

Future Internet Research and Experimentation

Support future Internet experiments
towards new design principles

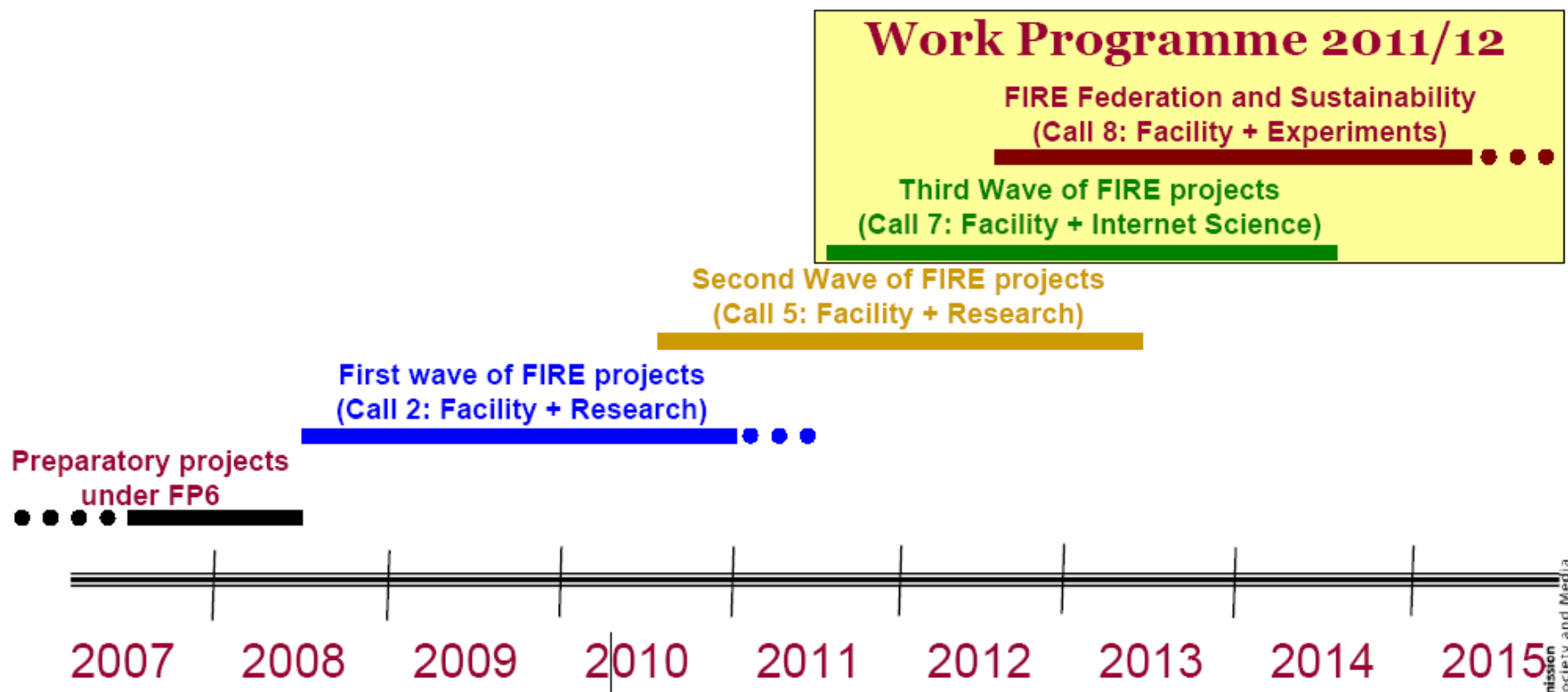
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What is FIRE

- An Initiative for the manifestation of an experimentally driven research methodology as a necessary research tool in the ICT related science disciplines
- Experimentally-driven long-term, visionary research on new paradigms and networking concepts and architectures for the future internet
- Building large-scale experimentation facilities to support both medium- and long- term research on networks and services by gradually federating existing and new testbeds for emerging or future internet technologies

FIRE Timeline



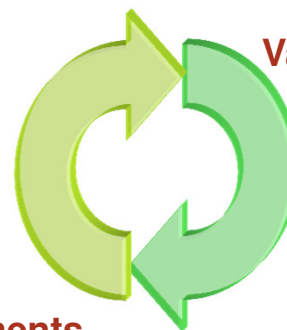
European Commission
Information Society and Media



Future Internet Research and Experimentation

FIRE Research

*Long-term
Research*



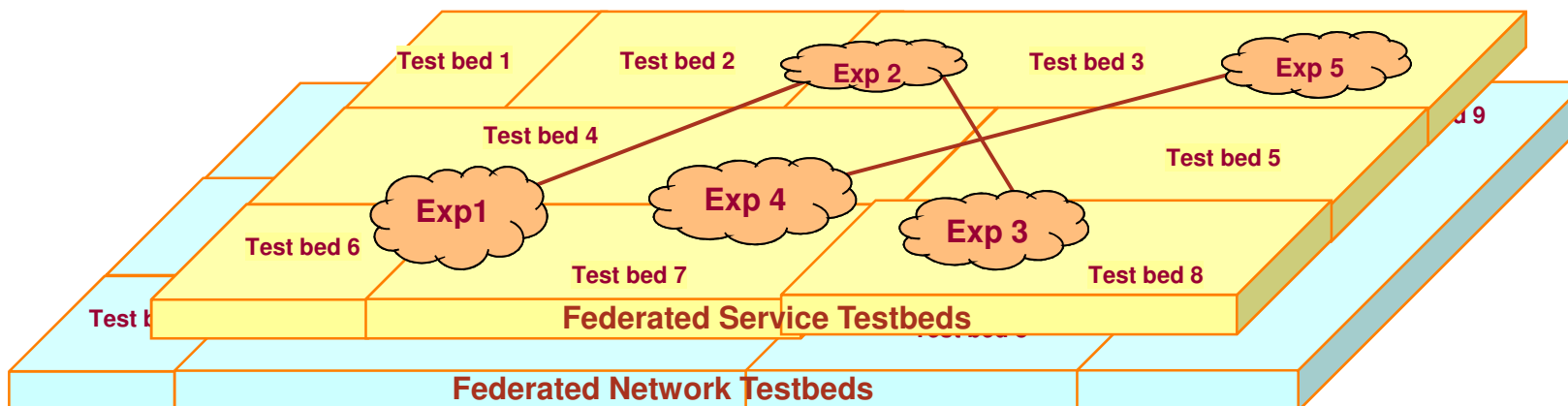
Validation

*Large Scale
Experiments*

Requirements

FIRE Experimental Facility

User Communities

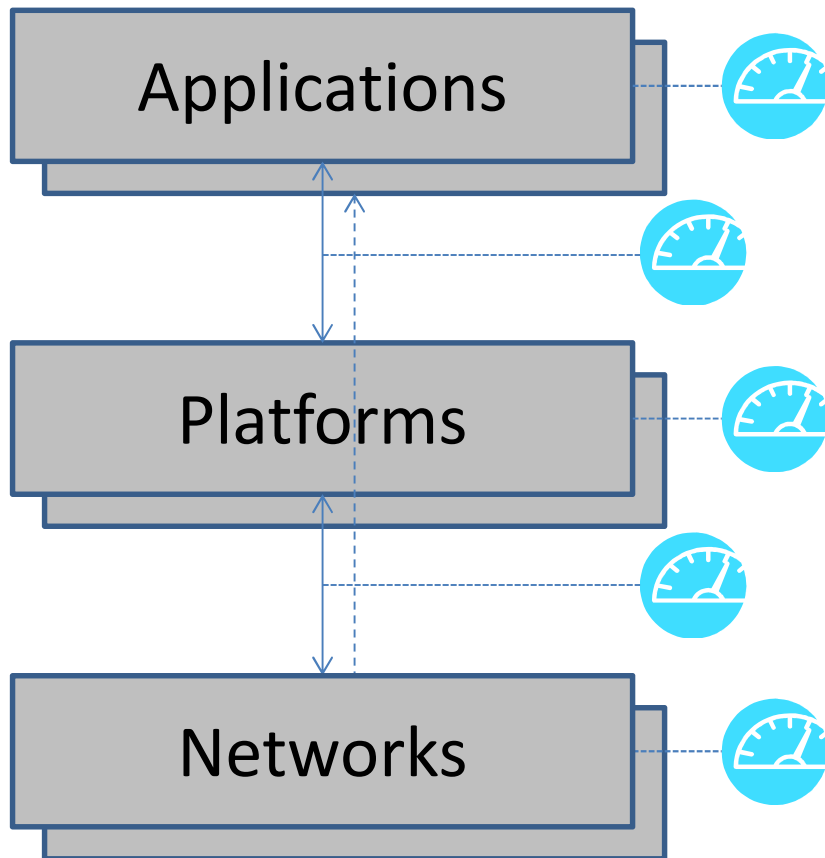


Systematic experimental methodology

- specification of the performance objectives, constraints, and description of expected results
- definition of relevant performance criteria and metrics
- description of the modus operandi including configuration, initialization, and running conditions and (iterative) procedure(s) to be executed
- reporting on observations and the resulting analysis and the feedback on each iteration before reaching (partial) conclusion

- formal description of experiments
- degree of control of the relevant input variables of an experiment
- degree of monitoring of the relevant output variables of an experiment
- degree of confidence in the verifiability, reliability, repeatability, and reproducibility of the experimental results

Instrumentation



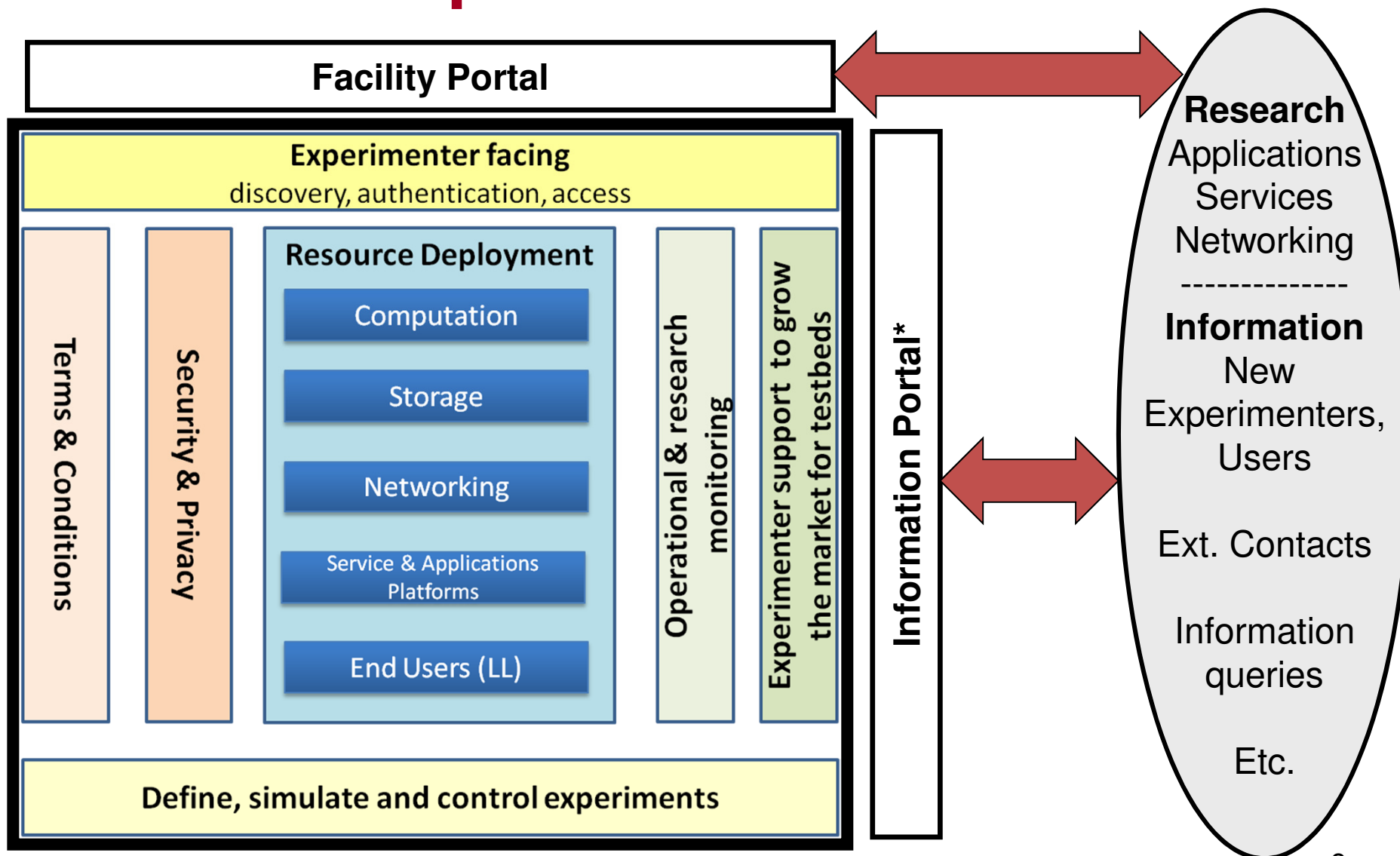
- Research towards Future Internet modelled as a complex distributed system
- Iterative cycles of research
- Research must address all associated aspects holistically , at all relevant levels and layers.
- Research directions must take into account the data and observations gathered from experimentation in previous iterations
- “Measurement-based” which requires the specification of relevant metrics and measurement tools



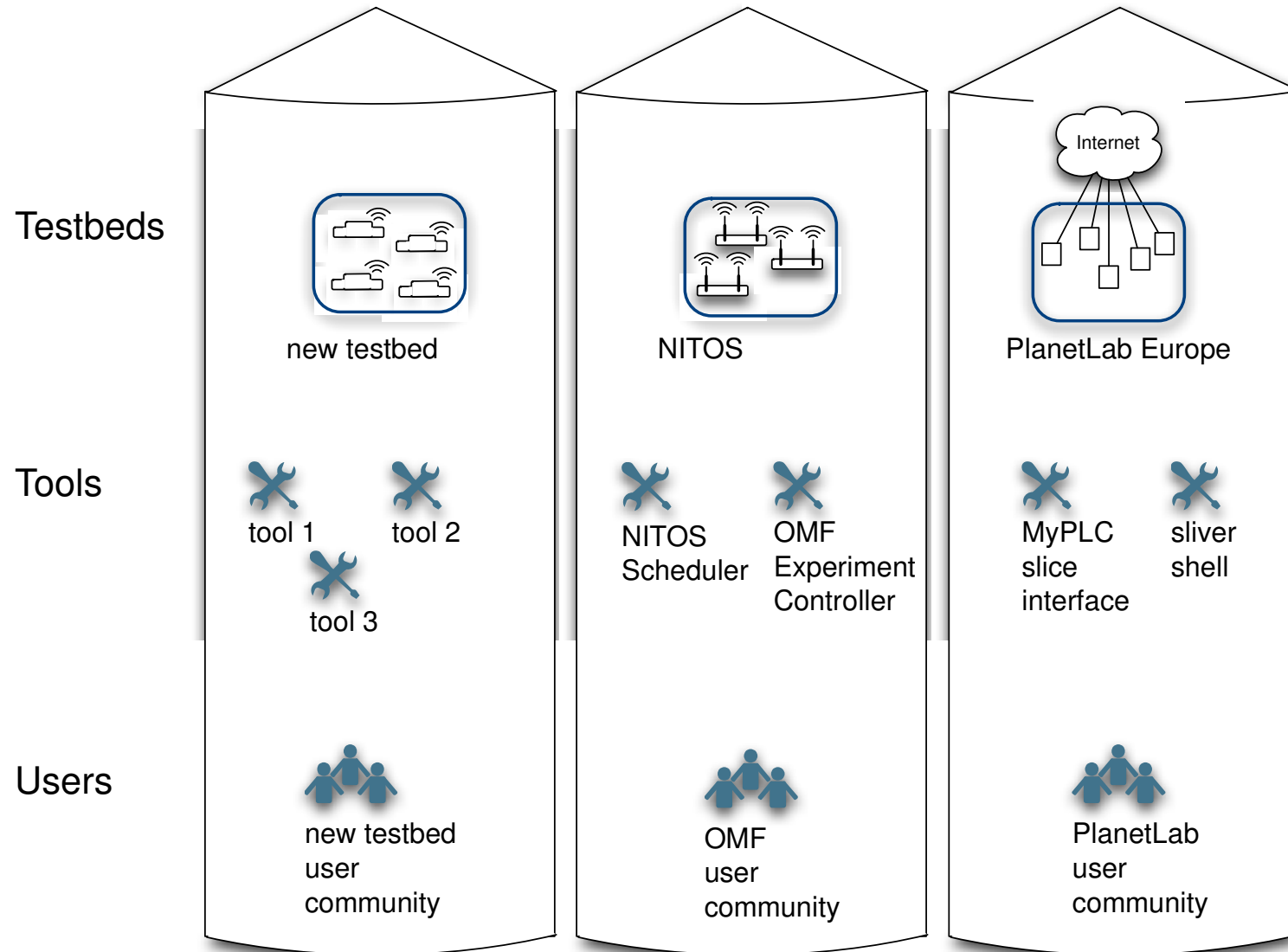
Available infrastructures

- Eight integrating projects make up the infrastructure
 - BONFIRE – research in the Cloud
 - CREW – radio spectrum and measurements of wireless
 - OFELIA – networking in OpenFlow
 - TEFIS – research in services
 - Smart Santander – Internet of Things
 - OPENLAB – advancing capabilities of early FIRE facilities
 - EXPERIMEDIA – research in Future Media Internet
 - CONFINE – exploration and advancement of the community networks
- Management of testbeds must be resource agnostic

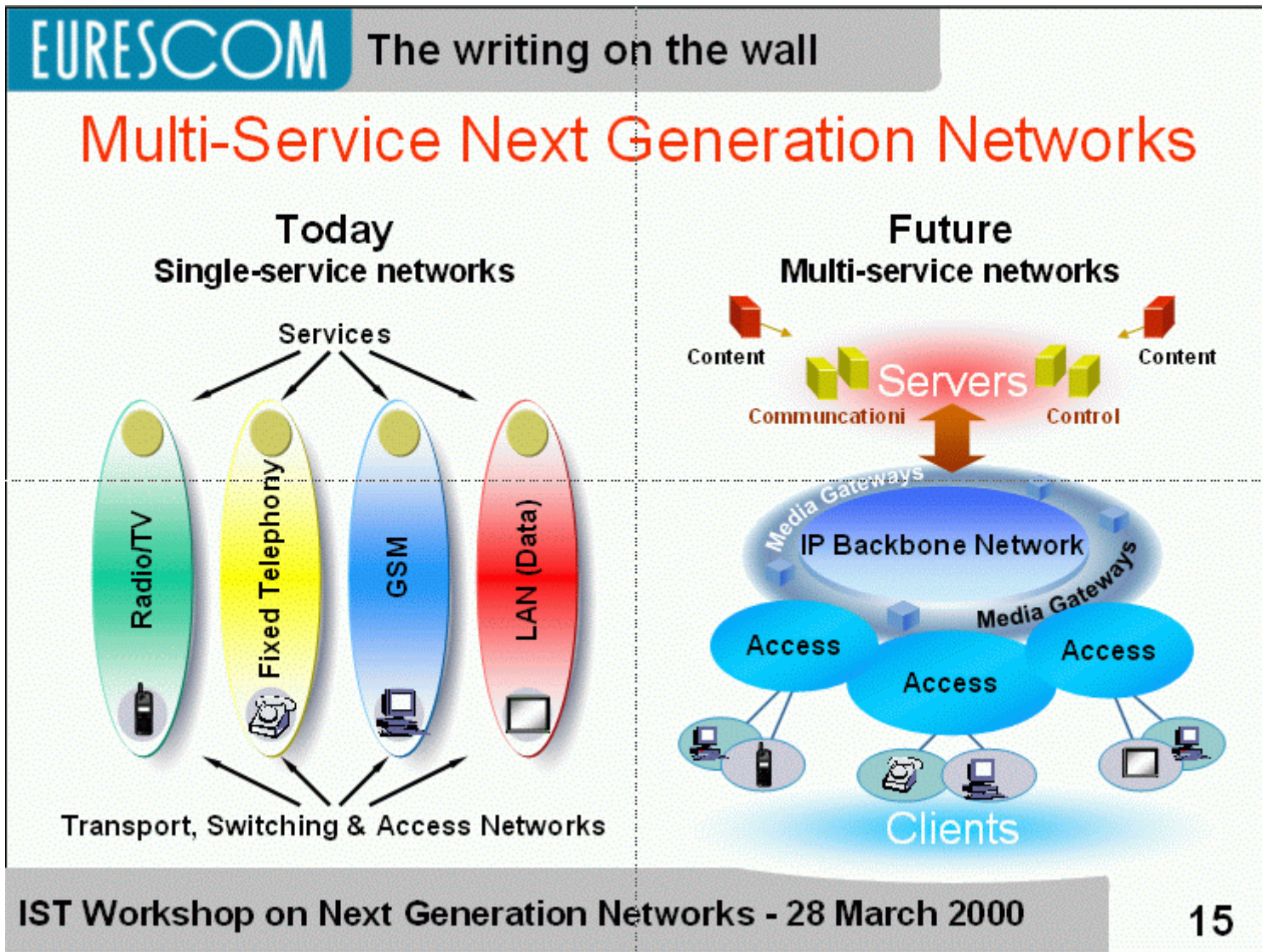
Experimenter's view



* www.ict-fire.eu



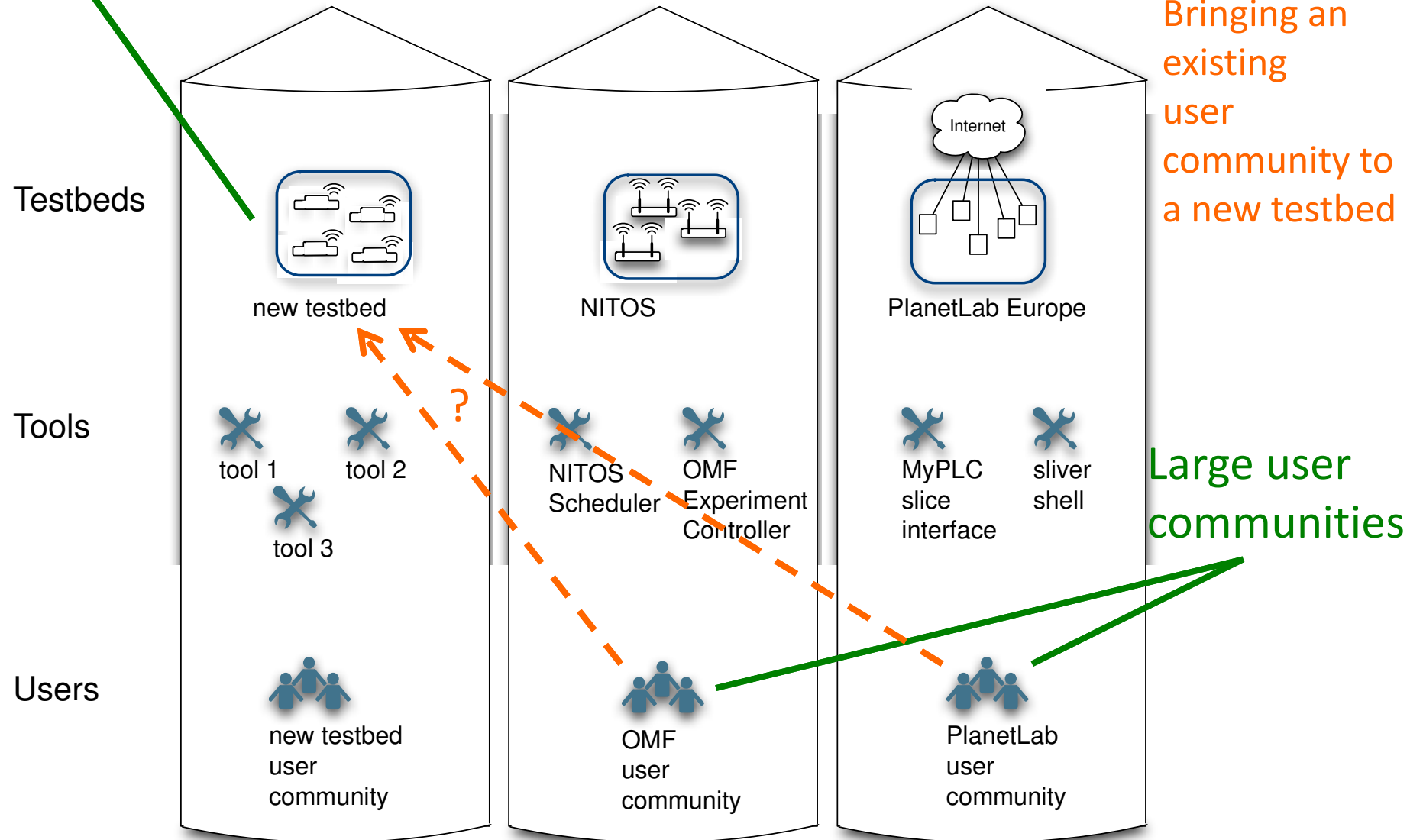
Silos in the Telecoms world



Challenges

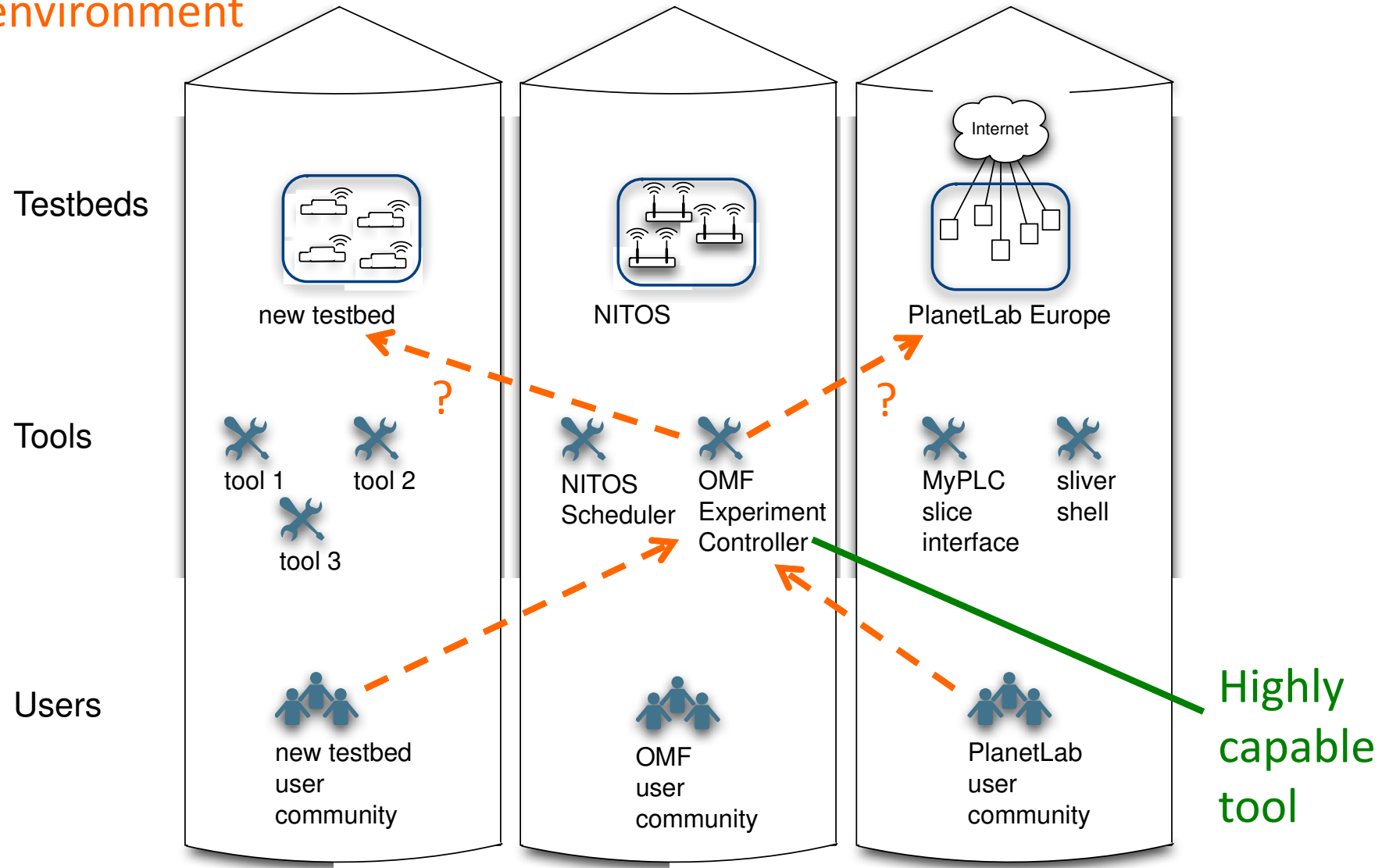
Excellent new testbed

Bringing an existing user community to a new testbed



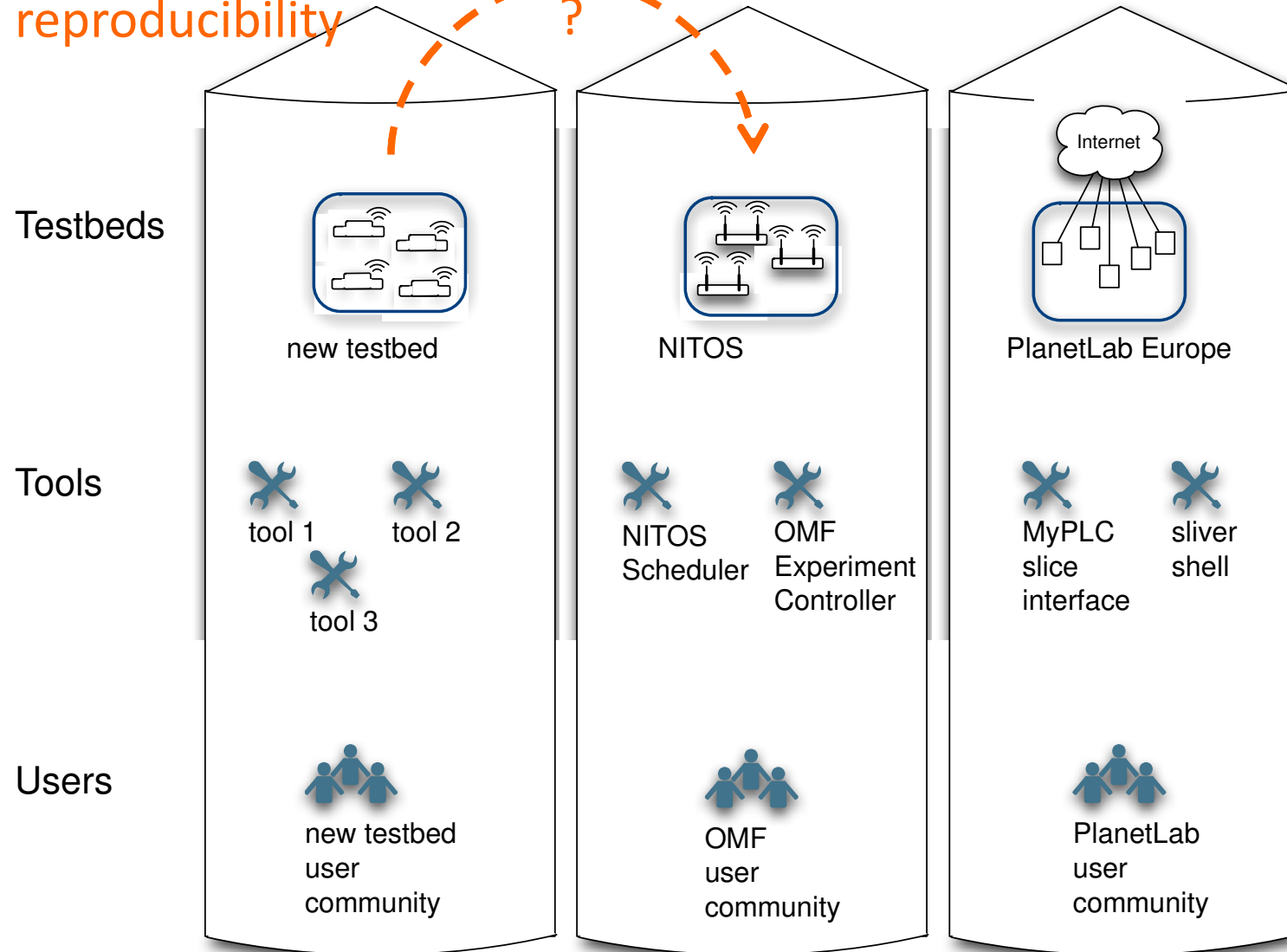
Applying a tool from
one testbed in another
environment

Challenges



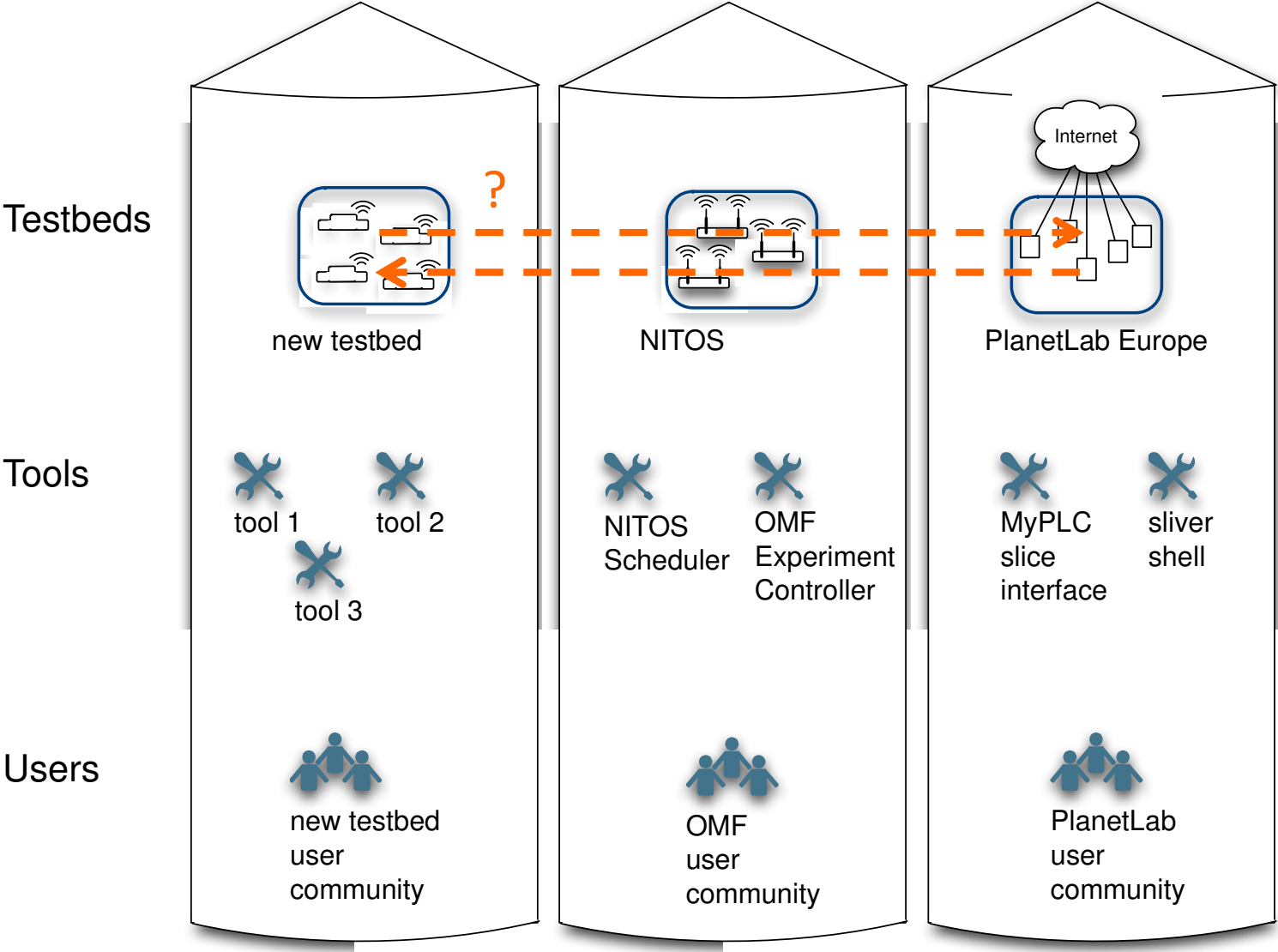
Challenges

Experiment
reproducibility

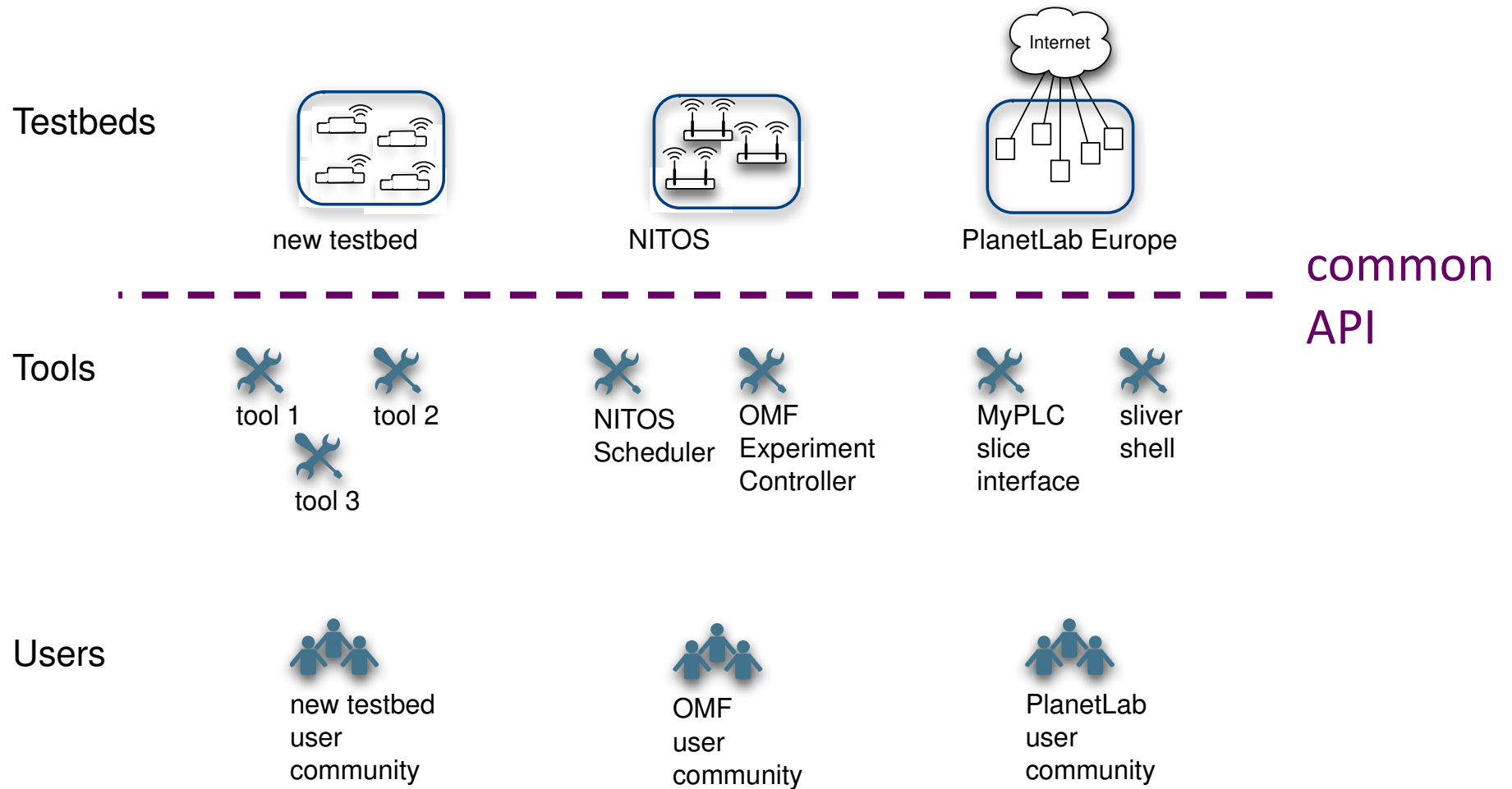


Cross-testbed experiments

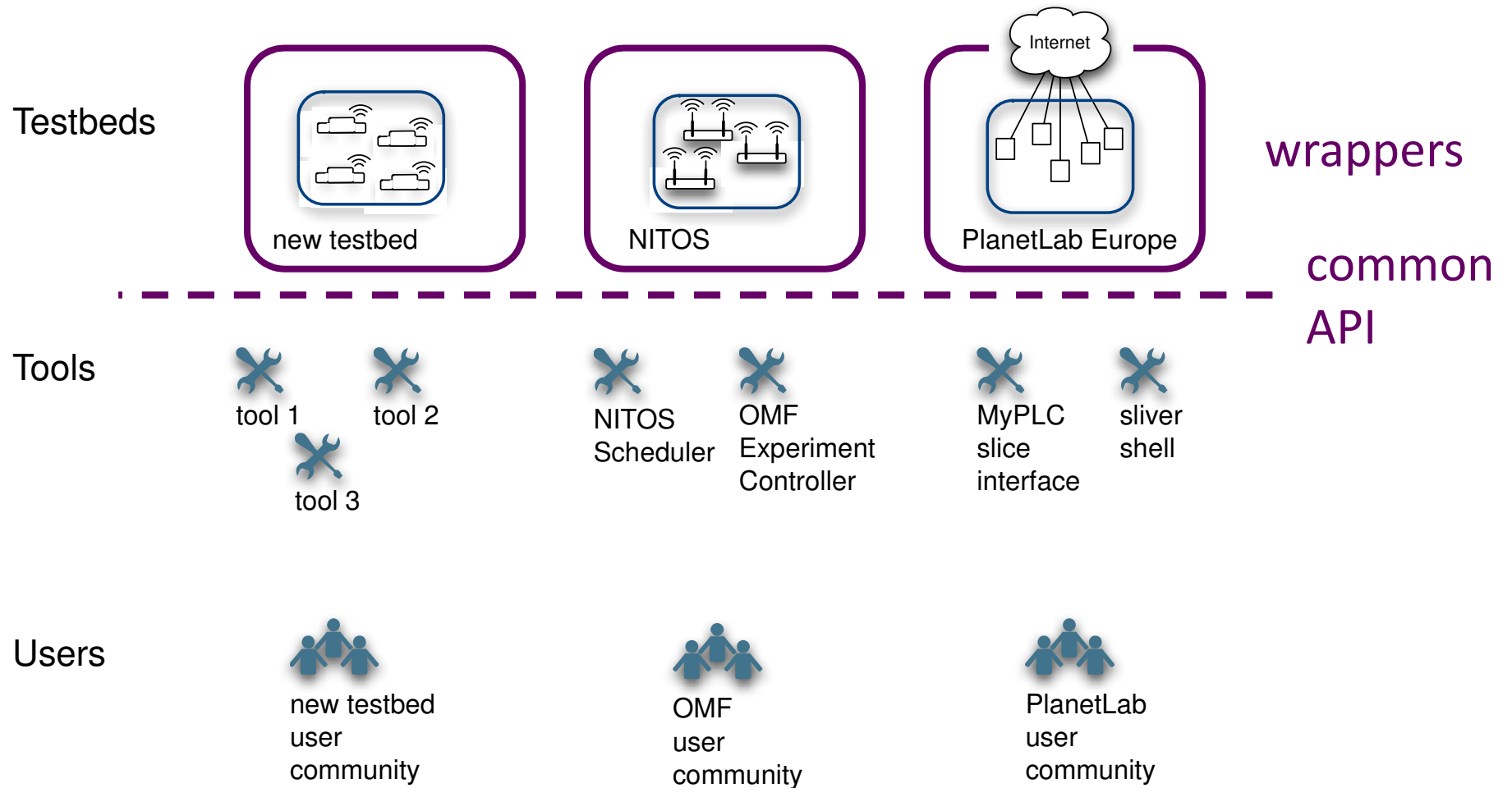
Challenges



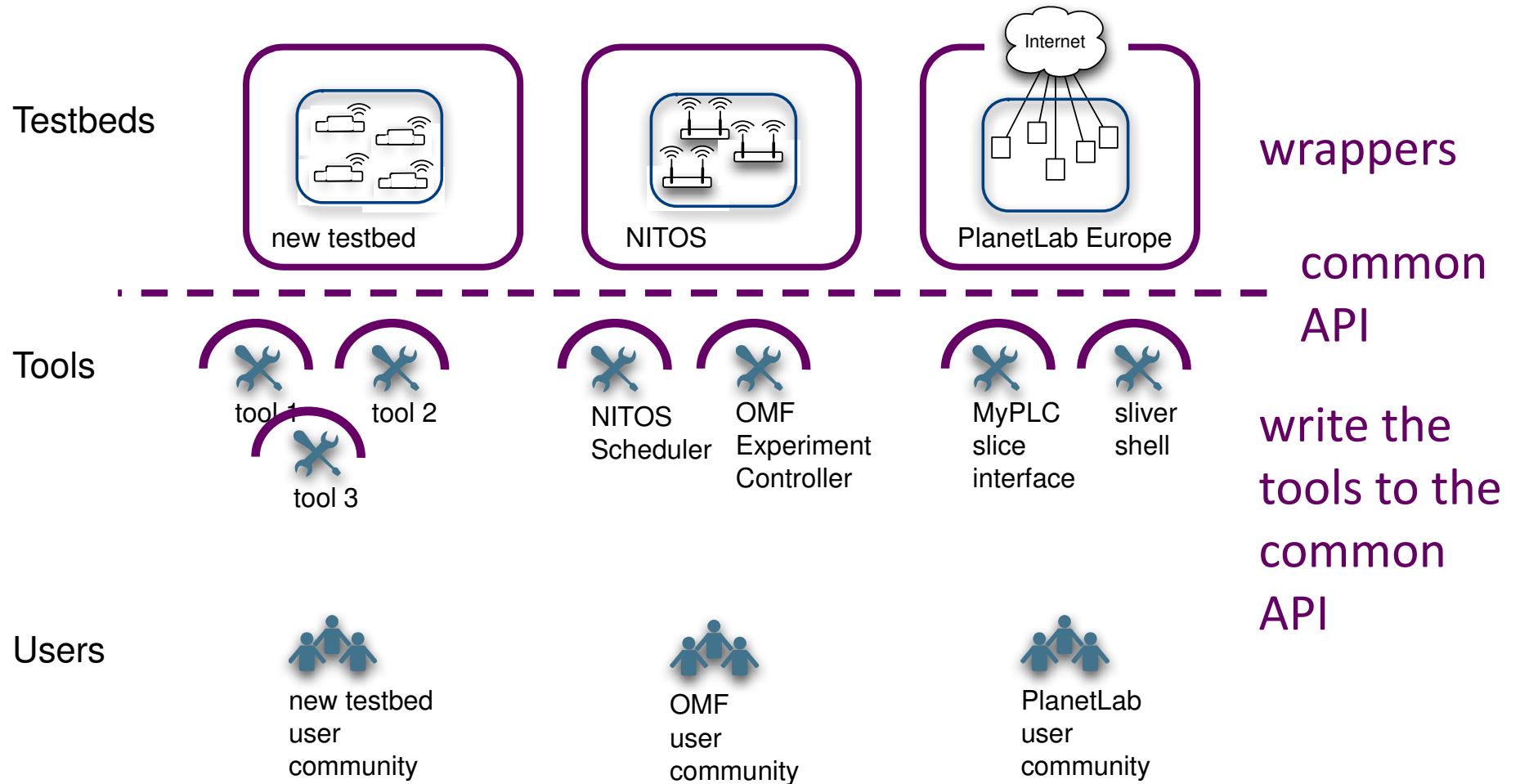
Interoperability



Interoperability

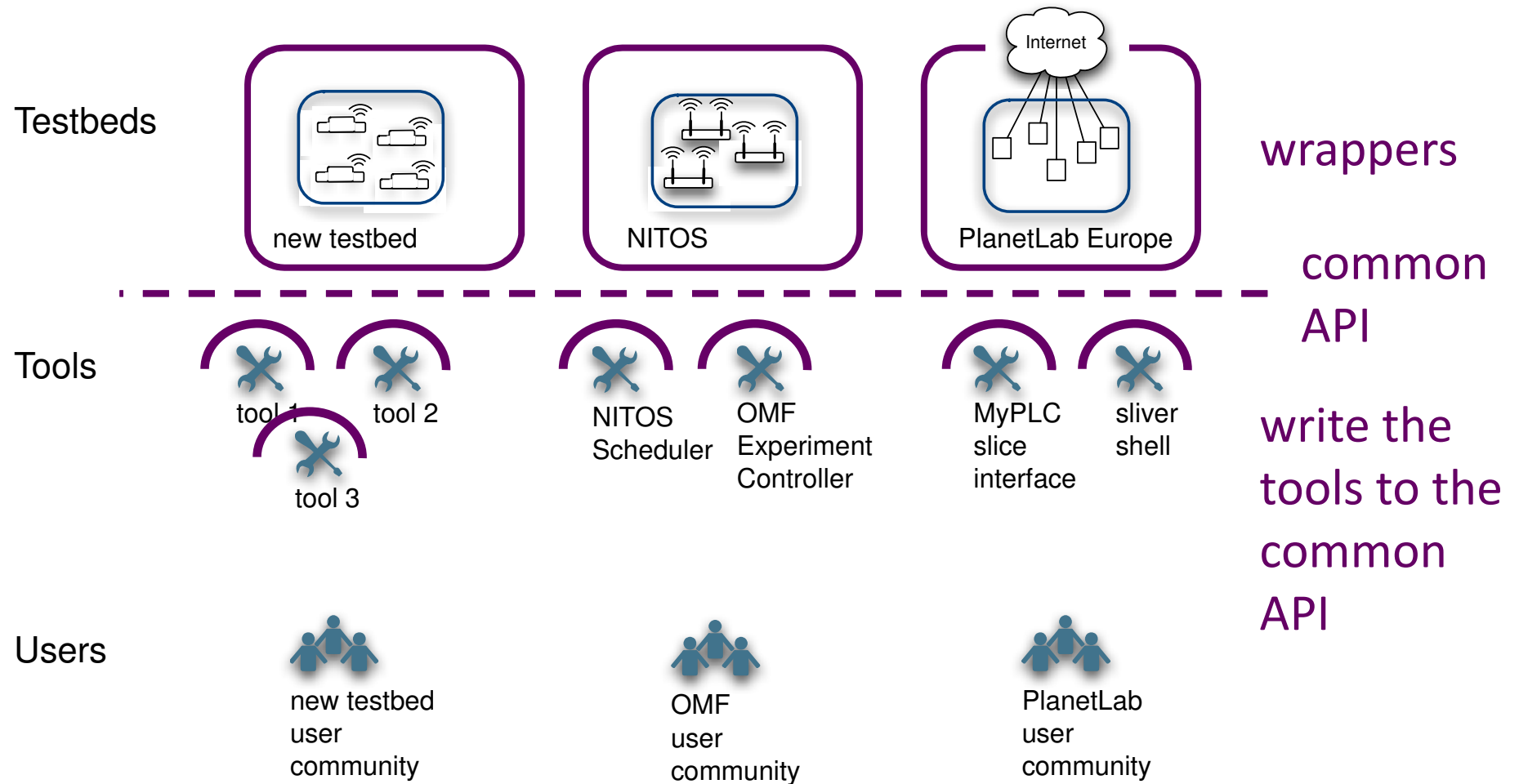


Interoperability



Interoperability

Interoperability trials, i.e., “bake-offs” or “plugfests”, planned





Further Information

- Future Internet Week in Aalborg (09-11 May)
 - FIRE at Future Internet Assembly (FIA) Aalborg, 10-11 May 2012
 - “Hands-on” FIRE Demonstration Evening, 10 May 2012
- TridentCom 2012, 11-13 June 2012 Thessaloniki, Greece
 - <http://www.ict-fire.eu/events/eventview/article/tridentcom-2012-call-for-papers.html>
- Useful Websites:
 - www.ict-fire.eu – FIRE website contact@ict-fire.eu
 - <http://wiki.ict-fire.eu> – FIRE wiki
 - <http://www.ict-fire.eu/home/publications.html> - FIRE Brochure
 - <http://cordis.europa.eu/fp7/ict/fire> - FIRE / EU Commission
 - www.ict-openlab.eu – OpenLab website contact@ict-openlab.eu