

**Panel 4. Global service delivery platform (GSDP) for the future internet: What is it and how to use it for innovation?**

The need for a discussion about GSDP was initiated by Jesus Villasante during the D3 Collaboration Meeting in September 2008, while commenting the ICTAG view of FI.

## The Internet of Services: Questions for debate

- Global service delivery platform:
  - What is it? Is this the future for the Internet?
  - How and who will develop, deploy and manage such platform?
  - Is this platform sufficient to realise the Internet of Services?
  - How can software engineering contribute to the developments?
  - Can your research contribute/benefit?
- Can we involve other communities to realise the Internet of Services?
  - Is convergence bringing new opportunities?



After that, the issue of GSDP was also inserted in the FISO position paper ([http://services.future-internet.eu/images/e/e0/Future\\_Internet\\_Service\\_Offer\\_v4.pdf](http://services.future-internet.eu/images/e/e0/Future_Internet_Service_Offer_v4.pdf)) and it was addressed by Stefano De Panfilis in the ICT 2008 #16 networking session “Towards a future Internet of Services”.

The FIA Madrid FISO panel #4 was organized to collect ideas about technical and business properties of the GSDP, in the context of IOS. The invited panelists, Frederic Gittler, Santi Ristol and Sergio Gusmeroli, respectively representing the NESSI ETP perspective through the NEXOF-RA IP, the open IOS vision through the SOA4ALL IP and the Enterprise Networks standpoint through the COIN IP, presented in one slide their ideas.

**Frederic Gittler** explained the NESSI view about a global service delivery platform. A service framework makes sense only if you also consider the wider context in which the platform plays a role. Also, a service framework needs to live in a society where use of the service framework is routine. One project on its own cannot develop a GSDP. In NEXOF-RA, which is a tool for implementing the NESSI vision, they are building on the results of a whole community of people and projects. NEXOF as the (technical) foundation for NESSI should be a long living architecture that can grow over time. It is an integrated, coherent and consistent set of technologies and associated methods and tools. It is open to the power n, open source, open standards, open consultation process, open for evolution. Its main characteristics are: technology independent, federated, trusted and dependable.

**Santi Ristol** presented the high level architecture of SOA4ALL, which can also be considered as a GSDP. There are 27,000 publicly available web services today. The aim of SOA4ALL is to make billions of web services available, as many as there are static web pages in the internet. SOA4ALL is based on semantic technology and an important component will be a web crawler that will detect automatically a new service. It will add the necessary metadata so it can be discovered in the future. This model of service description and service discovery mimics the search model of Google for static web pages and could be an alternative for UDDI service registry. The SOA4ALL architecture comprises three levels: SOA4ALL Studio - which enables users to have a unified view of the whole life cycle of services; SOA4ALL Cloud – semantic spaces and enterprise service bus; and SOA4ALL Infrastructure Services – basic services for the architecture. The use of “Micro WSMO” or “WSMO Lite” is being considered. The first prototype will be available in two or three months’ time.

**Sergio Gusmeroli** presented a viewpoint of the project COIN on a GSDP. Enterprise collaboration and interoperability are two sides of the coin. The glue is a semantically enabled service architecture. Enterprise collaboration environments, developed during FP6 projects, are the COIN starting point. These have involved different collaborative platforms in FP6 research, focusing on supply chains, collaborative networks and business digital ecosystems. Building on this, COIN is addressing collaborative platforms to access the Internet of Services; specifically GSDP will need to connect enterprise environments to the open Internet. Sergio pointed out that enterprises will also be pro-sumers in the future internet. They will provide and consume high level services which also have a human-oriented, interactive part. The question is how to manage enterprise services in the Future Internet (e.g. outsourcing of services?); how to manage the distribution of enterprise applications between enterprise systems and facilities like service parks, data centers, clouds? Enterprises should also not underestimate the usefulness of user generated services. COIN will start with enabling employees to generate their own services. If that is desired, those can be made available to others such as business partners.

Some immediate questions/comments raised from the audience:

- AAA (Authentication, Authorization, Accountability) & Billing issues are necessary components of a GSDP.
- The question as regards what is a unit of analysis for service constellation was raised.
- Another comment was that services spread through social links and business partners; understanding the different linkages and interactions is critical and socio-economics would help.
- Also it is important to develop standards for such a GSDP and projects therefore should be clear about the standards that they are targeting. However, standards development should be done only when research results are mature. Projects need to have a process to collect and coordinate research results to input to standards, and “scouting” of standardization bodies is needed.

Some discussion topics were then proposed to the audience, taking the acronym as a starting point:

- **Global**, in the sense of globally accessible or in the sense of registering all the services globally available in the IOS? Any implication from an architectural and implementation standpoint, one single platform, a federation of heterogeneous, generic and specialized platforms?
- **Service**, what is a service is a key question and several answers could be given from different domains and sectors. Shall the GSDP support just IT services, or also other

types (e.g. Telco consumer services, Enterprise business services, User generated services)?

- **Delivery**, shall we just limit to delivery, or should we think of a service life-cycle management platform, including IDEs, also for User generated services? Shall we have platforms specialized in Development, other in Deployment, other in Delivery or a single GSDP shall support the whole service life-cycle?
- **Platform**, shall the federation of platforms imply a heterogeneity of them? E.g. platforms specialized in search & discovery & composition, platforms specialized in integration / execution, platforms with specific privacy & security features. Shall we envisage a new research stream in Platform Modeling (what are the core services of a GSDP), Platform as a Service, Platform to Platform communication?
- **Business Model**, shall we have a GSDP Business Model, separated from the usual Service Providers one? Who is going to govern the GSDP and following what policies? Whenever GSDP becomes an essential commodity for society, could we define it as a public good and therefore subject to Public policies and regulations?

In the discussion about the global properties of GSDP:

- It was remarked that such a platform should be generic, that it could cope with different functionalities.
- There was a concern about the **proliferation** of platforms. A response to this concern was that while platforms should be transparent to the service consumers, service providers need to discuss the topology of the platforms, and what the purposes of the platforms are. Another response was that we need a connected world of **federation of platforms**.
- A further contribution (from the telco perspective) was that a GSDP should position itself vis-à-vis certain technical layers, not forgetting that the IMS (in telecommunications) is already tailored for vertical services.
- The word Platform had a different meaning for different people in the room, just like the word Service. If a GSDP supports different types of services, it is necessary to develop technology that can glue these services together.
- If a project develops a GSDP it should be tested on FIRE (with a large amount of users) to test for performance and scalability. Users should be taken into account from the beginning. The term “large scale” as in large scale testing facilities needs to be clarified.
- Telecom operators are currently opening up their walled gardens, since that is the only way to survive. They can play a role as GSDP providers – the opportunity for telcos to move to service discovery was described by a contributor as “a last opportunity for telcos”.
- In principle a GSDP can be owned by anyone (even SME's for niche markets). There will be many GSDP's in the future that need to be able to interoperate. A GSDP is full of tensions that need to be reconciled. This is very difficult. A GSDP needs to be open for different models of service delivery, such as telco model and web services model as well as entirely new service delivery models.
- With such an enormous diversity of services, what is the glue that ultimately glues all these services together? Striking a balance between interoperability (of services and platforms) and innovation (doing something new) is said to be very tough.
- One suggestion in this respect is to include (end) users and SMEs in the development process. On the other hand, it was said that making users understand the process is difficult.

- What is the role of a (Web 2.0 like) community in GSDP? Can anyone offer services to each other? If any entity can be a service producer as well as a service consumer, how can we accommodate the dynamic behavior of an entity?
- Is a GSDP a public good? Should be rephrased to: "What is the smallest set of basic services that are needed for the GSDP to be a public good?" and related to that governments have a role to encourage that such a small set of services is to be developed. These could be addressed by pre-competitive standardization.
- Other requirements to a GSDP: security and trust, context awareness, usability, simplicity, comfort, scalability.
- Every GSDP needs to manage communities of prosumers.
- It is important to study how users will use and combine services. Field data will play a key role. We need to define better the service lifecycle and how to do service management with monitoring.
- Not consider only web services, but also storage services, logistic services, TV services etc.
- Finally a question was raised if anything needed to be changed to the current architecture of the internet. Perhaps the only thing was UDDI, that doesn't work and needs to be replaced. It is also important to understand that research on these issues only makes sense if industry in Europe is prepared to support one or more GSDPs.

#### **REQUIREMENTS:**

- R1 **Global:** the GSDP shall be a "one-stop-shop" for every FI user (human, computer, mobile user) wishing to have access to the Future IOS. Regarding its implementation, a federation of heterogeneous platforms seems currently the best choice.
- R2 **Service:** the GSDP shall support different types of services, not just IT services (and web services in particular), but also services coming from the Telecommunication and from the Media & Content domains. High-level, human-centered business services, typical of Enterprise Collaboration Platforms, shall also be supported.
- R3 **Delivery:** the GSDP shall support the overall service life-cycle, from its conception, to its design, to its development, to its testing & simulation, to its deployment, till to its execution, quality assessment and maintenance. Particular attention should be given to User Generated Services and to service orchestrations along different platforms (service constellations).
- R4 **Platform:** the GSDP shall provide core services for data protection, identity management & privacy, AAA (Authentication, Authorization, Accountability), trust & security, as well as for guaranteeing agreed levels of quality, performance, scalability, availability and reliability.
- R5 **Business Model:** the GSDP shall be characterized by its own specific Business Model(s), independent from those of the Service Providers. The identification and standardization of a small set of common GSDP services could be the first step towards a future commoditization of the GSDP in a Service Utility perspective.