The NEXOF-RA project

ETSI - Grids, Clouds & Service Infrastructures Workshop

2-3 December 2009
Sophia Antipolis
Agenda

– NEXOF – The NESSI Open Service Framework
  • Motivation
  • Main concepts

– The NEXOF-RA Project
  • NEXOF-RA Why
  • NEXOF-RA What

– Trend in Cloud Computing
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  • NEXOF-RA Why
  • NEXOF-RA What
– Trend in Cloud Computing
NESSI Holistic View

EU Economy

NESSI Landscape
(Business level Services)

Business Domain 1
Business Domain 2
Business Domain n

Cross business Collaborations

NESSI Practices and Usages

Architecture and Engineering

Core Services

 Semantic Layer
Service Integration Layer
Infrastructure Layer

NESSI Framework

Trust - Dependability

Comprehensive View

Regulatory Governance

NESSI Adoption

Open Standards - Open Source - Quality - Connectivity - Federation
The NESSI Open Framework is an integrated, consistent and coherent set of technologies and associated methods and tools intended to

- Provide European Industry and the Public Sector with efficient services and software infrastructures to improve flexibility, interoperability and quality
- Master complex software systems and their provision as service oriented utilities
- Establish the technological basis, the strategies and deployment policies to speed up the dynamics of the services eco-system
- Develop novel technologies, strategies and deployment policies that foster openness, through the increased adoption of open standards and open source software as well as the provision of open services
- Fostering safety, security and the well-being of citizens by means of new societal applications, enhanced efficiency of industry and administrations, and competitive jobs
NESSI Open Service Framework

- Open Reference Model
  - Concept and Principles
- Open Reference Architecture
  - Standards
- Open Reference Implementation
- Conformance Test Suite

“The Independence Principle”

Size
Domain
Technology
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Why: Project motivation

• “Deliver a **coherent** and **consistent** open service framework, ranging from the infrastructure up to the interfaces with the end users, **leveraging research** ("value add") in the area of service-based systems to consolidate and trigger innovation in service-oriented economies”

• NEXOF-RA is a **step** in the process of building and creating the conditions for the adoption of the whole of Open Service Framework

• The aim is that the RA will be built through **consensus** within the NESSI Community, validated by the NSPs and widely adopted to support the European Service Economy
NESSI Open Service Framework

- Open Reference Model
  → Concept and Principles
- Open Reference Architecture
  → Standards
- Open Reference Implementation
- Conformance Test Suite
- Proof-of-concept
- NEXOF Roadmap

Reference Architecture

- Model
- Specification
- Rules
- Principles
- Policies
• The NEXOF Reference Model (v1.0)
  – From 9 concerns to 125 functionalities
  – 100 of which from external sources (standards, NSPs, ITs)
NEXOF-RA Achievements

NESSI Strategic Projects

Invitations to contribute

NESSI Compliant Projects

03/12/2009
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Trends in Cloud Computing

• Cloud normalization & standardization
  – (Migration,) Interoperability, Portability and Openness in the cloud (a step forward for cloud computing) to provide solutions for the challenges:
    • Interoperability between different cloud vendor platforms and on-premise platforms (Client / Service Consumer does not want to care where the service is hosted)
    • Portability (Service provider does not want to update the business logic every time he changes the service runtime (e.g. a cloud service runtime))
    • Services to use all the features (e.g. storage, DB) provided by the cloud without having to worry about vendor lock-in
    • Providing open protocols that enable participation, i.e. extending well-established open royalty-free protocols (such as XMPP in terms of message delivery, Open Social in terms of social networks)
  – Flexible service deployment using cloud providers
    • Allow use of hybrid and/or multiple clouds for the deployment of a service
  – QoS (service availability, bandwidth-related access quality)
“Security” in the Cloud

T’S’PR - Security in the cloud: (on the fly) access control in the cloud (from user-centric to (application) behavior centric (behavior tracking, (adaptive) profiling, mining, ..., under the constraints of privacy protection

behavior-based Security policy

Data confidentiality (how confidentiality requirement of each piece of data in the service could be supported by a cloud provider? e.g. do they have the proper DB structure required by the service?)

Compliance in the Cloud (Business and/or Regulatory)

Enhanced control in a cloud (e.g. resources (data, physical machines, ...) – “need to know”

Self-managing and self-healing clouds (high availability, fault tolerance, ...)

Trends in Cloud Computing (2)
Cloud adoption and usage
- Service Market place applied to the Cloud
- Plug and Cloud everything
- Virtualization and management beyond computation; e.g. storage and networks
- Virtual Sandboxing (vs. Virtual Machine)
Conclusions

- **NEXOF-RA** aims at **standardise** the way services are built, offered and consumed. There is the need for a Reference Service Architecture.
- The **Reference Architecture** should be defined in order to allow any business domain, size and technologies.
- Implementing a **Reference Architecture** is not a single shot.
- Implementing a **Reference Architecture** requires a large community with contributions from many sources.

www.nexof-ra.eu