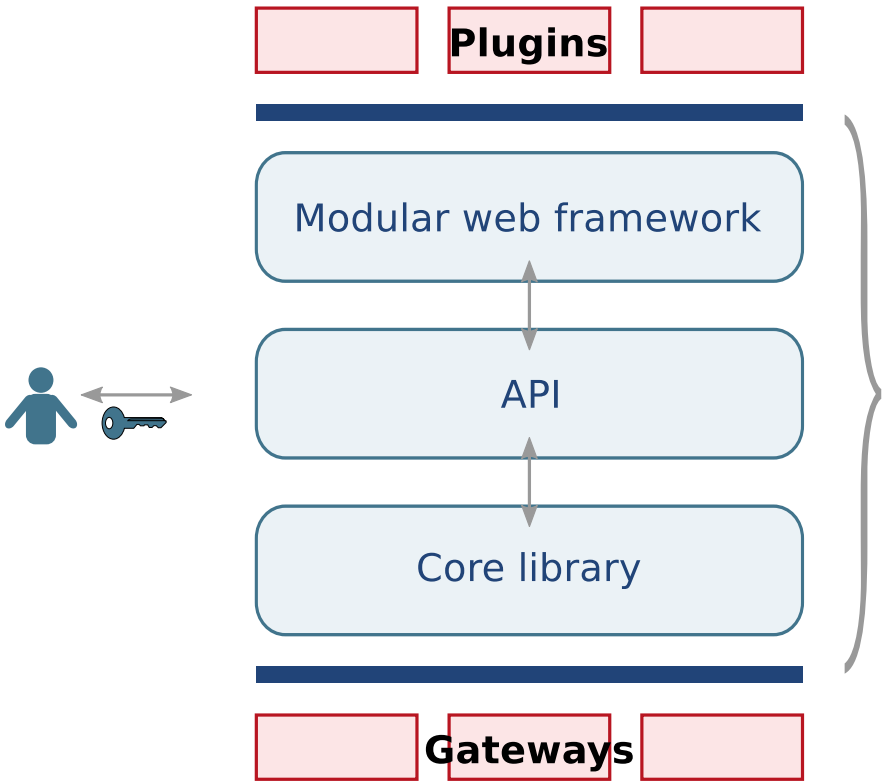


plugins are isolated from the gateways diversity thanks to the **query** abstraction

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

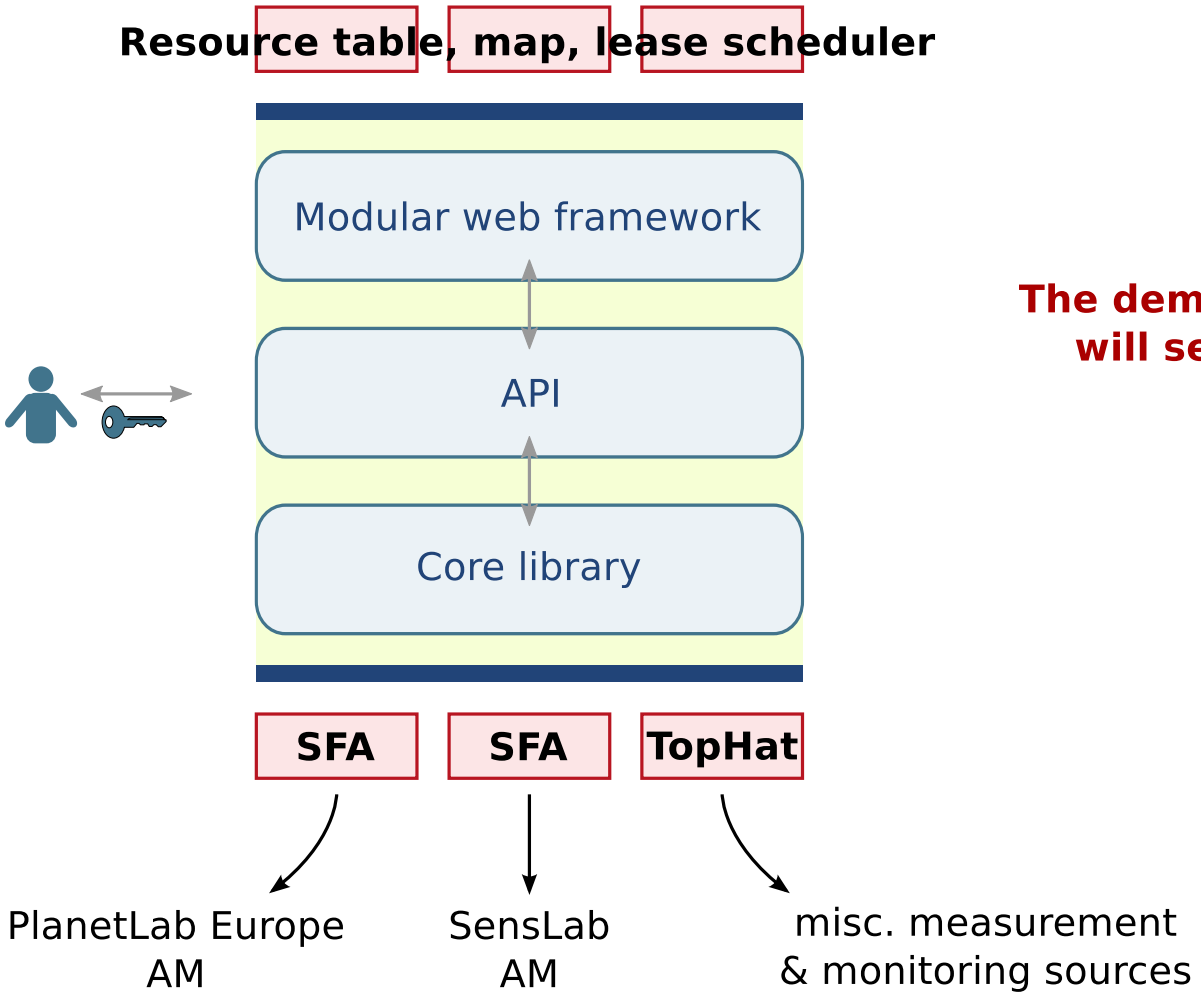


MySlice architecture provides a convenient **aggregation** and **interoperability** layer between the various services and the UI.

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 !

Pointers

For users

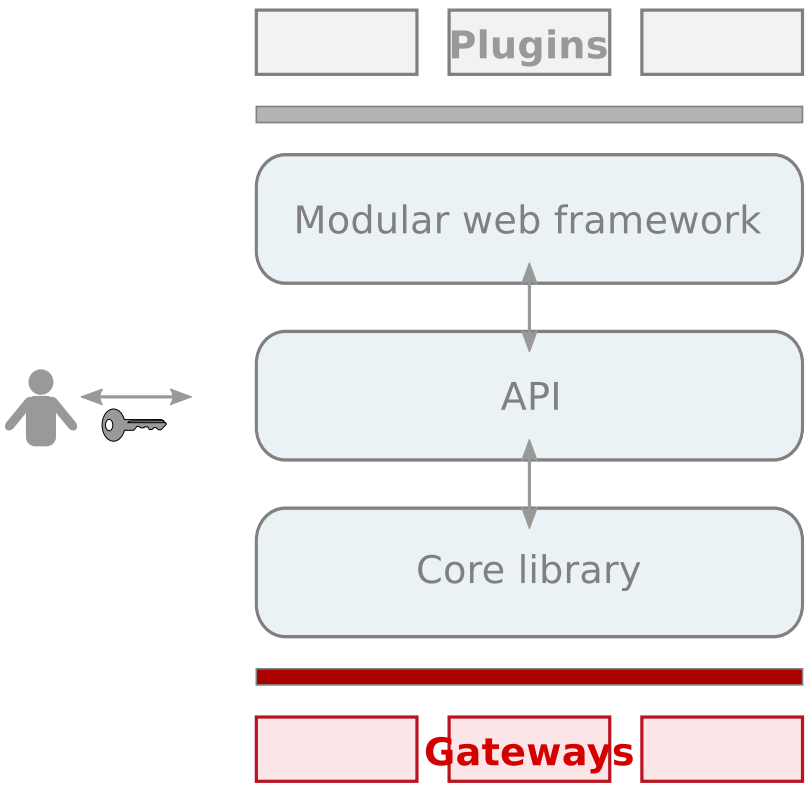
- Project website: `http://www.myslice.info`
- Demo website: `https://demo.myslice.info`
  - documentation and tutorials

For testbed owners and developers

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

Outline

MySlice architecture



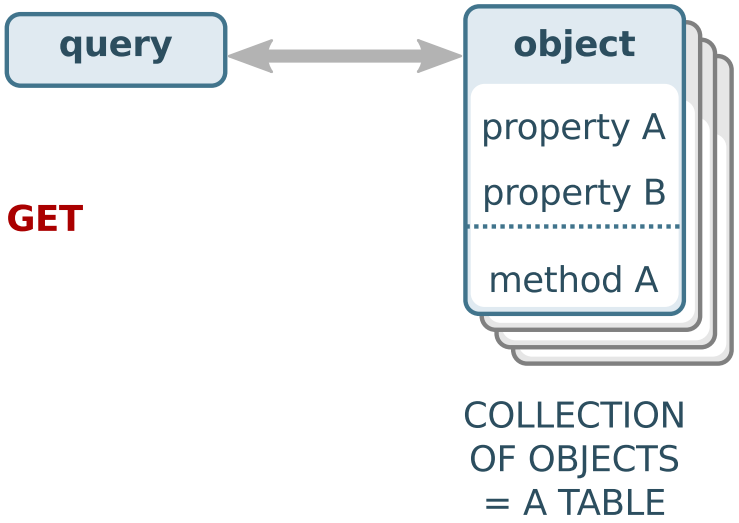
GUI enhancements through plugins

Interconnection with other existing APIs through gateways

MySlice objects

identified by a **UUID**:

- to get results
- to edit
- etc.



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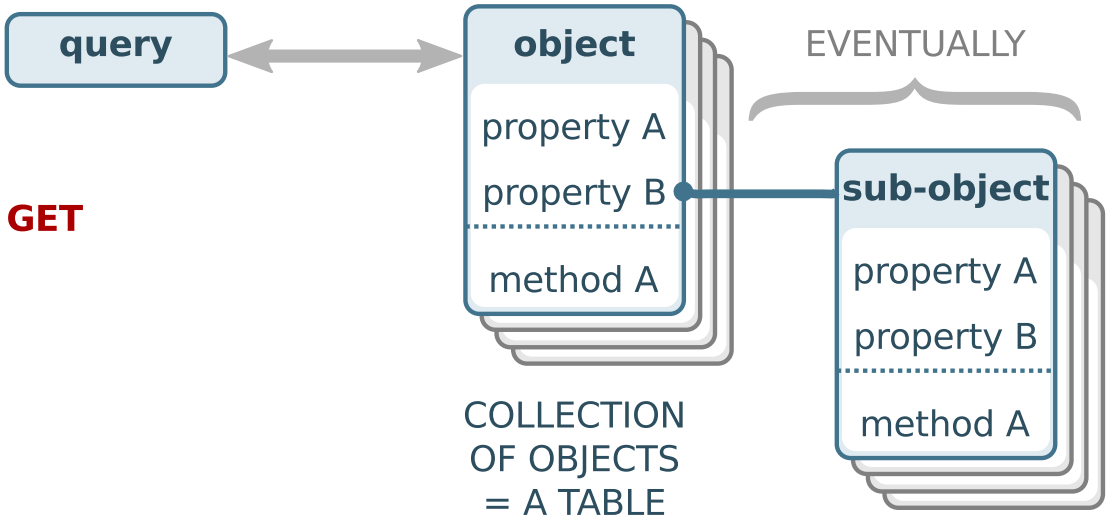

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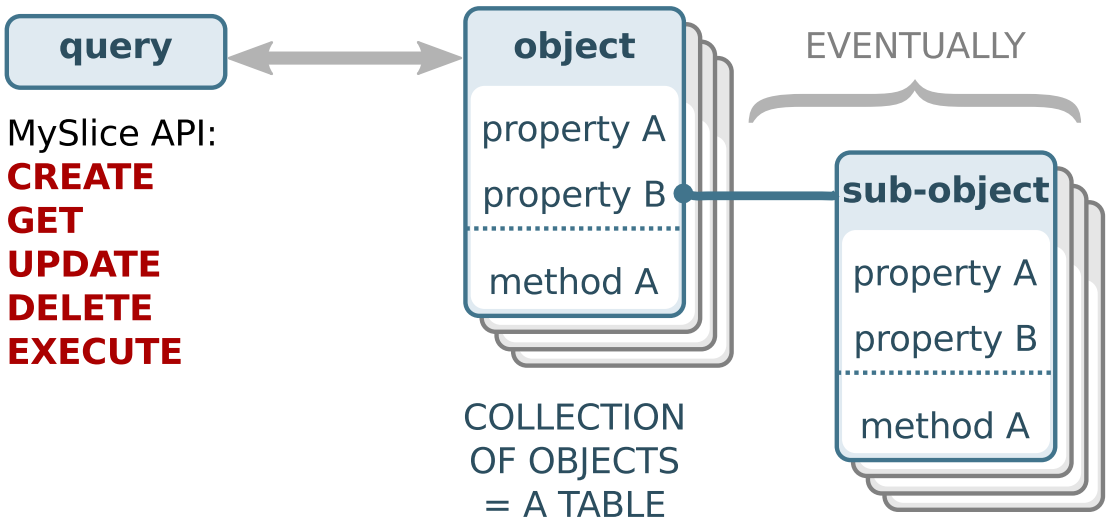

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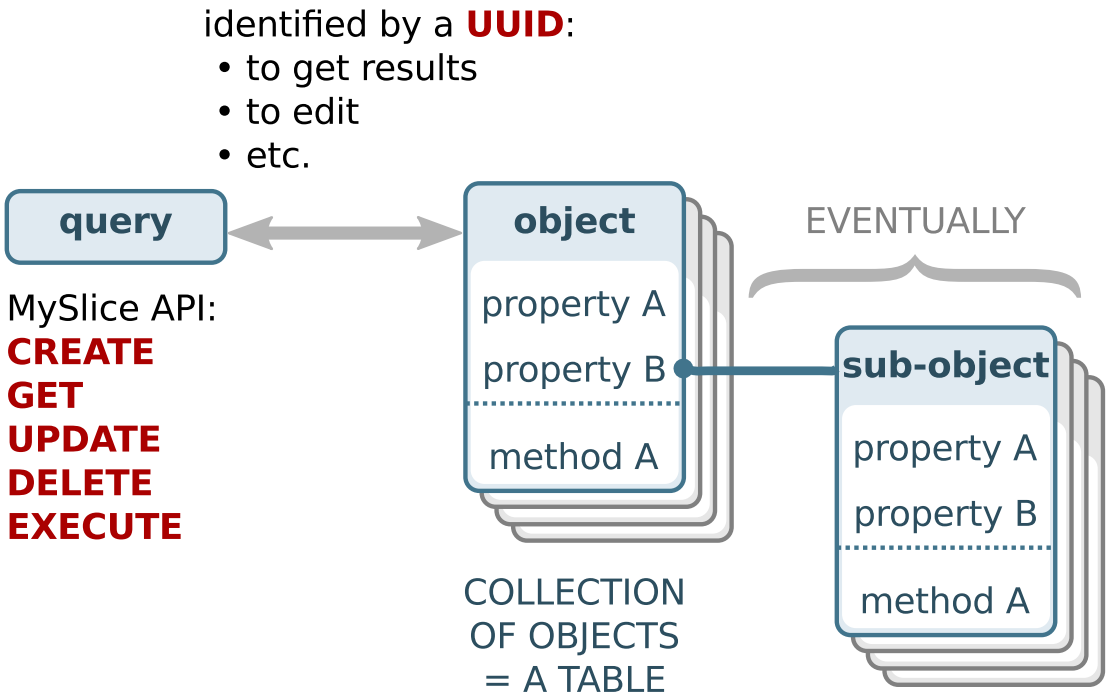


- Extending MySlice = adding new objects, or extending existing ones
- Like simplified distributed, streaming, object oriented database
- MySlice core makes the integration transparent

Querying the objects with MySlice API

```
Action(auth, method, filters, params, fields, ts, callback)
```

Action	method	filters	params	fields	ts	callback
CREATE	✓			✓		!
GET	✓	✓		✓	✓	!
UPDATE	✓	✓	✓	✓		!
DELETE	✓	✓				!
EXECUTE	✓	✓	✓	✓		!

MySlice/TopHat gateways

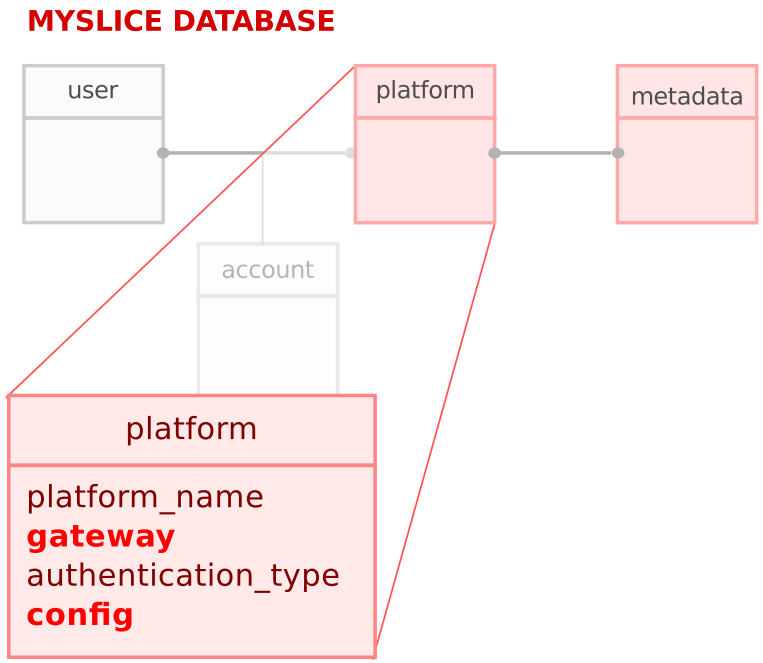
Existing gateways

SFA, MySlice/TopHat, MaxMind, Team Cumry, SONoMA†, ETOMIC†

Developing a new gateway

1. write a gateway module (Python)
   - translate MySlice query into platform query
   - translate back platforms results into MySlice table format
   - handles transport, data formats, semantics
2. write metadata (own format: .h file)
   - $\sim$ enhanced C++ .h file / database schema
   - describes object and its properties / methods
   - and platform capabilities: filtering, column selection, sorting, joining, etc.

The case of SFA : metadata



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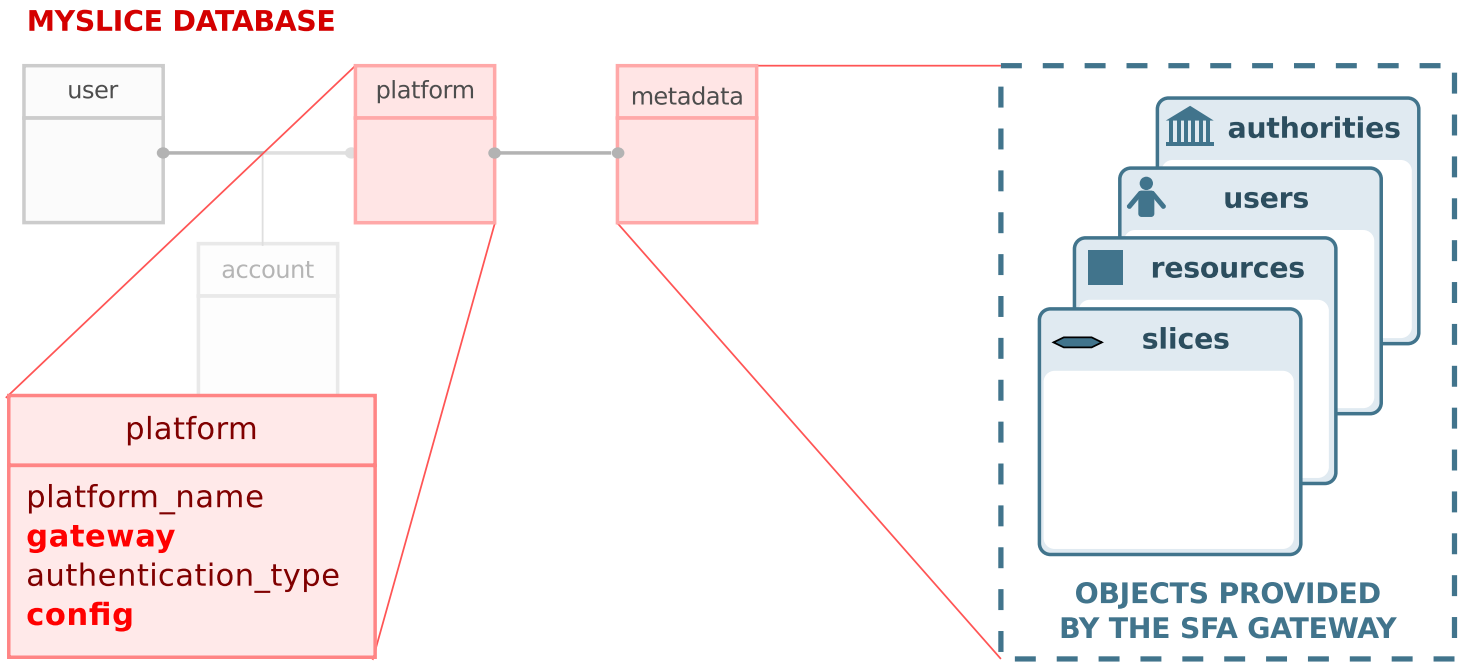

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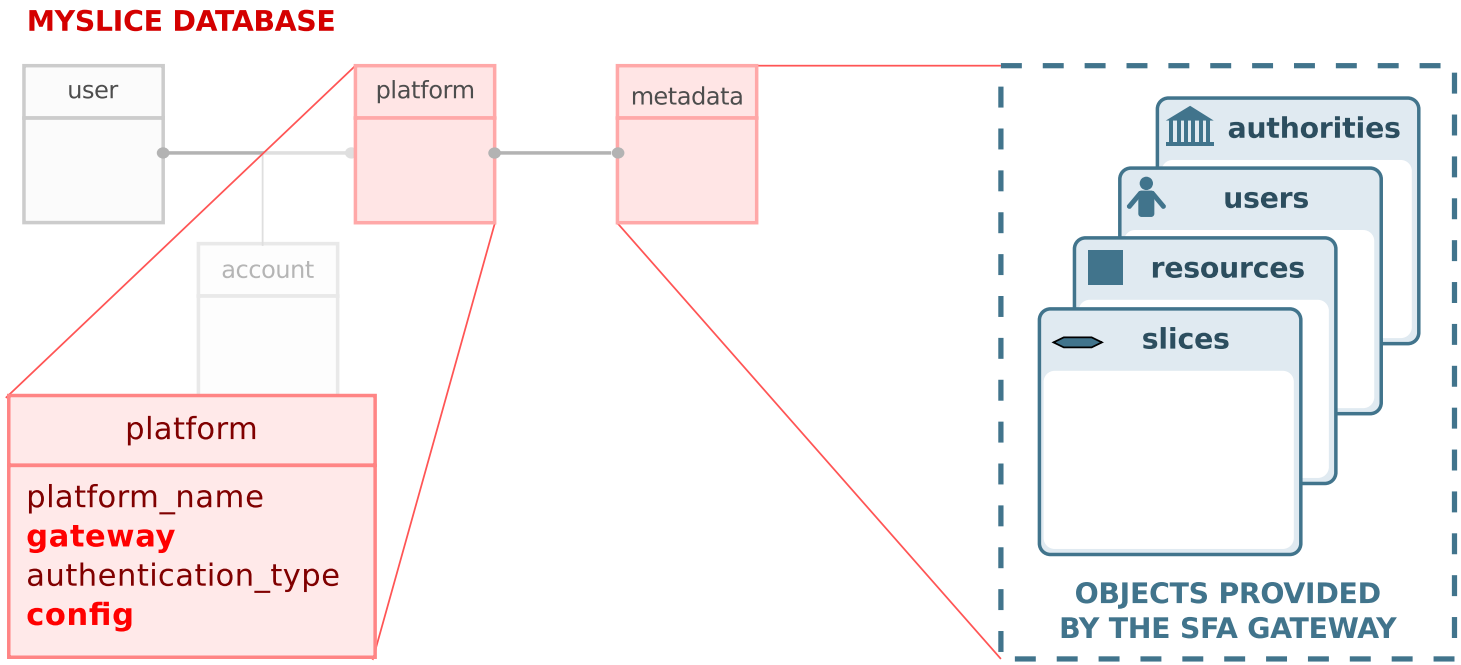
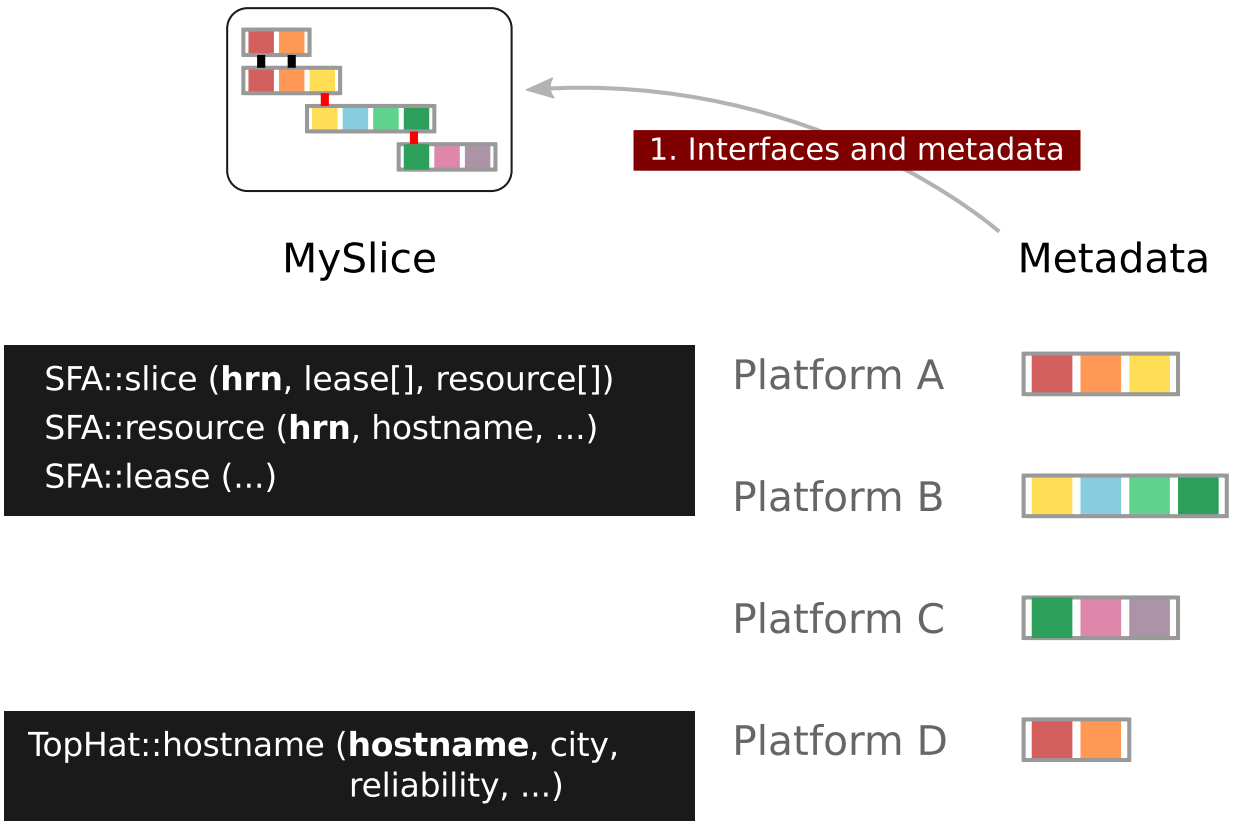


EXAMPLE OF METADATA FILE

```
class slice {
    const text slice_hrn; /**< Slice Human Readable name */
    resource   resource;  /**< List of resources associated to the slice */
    lease      lease;     /**< List of leases associated to the slice */
    user       user;      /**< List of users associated to the slice */
    KEY(slice_hrn);
};
...
```

Interconnection framework



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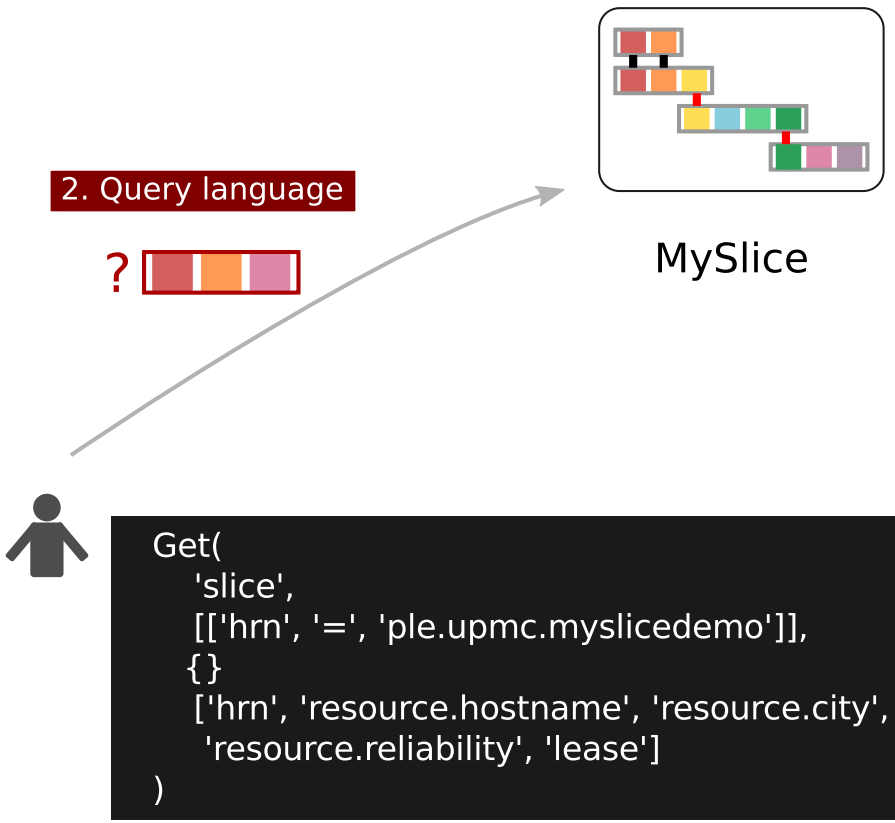

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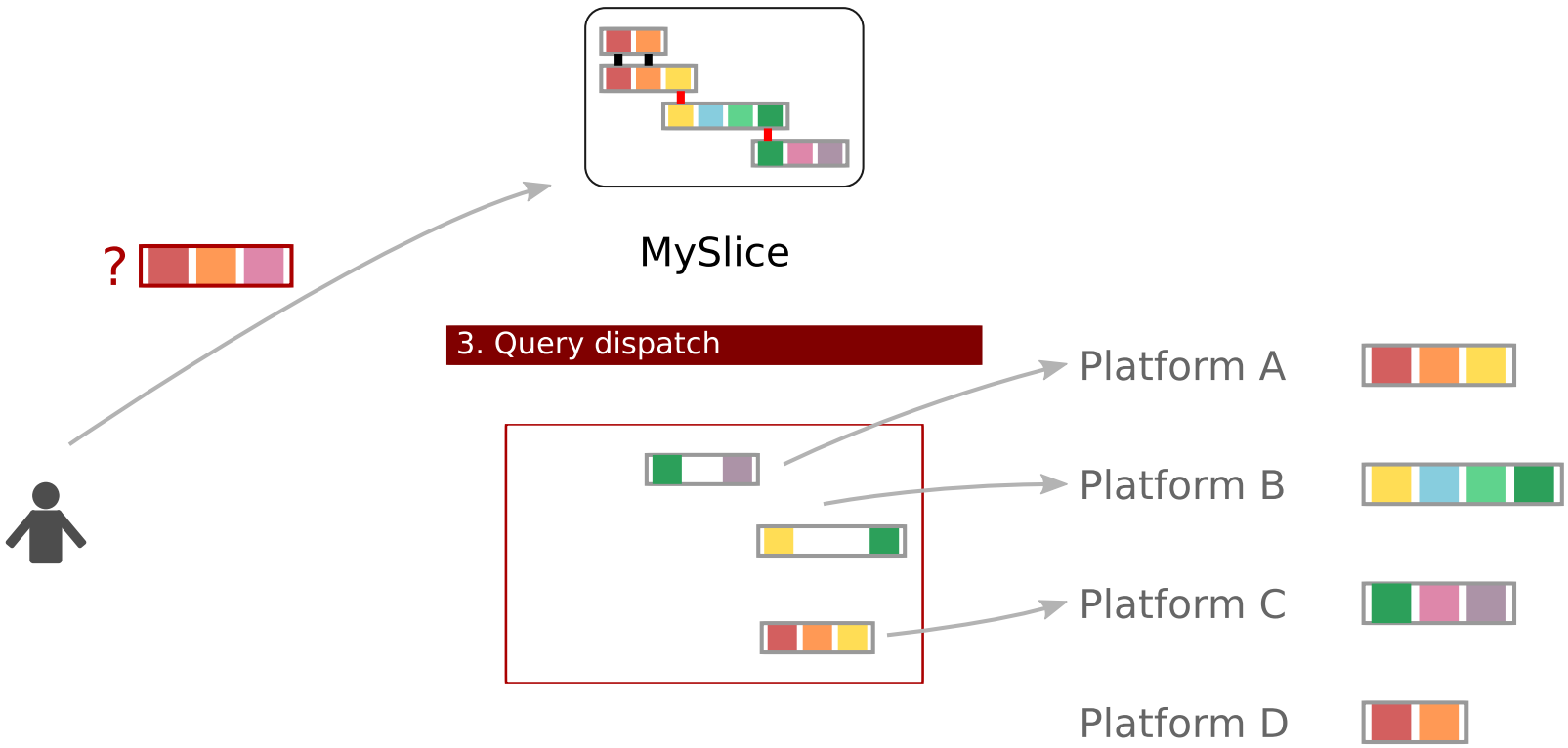

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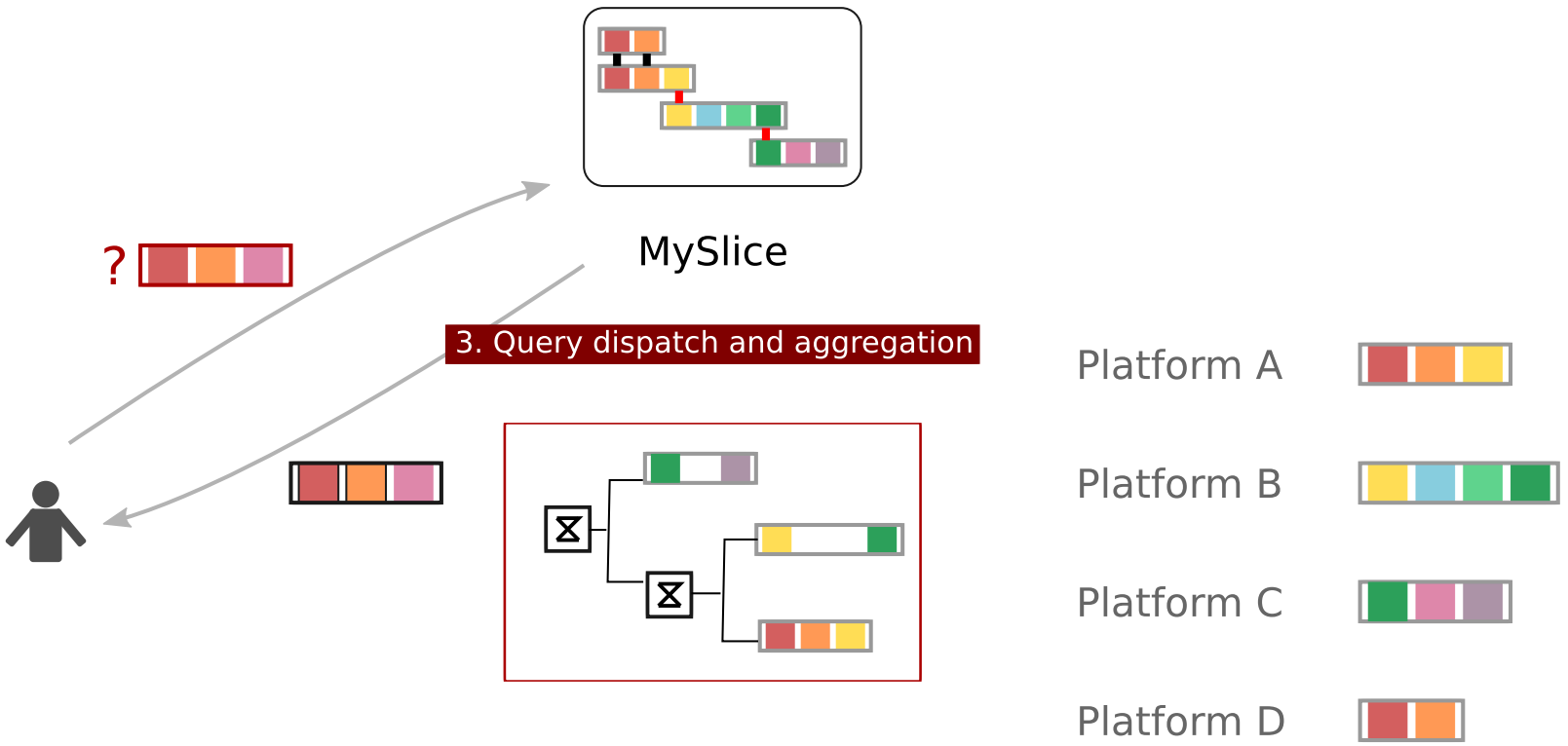

Aggregating SFA and measurements

SAMPLE MYSLICE QUERY

```
srv.Get(
    auth,
    "slice",
    [["slice_hrn", "=", "ple.upmc.myslicedemo"]],
    {},
    ["slice_hrn",
     "resource.network", "resource.type", "resource.hrn",
     "resource.hostname", "resource.asn", "resource.country"])
```

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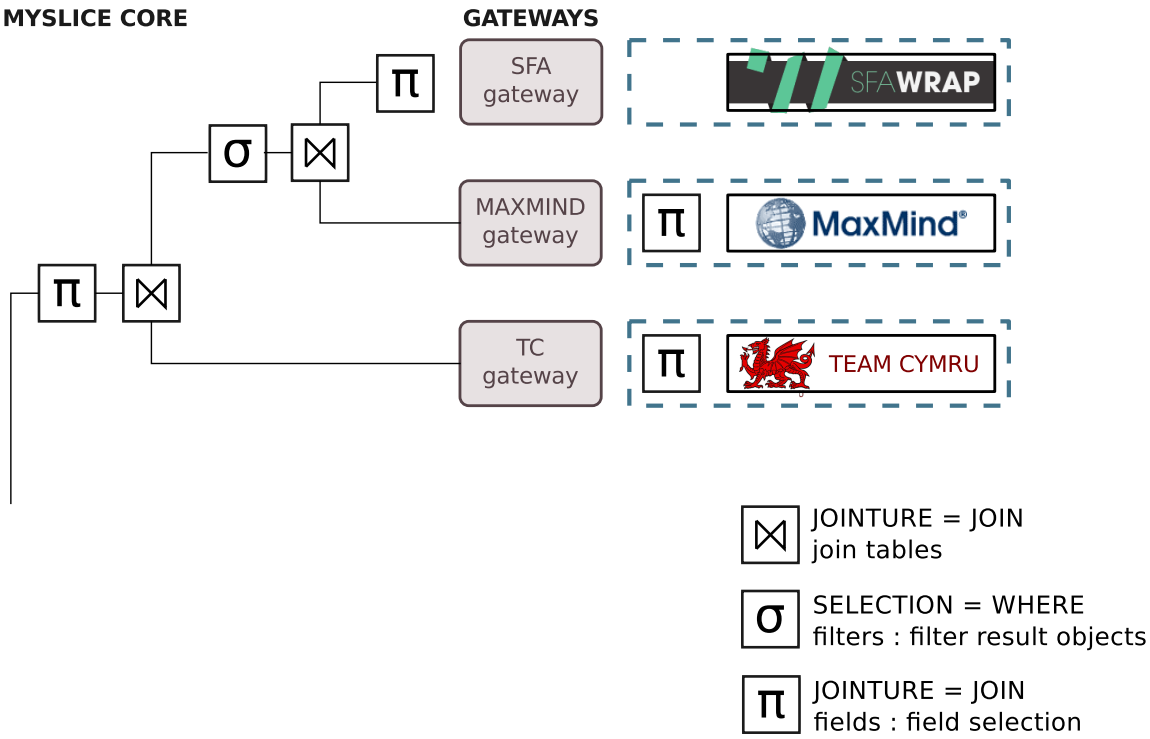

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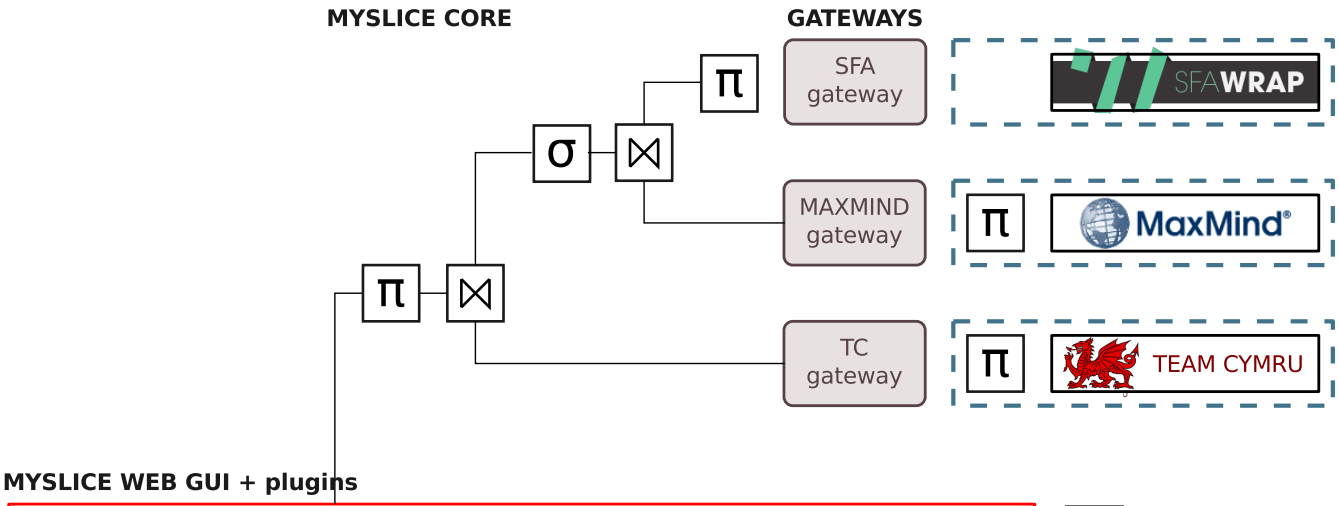

MYSLICE WEB GUI + plugins

hrn	hostname	asn	country	+/-
ple.uoeple.uoepl1	uoepl1.essex.ac.uk	786	United Kingdom	☑
ple.upmc.ple2	ple2.ipv6.lip6.fr	1307	France	☑
ple.ibbtple.planck249ple\.test\.iminds\.be	planck249ple.test.iminds.be	2611	Belgium	☐
ple.paderbornple.plane-lab-pb2\.uni-paderborn\.de	plane-lab-pb2.uni-paderborn.de	680	Germany	☐

⋈ JOINTURE = JOIN
join tables

σ SELECTION = WHERE
filters : filter result objects

π JOINTURE = JOIN
fields : field selection

Outline

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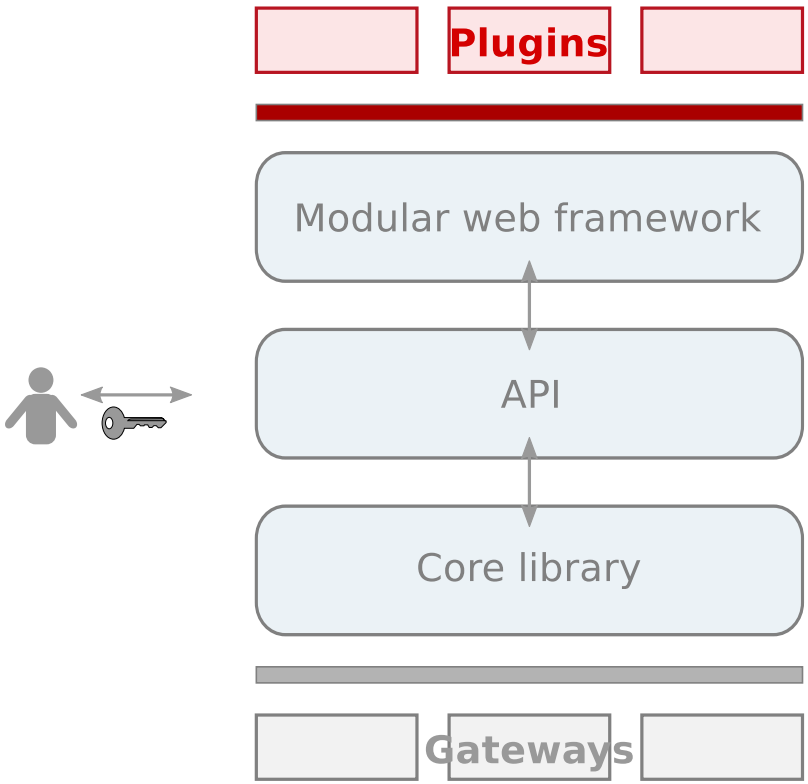

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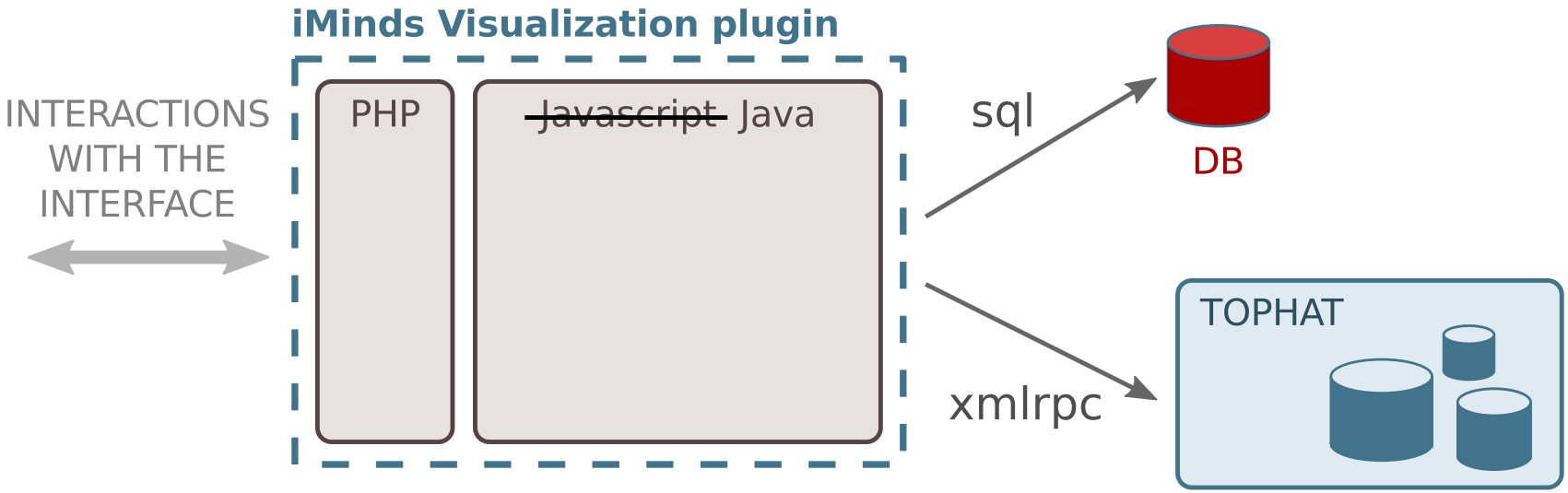
Example: iMinds visualization plugin



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 testbeds – Computer Networks – Special issue on 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
- Jordan Augé, Loïc Barton, Timur Friedman, Serge Fdida – Supporting the experiment lifecycle with MySlice – Invited talk @ GENI Engineering Conference, GEC15 – Oct. 23-25, 2012 – Houston, TX