mami

measurement and architecture for a middleboxed Internet

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FIRE Future Internet Research and Experimentation

An Observatory for Internet Path Transparency

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- Rampant deployment of middleboxes means the Internet is no longer end-to-end.
- New protocols and protocol extensions need to work around impairments on path
- These efforts should be guided by data about relative prevalence of these impairments.

How to make this data available to networking research and operations communities?

→ build an open repository around a common data model for **comparable** and **repeatable** measurement of these phenomena.

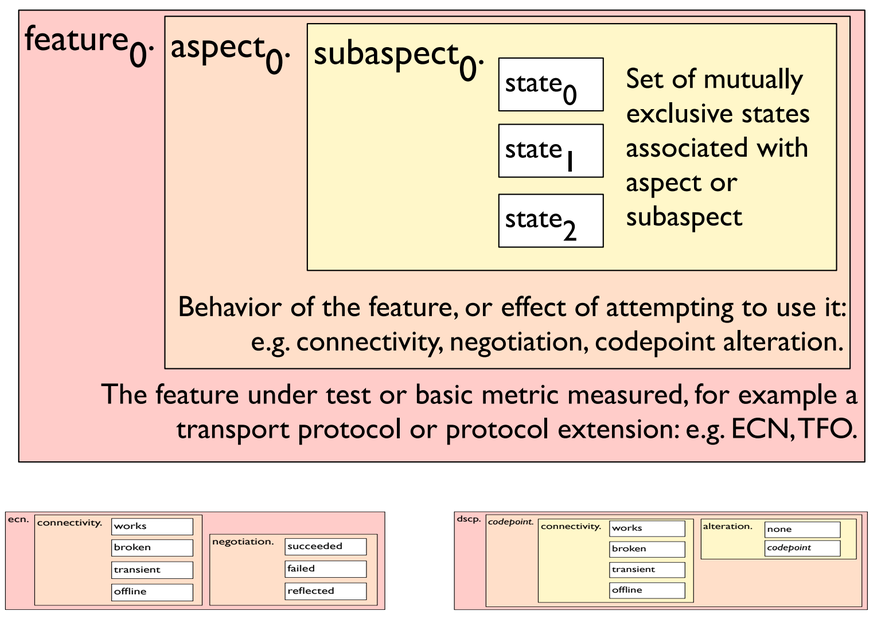
Observation: an assertion that at a given ***time*** along a given ***path***, a given ***condition*** held:

$$O = \{t, p, c\}$$

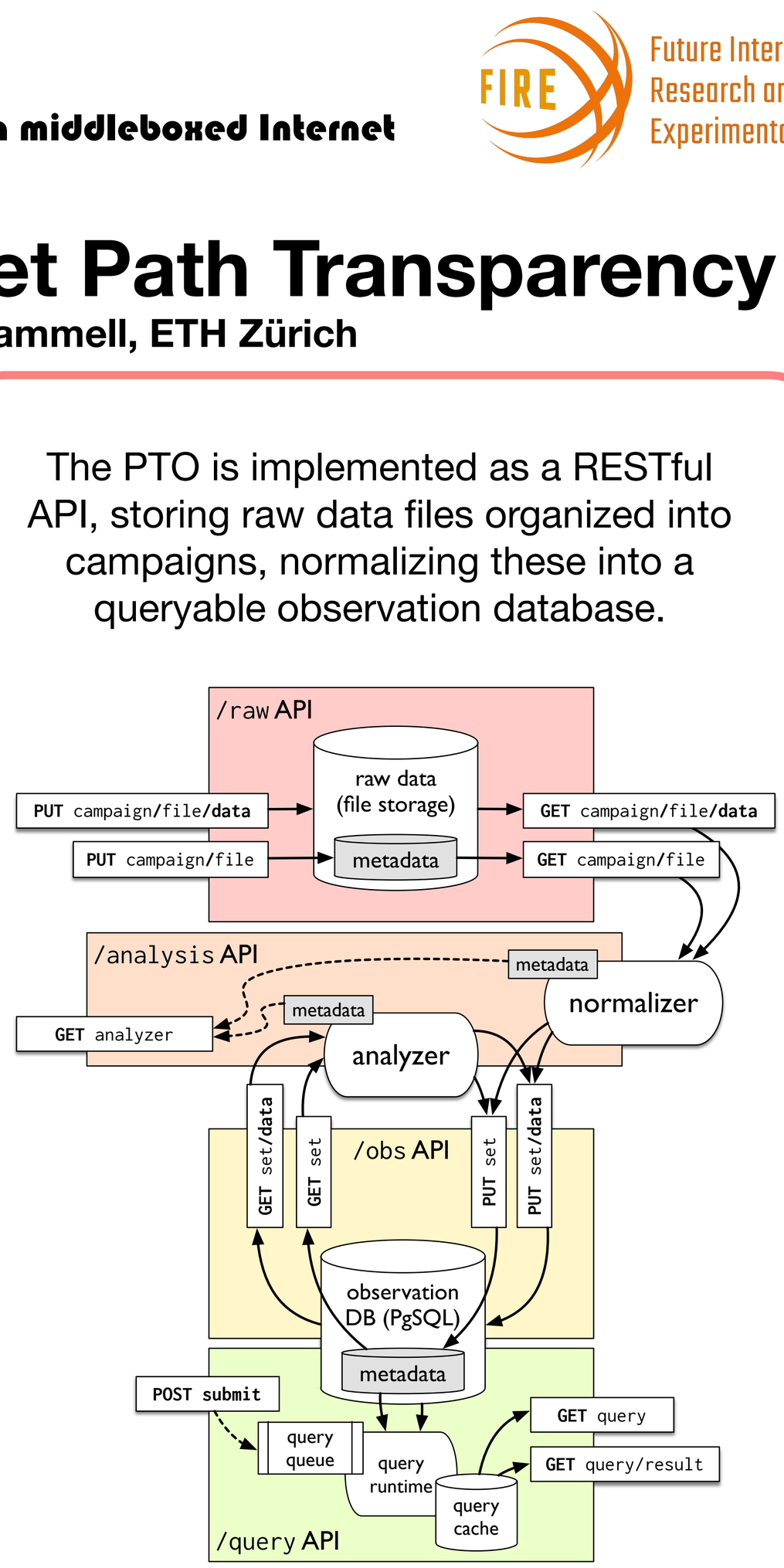
Paths are defined as sequences of elements (addresses, prefixes, BGP ASN, pseudonyms), allowing multi-resolution storage and correlation with topographic information (e.g. Tracebox)

$$[IP_0 * IP_8] \rightarrow [IP_0\ IP_1\ AS_3 * AS_5\ IP_6 * IP_8]$$

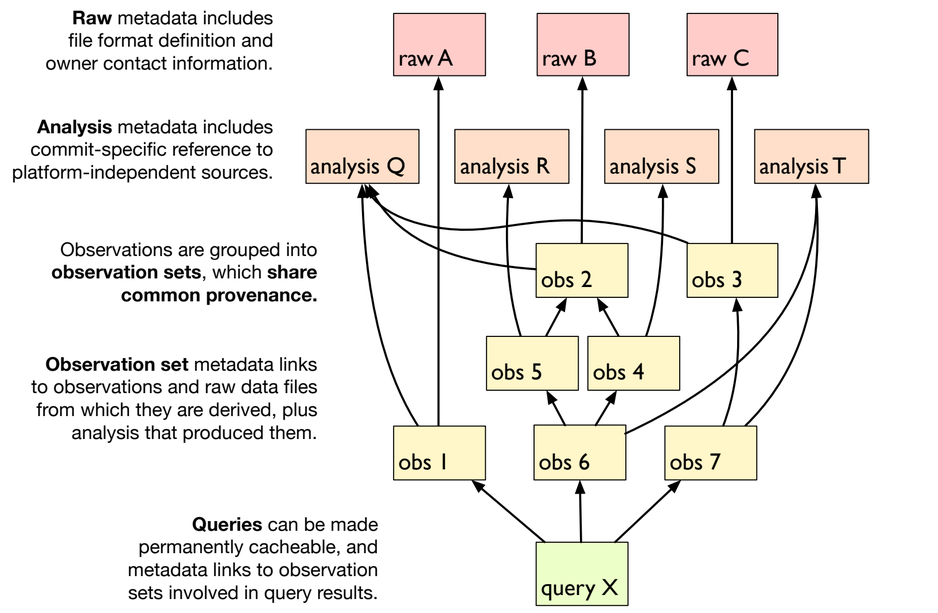
Conditions are defined in a structured namespace oriented to assign *states* to *aspects* of attempts to use a given protocol *feature*, fostering **comparability** of results.



The PTO is implemented as a RESTful API, storing raw data files organized into campaigns, normalizing these into a queryable observation database.



Every object stored in the observatory, including queries, keeps its *provenance*, including arbitrary metadata, fostering measurement **repeatability.**



Deploying soon: https://observatory.mami-project.eu/ — code: https://github.com/mami-project/pto3-go

measurement | architecture | experimentation

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