

Concertation on Policies and Sustainability

<http://indico.cern.ch/sessionDisplay.py?sessionId=51&confId=32220>

Roberto Barbera, EELA2
INFN Catania, Italy

Stephen Benians, BELIEF-II
Metaware, Italy

EGEE'08 Conference
23 September 2008, Istanbul (Turkey)



e-infrastructure



Approach

- Projects have been requested to present their activities for ensuring sustainability of e-Infrastructure between EU and emerging economies, i.e. how they address the objective of designing and implementing sustainable solutions for reducing cultural, technological and economic barriers within emerging economies.
- Considering the above, projects are asked to answer the following questions.

Questions

- Economic: how do you assure that the technology will be economically sustainable over time thus available at a for the target economy/country? how does it adapt its funding model as it evolves?
- Cultural and technical: how do you assure that the requested know-how and 'vision' is available (or acquired during the project's lifespan) and 'shared' within the scope of the target economy/country?
- Organizational and operational: how do you assure that the operation infrastructure (human resources, tools, systems, procedures, etc.) be synergised with other existing infrastructures?
- Moreover, give special focus to the sustainability and serviceability issues of the deployed or ongoing solutions to identify barriers, opportunities and priorities to the actual exploitations of the same.



- The eNMR project is organized involving three of the major bio-NMR centres in Europe, which provide access to their instrumentation to external users, and targets other NMR laboratories or research teams that exploit NMR as one of their spectroscopic techniques. **Because the cost of this technology is a small fraction of cost for running a NMR centre, we do not anticipate difficulties in maintaining the technology even after the project's lifespan.**
- The eNMR services will be **provided also via web portals, thus being effectively available to any research team** having access to the internet. Research teams accessing the NMR infrastructures will also be able to exploit the services of eNMR directly at the infrastructures.

Cultural

- The NMR infrastructures are intrinsically sites where a large variety of different know-how meet, ranging from physics to biology through engineering and informatics. Indeed, the development of NMR spectrometers is an advanced task involving physics and engineering back-ground, whereas the operation of the magnets and analysis of the data requires a combination of skills in chemistry, biology and informatics. **The requested know-how is thus naturally available at the NMR infrastructures that are the core nodes of the project.**

Organizational

- The operation of the NMR infrastructures and the operation of the eNMR project are highly synergistic. The infrastructures have human resources covering all informatics aspects and naturally train researchers and technical staff in the various the scientific and technological topics that are related to eNMR.
- The eNMR operation can be maintained in the future as part of the running of the infrastructures.

Other

- Finally, it is important to stress that the eNMR project constitutes an opportunity to broaden the user community of bio-NMR spectroscopy, involving also scientists not expert in this technique. This will happen by making available to them innovative, highly automated tools for the analysis of NMR data, which can be acquired at the infrastructures, in a seamless, cost-effective manner. The priority is thus to render web-based services as easily accessible and information-rich as possible.

Economic Issues of e-Infrastructure



Economic

- Today's internet is broken: IPv4 address space is coming to an end. From 2015 IPv4 address allocation will be a commodity of black market.
- Security is breached and system configuration and maintenance has become very complex.

The solution is to deploy IPv6 networks and services with unlimited address space, ease of network configuration and enriched functionalities.

- 6CHOICE is promoting IPv6 deployment through **awareness creation** and co-operation between India and Europe.
- **Indian Government** has adopted IPv6 to be their Internet strategy and have promoted IPv6 with support in ERNET, NIXI and commercial SIFY networks
- India has IPv6 supported GRID networks and applications



Cultural

- Know-how in the target countries are developed through **co-operation at education and reseach networks area**, to start with (ERNET-GEANT collaboration)
 - Multiple **workshops** to the operational staff of PoPs to configure and manage their networks and services (organised through ISPIA/NIXI)
 - **eLearning tool** is being deployed to reach the remote persons
 - Planning **joint experiments** across Europe and India
 - Setting up permanent testbeds to provide hands-on experience to the students and researchers
 - Setting up **high level delegations** to plan further activities.
 - **Participation** in national and international events

Operational issues



Organizational

- The most critical issues are **infrastructure operation and maintenance**. This is directly related to the know-how of the staff involved and support with maintenance tools (HW+SW)
 - 6CHOICE project has put in place the **resource center** through their website, to support with F&A.
 - The importance of new technology (IPv6) is being promoted at higher levels (through technical and business case briefings)
 - IPv6 technology is an evolution of IPv4 and **incremental cost is minimum**.

- **Serviceability issues**

- The critical issue of sustainability is its availability. Though IPv6 technology is mature, there is little difference in the applications. Hence, from the users side it is difficult to see the difference (**underlying infrastructure is not visible**)
- It is important from to adopt the **technology as a policy directive**, and to promote the applications and IPv6 supporting terminals development through incentives
- Technology deployment should be decoupled with the immediate demand, and necessary to create an environment for **natural transition** to the new technology from users side.
- The exploitation opportunities are huge, but slow take-up will not encourage the operators to invest in new technologies.
- One possible short term solution would be to stop further allocation of IPv4 addresses to the community. The **scarcity of commodities will lead to the breakthrough** required to adopt, deploy and operate IPv6 based Internet (e.g OIL market).

Economic issues



- Faced through a mix of:
 - Favourable licensing policy for software (D4Science system is open source)
 - Use Of existing research infrastructures (both hardware and software) on which D4Science can rely on
 - Support of existing operation centres (after adequate training)
 - Sponsorship by organizations, initiatives, etc..

Cultural issues



- D4Science provides:
 - Design of focused training plan,
 - Implementation of training material, tools and courses ([Using a gCube infrastructure](#), [Application Development on gCube](#), [Customising gCube](#), [Deploying a gCube Infrastructure](#), [Managing a gCube infrastructure](#), etc.)
 - Involvement of entities from the target country in the project via participation in the user communities

Organizational issues

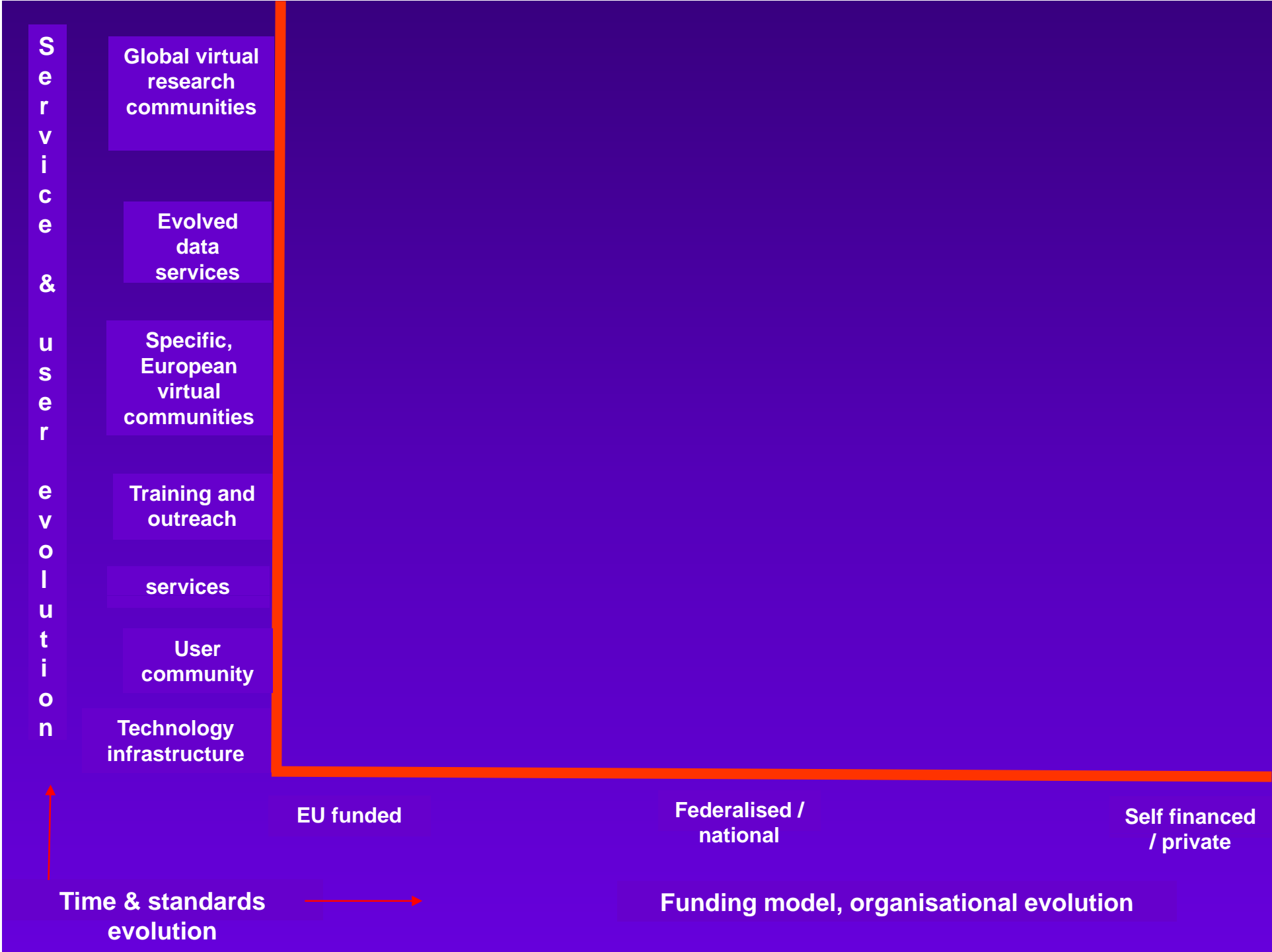


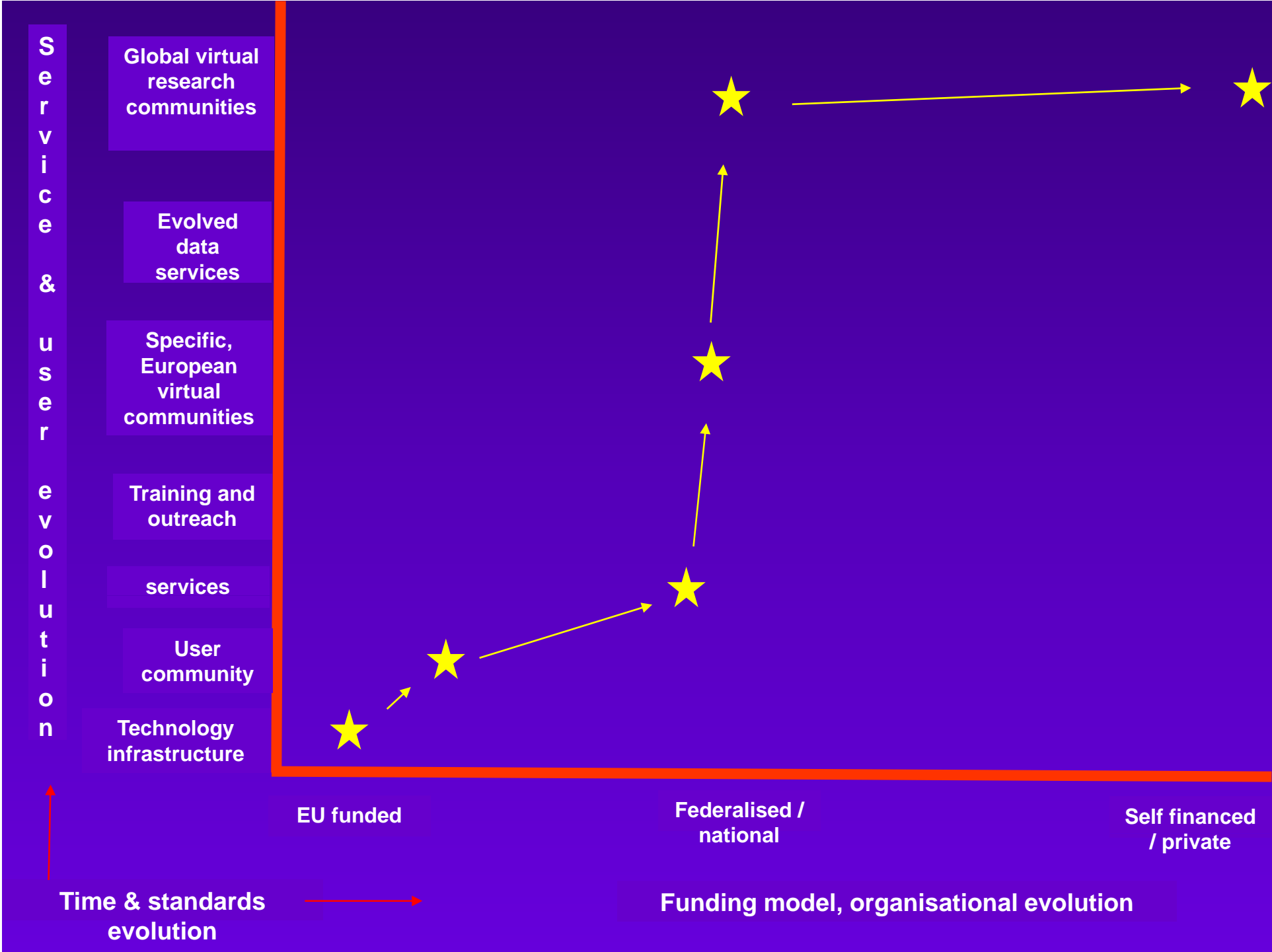
- Undertaken by:
 - Developing technology and methodologies that will enable sustainable interoperation of multiple, diverse and heterogeneous data e-Infrastructures that have been established and are currently running autonomously
 - Constituting the vehicle through which the other e-Infrastructures will be able to exploit EGEE resources for executing computationally intensive and potentially repetitive tasks in a completely transparent way without incurring high sustainability costs
 - Implementing tools to support and facilitate the day-by-day activity of the administrators, hiding the complexity of the underlying system. As an example, certification of new components against a set of rules, monitoring and control of the infrastructure's resources, deployment of software components, etc.

Sustainability and serviceability issues



- To become a backbone of excellence in European research, the life of the D4Science infrastructure will have to extend beyond the life-cycles of this (and any potential future) project. In this direction, D4Science is establishing synergies with initiatives such as the **European Grid Initiative (EGI)** and the **DRIVER Confederation** and investigate relevant models for sustainability.
- Still it is already clear that sustainability of the D4Science infrastructure will only be ensured if there are always new e-Infrastructures that greatly enhance their individual capabilities by joining it and staying with it. In turn, this is critically dependent on these e-Infrastructures bringing new scientific communities that embrace the D4Science infrastructure because they need to use its services to solve their problems. Hence, it becomes evident that any effective way to sustainability must be deeply intertwined with the **dissemination, consulting, training, technological support, and standardisation** activities of the project.
- In particular, as preferred policy, the project works on the **co-organization of dissemination and training** activities with relevant third parties in order to maximize the impact of these events.





Lyon Concertation on sustainability: 24 November

- Sustainability can be seen from the following perspectives: **policy, awareness-raising and technical perspectives.**

Accordingly, the event will:

- provide input to the European Commission's ongoing consultation exercise on the e-Infrastructures **Work Programme** 2010 and 2011
- provide a session on **communicating** effectively project's goals and achievements
- review the recent progress made on **standardisation**
- All your thoughts on the eConcertation forum at:

www.beliefproject.org