

		Working Group on Testing
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To the European Technology Platforms

Working Group on testing

1 Background and Context

The Pan-European Laboratory was introduced by CELTIC¹ as a concept to enable the trial and evaluation of service concepts, technologies, system solutions and business models to the point where the risks associated with the launching of these as commercial products will be minimised

The IST Programme in FP6 was asking for actions on "...developing roadmaps and strategic guidance for infrastructure development in Europe..."

The Panlab² FP6 support action (IST-2005-034305) aims at delivering a set of long-living and well-functioning guidelines, principles and rules enabling the implementation of the Pan-European Laboratory.

The Future Internet Research and Experimentation (FIRE³) activity aims at addressing the emerging expectations which are being placed on the Internet by providing a research environment for investigating and experimentally validating highly innovative and revolutionary ideas by,

- experimentally-driven long term research on new paradigms and networking approaches for the future Internet
- building a sustainable, dynamic, large scale experimentation facility by gradually federating existing and new testbeds for emerging or future Internet technologies.

2 Proposal

Panlab has identified that it is possible to motivate a critical mass in European research for the creation of large scale testbeds, based on existing testbeds, by exploiting the concept of federation. To achieve this, Panlab now proposes that the European Technology Platforms **establish a common Working Group on Testing** to conclude on several fundamental questions related to the basic approach and the financing of a long-term sustainable Pan-European Laboratory. The items list below represents only an excerpt of the potential items that a working group on testing must address:

1. What is the basic approach for the use of testbeds and their federation?

- Use by collaborative projects and initiatives with an open access policy
- For conditional use and access provided that the provider of parts of the testbed has a direct interest

¹ <http://www.celtic-initiative.org>

² <http://www.panlab.net>

³ <http://www.panlab.net/FIRE.html>

- Any other use and access modalities
- A generic testing facility

2. Financing of the facility (testbeds and federation)

- Funding by upfront funds of interested stakeholders
 - i. Interested stakeholders can be organisations, companies, the public, temporary projects
 - ii. Upfront funds means some type of membership
- Funding by users (projects) and other customers
 - i. Projects have to include costs for the testing facility and the connectivity into their budget
 - ii. The testing facility charges the cost according to a transparent pricing scheme (non for profit)
- Funded under a PPP model (public private partnership)

3. Classification criteria and metrics

- How to assess the quality of a testbed?
- How to define the uniqueness of a resource?
- How to compare similar testbeds and facilities?
- How to verify a claim (e.g. Conformance to a certain standard or standard in progress)?

4. Description of testbeds and facilities

- How to describe testbeds?
- How to describe individual components?
- How to find/locate the components?

3 Motivation and further considerations

The operation and management of a testbed federation will typically span over multiple networks and multiple administrative domains and is a challenging task requiring professional support from both industry and organisations with experience of operating large networks. The following general policy related recommendations should be considered:

- **Openness:** Federation implies openness at all levels, including provision, implementation and use. Concerning provision, the Pan-European Laboratory must be open for any test-bed of the European test-beds ecosystem. There are many related issues which make the implementation of openness a challenge. These include Intellectual Property Rights (IPR), how to exchange results and what may be shared, the standardisation of interfaces, common procedures, usage policies, etc. The implementation could be done through open source tools and open hardware design details which will enable easy replication, interfacing and inter-operation among various test-bed components, and consequently, would increase the overall Panlab effectiveness and impact. Use should be open to any relevant European and worldwide initiative under fair access terms.
- **Excellence:** The federation principle promoted by Panlab aims for “best of breed” and must assure excellence of the capabilities of the federation from various aspects. These aspects include among others (i) degree of innovation, (ii) measurable quality or compliance to essential standards, (iii) diversity, and (iv) scale or geographic coverage. Criteria must be developed that allow a transparent evaluation of excellence, and also the re-classification of a testbed as a commodity and, thus, its retirement from the federation.
- **Management:** Managing federated testbeds is complex, but necessary for achieving scale, diversity, cost-efficiency, and, last but not least, to improve the sustainability and quality of the individual test-beds and the federation as a whole. The traditional network management objectives apply for the management of federated test-beds as well.
- **Governance:** Interconnecting different testbeds belonging to different administrative domains means granting access to remote resources that are owned by different stakeholders. This has the consequence that a legal framework must be in place that governs this relation and which must include among others: handling of IPR, definition of confidentiality and trust, process for resolution of conflicts and handling of the misuse of rights or neglecting obligations, etc. In order to lay the foundation for establishing a long-term sustainable test-bed federation, a legal entity is necessary. This legal entity must manage the different relations, possibly manifested as contracts, between the stakeholders that interconnect their resources in the scope of the federation.

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