NEXOF-RA

NESSI Open Framework – Reference Architecture

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2nd Report on Standardisation Activities

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EXECUTIVE SUMMARY

In its second year NEXOF-RA has continued organising the standardisation community among NESSI Strategic and Compliant projects. In this deliverable we give an overview on events and workshops, where standardisation topics were discussed in a broader audience, and the results of a survey among NESSI projects, which was conducted in February and March 2010. Mostly all these projects have started to implement their standardisation strategies. The maturity of standardisation results varies from “first ideas” to already submitted specifications and even released standards. The animation of the standardisation community showed also best practice examples of projects that joined forces for standards that are in the focus of both of them. Areas of standardisation are Cloud Computing, Service Level Agreements & Negotiation, Mobile Services, Service Compliance Management, Lightweight Service Modelling, and Privacy-aware Services.

The results of the survey are also reflected in the NEXOF standards catalogue, which is published on the NEXOF-RA web site as part of the overall reference architecture. For some standards there are references to the NEXOF patterns available, but here is still room for further work. The organisation of the standards working group during the collaboration meeting in Brussels was handed over to SLA@SOI and a considerable number of projects resulting from FP7 Call 5 showed interest in contributing. Thus the further development and maintenance of NEXOF-RA standardisation results is ensured.

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1 INTRODUCTION

In the first project year of NEXOF-RA the standardisation work package elaborated a strategy for the standardisation approach, which also defines the relationship to NESSI and its Standardisation Committee.

Further it has elaborated a list of standards and standardisation bodies that are candidates for interest in the context of the NESSI Open Framework. This information was documented in a project internal wiki and used for state-of-the art reports and other technical work packages.

A first step in the animation and moderation of a standardisation community of related projects NEXOF-RA had organised a session at the “Internet of Services 2009 Collaboration Meeting for FP6 & FP7 projects” on 10 and 11 June 2009 in Brussels. This was reported in the first version of this deliverable.

Since then most of the NESSI Strategic and NESSI Compliant projects have started their activities towards standardisation. In order to get an overview and to plan for support activities NEXOF-RA standardisation work package has conducted a survey on standardisation. Most of the relevant projects submitted their individual reports, and a first overview was presented at the NESSI Projects Summit on 12 April 2010 in Valencia.

In this deliverable we give a detailed report on the outcomes of the survey, the consequences and a plan for keeping the momentum of joint project activities after the end of NEXOF-RA.

The report starts with a short resume of the NESSI Position paper on Standards, which was elaborated by the NESSI Standardisation Committee (Chapter 2).

A detailed analysis of the reported standardisation activities is provided given in chapter 3. It contains statistics, an overview on references to NEXOF architectural patterns and a description of the standards catalogue in the NEXOF-RA web site.

Chapter 4 derives from the reports and the analysis of the current situation the activities and perspectives, that standardisation in the context of the NESSI Reference Architecture will have in the near and mid-term future.

Appendix 1 contains the questionnaire as it was distributed to the NESSI Projects in January 2010. Appendix 2 collects the individual reports of the contributing projects that were submitted until April 2010.

2 NESSI POSITION PAPER ON STANDARDS

NESSI has set up a position paper on standards which points out NESSI's position with regard to the role and importance of standards and the implementation of relevant regulations and policies. Here we give a short overview on its main statements:

Standardisation and the use of Open Standards are of high relevance for the realisation of the objectives and work plan of the European Technology Platform (ETP) NESSI. Most notably the NESSI Open Framework (NEXOF) will rely on the implementation of Open Standards. Based on broad participation and the availability of Open Standards, NESSI should create opportunities for enabling the transformation of European environment through the development of an open services ecosystem.

In the context of public policy, both European national governments and the European Commission have always been pointing out the role and importance of standardisation. Moreover, the new Commission has included standardisation as a key element for transforming Europe into an Innovation Society.[1] This is supported by a number of European Council decisions and policies.

Over the last decade the standardisation in the ICT sector has evolved dynamically and the EC has recognised the need to keep up with these dynamics. A white paper[2] on the EU ICT standardisation reform was published in July 2009 followed by a public consultation. The process of legal implementation is ongoing.

With the position paper NESSI wants to elaborate on the crucial role of Open Standards in the NESSI context. In addition, the paper intends to contribute to the policy debate. It will point out the importance of Open Standards; in particular it will look at the requirements on standardisation policies, on support and on the transfer of research results into Open Standards.

The position paper was elaborated by the NESSI Standardisation Committee and presented to the NESSI Steering Committee in May 2010. After incorporating comments it will be submitted to the NESSI Board for approval and then published on the NESSI web site (http://www.nessi-europe.eu).

1 http://www.knowledge4innovation.eu/k4i/default.aspx

2 http://ec.europa.eu/enterprise/sectors/ict/files/whitepaper_en.pdf

3 SURVEY ON STANDARDISATION ACTIVITIES I N NESSI PROJECTS

As pointed out in the previous section - contribution to standardisation is a central aim of NESSI. The NESSI research programme is currently[3] composed in addition to NEXOF-RA by 5 strategic and 5 compliant projects - all of them large scale integrated research projects. These initial NESSI projects - representing a total of over 100 M Euros of public private research investments and over 120 of involved organizations - compose one of the most significant research initiatives on core service platform technologies in the world.

In this chapter we give a report on the survey on standardisation activities of NESSI related projects NEXOF-RA has performed during the first half of 2010.

First we give an introduction on the motivation fro the survey and then we explain the questions we submitted to the projects.

The results are the evaluated regarding standardisation domains, support form industrial and academic partners and collaboration activities with open source communities and between projects.

At last we provide an overview on the relationship between standards and the NEXOF patterns.

The complete survey questionnaire and the detailed reports from projects are available in Appendix 1: The Questionnaire and Appendix 2: Reports of NESSI Projects.

3.1 Motivation

The NEXOF patterns are largely derived from contributions of these projects and represent their condensed architectural innovations. Complementary to this are contributions to standards as the functionalities described in the NEXOF patterns are based on emerging or existing open standards in interoperability-relevant areas such as data formats and interfaces. Partially, the functionalities of the NEXOF patterns demand in this context that existing open standards are extended or that even new open standards are created.

With the term "open standards" we refer here to standards that are[4]:

- royalty free[5]
- open in maintenance
- open in terms of its development

[3] referring to the NESSI projects selected in call 1 of the FP7 ICT programme. At the stage of writing this deliverable - further 6 NESSI projects are already in negotiation.

[4] in accordance with the definition of the European Interoperability Forum

[5] In the ICT industry most standard setting organizations (SSOs) have intellectual property rights that tolerate (F)RAND - (Fair)Reasonable and Non-Discriminatory terms.

- implementable by third parties

Typically these standards are suggested, developed and maintained via standardisation organizations. NESSI is collaborating in this context with several leading standardisation organizations and is not aiming to be a standards setting organization itself. It is therefore important to distinguish the role of NESSI and NEXOF as a vehicle for contributions to standardization processes from the role of standards organizations that are in charge of such processes and also of the standards themselves.

One characteristic of this difference is that the standardization process has a dynamic and an organization of its own (e.g. via a technical committee and multiple release and acceptance phases). It is in general difficult to link these process with research projects and the quality of a standards contribution from a research project has therefore not only to be judged by its technical content but also by how well it is aligned with the relevant standardization process.

This addresses the inherent risk that otherwise a potentially interesting contribution is simply left aside by the standardization process. A connected challenge in this context is that of *sustainability*: Whereas the most interesting contributions from research projects are typically developed at a late stage (all reported projects here are in their final year) - the actual standardisation process runs longer than the runtime of the research projects. So, the uptake and integration of the contribution has to be supported beyond the runtime of the projects.

Connected to the issue of sustainability is that of *overlapping or complementary contributions*. Some NESSI projects are working in overlapping fields where the contribution to standards should be aligned between the projects. Furthermore, contributions should at best be integrated.

The aim of the survey that NEXOF-RA has conducted among NESSI projects is therefore:

- to identify contributions from NESSI projects to standards
- identify the relevant standardisation organizations and the current NESSI project linkage to these organizations
- identify the status of the concerned standardization processes and the alignment with the contributions from NESSI projects
- identify potential overlap and complementary contributions and initiate collaboration between NESSI projects
- identify factors for sustainability of the major standards contributions from NESSI

3.2 The Questions

A questionnaire was developed by the NEXOF-RA standardisation work package team in alignment with the above mentioned survey objectives. Questions were structured into the following areas:

Standards organization

Details about the standards organization and in particular the receiving body (such as a specific technical committee) and the key persons involved on behalf of this body

Standard concerned

Details about the concerned standard - e.g. with regard to specification version and details about the specification

General Milestones relating to the standard

Details about the current status of the standardization process with regard to the concerned standard. Milestones may be specific to the standards organisation but are typically related to steps like "committee draft", "public review", "committee specification"

The milestones provide an indication where the NESSI contribution currently is supposed to fit in - which itself should be aligned with the type of contribution.

General online references relating to the standard

Open standards typically should have free accessible online documentation.

Summary of the standards contribution

A summary of the contribution to the standard, provided by the NESSI project, including concrete references to documentations of that contribution

Supporters of the standards contribution

As each NESSI project is a consortium with limited time duration, a standard needs support not only by a project but also by selected members of the consortium. Also from the organizations involved in NESSI project consortia, many have longstanding relations to standards organisations - and are often directly represented in e.g. technical committees or standards organization leadership. So, this question assesses the support of the standards contribution by individual organizations.

Status of the standards contribution

The current status of the contribution from the viewpoint of the NESSI project as well as in relation to the milestones of the standardization process - as referred to previously.

Collaboration with other NESSI projects

Existing or potential collaboration between NESSI projects in the joint development and definition of contributions to standards. One example is the collaboration between the RESERVOIR and the SLA@SOI project in the domain of cloud-computing standards.

Relation to NEXOF architectural patterns

Details about the NEXOF-RA pattern(s) where the concerned standard is applicable.

Requested support activity from NESSI and NEXOF

As an input to the NEXOF sustainability planning, this question assesses if further support of the standards contribution is needed via NESSI and NEXOF.

3.3 Overview on the results

The survey has demonstrated that all NESSI Strategic and Compliant Projects originating from FP7 Call 1 have started to contribute to standardisation activities.

This involves contributions to major standardization organizations such as:

- the World Wide Web Consortium (W3C) - 3 contributions
- the Open Grid Forum (OGF) - 4 contributions
- the Organization for the Advancement of Structured Information Standards (OASIS) - 6 contributions
- the Distributed Management Taskforce (DMTF) - 1 contribution
- the International Organization for Standardization (ISO) - multiple contributions
- the International Telecommunication Union - Standardization Sector (ITU - T) - 1 contribution

The contributions can be classified along the prototypical phases of the standardization process as described in the following picture.

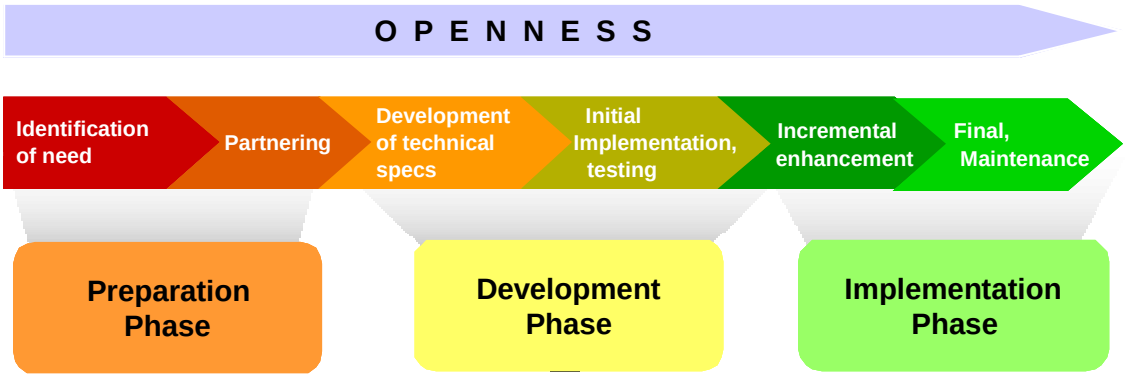


Figure 1 ***Prototypical phases of the standardization process***[6]

In particular, the NESSI contributions fall into three broad categories alongside these prototypical phases:

1. **Identification of need:** An example for this is the domain of *service compliance management* that is addressed by the NESSI projects MASTER (NSP) and COMPAS (NCP). The projects have identified needs for open standards to define the evidence attributes and sources that can attest for the behaviour of a service. In the same way, they have identified needs for a request language on compliance concerns.

2. **Development of technical specs & initial implementation, testing:** An example for this is the domain of infrastructure is *cloud computing* and corresponding *service level management* that is addressed by the NESSI projects RESERVOIR and SLA@SOI. Whereas these projects have also contributed to the identification of needs, they are closely engaged in the specification of emerging standards. One central contribution here is on the Open Cloud Computing Interface (OCCI) - a new REST-based API standard for managing cloud services in between cloud providers. Also, the projects are engaged in corresponding testing and initial implementation activities on that emerging standard - OCCI is used in several test cases of both projects and also initially implemented in Open Source and proprietary software components - e.g. in the OpenNebula virtualization manager.

3. **Incremental enhancement:** This refers to the extension of existing - usually well established standards. Another example from the *cloud domain*

[6] Innovation, Open Standards and Democracy, available at http://www.consortiuminfo.org/metalibrary/detail.php?EID=1850&PID=4&ID=16

is here the collaboration on extending the Open Virtualization Format (OVF) with features that are specific for virtualized execution environments provided by clouds - such as scalability and elasticity parameters...

Whereas each standards contribution typically has a centre of gravity in one of these phases - it is not unusual to have combined contributions to several phases. E.g. the RESERVOIR and SLA@SOI projects have also contributed to use-case and requirement definitions as part of the identification of needs to both the OGF Open Cloud Computing Interface Working Group and the DMTF Open Cloud Standards Incubator.

The contributions also show that there is a significant body of existing standards on software based services (such as the WS-* family of standards). However, in order to account for new types of service applications - e.g. Infrastructure as a Service or Platform as a Service cloud services - extensions of existing standards and potentially new standards are necessary.

Also, some domains of software service standards have become "heavy" in terms of the requirements to use the standard - with regard e.g. to the complexity of the semantic description (such as WSMO - the Web Service Modelling Ontology). Here, NESSI projects - in that example SOA@ALL - are working on "light" versions that can better cater for flexible service applications outside of the classical domains where these standards where originally developed for.

In summary, the survey has shown that NESSI projects are working on strongly targeted domains of standards around software based services - building on a large body of existing standards. The contributions are in particular addressing emerging fields of applications (many of those connected to the *Internet of Services*) and are a blend of identification of new needs for standards, specification and piloting of emerging standards and contribution and extension of existing standards. The application of these standards is partially demonstrated in NEXOF-RA patterns, whereas not all standards contributions are directly relating to a pattern and vice versa.

In the following the domains where NESSI projects are contributing with standardisation activities will be described in more detail. The relationship to NEXOF patterns will be described in section 3.4.

3.3.1 Addressed standardisation domains

The standards contributions by the first round of NESSI projects can be classified into the following domains:

1. **Cloud Computing:** Contributions on a standardized interface to manage infrastructure cloud services in between the IaaS provider and the service consumer (DMTF - OVF extension). Another contribution is towards a

standardized interface in between IaaS providers that are aiming to federate their cloud resources (OGF- OCCI).

2. **Service Level Agreements & Negotiation:** Contributions on applying the WS Agreement Standard (OASIS) for managing service level agreements. Contribution to the upcoming WS Agreement Negotiation standard (OASIS) to define a negotiation protocol as well as a language to describe and negotiate Service Level Agreements. This domain is closely linked to the first domain of (infrastructure) cloud computing.

3. **Mobile Services:** Contributions on an API standard for accessing Device Description Repositories (DDRs) that store detailed information on the (mobile) devices from which a service is accessed. Contributions to delivery context ontology to provide a formal model of the characteristics of the environment in which devices interact with the Web or other services. (both contributions to W3C)

4. **Service Compliance Management:** Contributions on the extension of BPEL (OASIS) and on the OASIS SOA Reference Model for integrating service compliance considerations. Need identification and initial specification for a compliance request language.

5. **Lightweight Service Modelling:** Contributions on the Reference Ontology for Semantic Service Oriented Architectures (SEE-ROSOA, OASIS). Contributions on a REST based alternative for the semantic annotation of web resources (SA-REST, W3C). WSMO-Lite contribution to the Web Services Modelling Ontology (W3C).

6. **Secure Service Access:** Contributions in the domain of access control (OASIS extensible Access Control Markup Language XACML WG). Contributions on password policy as an extension of X.500 / LDAP (ISO/ ITU).

7. **Identity Management and Privacy**: Multiple contributions to elements of the ISO Identity Management Framework 24760 in areas such as terminology, process and structure. Strengthening of privacy aspects of the standards in development within ISO/IEC JTC 1/SC 27/ WG 5.

3.3.2 Support by Industrial and Academic Partners

The survey has shown that most NESSI standard contributions are supported by selected industrial partners. There is also often a direct link between one or several of the organizations that support the contribution and the leadership of either the standards organization or the receiving body within the standards organization.

One example is the domain of cloud computing where the co-chairs of the OCCI working group are provided by Intel (SLA@SOI project) and SUN (RESERVOIR project). Also the OCCI working-group involves a number of application partners such as Google, SAP, RightScale, GoGrid, Flexiscale, Nimbus, Cisco and OpenNebula. This gives the NESSI standardization contributions a good industrial visibility. The same applies in cloud computing for the DMTF OVF contribution where Telefónica, IBM, SAP and SUN are industrial supporting partners and where the DMTF cloud standards incubator groups also includes further major vendors such as VMWare and Oracle.

Typically, NESSI standards also receive support from academic partners with a balance towards industry - in particular for the standards on cloud computing, frontends/mobile services and privacy.

3.3.3 Collaboration with Open Source projects

Several of these standardization activities are also linked to Open Source projects - such as the cloud computing and the privacy domains that are linked to open source frameworks as OpenNebula (clouds) and Higgins (privacy). The parallel engagement in open source projects ensures the early propagation of components for open pilot implementations and testing of the suggested standards contributions. Also it provides a further option towards sustainability.

Whereas some of the "identification of need" contributions are conceptual - the contributions to later phase standardization activities are backed by use case and piloting work. In this context, most projects are using open source releases of self developed software components that partially implement the suggested standards contributions.

3.3.4 Collaboration between NESSI Projects

Collaboration between projects can be useful within a domain of standardization and also across. The prime example of a collaboration that has been triggered explicitly by NEXOF-RA is the collaboration between the RESERVOIR and the SLA@SOI project in the domain of cloud computing:

Example: The RESERVOIR/SLA@SOI collaboration on cloud computing standards

The collaboration was originally driven by the intention to combine functionality and create a joint NEXOF-RA proof-of-concept in the cloud domain that would integrate advanced federated cloud infrastructure service management as provided by RESERVOIR with the SLA management, monitoring and

negotiation capabilities of SLA@SOI. After conducting a detailed comparison on functionalities, it became clear to the collaboration team that there was a need for an in-depth investigation of the data models and interface standards used by both projects with regard to:

1. *The vertical interface between the infrastructure service provider(s) and the consumer(s*). This relates to the SLA management model used by SLA@SOI and the service management interface as used by RESERVOIR. The projects have agreed to use an extended OVF (DMTF) as the standard for this interface.
2. *The horizontal interface between the federated infrastructure providers (IaaS providers).* This relates to the Virtual Execution Environment Manager Interface of the RESERVOIR project. The projects have agreed to use the emerging OCCI (OGF) standard here for their collaboration
3. *The alignment of the monitoring capabilities* as designed by both projects. This has impact on both above mentioned standards

The projects have documented this collaboration in more detail in a joint NEXOF-RA white paper of both projects. Also, from this collaboration has sprung a conceptual PoC and joint contributions to the IaaS pattern.

Other collaborations have been in particular between projects on service frontends & mobile services and also in between the projects on service privacy.

3.3.5 Open Alliances

Open Alliances were suggested by the NESSI Steering Committee as an instrument to install sustainable collaboration in between research projects (NESSI projects and further projects beyond the NESSI program) in a given domain. Central elements are contributions to standards via open specifications and collaboration on reference implementations.

The first alliance that was created under this scheme was the alliance on service frontends:

Example: The Service Frontend Open Alliance

The Service Frontend Open Alliance (http://sfe.morfeo-project.org/) has met the first time in Zurich hosted by SAP Switzerland in February 2009. During this meeting the Open Alliance concept was introduced and the founding projects presented their work and vision in how to support the Open Alliance.

The founding projects are namely: “EzWeb”, “FAST”, “Building Marketplaces with Service Syndication”, “InContext”, “MyMobileSearch”, “MyMobileWeb”, “OPUCE” and “UsiXML”

The meeting agreed that the Service Frontend Open Alliance is aiming to deliver:

- A common vision on the technologies and architecture associated to Service Front Ends in the Future Internet of Services.
- Open specifications and open source reference implementations of components in the envisioned architecture.

The aim of these two points is coming from the reality that internet users are expecting that the Web will support their daily life becoming the front-end through which they will get access and mix services (either application services, content/data delivery services). These Services can be mixed and accessed so that they are truly useful for the end-user, matching their needs at any moment, in a context/knowledge-aware manner.

The Open Alliance has formulated a manifesto to support this vision and has organized several contributions to research fora such as the Future Internet Assembly.

A Cloud Open Alliance (http://cloudtechnologies.morfeo-project.org/) was founded in March 2009. The founders of the alliance were the DSA-Research Group from Universidad Complutense de Madrid (UCM) and Telefónica I+D. Additionally BSC, CESGA, Atos Origin, Catón, EyeOS and Xeridia joined later on. The cloud computing domain has currently a number of new alliances that are being created - several NESSI and NEXOF-RA project members e.g. support also the Open Cloud Manifesto (www.opencloudmanifesto.org).

3.4 Relationships between Standards and Patterns

3.4.1 State of the Art Standards referenced by NEXOF Patterns

For a better overview on standards relationships a referenced the result of an evaluation of NEXOF-RA pattern descriptions a reference table was set up, which contains following columns:

- *NEXOF-RA pattern*: name of the pattern
- *Source*: link (if available) to the pattern document into NEXOF-RA Portal.
- *Date*: last date of submission
- *Standards relationship*: standards available on the Catalogue used to define the pattern.

NEXOF-RA Pattern	Source	Date	Standards relationship
Active Replication	Not yet available	27.04.2010	No relationships to the catalogue of standards.

Assisted Composition Designer	Not yet available	23.12.2009	WSDL, WSMO, OWL-S, WSML, RDF, WS-BPEL, WS-CDL, BPMN
Authorization	Not yet available	03.06.2010	Not yet available
Black-Box Database Replication	http://www.nexof-ra.eu/?q=node/556	11.12.2009	ANSI SQL
Cloud Migration Enabled by OSGi	Not yet available	04.06.2010	OGF Open Cloud Computing Interface, Sun JCP Java Data Objects, Sun JCP Java Persistence API, OSGi Alliance OSGi, SQL
Cloudified Application Servers	Not yet available	28.04.2010	No relationships to the catalogue of standards.
Data Mediation	http://www.nexof-ra.eu/?q=node/565	14.12.2009	Not available
Designer and Runtime Tools for E-Soa	http://www.nexof-ra.eu/?q=node/531	11.12.2009	Not yet available
Distributed ESB in ESOA	http://www.nexof-ra.eu/?q=node/564	11.12.2009	W3C SOAP and EDI
Dynamic Binding of Services	Not yet available	06.05.2010	WSDL, WSMO, OWL-S, WSML, RDF, WS-BPEL, WS-CDL
Elastic and Reliable Filesystems	Not yet available	31.05.2010	No relationships to the catalogue of standards.
Enterprise SOA	http://www.nexof-ra.eu/?q=node/530	14.12.2009	No relationships to the catalogue of standards.
Federated Distributed Service Bus	Not yet available	11.05.2010	No concrete standards recommended
Front-end in E-SOA	http://www.nexof-ra.eu/?q=node/534	09.11.2009	Delivery Context Ontology W3C, OWL, Device Description Repositories Simple API W3C, OMA Standard Transcoding Interface, JPC Java Servlet Specification (JSR-154), JPC Java Server Pages Specification (JSR-245), HTTP W3C
Generic Group Communication	Not yet available	27.04.2010	No relationships to the catalogue of standards.
Gray-Box Database Replication	http://www.nexof-ra.eu/?q=node/555	14.12.2009	ANSI SQL

Horizontal Replication	Not yet available	19.01.2010	J2EE/JEE JCP, ANSI SQL
Infrastructure as a Service	Not yet available	06.06.2010	OGF Open Cloud Computing Interface, DMTF Open Virtualization Format
Internet of Service	Not yet available	27.04.2010	Not yet available
Log-Mining Writeset Extraction	http://www.nexof-ra.eu/?q=node/552	14.12.2009	ANSI SQL
Mashup as a Service	Not yet available	15.05.2010	Not yet available
Map-Reduce	Not yet available	31.05.2010	No relationships to the catalogue of standards.
Models Manager	Not yet available	07.01.2010	WSDL, WSMO, OWL-S, WSML, RDF, WS-BPEL, WS-CDL, BPMN
Monitoring in Enterprise SOA	http://www.nexof-ra.eu/?q=node/532	14.12.2009	Java Management Extensions (JMX) SUN, Simple Network Management Protocol IETF, Web Services Distributed Management OASIS
Multicast-Based Replica Discovery	Not yet available	16.02.2010	No relationships to the catalogue of standards.
Multi-Phase Discovery	http://www.nexof-ra.eu/?q=node/566	31.05.2010	WSDL, WSMO, OWL-S, WSML, W3C RDF, W3C SPARQL Query Language for RDF
Multi Tenancy Enabler	Not yet available	12.05.2010	OGF Open Cloud Computing Interface, DMTF Open Virtualization Format, Sun JCP Java Data Objects, SQL
Multi-Tier Transactional Service Runtime	http://www.nexof-ra.eu/?q=node/533	14.12.2009	CORBA OMG, J2EE/JEE JCP, ANSI SQL
Non-Repudiation	http://www.nexof-ra.eu/?q=node/559	30.11.2009	W3C XML Signature Syntax and Processing
NoSQL Storage	Not yet available	31.05.2010	No relationships to the catalogue of standards.

OSGi-based SCA-Container	http://www.nexof-ra.eu/?q=node/562	14.12.2009	Service Component Architecture (SCA) OSGi, BPEL, JMS
Platform as a Service	Not yet available	11.05.2010	No relationships to the catalogue of standards.
Reflective Database Replication	Not yet available	27.04.2010	ANSI SQL
Registry-Based Replica Discovery	Not yet available	16.02.2010	No relationships to the catalogue of standards.
Security in Enterprise SOA	http://www.nexof-ra.eu/?q=node/560	30.11.2009	IETF HTTP Authentication, WS-Federation OASIS, XACML, SPML
Semantic Annotation Composition	Not yet available	06.05.2010	WSDL, WSMO, OWL-S, WSML, RDF, WS-BPEL, WS-CDL, BPMN
Semantic based Federated Registry	Not yet available	12.05.2010	Not yet available
Service Discovery	http://www.nexof-ra.eu/?q=node/567	31.05.2010	WSDL, WSDL-S, WSMO, OWL-S, WSML,
Service Matchmaking and Ranking	http://www.nexof-ra.eu/?q=node/568	31.05.2010	WSDL, WSMO, OWL-S, WSML, W3C RDF, W3C SPARQL Query Language for RDF
Session Replication with Multi-Tier Coordination	Not yet available	19.01.2010	CORBA OMG, J2EE/JEE JCP, ANSI SQL
Template-based Discovery	Not yet available	31.05.2010	WSDL, WSMO, OWL-S, WSML, W3C RDF, W3C SPARQL Query Language for RDF
Transparent Replication Proxy	Not yet available	21.01.2010	No relationships to the catalogue of standards.
Trigger Writeset Extraction	http://www.nexof-ra.eu/?q=node/551	14.12.2009	ANSI SQL
Trusted Timestamping	http://www.nexof-ra.eu/?q=node/558	30.11.2009	W3C XML Signature Syntax and Processing
Trust Based Model Registry	Not yet available	03.06.2010	No relationships to the catalogue of standards.
Vertical Replication	http://www.nexof-ra.eu/?q=node/557	14.12.2009	CORBA OMG, J2EE/JEE JCP, ANSI SQL
Virtual ESB	Not yet available	27.04.2010	SOAP, EDI

Virtualization of Computational Resources in E-SOA	http://www.nexof-ra.eu/?q=node/561	14.12.2009	No relationships to the catalogue of standards.
White-Box Database Replication	http://www.nexof-ra.eu/?q=node/554	14.12.2009	ANSI SQL
Writeset Extraction Based on Extended Interfaces	http://www.nexof-ra.eu/?q=node/553	14.12.2009	ANSI SQL

Table 1 Relationship of NEXOF-RA patterns to standards

While analyzing data collected during the set-up of the reference table it was possible to establish the status of standards referenced by NEXOF patterns.

Due to the importance of the service description concerning a lot of patterns (*Assisted Composition Designer, Dynamic Binding of Services during Composition, Models Manager, Multi-Phase Discovery, Semantic Annotation Composition, Service Discovery, Service Matchmaking and Ranking and Template-based Discovery*), there are some standards related to this aspect which have to be taken into account. WSDL is a key standard for the syntactical description of services, and WSMO, OWL-S, WSDL-S, WSML are used to describe the semantic of services behaviour. WS-BPEL, WS-CDL and BPMN are related to orchestration and choreography. The latter is related to the modelling of the composition while the former are related to its execution (*Assisted Composition Designer, Dynamic Binding of Services during Composition, Models Manager, Semantic Annotation Composition*).

W3C SPARQL is a standard for semantic queries which is taken into account in *Multi-Phase Discovery, Service Matchmaking and Ranking and Template-Based Discovery* patterns, since some approaches need to access to RDF repositories for extracting semantic information.

Regarding to databases, the most well-known and currently used in enterprises are relational databases. In relational databases, the SQL standard is the *de iure standard*, as reported in the following patterns: *Black-Box Database Replication, Gray-Box Database Replication, Horizontal Replication, Log-Mining Writeset Extraction, Multi Tenancy Enabler, Trigger Writeset Extraction, Vertical Replication, White-Box Database Replication, Writeset Extraction Based on Extended Interfaces.*

In addition, as *Distributed ESB in ESOA* and *Virtual ESB* patterns provide a mean to mediate between protocols, it is expected to deal with several standards related to services messaging, such as SOAP and REST, and even with others like EDI.

As regards the construction of multi-tier architectures (as reported to *Horizontal Replication, Vertical Replication, Multi-Tier Transactional Service Runtime, Session Replication with Multi-Tier Coordination* patterns), nowadays there are

many different standards distinguishing between *de iure standards* and *de facto standards*. In the first group, the CORBA standard from the Object Management Group (OMG) are included and the J2EE/JEE from the Java Community Process (JCP). Some examples of the second group are frameworks based on the model-view-controller pattern such as Ruby on Rails or Struts, and other alternatives such as Spring or .NET. Many of these frameworks such as J2EE/JEE or Struts, define open architectures (by means of open-source projects) that allow the community to improve the products. Nowadays, the most used standard in the enterprises is J2EE/JEE.

In the context of the *Cloud Migration Enabled by OSGi, OSGi-based SCA-Container and Multi Tenancy Enabler* patterns, standards for databases and virtualisation could be applicable. Some examples for such standards which could be used to implement some of the components, interfaces and connections of these patterns are: OSGi, OGF Open Cloud Computing Interface, DMTF Open Virtualization Format, Sun JCP Java Data Objects and Sun JCP Java Persistence.

W3C XML Signature Syntax and Processing, IETF HTTP Authentication, WS-Federation OASIS, XACML, SPML are related to *Non-Repudiation, Security in Enterprise SOA and Trusted Time stamping* pattern while a well-known example of specification for *Monitoring in Enterprise SOA* pattern is JMX.

JMX is a Java specification included in the Java Community Process (JCP) that allows creating management architectures, providing APIs and services for building Web-based, distributed, dynamic and modular solutions to manage/monitor Java resources. Other specifications such as Simple Network Management Protocol or Web Services Distributed Management also include monitoring among their features.

Finally, in the context of web content delivery (*Front-end in E-SOA* pattern), the Delivery Context Ontology standard provides a formal model of the characteristics of the environment in which devices interact with the Web or other services. The delivery context includes the characteristics of the device, the software used to access the service and the network providing the connection among others.

Web content delivered to mobile devices usually benefits from being tailored to take into account a range of factors such as screen size, mark-up language support and image format support. Such information is stored in "Device Description Repositories" (DDRs) and can be accessed by means of the DDR Simple API, in order to ease and promote the development of Web content that adapts to its Delivery Context.

OMA STI is the first specification of a standard interface between application platforms and a trans-coding platform and is meant to resolve some of the integration and testing problems when deploying multimedia services towards mobile devices.

3.4.2 Contributions from NESSI Projects to upcoming standards in the context of NEXOF patterns

When submitting their filled questionnaires many representatives of contributing projects were quite unsure how their envisaged standards had relations to the NEXOF-RA patterns. A phase of bilateral discussions brought a number of clarifications, but not all relationships could be defined yet. This is one task for the future work on the reference architecture (see also chapter 5).

As for now the following contributions from NESSI Projects to standards have defined relationships to patterns:

Pattern	Standard	St. Body	Project	Status
Context of Use Management for Service front-Ends pattern	DCO (Delivery Context Ontology)	W3C	MyMobileWeb	Submitted
SLA Translation	WS-Agreement Negotiation	OGF	SLA@SOI	Final draft
Virtualisation of Computational Resources in E-SOA	OCCI (Open Cloud Computing Interface)	OGF	SLA@SOI	In work
Virtualisation of Computational Resources IaaS	OCCI (Open Cloud Computing Interface)	OGF	RESERVOIR	In work
Virtualisation of Computational Resources IaaS	OVF (Open Virtualization Format V1.1.0)	DMTF	RESERVOIR	pattern included in Top Level Patterns E-SOA, CC, IoS

Table 2 Contributions from NESSI Projects to Standards

3.5 The Standards Catalogue

During the first six months of NEXOF-RA the standardisation work package had compiled a list of relevant standardisation bodies and standards. This was done in close collaboration with the horizontal work packages and the architecture work package. The result was primarily collected in a wiki for enabling all project

participants to enter their knowledge and contribution easily. The interim result was published in deliverable D9.1.

Deliverable D7.2 (Definition of an architectural framework & principles NEXOF-RA)[7] described the structure of the NEXOF-Reference Architecture:

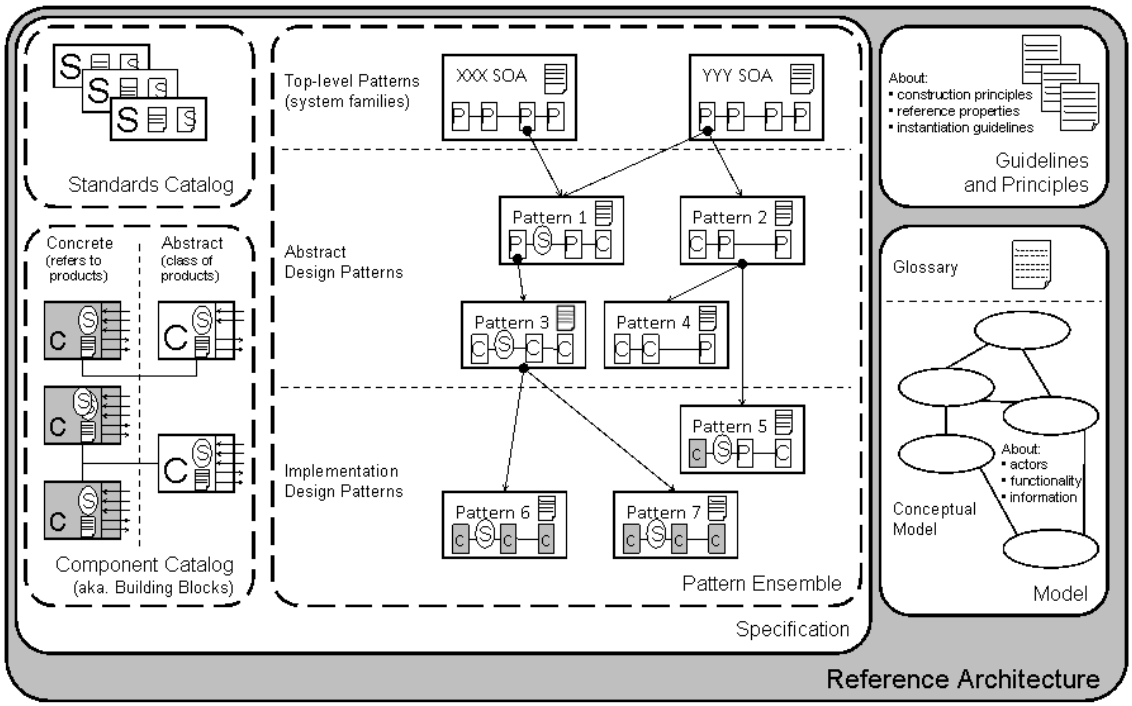


Figure 2 NEXOF Reference Architecture Structure

Accompanied by the Model and Guideline and Principles, the specification of the architecture consists of the pattern ensemble and the components and the standards catalogue.

The *NEXOF-RA Standards Catalogue* contains all standards referred to in the Reference Architecture and each standard is linked to the relevant elements of the Guidelines and Principles as well as to the concepts it addresses. The main public access to this catalogue is provided by the NEXOF-RA web site[8]. The navigation from the NEXOF-RA entry page through “What is NEXOF” to “The Reference Architecture” and a link in the respective section of the overview image (see Figure 2).

Figure 3 shows an extract of the standards catalogue as implemented in the NEXOF-RA web site. The standards are groups according to thematic areas. For each entry the following information is provided:

- the name and the version of the standard or specification

[7] http://www.nexof-ra.eu/?q=node/569

[8] http://www.nexof-ra.eu/?q=node/529

- the source (standardisation body or consortium)
- a link into the patterns catalogue (if applicable)

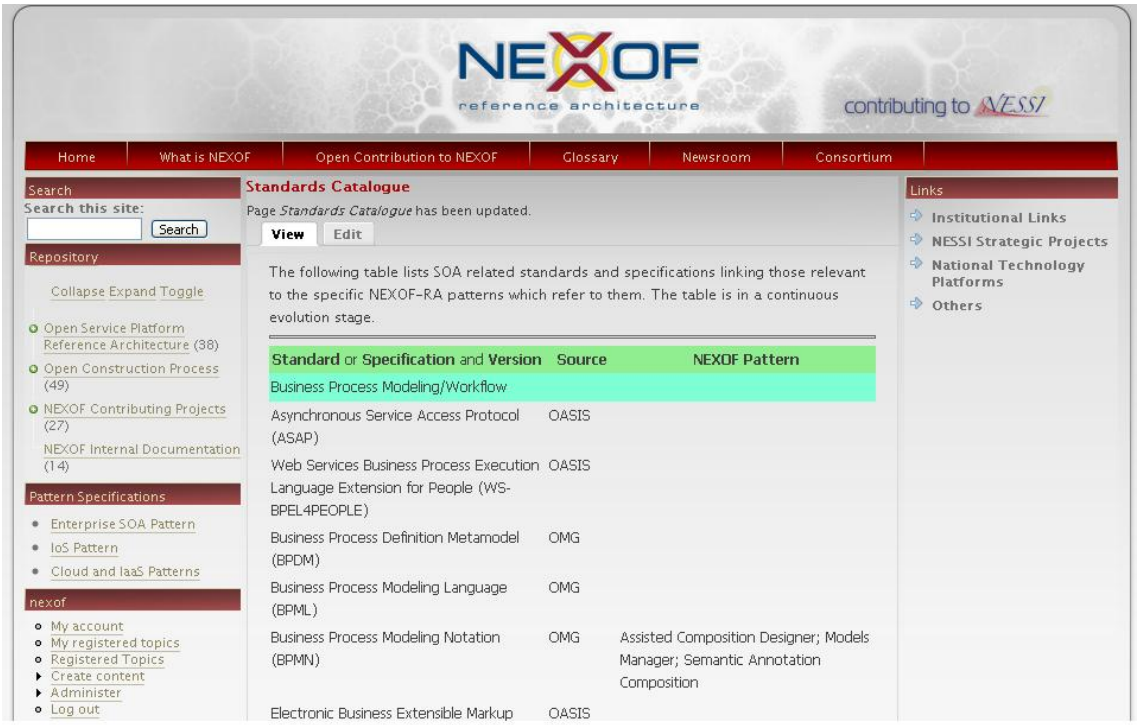


Figure 3: The Standards Catalogue

4 STANDARDISATION WORKSHOPS

During the second year of NEXOF-RA a number of workshops related to standardisation topics took place. They were organised by NESSI projects or project participants. In this chapter we report summaries of the workshops and the support given by NEXOF-RA. The detailed results are or will be available on respective workshop web sites.

4.1 Workshop on "Grids, Clouds and Service Infrastructures"

ETSI TC GRID organised a workshop on 2-3 December 2009 at ETSI in Sophia Antipolis, France. This event, the first of its kind, brought together key stakeholders of the grid, cloud and telecommunications domains and was collocated with an interoperability demonstration Plugtests(TM) which showed a range of cloud deployment and interoperability demonstrations based on both commercial and open source products.

The event attracted more than 70 delegates, from both research and commercial backgrounds. An impressive programme of invited talks provided the context for a lively workshop and stimulated discussions on the way grid and cloud technologies are starting to have a commercial impact and the potential role of standardisation in helping to realise their full potential.

Organised by Mike Fisher (BT, ETSI TC CLOUD Chair) and Karsten Oberle (Alcatel-Lucent, Bell Labs, ETSI TC CLOUD Vice Chair) and supported by OGF-Europe and a Programme Committee the workshop programme opened with a keynote speech by Jorge Gasos on EC Research in Software and Services and the role of standards. Invited experts from Alcatel-Lucent, Animoto, BT Global Services, Conformiq, D-Grid, ETSI, IBM, INRIA, the 451 Group, Microsoft, Nokia Siemens Networks, the Open Grid Forum, Sun Microsystems and Telefónica I+D presented from a range of perspectives. European research was also well represented, with talks from NEXOF-RA, IRMOS, RESERVOIR and SLA@SOI.

The workshop also included opportunities for discussion which were taken up enthusiastically by the participants. These discussions were subsequently analysed and summarised by ETSI TC CLOUD, resulting in the publication of an ETSI Technical Report (DTR 102 997: "Initial Standardisation Requirements for Cloud Services")[9] which can be regarded as defining a starting point for a debate on where standardisation efforts for cloud services should be focused.

The general impression from the workshop was that open standards will be an important contributor to stimulating the mainstream adoption of cloud services. However, this needs to be translated into specific requirements and the committed participation of stakeholders, including both commercial and research organisations. There are strong indications that cooperation between standards development organisations will be possible in this area.

[9] Can be downloaded from http://webapp.etsi.org/workprogram/SimpleSearch/QueryForm.asp

4.2 Workshop on Access Control Application Scenarios

W3C – supported by the NESSI project PrimeLife – organised a workshop on access control application scenarios. It took place on 17 and 18 November 2009 in Luxemburg.

This workshop brought together worldwide research and user communities to explore evolving application scenarios for access control technologies, such as XACML. Results form a number of recent European research projects in the grid, cloud computing, and privacy areas show overlapping use cases for these technologies that extend beyond classical intra-enterprise applications. The commonalities between different application scenarios, and standardization needs (at W3C and elsewhere) were explored.

Participants from 17 organizations examined the current limitations of access control, privacy enhancement, distributed handling of access control, and other challenging use cases. eXtensible Access Control Markup Language (XACML) was a focus of the Workshop, though not the exclusive topic of conversation.

W3C has published a report and full minutes on the workshop web site[10]. It summarizes the major results from the workshop, related to XACML semantics, *sticky policies*, and credentials-based access control. The OASIS XACML Technical Committee is expected to take up these topics. W3C's Policy Languages Interest Group (PLING) is expected to discuss data handling policies and the matching and triggering of events in the privacy context were also discussed. Further discussion about this subject and complex matching using semantic web technologies will be directed to the Policy Languages Interest Group (PLING).

4.3 Workshop on Future Standards for Model-Based User Interfaces

The Workshop on Future Standards for Model-Based User Interfaces was organised by MyMobileWeb and took place in Rome, 13-14 May 2010.

The goal of this workshop was to discuss the Model-Based UI Incubator Group Report[11] and to identify opportunities and challenges for new open standards in the area of Model-Based User Interfaces:

- What are the main benefits for Model-Based UI?
- What are the next steps to be taken concerning standardization?
- Is it feasible and opportune to start and standardization process now?
- What are the technologies that call for standardization?
- What needs to be standardized, models, syntaxes, both?

[10] See http://www.w3.org/2009/policy-ws/

[11] See http://www.w3.org/2005/Incubator/model-based-ui/XGR-mbui-20100504/

- What companies and institutions are interested in participating in the process?
- What liaisons need to be established?
- What is the roadmap to be followed?

The workshop also aimed at creating a community of interested parties, with a view to defining the charter of a W3C Working Group on the topic.

The main outcome of the workshop will be the publication of a report that will serve as a guide for further work in W3C.

5 CONCLUSION AND OUTLOOK

5.1 Sustainability

It is in the very nature of collaborative research projects that standardisation activities are coming up after the first technical results have been achieved and the standards to address are indentified. Thus it is also natural that NEXOF-RA had much more to report on standardisation compared to the first project year. The big interest of NESSI projects in collaborating, exchanging experience and giving support shows that standardisation is important for all of them and a main pillar of NEXOF.

The results of the survey show that this was only the initial phase and many topics will be brought into standardisation in the near and mid-term future. The standards catalogue was published as an initial version, but it has to be extended and maintained continually. After the project end of NEXOF-RA there are mainly two means to support that:

- The ECSS Collaboration Platform
- NESSI and its Standardisation Committee (Costa)

The procedures and organisation of this further work has to be defined in these two audiences.

5.2 Collaboration Platform

In the Collaboration Meeting for Software and Services in June 2009, the representatives of related projects have suggested to use the ECSS platform[12] for further community building and communication. The implementation was presented in deliverable D9.2a ([First] Report on Standardisation Activities).

Interim results of collaboration were published on this platform:

- Report on the Collaboration Meeting for FP6 & FP7 projects
- NEXOF-RA Questionnaire on Standardisation
- Interim Report on Standardisation Activities of NESSI projects (presentation given at the NESSI projects summit on April 12, 2010 in Valencia)

Allocated to the community website there is a discussion forum, that also contains a message board for the standards working group. Since start up of this forum ten posts were submitted, which shows that the acceptance of this platform is still low.

But the ECSS community is calling for another Internet of Services Technical Collaboration meeting for FP6 & FP7 projects on 19 and 20 October 2010 in Brussels (website not available yet). In this collaboration meeting there will be another session on standardisation organised by SLA@SOI. The preparation of

[12] See http://www.eu-ecss.eu/

the event shows that nine out of thirty-two projects resulting from FP7 Call 5 show strong interest in standardisation. This gives a good perspective for further collaboration and contributing to the NEXOF standards catalogue.

5.3 NESSI Costa

The NESSI Standardisation Committee was installed by NESSI already in 2006. Its mission and the relationship to the NEXOF-RA standardisation work package were already described in deliverable D9.1b (Relevant Standardisation Bodies and Standards for NEXOF).

In its sustainability plan, the NESSI Steering Committee has underlined the importance of standards activities for NESSI and this was further emphasised by the European Commission's vice president and commissioner for the Digital Agenda, Neelie Kroes, in the meeting of the NESSI Board end of May 2010.

The NESSI Costa will have to do the following tasks over the next couple on months:

- Publish the NESSI position paper on standards and follow-up the policy activities toward the EC and industrial organisations
- Rework the Costa manifesto with regard to NESSI's role in the Future Internet activities and the Public Private Partnership
- Play an active role in the FI PPP projects and ensure appropriate regard to standardisation in project proposals of the dedicated calls
- Participate in the FP7 projects collaboration meeting and establish contacts to new projects resulting out of call 5
- Support NESSI Strategic Projects and NESSI partners in getting in contact with the envisaged standardisation bodies for their activities

6 APPENDIX 1: THE QUESTIONNAIRE

NEXOF-RA

NESSI Open Framework – Reference Architecture

IST- FP7-216446

NEXOF-RA supporting NESSI Project Contributions to Standards Organizations

Standardization Activities

by NESSI Strategic and Compliant Projects

Contact: <fill-in name and affiliation>

Date of publication: <Fill-in date>

Action Required by <Fill-in date>

Important Dates

This section describes the important dates for contributors to the NEXOF standardization survey. When submitting contributions it can be removed.

February 28, 2010	Submission of survey results to NEXOF
March 19, 2010	Clarification of open issues – Agreement on mutual actions (optional)
April 13, 2010	Survey and actions summary document (Session in NESSI Summit, Valencia)
	Communication to the EC, NESSI Steering Committee and Board
End of May, 2010	Follow on activities

Instructions and Guidelines

Please fill-in any section of text highlighted in yellow (like this). You may remove the highlight prior to submitting the position paper.

Any paragraph on a light blue background (like this one) may be removed prior to submitting the template.

The survey on standardization activities intends to provide transparency of the diverse intended, ongoing or already provided contributions from NESSI projects to standardization initiatives and standards organizations. It shall further provide the basis for agreed actions in order to support these standardization activities via the NEXOF-RA project and the NESSI ETP. The survey is explicitly focused on contributions and not on general relationship activities with standards organizations.

The submitted information on standardization activities must not contain any confidential or proprietary information. The copyright for your information provided via the survey must allow the publication of the NEXOF Standardization Survey Results as an open document with derivative rights (the project is currently using the Creative Commons Attribution 3.0 License).

Effective participation to the survey process requires the following:

- filling in of this survey document
- actively engage in email clarification of open issues arising from the contribution
- participate to phone conferences for the clarification of open issues and potentially agreement of further actions

You are requested to keep the same representative(s) through the duration of the survey.

Details about the Contributors

Main Contact / Lead

- Name: <fill-in>
- Affiliation: <fill-in>
- Email: <fill-in>
- Phone: <fill-in>
- Mobile Phone: <fill-in>

Additional Contributor (if any – copy if needed for multiple contributors)

- Name: <fill-in>
- Affiliation: <fill-in>
- Email: <fill-in>
- Phone: <fill-in>
- Mobile Phone: <fill-in>

Project Represented

- Project: <fill-in>
- Programme: <fill-in>

Please copy the following pages or create multiple documents from this template – if needed – to provide details about multiple different standards contributions and/or contributions to different standards organizations from your project.

1 Details about the standards organization and the concerned standard

1.1 Standardization Organization

Standards Organization:	Name of the organization
Receiving body of the Contribution:	Name and type (WG / Tech Committee)
Contact Name:	Name of contact person
Role:	Role of contact person
E-mail:	E-Mail

1.2 Standard concerned

Standard concerned:	Name of the standard(s)
Specification concerned:	Version of the standard specification
Status of the specification:	Status (such as “preliminary”)

1.3 General Milestones relating to the standard

Please provide details about relevant milestones (if any) of the standardization process that are relevant in the context of your contribution:

Milestone	Target Date	Details

1.4 General online references relating to the standard

Please provide relevant online references (if any) such as links to specification documents, technical notes, white papers, websites.

Type of Reference	Link

2 Details about the standards contribution

2.1 Summary of the standards contribution

Please describe a summary of the contribution(s) that you have provided or intend to provide related to the standard / organization as identified in the previous section

2.2 References on details of the standards contribution

Please provide references that detail your provided standards contribution. Please also provide the status (such as “in work”, “final”) of these references as well as their current distribution level (such as “restricted to the project”, “open”).

For openly distributed documents please provide an online source or attach the document in your communication to NEXOF.

Type of Reference	Document / Link	Status & Distribution Level

2.3 Supporters of the standards contribution

Please name the organizations that have provided / supported the contribution – in case the contribution was not provided / supported on behalf of the full project consortium.

2.4 Status of the standards contribution

Please provide details about the activities that relate to your contributions and the dates and status (such as “planned”, “submitted”).

Standards Contribution Activity	Date	Status

3 Details about the relation of the standards contribution to NESSI and NEXOF

3.1 Relation to NEXOF architectural patterns

Please name the NEXOF architectural patterns (if any) that show instantiations of the standard and the provided contribution.

Please describe any particular concerns or restrictions in instantiating the standard and the provided contribution in the context of the NEXOF architectural patterns.

3.2 Collaboration with other NESSI projects in the context of the standards contribution

Please describe collaborations (if any) with other NESSI projects in the context of this standards contribution activity

3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

Please describe the support activities from NESSI and NEXOF that you are interested in. Please also indicate if an activity does not or does not yet apply.

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	
Do you propose the standard contribution to be supported as “NESSI Strategic Standards Contribution” towards the standards organization and the European Commission by NEXOF and NESSI?	
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	
Further activities – please suggest (if any)	

7 APPENDIX 2: REPORTS OF NESSI PROJECTS

7.1 SLA@SOI: WS-Agreement

7.1.1 Details about the standards organization and the concerned standard

7.1.1.1 Standardization Organization

Standards Organization:	Open Grid Forum
Receiving body of the Contribution:	GRAAP WG
Contact Name:	Wolfgang Ziegler
Role:	Co-Chair
E-mail:	wolfgang.ziegler@scai.fraunhofer.de

7.1.1.2 Standard concerned

Standard concerned:	WS-Agreement
Specification concerned:	Version 1.0
Status of the specification:	Proposed Recommendation

7.1.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
Move to recommendation state	1st half 2010	At OGF, a specification needs to be implemented twice and the standard's owner (in this case the GRAAP WG) has to show that these implementations are interoperable. Once this is proven, the standard becomes a recommendation (final state).
Start work on Version 2.0	2nd half 2010	Work on next version of WS-Agreement

7.1.1.4 General online references relating to the standard

Type of Reference	Link

Specification	http://www.ogf.org/documents/GFD.107.pdf
Schema	https://forge.gridforum.org/sf/go/doc15586?nav=1
Repository	https://forge.gridforum.org/sf/projects/graap-wg

7.1.2 Details about the standards contribution

7.1.2.1 Summary of the standards contribution

SLA@SOI is using the WS-Agreement standard as one target Service Level Agreement model. To this end, WS-Agreement is used and feedback is provided to the owners of the standard, the GRAAP WG of the Open Grid Forum. Since the standard is already final, contributions including those made by SLA@SOI, are collected for the standard's next version (see 7.1.1.3). In addition, SLA@SOI co-edited the experience document that describes the two interoperable implementations leading to WS-Agreement becoming a full standard.

7.1.2.2 References on details of the standards contribution

7.1.2.3 Supporters of the standards contribution

The contribution is supported by SLA@SOI, the responsible partner is TU Dortmund University.

7.1.2.4 Status of the standards contribution

7.1.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.1.3.1 Relation to NEXOF architectural patterns

7.1.3.2 Collaboration with other NESSI projects in the context of the standards contribution

7.1.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	
Do you propose the standard contribution to be supported as "NESSI Strategic Standards Contribution" towards the standards	

organization and the European Commission by NEXOF and NESSI?	
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	
Further activities – please suggest (if any)	

7.2 SLA@SOI: WS-Agreement Negotiation

7.2.1 Details about the standards organization and the concerned standard

7.2.1.1 Standardization Organization

Standards Organization:	Open Grid Forum
Receiving body of the Contribution:	GRAAP WG
Contact Name:	Wolfgang Ziegler
Role:	Co-Chair
E-mail:	wolfgang.ziegler@scai.fraunhofer.de

7.2.1.2 Standard concerned

Standard concerned:	WS-Agreement Negotiation
Specification concerned:	Version 1.0
Status of the specification:	Draft (for Proposed Recommendation)

7.2.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
Finalise Draft	June 2010	The current draft on WS-Agreement based negotiation has been discussed at OGF 28 (March 2010) and only minor issues have to be adopted. It is planned to discuss the final draft at OGF 29 (June 2010).
Submit Draft to OGF editorial board	August 2010	After the final discussion at OGF 29 (assuming that no major changes are required), the document will enter the

		OGF editorial process. This implies that after a thorough check by the OGF editor, the WS-Agreement Negotiation will enter the 60-day public comment period.

7.2.1.4 General online references relating to the standard

Type of Reference	Link
Home page	https://forge.gridforum.org/sf/projects/graap-wg
Repository containing current draft document	https://forge.gridforum.org/sf/projects/graap-wg

7.2.2 Details about the standards contribution

7.2.2.1 Summary of the standards contribution

SLA@SOI is using the WS-Agreement standard as one target Service Level Agreement model. The upcoming WS-Agreement Negotiation standard is built upon the WS-Agreement standard and defines a negotiation protocol as well as a language to describe and negotiate Service Level Agreements.

7.2.2.2 References on details of the standards contribution

Type of Reference	Document / Link	Status & Distribution Level
Core specification	https://forge.gridforum.org/sf/go/doc15831?nav=1	Draft/public
Use cases	https://forge.gridforum.org/sf/go/doc15831?nav=1	Draft/public

7.2.2.3 Supporters of the standards contribution

The contribution is supported by SLA@SOI, the responsible partner is TU Dortmund University.

7.2.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
WS-Agreement Negotiation	March 19, 2010	Draft, finalisation

		in working group

7.2.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.2.3.1 Relation to NEXOF architectural patterns

SLA@SOI committed an architectural pattern on “SLA Translation” and a position paper on Service Level Agreements, to which this standardisation contribution is related. This was done through the NEXOF’s 2nd Invitation to Contribute, the results of which are not yet available to be referenced

7.2.3.2 Collaboration with other NESSI projects in the context of the standards contribution

SLA@SOI collaborates with RESERVOIR on Service Level Agreement-related topics.

7.2.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	yes
Do you propose the standard contribution to be supported as “NESSI Strategic Standards Contribution” towards the standards organization and the European Commission by NEXOF and NESSI?	?(*)
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	yes
(*) From the SLA@SOI point of view, the answer is a “yes”. But taking the large amount of standard contributions by NESSI projects into account, support here from other projects would be good.	

7.3 SLA@SOI: Open Cloud Computing Interface, OCCI

7.3.1 Details about the standards organization and the concerned standard

7.3.1.1 Standardization Organization

Standards Organization:	Open Grid Forum (OGF)
Receiving body of the Contribution:	Open Cloud Computing Interface WG
Contact Name:	Andy Edmonds
Role:	Co-chair
E-mail:	andrewx.edmonds@intel.com

7.3.1.2 Standard concerned

Standard concerned:	Open Cloud Computing Interface, OCCI
Specification concerned:	Version 1.0
Status of the specification:	Draft, in public comment.

7.3.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
End of public Comment phase	March 22nd	Once out of public comment, the specification will be updated to accommodate input received from the public
OCCI Extensions	OGF 30, Oct 25th	Extensions to the core specification will be presented, along with refinements to the specification
OCCI & CDMI[13] Joint Demo	OGF 30, Oct 25th	A demo showing the integration of two cloud standards. CDMI is the cloud storage specification from SNIA.

[13] http://www.snia.org/cloud

7.3.1.4 General online references relating to the standard

Type of Reference	Link
Homepage	http://occi-wg.org
Mailing list	http://www.ogf.org/mailman/listinfo/occi-wg
Twitter Hashtag	http://search.twitter.com/search?q=%23occi
Repository	http://code.google.com/p/occi
Implementer & Integrator Guide	http://bit.ly/occi-impl-guide

7.3.2 Details about the standards contribution

7.3.2.1 Summary of the standards contribution

SLA@SOI has contributed heavily throughout the on going lifecycle of OCCI. Use cases were supplied to help in scoping of specification and these are reflected in the OCCI Use Case & scoping document. Outputs from SLA@SOI relating to infrastructure management were used in guiding and forming the current OCCI core and infrastructure model. Supports through the co-chair role brought additional resources to not only contribute to the specification but also to perform reviews. OCCI proved to be a stable integration point between a collaboration activity taken between SLA@SOI and Reservoir. OCCI allows this activity to avail of each project infrastructure resources through a common API.

7.3.2.2 References on details of the standards contribution

Type of Reference	Document / Link	Status & Distribution Level
Use cases and requirements for a Cloud API Document	http://www.ggf.org/documents/GFD.162.pdf	Final, open
OCCI Core Specification	http://www.ogf.org/Public_Comment_Docs/Documents/2010-01/occi-core.pdf	Draft, in public comment, open
OCCI HTTP Header Rendering Specification	http://www.ogf.org/Public_Comment_Docs/Documents/2010-01/occi-http.pdf	Draft, in public comment, open
OCCI	http://www.ogf.org/Public_Comment_Docs/Documents/2010-	Draft, in

Infrastructure Model Specification	01/occi-infrastructure.pdf	public comment, open
OCCI XHTML5/RDFa Rendering Specification	http://www.ogf.org/Public_Comment_Docs/Documents/2010-01/occi-xhtml5.pdf	Draft, in public comment, open

7.3.2.3 Supporters of the standards contribution

The OCCI standard is supported by the work of the co-chairs and the community that has formed around the specification. SLA@SOI provides support as with a co-chair role (Andy Edmonds, Intel), Reservoir provides support with a co-chair role (Thijs Metsch, SUN), RabbitMQ provides support with a co-chair role (Alexis Richardson, RabbitMQ) and Google provides support with a secretary role (Sam Johnston, Google). There are further details of the contributing community (including: SAP, RightScale, GoGrid, Flexiscale, Nimbus, Cisco, OpenNebula) that can be found here:

http://forge.ogf.org/sf/wiki/do/viewPage/projects.occi-wg/wiki/Members

7.3.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
Core specification	Jan 12th 2010	Draft, in public comment
Infrastructure Model Specification	Jan 12th 2010	Draft, in public comment
HTTP Header Rendering Specification	Jan 12th 2010	Draft, in public comment
XHTML5/RDFa Rendering Specification	Jan 12th 2010	Draft, in public comment

7.3.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.3.3.1 Relation to NEXOF architectural patterns

The OCCI standard can compliment and make contributions, from a standardisation point of view, to the area of "**Virtualization of Computational**

Resources in E-SOA[14]". Currently in the public available document, there are no relationships (Section 9 of Virtualization of Computational Resources in E-SOA) made to any standard to support this area within the set of NEXOF architectural patterns. Complimenting this is the lack of any concern or restriction in instantiating the standard within the context of the NEXOF architectural patterns.

7.3.3.2 Collaboration with other NESSI projects in the context of the standards contribution

OCCI has been collaborating from its inception with SLA@SOI and Reservoir, both adopters of the specification.

7.3.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	Yes
Do you propose the standard contribution to be supported as "NESSI Strategic Standards Contribution" towards the standards organization and the European Commission by NEXOF and NESSI?	Yes
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	Yes

7.4 SOA4ALL: WSMO-Lite Member Submission

7.4.1 Details about the standards organization and the concerned standard

7.4.1.1 Standardization Organization

Standards Organization:	W3C
Receiving body of the Contribution:	W3C Team (Member submission)
Contact Name:	N/A
Role:	Review of a submission, forward to W3C director
E-mail:	N/A

[14] http://www.nexof-ra.eu/sites/default/files/VirtualizationofComputationalResourcesV1_6.pdf

7.4.1.2 Standard concerned

Standard concerned:	WSMO-Lite Member Submission
Specification concerned:	CMS Draft 0.3
Status of the specification:	Draft

7.4.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
Member Submission	June 2010	http://www.w3.org/2005/10/Process-20051014/submission
Acknowledgment and Publication	September 2010	

7.4.1.4 General online references relating to the standard

Type of Reference	Link
CMS Working group	http://cms-wg.sti2.org/home/
ESWC 2008 Conference Paper	http://www.eswc2008.org/final-pdfs-for-web-site/swsII-3.pdf
SOA4All Project Deliverable: D3.4.2 WSMO-Lite: Lightweight Semantic Descriptions for Services on the Web	http://soa4all.eu/file-upload.html?func=startdown&id=84

7.4.2 Details about the standards contribution

7.4.2.1 Summary of the standards contribution

The W3C has standardized key specifications of Web service technologies that are focus points of SOA4All, e.g. WSDL, SA-WSDL. Therefore, SOA4All will submit WSMO-Lite as the input for the next step after SA-WSDL, which should be an ontology of service semantics. The member submission of WSMO-Lite to W3C should lead to further activities oriented towards alignment of different Semantic Web service approaches.

The WSMO-Lite specification currently resides with cross-project pre-standardization group called the Conceptual Models for Services Working Group (CMS WG), where it is available as a draft version.

Type of Reference	Document / Link	Status & Distribution Level

Latest Drafts of WSMO-Lite	http://cms-wg.sti2.org/TR/d11/v0.3/pdf	Draft, Public

7.4.2.2 Supporters of the standards contribution

CMS – Conceptual Models for Services (Semantic Technology Institute International Working Group) with the members The Open University, University of Innsbruck, Karlsruhe Institute of Technology, iSOCO from the SOA4All consortium.

7.4.2.3 Status of the standards contribution

Standards Contribution Activity	Date	Status
Specification of WSMO-Lite		Done
Preparation of Member Submission	May 2010	Ongoing
Submission of Member Submission	June 2010	Upcoming

7.4.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.4.3.1 Relation to NEXOF architectural patterns

In terms of NEXOF, the use of semantics for describing services is an implementation detail. NEXOF thus has no architectural patterns that address the use of ontologies for describing service offerings and demands. However, any functionality of NEXOF-RA and the respective patterns that deal with the processing of services at the meta-level could profit from this work. This includes discovery and composition mainly and there all aspects of design and promotion.

7.4.3.2 Collaboration with other NESSI projects in the context of the standards contribution

None.

7.4.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

As NEXOF is working on architectural patterns in which context semantics is orthogonal, there is not direct expectation for support coming from SOA4All. In terms of NESSI, there is support given and further expected through the working groups on semantics and service infrastructures.

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns	no

mentioned above?	
Do you propose the standard contribution to be supported as "NESSI Strategic Standards Contribution" towards the standards organization and the European Commission by NEXOF and NESSI?	No, as this is a standard clearly targeting W3C
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	yes

7.5 SOA4ALL: SA-REST Member Submission

7.5.1 Details about the standards organization and the concerned standard

7.5.1.1 Standardization Organization

Standards Organization:	W3C
Receiving body of the Contribution:	W3C Team (Member submission)
Contact Name:	N/A
Role:	Review of a submission, forward to W3C director
E-mail:	N/A

7.5.1.2 Standard concerned

Standard concerned:	SA-REST Member Submission
Specification concerned:	
Status of the specification:	Pre-Submission

7.5.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
Member Submission	April 2010	http://www.w3.org/2005/10/Process-20051014/submission
Acknowledgment and Publication	July 2010	

7.5.1.4 General online references relating to the standard

Type of Reference	Link
SA-REST Wiki	http://wiki.knoesis.org/index.php/SA-REST

7.5.2 Details about the standards contribution

7.5.2.1 Summary of the standards contribution

The W3C has standardized key specifications of Web service technologies that are focus points of SOA4All, e.g. WSDL, SA-WSDL. Therefore, SOA4All will actively support the submission of SA-REST as REST-targeted approach in extension to SA-WSDL. The member submission of SA-REST to W3C should lead to further activities oriented towards alignment of different Semantic Web service approaches and eventually to the creation of a W3C working group on the topic.

The SA-REST specification is currently driven by Kno.e.sis Services Science Lab at the Wright State University in Dayton, USA, and is supported by all SOA4All members to W3C.

Type of Reference	Document / Link	Status & Distribution Level
Discussion Draft of SA-REST	http://knoesis.wright.edu/research/srl/standards/sa-rest/	Draft, Public

7.5.2.2 Supporters of the standards contribution

This standardization effort is actively supported by all members of SOA4All that are member to W3C (The Open University, SAP AG, INRIA, Ontotext, University of Manchester), but is related to the work of the entire consortium and in particular WP3 on languages and reasoning.

7.5.2.3 Status of the standards contribution

Standards Contribution Activity	Date	Status
Specification of SA-REST		Done
Finalization of Member Submission	April 2010	Ongoing
Submission of Member Submission	April 2010	Upcoming

7.5.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.5.3.1 Relation to NEXOF architectural patterns

In terms of NEXOF, the use of semantics for describing services is an implementation detail. NEXOF thus has no architectural patterns that address the use of ontologies for describing service offerings and demands. However, any functionality of NEXOF-RA and the respective patterns that deal with the processing of services at the meta-level could profit from this work. This includes discovery and composition mainly and there all aspects of design and promotion.

7.5.3.2 Collaboration with other NESSI projects in the context of the standards contribution

None.

7.5.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

As NEXOF is working on architectural patterns in which context semantics is orthogonal, there is not direct expectation for support coming from SOA4All. In terms of NESSI, there is support given and further expected through the working groups on semantics and service infrastructures.

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	no
Do you propose the standard contribution to be supported as “NESSI Strategic Standards Contribution” towards the standards organization and the European Commission by NEXOF and NESSI?	No, as this is a standard clearly targeting W3C
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	no

7.6 SOA4ALL: Reference Ontology for Semantic Service Oriented Architectures (SEE-ROSOA)

7.6.1 Details about the standards organization and the concerned standard

7.6.1.1 Standardization Organization

Standards Organization:	OASIS
Receiving body of the Contribution:	OASIS SEE TC (Tech Committee)
Contact Name:	Mick Kerrigan
Role:	Chair
E-mail:	mick.kerrigan@sti2.at,

7.6.1.2 Standard concerned

Standard concerned:	Reference Ontology for Semantic Service Oriented Architectures (SEE-ROSOA)
Specification concerned:	Reference Ontology for Semantic Service Oriented Architectures
Status of the specification:	Committee Draft (Specification approved by the TC as described by the OASIS TC Process)

7.6.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
Committee Draft		Done
Public Review	May 2010	Public Review 2 in preparation
Committee Specification	Earliest September 2010	Final Standard

7.6.1.4 General online references relating to the standard

Type of Reference	Link
OASIS SEE TC Website	http://www.oasis-pen.org/committees/tc_home.php?wg_abbrev=semantic-ex

7.6.2 Details about the standards contribution

7.6.2.1 Summary of the standards contribution

SOA4All has substantial involvement in this work. Some committee members, along with one group chairman, who is also among the main contributors, are directly funded by the project. Under the guidance of SOA4All, especially influenced by the lightweight approaches in use in the project, the group has decided to encode the reference ontology in RDFS, the basic Semantic Web ontology language.

Type of Reference	Document / Link	Status & Distribution Level
Reference Ontology for Semantic Service Oriented Architectures	http://www.oasis-open.org/apps/group_public/document.php?document_id=29909	Committee Draft, Public

7.6.2.2 Supporters of the standards contribution

The most important contributors to this effort come from SOA4All WP1 (runtime architecture) and WP3 (languages and reasoning). Again, the people involved are mostly affiliated with the University of Innsbruck, CEFRIEL, The Open University and the Karlsruhe Institute of Technology.

7.6.2.3 Status of the standards contribution

Standards Contribution Activity	Date	Status
Methodology for modelling services (MEMOS)		In Review
Transformations to/from the Reference Ontology and other Semantic Web service formalisms	December 2010	Ongoing

7.6.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.6.3.1 Relation to NEXOF architectural patterns

There is no relationship between the reference ontology and NEXOF architecture patterns. The SEE Reference Ontology specifies the concepts, attributes and relations necessary to semantically describe Web services' offers

and demands (called goals) with functionality and interface models. It is specifically designed to be a super-set of other Semantic Web service formalisms such as WSMO and WSMO-Lite (used in SOA4All) or OWL-S – the Reference Ontology serves as a bridge between these formalisms.

7.6.3.2 Collaboration with other NESSI projects in the context of the standards contribution

None.

7.6.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

None.

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	No
Do you propose the standard contribution to be supported as "NESSI Strategic Standards Contribution" towards the standards organization and the European Commission by NEXOF and NESSI?	No
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	Yes

7.7 SOA4ALL: Semantic Execution Environment Reference Architecture (SEE-RA)

7.7.1 Details about the standards organization and the concerned standard

7.7.1.1 Standardization Organization

Standards Organization:	OASIS
Receiving body of the Contribution:	OASIS SEE TC (Tech Committee)
Contact Name:	Mick Kerrigan
Role:	Chair
E-mail:	mick.kerrigan@sti2.at,

7.7.1.2 Standard concerned

Standard concerned:	Semantic Execution Environment Reference Architecture (SEE-RA)
Specification concerned:	Reference Architecture for Semantic Execution Environments
Status of the specification:	Draft

7.7.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
Committee Draft	Depends on Reference Ontology for Semantic SOA Standard	
Public Review	Three month review process	
Committee Specification		Final Standard

7.7.1.4 General online references relating to the standard

Type of Reference	Link
OASIS SEE TC Website	http://www.oasis-pen.org/committees/tc_home.php?wg_abbrev=semantic-ex

7.7.2 Details about the standards contribution

7.7.2.1 Summary of the standards contribution

The reference architecture for Semantic Execution Environments is a description of the required infrastructure to support semantic SOAs in terms of the essential components and their required interactions. As concrete output SOA4All will deliver an extended OASIS Specification for SEE in order to align with and based on results gained during work on the SOA4All reference architecture.

Type of Reference	Document / Link	Status & Distribution Level
Deliverable	D1.4.1A SOA4All Reference Architecture Specification http://soa4all.eu/file-upload.html?func=startdown&id=77	Final
Deliverable	D1.4.2A Final SOA4All Reference Architecture	Final

	Specification http://soa4all.eu/file-upload.html?func=select&id=6	

7.7.2.2 Supporters of the standards contribution

Primarily the entire team of SOA4All that is involved in the architecture work, but also in terms of particular components, named platform services in SOA4All. The main contributors in regards to the SEE TC at OASIS are the University of Innsbruck, The Open University, CEFRIEL, and the Karlsruhe Institute of Technology.

7.7.2.3 Status of the standards contribution

Standards Contribution Activity	Date	Status
Experience Feedback Report	September 2010	Starting
Reference Implementation Specification	March 2011	Planned

7.7.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.7.3.1 Relation to NEXOF architectural patterns

There are no particular links to the architectural patterns of NEXOF done (yet). In terms of functionalities the two efforts are of course comparable. SEE aims for a reference architecture for Semantic Execution Environments, i.e., for architectural solutions to infrastructures that enable the creation, publication and use of Semantic Web services. NEXOF in comparison focuses on (Web) services that are not semantically annotated. Still, there is an overlap in terms of components, called broker services in SEE: Discovery, Composition, Mediation, Transport, Choreography and Orchestration Execution. In all these aspect, reasoning and formal languages are very important, which they are not in NEXOF.

7.7.3.2 Collaboration with other NESSI projects in the context of the standards contribution

None.

7.7.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

The work of NEXOF and SEE are on different levels, as one deals with semantics while the other a priori does not; the use of semantics is an implementation detail in the scope of NEXOF/NEXOF-RA. Again, support could come from NESSI through the working groups.

NESSI / NEXOF support activity	(yes/no)

Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	No
Do you propose the standard contribution to be supported as "NESSI Strategic Standards Contribution" towards the standards organization and the European Commission by NEXOF and NESSI?	No
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	Yes

7.8 MASTER: OASIS SOA-RM

7.8.1 Details about the standards organization and the concerned standard

7.8.1.1 Standardization Organization

Standards Organization:

OASIS (Organization for the Advancement of Structured Information Standards)

Receiving body of the Contribution:

Service Oriented Architecture Reference Model Technical Committee (abbreviated as OASIS SOA-RM TC)

7.8.1.2 Standard concerned

OASIS Service Oriented Architecture Reference Model

TECHNIQUES

Specification concerned: Evidence Model

Status of the specification: In progress

7.8.1.3 General Milestones relating to the standard

7.8.1.4 General online references relating to the standard

7.8.2 Details about the standards contribution

7.8.2.1 Summary of the standards contribution

Describing services is not a new endeavour. Many standards already exist to describe services from a functional perspective (WSDL), a semantic perspective (OWL. OWL-S). OWL-S is a standard that allows for a semantic description of service behaviour, however does not allow for the description of the evidence attesting to the behaviour being conducted.

Service description in WSMO includes a functional description of a Web Service, describing constraints on the input and output of a service through the notions of preconditions, assumptions, post conditions, and effects; and *service interfaces* which specify how the service behaves in order to achieve its functionality. However the description of the available evidence enabling monitoring of the described service behaviour is not provided.

The significance of Web services technology arises mainly from the fact that it is based on a set of open standards, enabling the interoperability of Web services across boundaries. Open standards are a necessary precondition for Web services gaining momentum. Standards are provided and still developed by organizations such as the World Wide Web Consortium (W3C), the Web service Interoperability Organization (WS-I), and the Organization for the Advancement of Structured Information Standards (OASIS).

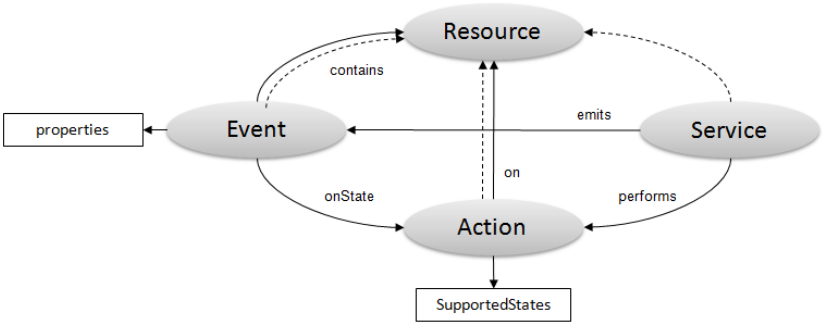
We argue that for compliance related concerns, a similar open standard is required for the evidence that can attest to the behaviour of a service. By definition, each service must support this model and its semantics, such that a common understanding of the evidence produced by a SOA can be available for MASTER and derivatives.

Model Description

A natural way to describe service functionality is in terms of actions the service performs. As services perform actions on resources, these must also be specified.

For example if an application service provides interface for a database access, then this service performs actions *Select*, *Update*, *Insert*, *Delete* on resource *Data*. Business services can be considered to perform the action *Invoke* on a resource *Service*, whilst a service bus performs the actions *Route* on resource *Message* and *Discover* on the resource *Service*.

The goal of this work however is not to define a set of actions for every layer but rather to describe an approach to describe services, thereby enabling a common description of service functionality and available evidence. The core concepts of the model are shown in Figure 1.



This model contains description of:

- The *actions* a service performs. A set of all actions to build a taxonomy, where the subclass and superclass relationships are important to derive requirements on, and possibilities of, a service.
- The *resources* every action requires. Resources also have relations to other resources, thus the *Resource* concept can be viewed as a resource evidence model. An example service description in the next section shows example relations between resources.
- The *states* every action supports. Every action can have it own set of supported states, however we assume that a superset of all possible states exists, which means that an action specific state set must always be a subset of these states. An example of such a superset is depicted in Figure 2 as an action state diagram.}
- The *events* on an action state change, which the service can emit. Events can have properties, like for example event timestamp. As a payload, events can contain information about resources to provide detailed contextual information about its interaction with the resources.

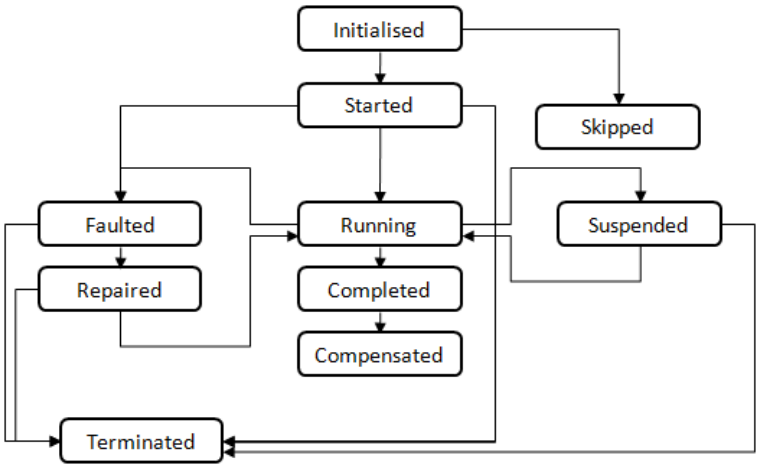


Figure 2

In the model, a resource is a super concept, as an action can use another action, service or event as a resource. An event can be emitted when an action changes its state. We decided for an action based event model rather than resource based (emit event if a resource changes its state) for numerous reasons. Firstly, actions can be considered to have a common model with a

finite number of states that they can support. In this way, an action-centric approach simplifies the modelling process over a resource-centric model, where every type of a resource has potentially different states. For example, a modeller might want to specify states *Idle* and *Busy* for resource Service and states Created, Updated and Deleted for resource Data.

A resource is described by way of its properties, whose values define its state. For instance, a *Person* can be considered as having the properties *Name*, *Age*, *DateOfBirth*. These properties values provide its descriptive state. Therefore, a resource state diagram essentially describes a lifecycle for each of these properties. Accordingly, a resource with properties requires specification of multiple state diagrams. Every resource state change however can be related to an action performed on this resource and action states, as the action interacts with these properties. Therefore resource state changes are reflected in the action state change for which a common state diagram can be specified.

Secondly, a resource state does not always properly reflect resource changes. For example, if resource Data is in the state Updated, then the execution of the action Update on this resource will change the Data value but not Data state as it will still be updated. This means that if we would subscribe for an event indicating a resource state change, we would miss such an update because the state does not change. On the other hand, a subscription for the state change of action Update (e.g. from state Started to state Completed) will cover this issue.

The relationship *onState* between *Event* and *Action* concepts is an abstract relationship. It can be refined with the *onStarted, onRunning, onFaulted, onRepaired, onSuspended, onTerminated, onCompleted* and *onCompensated* relations, depending on the states the current action supports.

7.8.2.2 References on details of the standards contribution

Type of Reference	Document / Link	Status & Distribution Level
Project deliverable (report, pdf format)	http://www.master-fp7.eu/index.php?option=com_docman&task=doc_download&gid=19&Itemid=60	Final, Public

7.8.2.3 Supporters of the standards contribution

SAP, University of Stuttgart

7.8.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
Presentation document of MASTER Evidence Model in the form of contribution	July 2010	in progress

to the standard		

7.8.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.8.3.1 Relation to NEXOF architectural patterns

There is no relation with the NEXOF architecture, the proposed contributions of MASTER to standards bodies have not actually been incorporated into any standard at the time of this writing, and for this reason there are no MASTER-influenced standards present in NEXOF pattern.

7.8.3.2 Collaboration with other NESSI projects in the context of the standards contribution

None.

7.8.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	YES
Do you propose the standard contribution to be supported as “NESSI Strategic Standards Contribution” towards the standards organization and the European Commission by NEXOF and NESSI?	YES
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	YES
Further activities – please suggest (if any)	no

7.9 RESERVOIR: Open Cloud Computing Interface Specification

7.9.1 Details about the standards organization and the concerned standard

7.9.1.1 Standardization Organization

Standards Organization: Open Grid Forum (OGF)

Receiving body of the Contribution:	Open Cloud Computing Interface (OCCI) working group
Contact Name:	Thijs Metsch
Role:	OCCI WG Chair
E-mail:	Thijs.Metsch@SUN.com occi-wg@ogf.org

7.9.1.2 Standard concerned

Standard concerned:	Open Cloud Computing Interface Specification
Specification concerned:	Version 1
Status of the specification:	work in progress

7.9.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
OGF25	03/01/09	Creation of the OCCI working group
OGF26	06/01/09	Presentation of the OCCI working group – Delivery of a Use case and requirements document
OGF27	09/01/09	First presentation of a draft specification
OGF28	03/01/10	Specification in public comment phase

7.9.1.4 General online references relating to the standard

Type of Reference	Link
Draft Specification	http://forge.ogf.org/sf/docman/do/listDocuments/projects.occi-wg/docman.root.drafts.occi_specification
Use case and requirement document	http://www.ogf.org/documents/GFD.162.pdf
Working group	Http://www.occi-wg.org

homepage	
Wiki	http://forge.ogf.org/sf/wiki/do/viewPage/projects.occi-wg/wiki/HomePage

7.9.2 Details about the standards contribution

7.9.2.1 Summary of the standards contribution

The new API for interfacing “IaaS” Cloud computing facilities will allow for:

- **Consumers** to interact with cloud computing infrastructure on an ad-hoc basis (e.g. deploy, start, stop, restart)
- **Integrators** to offer advanced management services
- **Aggregators** to offer a single common interface to multiple providers
- **Providers** to offer a standard interface that is compatible with available tools
- **Vendors** of grids/clouds to offer standard interfaces for dynamically scalable service delivery in their products

The OCCI APIs are based on RESTful queries and use unique URIs to identify IaaS resources in combination with a basic set of operations. The OCCI specification consist of

- The Core specification
- A description of how IaaS based resources should look like
- A HTTP rendering for easy machine-to-machine management
- An XHTML rendering for creation of human-to-machine interfaces.

7.9.2.2 References on details of the standards contribution

The trigger to create the OCCI working group came in part from the RESERVOIR project.

RESERVOIR further provided specific use cases and requirements to OCCI. Also in the context of RESERVOIR, UCM provided a piloting implementation of the OCCI APIs in Open Nebula. Telefónica provided an OCCI Java implementation as part of the Claudia platform.

Type of Reference	Document / Link	Status & Distribution Level
Open Cloud Computing Interface	http://forge.ogf.org/sf/go/doc15732	public

- Use cases and requirements for a Cloud API		
MORFEO Community	http://cloudtechnologies.morfeo-project.org	Project Community
Claudia Platform	http://claudia.morfeo-project.org/	Open Source Software
Open Nebula Release 1.4	http://www.opennebula.org/	Open Source Software

7.9.2.3 Supporters of the standards contribution

SUN

UCM

Intel (via SLA@SOI project)

Telefonica

7.9.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
Implement OCCI inside of RESERVOIR	06/01/10	planned
Implement OCCI inside of SLA@SOI project	?	planned

7.9.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.9.3.1 Relation to NEXOF architectural patterns

Virtualized Computational Resources

Infrastructure as a Service (IaaS)

Included in the Top Level Patterns:

– Enterprise SOA, Cloud Computing, Internet of Services (IoS)

7.9.3.2 Collaboration with other NESSI projects in the context of the standards contribution

A collaboration with the SLA@SOI project has been initiated with one objective to clarify mutual approaches to the service provider to service provider interface level.

7.9.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	Yes
Do you propose the standard contribution to be supported as "NESSI Strategic Standards Contribution" towards the standards organization and the European Commission by NEXOF and NESSI?	Tbc
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	Tbc

7.10 RESERVOIR: Open Virtualization Format (OVF)

7.10.1 Details about the standards organization and the concerned standard

7.10.1.1 Standardization Organization

Standards Organization:	DMTF
Receiving body of the Contribution:	Open Cloud Standards Incubator
Contact Name:	Winston Bumpus
E-mail:	wbumpus@vmware.com
Role:	Interim Co-Chair of the Incubator, DMTF President
Contact Name:	Mike Baskey
Role:	Interim Co-Chair of the Incubator
E-mail:	mbaskey@us.ibm.com

7.10.1.2 Standard concerned

Standard concerned:	Open Virtualization Format (OVF)
Specification concerned:	V1.0.0
Status of the specification:	published as DMTF Standard

Standard concerned:	Open Virtualization Format (OVF)
Specification concerned:	V1.1.0
Status of the specification:	work in progress

7.10.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
Phase 1 – Cloud Standards Incubator	3Q 2009	Cloud Taxonomy Cloud Trust requirements Alliance partner identification Use cases and requirements for Cloud Profiles Cloud Interoperability White paper
Phase 2 – Cloud Standards Incubator	1Q 2010	Proposed Profiles Proposed OVF changes for cloud usage Proposed Changes for DMTF Standards

7.10.1.4 General online references relating to the standard

Type of Reference	Link
Open Virtualization Format Specification V1.0.0	http://www.dmtf.org/standards/published_documents/DSP0243_1.0.0.pdf
Open Virtualization Format White Paper V1.0.0	http://www.dmtf.org/standards/published_documents/DSP2017_1.0.0.pdf
Open Virtualization Format Specification V1.1.0 (work in progress)	http://www.dmtf.org/standards/published_documents/DSP0243_1.1.0.pdf
Interoperable Cloud Whitepaper	http://www.dmtf.org/about/cloud-incubator/DSP_IS0101_1.0.0.pdf
VM Ware vCloud–OVF based cloud APIs	http://communities.vmware.com/community/developer/forums/vcloudapi

7.10.2 Details about the standards contribution

7.10.2.1 Summary of the standards contribution

The contribution from the RESERVOIR projects relates to current limitations of standard OVF when applied in federated cloud environments – in particular specifications have been added for:

- Custom Key Performance Indicators
- Automatic elasticity
- Deployment-time customization – allocation of network IPs
- Deployment restrictions specification - e.g. based on country, time zone, etc.
- Performance objectives (SLA)

The RESERVOIR project uses extended OVF in the Service Management Interface (SMI).

7.10.2.2 References on details of the standards contribution

Type of Reference	Document / Link	Status & Distribution Level
RESERVOIR Publication	Service Specification in Cloud Environments Based on Extensions to Open Standards http://www.reservoir-fp7.eu/fileadmin/reservoir/presentations/comsware09.pdf	public

7.10.2.3 Supporters of the standards contribution

Telefónica

IBM

SAP

SUN

7.10.2.4 Status of the standards contribution

7.10.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.10.3.1 Relation to NEXOF architectural patterns

Virtualized Computational Resources

Infrastructure as a Service (IaaS)

Included in the Top Level Patterns:

– Enterprise SOA, Cloud Computing, Internet of Services (IoS)

7.10.3.2 Collaboration with other NESSI projects in the context of the standards contribution

A collaboration with the SLA@SOI project has been initiated with the objective to clarify mutual approaches to the SMI interface.

7.10.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	Yes
Do you propose the standard contribution to be supported as "NESSI Strategic Standards Contribution" towards the standards organization and the European Commission by NEXOF and NESSI?	Yes
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	Yes

7.11 COMPAS: BPEL extensions for compliant services

In COMPAS we agreed, that we will write specifications for proposing potential standardization material. But these specifications might be taken up from companies and organizations, e.g., by companies from industry, etc. to be submitted to a concrete standardization organization and body, because we in COMPAS cannot provide the required effort and support to be successful in creating a standard. This was also the predominant opinion of most of the projects having been present during the standardization workshop at the Internet of Services Collaboration Meeting in Brussels last year where Steve Strauch from IAAS, University of Stuttgart has participated for representing the COMPAS project. Therefore we cannot provide any detailed information regarding the standardization organization as well as the concerned standard(s).

7.11.1 Summary of the standards contribution

The first specification for proposing potential standardization material within the COMPAS project (http://www.compas-ict.eu) is on the usage of process fragments in the field of compliance. The content of the specification will be mainly based on the COMPAS deliverable D4.2 entitled "BPEL extensions for compliant services" [D4.2], which specifies extensions to the BPEL [OASIS07]

language in order to enable the augmentation of business processes with compliance.

7.11.2 References on details of the standards contribution

The references listed in the following table provide detailed information about the planned content, concepts, etc. of the specification document on the usage of process fragments in the field of compliance of business process and the associated extensions of WS-BPEL. The hyperlinks in the second column directly reference the PDF versions of the referenced documents.

Type of Reference	Document / Link	Status & Distribution Level
COMPAS project deliverable	[D4.2] BPEL extensions for compliant services, December 2009	Final, public
OASIS Committee Specification	[OASIS07] A. Alves, A. Arkin, S. Askary, C. Barreto, B. Bloch, F. Curbera, M. Ford, Y.Goland, A. Guízar, N. Kartha, C.K. Liu, R. Khalaf, D. König, M. Marin, V. Mehta, S. Thatte, D. van der Rijn, P. Yendluri, and A. Yiu: Web Services Business Process Execution Language Version 2.0. OASIS Comitee Specification, April 2007	Final, public

7.11.3 Supporters of the standards contribution

The COMPAS partners mainly providing and working on the first specification proposing potential standardization material within COMPAS are the Institute of Architecture of Application Systems (IAAS), University of Stuttgart, Germany as well as the Distributed Systems Group, Institute of Information Systems, Vienna University of Technology, Vienna, Austria.

7.11.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
Creation of first complete version of the specification on the usage of process fragments in the field of compliance of business processes and the associated extension of WS-BPEL	End of June 2010	ongoing
Review phase	End of July 2010	planned
Release of final version	31/07/2010	planned

7.11.5 Relation to NEXOF architectural patterns

So far no NEXOF architectural pattern has been identified, that shows the instantiations of the provided contribution.

7.11.6 Collaboration with other NESSI projects in the context of the standards contribution

Currently there are no ongoing or planned collaborations with other NESSI projects in the context of the first specification document on the usage of process fragments in the area of compliance of business processes.

7.11.7 Requested activities from NESSI and NEXOF in relation to the standards contribution

The COMPAS consortium, mainly the involved COMPAS partners will provide both specifications for proposing potential standardization material within COMPAS especially concerning the achieved research results and outcomes of the project. Due to the limited resources the consortium is not able to provide the required effort and support to successfully create a standard based on the identified potential standardization material. Although the COMPAS consortium is active in standardization activities, e.g. participating in the standardization workshop at the Internet of Services Collaboration Meeting in Brussels in 2009 and working on the creation of two specifications for proposing potential standardization material, these specifications have to be taken by organizations and companies outside of the consortium to be supported and submitted to a corresponding standardization organization.

NEXOF-RA being the flagship of NESSI might play the role of the organization outside the COMPAS consortium, because of having the industry involvement in standardization bodies to ease the process to promote potential standardization material provided by the NESSI projects. Pascal Bisson from the COMPAS partner Thales Security Solutions and Services Division is involved in NESSI and he provided the information, that this is exactly the goal of NEXOF-RA dedicated work package nine (WP9) leaded by Siemens.

For the time being we do not propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns, because no relation to NEXOF architectural patterns has been identified, see first row of the following table.

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	no
Do you propose the standard contribution to be supported as “NESSI Strategic Standards Contribution” towards the standards organization and the European Commission by NEXOF and	yes

NESSI?	
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	yes

7.12 COMPAS: Compliance Request Language (CRL)

7.12.1 Summary of the standards contribution

The second specification for proposing potential standardization material within the COMPAS project (http://www.compas-ict.eu) is on the Compliance Request Language (CRL) for the formal specification of compliance requirements stemming from legislative and regulatory bodies, standards and code of practice and business partner contracts. The content of the specification will be mainly based on the COMPAS deliverables D2.2 and D2.3, which specify the meta-model and extensions for the CRL.

7.12.2 References on details of the standards contribution

The references listed in the following table provide detailed information about the planned content, concepts, etc. of the specification document on Compliance Request Language (CRL) for the formal specification of compliance requirements. The hyperlinks in the second column directly reference the PDF versions of the referenced documents.

Type of Reference	Document / Link	Status & Distribution Level
COMPAS project deliverable	[D2.2] Initial Specification of Compliance Language Constructs and Operators, December 2008	Final, public
COMPAS project deliverable	[D2.3] Design of Compliance Language Run-time Environment and Architecture, July 2009	Final, public

7.12.3 Supporters of the standards contribution

The COMPAS partner mainly providing and working on the second specification proposing potential standardization material within COMPAS is the ERISS - European Research Institute on Services Science, Tilburg University, Netherlands. For the concrete names of the involved persons from the mentioned organization please take a look on the list of contributors at the beginning of this document.

7.12.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
Creation of first complete version of Specification on the Compliance Request Language (CRL) for the formal specification of compliance requirements stemming from legislative and regulatory bodies, standards and code of practice and business partner contracts.	Mid of July 2010	ongoing
Review phase	End of July 2010	planned
Release of final version	31/07/2010	planned

7.12.5 Relation to NEXOF architectural patterns

So far no NEXOF architectural pattern has been identified, that shows the instantiations of the provided contribution.

7.12.6 Collaboration with other NESSI projects in the context of the standards contribution

Currently there are no ongoing or planned collaborations with other NESSI projects in the context of the second specification document on the Compliance Request Language (CRL) for the formal specification of compliance requirements.

7.12.7 Requested activities from NESSI and NEXOF in relation to the standards contribution

The COMPAS consortium, mainly the involved COMPAS partners will provide both specifications for proposing potential standardization material within COMPAS especially concerning the achieved research results and outcomes of the project. Due to the limited resources the consortium is not able to provide the required effort and support to successfully create a standard based on the identified potential standardization material. Although the COMPAS consortium is active in standardization activities, e.g. participating in the standardization workshop at the Internet of Services Collaboration Meeting in Brussels in 2009 and working on the creation of two specifications for proposing potential standardization material, these specifications have to be taken by organizations and companies outside of the consortium to be supported and submitted to a corresponding standardization organization.

NEXOF-RA being the flagship of NESSI might play the role of the organization outside the COMPAS consortium, because of having the industry involvement in standardization bodies to ease the process to promote potential standardization material provided by the NESSI projects. Pascal Bisson from the COMPAS partner Thales Security Solutions and Services Division is

involved in NESSI and he provided the information, that this is exactly the goal of NEXOF-RA dedicated work package nine (WP9) leaded by Siemens.

For the time being we do not propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns, because no relation to NEXOF architectural patterns has been identified, see first row of the following table.

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	No
Do you propose the standard contribution to be supported as "NESSI Strategic Standards Contribution" towards the standards organization and the European Commission by NEXOF and NESSI?	Yes
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	yes

7.13 MyMobileWeb: Device Description Repository Simple API

7.13.1 Details about the standards organization and the concerned standard

7.13.1.1 Standardization Organization

Standards Organization:	W3C
Receiving body of the Contribution:	Device Description Working Group
Contact Name:	Jose Manuel Cantera Fonseca
Role:	Editor
E-mail:	jmcf@tid.es

7.13.1.2 Standard concerned

Standard concerned:	Device Description Repository Simple API
Specification concerned:	Device Description Repository Simple API

Status of the specification: W3C Recommendation 05 December 2008

7.13.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
Final Version	W3C Recommendation 05 December 2008	

7.13.1.4 General online references relating to the standard

Type of Reference	Link
API Specification	http://www.w3.org/TR/2008/REC-DDR-Simple-API-20081205/

7.13.2 Details about the standards contribution

7.13.2.1 Summary of the standards contribution

Web content delivered to mobile devices usually benefits from being tailored to take into account a range of factors such as screen size, mark-up language support and image format support. Such information is stored in "Device Description Repositories" (DDRs). This document describes a simple API for access to DDRs, in order to ease and promote the development of Web content that adapts to its Delivery Context.

7.13.2.2 References on details of the standards contribution

Type of Reference	Document / Link	Status & Distribution Level
DDR Simple API JAR File	http://www.w3.org/TR/DDR-Simple-API/DDRSimpleAPI.jar	W3C Recommendation public
DDR Simple API JavaDoc	http://www.w3.org/TR/DDR-Simple-API/javadoc	W3C Recommendation public
Specification	http://www.w3.org/TR/2008/REC-DDR-Simple-API-20081205/	W3C Recommendation public

7.13.2.3 Supporters of the standards contribution

Editors:

Jo Rabin, dotMobi (mTLD Top Level Domain)

José Manuel Cantera Fonseca, Telefónica I+D

Rotan Hanrahan, MobileAware

Ignacio Marín, Fundación CTIC

7.13.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
This standards activity is closed		

7.13.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.13.4 Relation to NEXOF architectural patterns

7.13.5 Collaboration with other NESSI projects in the context of the standards contribution

7.13.6 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	Yes
Do you propose the standard contribution to be supported as “NESSI Strategic Standards Contribution” towards the standards organization and the European Commission by NEXOF and NESSI?	yes
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	yes

7.14 MyMobileWeb: Delivery Context Ontology

7.14.1 Details about the standards organization and the concerned standard

7.14.1.1 Standardization Organization

Standards Organization:	W3C
Receiving body of the Contribution:	Ubiquitous Web Applications WG
Contact Name:	José Manuel Cantera Fonseca
Role:	Editor
E-mail:	jmcf@tid.es

7.14.1.2 Standard concerned

Standard concerned:	Delivery Context Ontology
Specification concerned:	Delivery Context Ontology
Status of the specification:	W3C Working Draft 16 June 2009

7.14.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
Working Draft	15 April 2008	
Last Call Working Draft	16 June 2009	
Candidate Recommendation	July 2010	

7.14.1.4 General online references relating to the standard

Type of Reference	Link
Latest Version	http://www.w3.org/TR/dcontology/
W3C Working Draft 16 June 2009	http://www.w3.org/TR/2009/WD-dcontology-20090616/

7.14.2 Details about the standards contribution

7.14.2.1 Summary of the standards contribution

The Delivery Context Ontology provides a formal model of the characteristics of the environment in which devices interact with the Web or other services. The Delivery Context includes the characteristics of the Device, the software used to access the service and the Network providing the connection among others.

The Delivery Context is an important source of information that can be exploited to create context-aware applications, thus providing a compelling user experience.

7.14.2.2 References on details of the standards contribution

Type of Reference	Document / Link	Status & Distribution Level
Owl File	http://www.w3.org/TR/dcontology/deliveryContextAll.owl	WD public
Protege File	http://www.w3.org/TR/dcontology/deliveryContextAll.pprj	WD public
Specification	http://www.w3.org/TR/dcontology	WD public

7.14.2.3 Supporters of the standards contribution

Editors:

José Manuel Cantera Fonseca, Telefónica I+D

Rhys Lewis, then at Volantis Systems Ltd.

7.14.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
We plan to submit an updated contribution that will respond to the Last Call Comments	May 2010	Working on it

7.14.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.14.3.1 Relation to NEXOF architectural patterns

This contribution is related to the “Context of Use Management for Service Front-Ends” pattern.

7.14.3.2 Collaboration with other NESSI projects in the context of the standards contribution

EzWEB

7.14.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	yes

Do you propose the standard contribution to be supported as "NESSI Strategic Standards Contribution" towards the standards organization and the European Commission by NEXOF and NESSI?	yes
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	yes

7.15 SHAPE: Service-Oriented Architecture Modeling Language (SoaML)

7.15.1 Details about the standards organization and the concerned standard

7.15.1.1 Standardization Organization

Standards Organization:	Object Management Group
Receiving body of the Contribution:	Platform Technology Committee
Contact Name:	n/a
Role:	n/a
E-mail:	n/a

7.15.1.2 Standard concerned

Standard concerned:	Service-Oriented Architecture Modeling Language (SoaML) – Specification for UML Profile and Metamodel for Services (UPMS)
Specification concerned:	ptc/2009-04-01 http://www.omg.org/spec/soaml/1.0/
Status of the specification:	FTF Beta 1

7.15.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
RFP - Request for Proposal	2006-09-09	Call text for the standardization of UPMS
Revised submission	2008-11-01	Last version before adaption

Adopted submission	2009-04-01	The adapted version for the Finalize Task Force

7.15.1.4 General online references relating to the standard

Type of Reference	Link
SoaML standard documents website	http://www.omg.org/spec/SoaML/1.0/Beta1/
Website for SoaML	http://www.soaml.org/
White paper on SoaML	http://www.omg.org/news/whitepapers/EnterpriseSoaML.pdf

7.15.2 Details about the standards contribution

7.15.2.1 Summary of the standards contribution

SINTEF with Dr. Arne Berre has been the primary contact for this standardisation efforts among submitters and supporter of the standard and who has taken part of this effort. SINTEF's main contribution on the technical input to SoaML has been transferred as results from the SHAPE project.

7.15.2.2 References on details of the standards contribution

7.15.2.3 Supporters of the standards contribution

In OMG a standard formally needs to be submitted by one or more members. In addition there may be organisations supporting the standard. Hence, a supporting organisation may actually be a prime contributor to the standard.

Submitters:

Adaptive

Cap Gemini

EDS

Fujitsu

Fundacion European Software Institute

Hewlett-Packard

International Business Machines

MEGA International

Model Driven Solutions

Rhysome

Supporters:

BAE Systems

DERI – University of Innsbruck

DFKI

Everware-CBDI

France Telecom R&D

General Services Administration

Visumpoint

MID GmbH

NKUA – University of Athens

Oslo Software

SINTEF

THALES Group

University of Augsburg

Wilton Consulting Group

7.15.2.4 Status of the standards contribution

7.15.3 Details about the relation of the standards contribution to NESSI and NEXOF

No relation to NESSI and NEXOF reported.

7.16 Tas³: X.500 V.7 Password Policy

7.16.1 Details about the standards organization and the concerned standard

7.16.1.1 Standardization Organization

Standards Organization: ISO ITU-T (joint working group)

Receiving body of the Contribution:	ISO/IEC JTC 1/SC 6 and ITU-T SG 17 Q11
Contact Name:	David Chadwick
Role:	UK Principal Expert
E-mail:	d.w.chadwick@kent.ac.uk

7.16.1.2 Standard concerned

Standard concerned:	X.500
Specification concerned:	V7. Password Policy
Status of the specification:	2nd PDAM

7.16.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
2nd PDAM ballot closes	28 July 2010	This extension to X.500/LDAP is designed to standardise the management of stored passwords, as needed for identity management.
X.500 v7	2011-12	Publication of V7 of X.500

7.16.1.4 General online references relating to the standard

Type of Reference	Link
Web site providing standardisation details and document downloads	http://www.x500standard.com/pmwiki.php?n=Ig.Extension

7.16.2 Details about the Standards Contribution

7.16.2.1 Summary of the standards contribution

This extension to X.500/LDAP provides the schema and procedures for managing user passwords, such as expiry times, recording passwords histories and recently used passwords; as well as the operations for updating passwords by both administrators and users. My contributions have been towards the schema definitions and procedures, as well as to the parameters of the operations.

7.16.2.2 References on details of the standards contribution

Type of Reference	Document / Link	Status & Distribution Level
Report to BSI	Sept 2009 Meeting, Geneva	Private
Report to BSI	February 2009 Meeting, Geneva	Private
Report to BSI	November 2008 Meeting, Montreux	Private
Report to BSI	April 2008 Meeting, Geneva	Private

7.16.2.3 Supporters of the standards contribution

The funding to attend the above meetings was provided by the UK Government administered by BSI.

7.16.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
I attended the ISO/ITU-T meeting and participated in the discussions with the US editor of an earlier IETF draft on how to progress with this work.	14-15 April 2008	Initial discussion of the new work item and how to progress it
I attended the ISO/ITU-T meeting and we reviewed the IETF draft and extracted relevant features for inclusion in the ISO draft	3-5 November 2008	Working document came out of the meeting
I attended the ISO/ITU-T meeting, we worked on improving the draft and left the updates with the editor to finalise into the working document	16-17 February 2009	Final working document for ballot
I attended the ISO/ITU-T meeting where we worked on the draft and finalised for publication as a PDAM	21-23 September 2009	PDAM output of meeting

7.16.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.16.3.1 Relation to NEXOF architectural patterns

None. Password management is currently not part of the NEXOF architecture

7.16.3.2 Collaboration with other NESSI projects in the context of the standards contribution

None.

7.16.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	no
Do you propose the standard contribution to be supported as “NESSI Strategic Standards Contribution” towards the standards organization and the European Commission by NEXOF and NESSI?	no
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	yes
Further activities – please suggest (if any)	none

7.17 Tas³: XACML BTG Profile

7.17.1 Details about the standards organization and the concerned standard

7.17.1.1 Standardization Organization

Standards Organization: OASIS

Receiving body of the Contribution: XACML Technical Committee

Contact Name: David Chadwick

Role: Joint Editor of Profile

E-mail: d.w.chadwick@kent.ac.uk

7.17.1.2 Standard concerned

Standard concerned: XACML

Specification concerned: BTG Profile for V2 and V3

Status of the specification: Early Draft

7.17.1.3 General Milestones relating to the standard

Milestone	Target Date	Details
Initial Draft to XACML TC	September 2010	Initial full draft profile for Break the Glass result
Final Working Draft	April 2011	Final draft ready for ballot

Committee Draft	Summer 2011	Committee Draft ballot

7.17.1.4 General online references relating to the standard

Type of Reference	Link
Demo of Break The Glass policy	http://issrg-testbed-2.cs.kent.ac.uk/

7.17.2 Details about the standards contribution

7.17.2.1 Summary of the standards contribution

Break the Glass is a new return code from a PDP, which is neither grant nor deny (it means the user is not allowed access but will be if he/she decides to break the glass and take the consequences).

We have discussed this on the XACML mailing list, and decided that the best way forward is to define a new profile of XACML, which says how to encode up a BTG response as a new error code. Seth Proctor and myself were due to be editors, but shortly before the work began Seth left Sun and I have heard from him since. I have now decided to progress the work with my own staff.

7.17.2.2 References on details of the standards contribution

Type of Reference	Document / Link	Status & Distribution Level
First draft	http://sec.cs.kent.ac.uk/permis/downloads/Level3/BTG.shtml (available from 1 Sept 2009)	Pubic

7.17.2.3 Supporters of the standards contribution

TAS3 support

7.17.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
Build a demo of BTG	2009	completed
Discuss with OASIS XACML TC best way to	Dec 2009	Completed

standardise this		
Write the first draft profile	Sept 2010	Planned

7.17.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.17.3.1 Relation to NEXOF architectural patterns

Not sure.

There are no concerns or restrictions in instantiating the standard and the provided contribution in the context of the NEXOF architectural patterns.

7.17.3.2 Collaboration with other NESSI projects in the context of the standards contribution

There have been no collaborations with other NESSI projects in the context of this standards contribution activity

7.17.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

Please describe the support activities from NESSI and NEXOF that you are interested in. Please also indicate if an activity does not or does not yet apply.

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	Yes
Do you propose the standard contribution to be supported as “NESSI Strategic Standards Contribution” towards the standards organization and the European Commission by NEXOF and NESSI?	Yes
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	Yes
Further activities – NEXOF members who are members of the XACMLTC can help to support this draft when it is published.	

7.18 Tas³: XACML V3 Obligations

7.18.1 Details about the standards organization and the concerned standard

7.18.1.1 Standardization Organization

Standards Organization:	OASIS
Receiving body of the Contribution:	XACML TC
Contact Name:	David Chadwick
Role:	TC member
E-mail:	d.w.chadwick@kent.ac.uk

7.18.1.2 Standard concerned

Standard concerned:	XACML
Specification concerned:	V3 Obligations Working Draft
Status of the specification:	Working Draft 3 (Dec 2007)

7.18.1.3 General Milestones relating to the standard

The obligation standardisation work within XACML has stalled. In order to gain renewed vigour I put together a consortium interested in this and submitted a project proposal in FP7 Call 5 (Nov 2009) to standardise and implement distributed obligation enforcement. Unfortunately the proposal was not funded, so work has stalled again.

Milestone	Target Date	Details
Get project funding for obligation standardisation	April 2010	Stefagon bid submitted to Call 5, but it was not selected for funding

7.18.1.4 General online references relating to the standard

Type of Reference	Link
OASIS obligation working draft	http://www.oasis-open.org/committees/document.php?document_id=27230

7.18.2 Details about the Standards Contribution

7.18.2.1 Summary of the standards contribution

The first contribution I made was to suggest that obligations should have a temporal component of: before, with or after. This has been accepted and is in the current working draft.

Other suggestions are to have standardised fields in obligations such as: obligation enforcer, fallback obligation etc. These have not yet been progressed in the standards group.

7.18.2.2 References on details of the standards contribution

Type of Reference	Document / Link	Status & Distribution Level
Published academic paper	David W Chadwick, Linying Su, Romain Laborde. "Coordinating Access Control in Grid Services". Concurrency and Computation: Practice and Experience, Volume 20, Issue 9, Pages 1071-1094, 25 June 2008. Online version available from http://www3.interscience.wiley.com/cgi-bin/abstract/117347062/ABSTRACT	Public
W3C access control workshop paper on obligation standardisation	http://www.w3.org/2009/policy-ws/papers/Chadwick.pdf	Public

7.18.2.3 Supporters of the standards contribution

Supported by TAS3.

7.18.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
None currently planned		

7.18.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.18.3.1 Relation to NEXOF architectural patterns

Not sure

There should not be any problems implementing before and after obligations, since we have instantiated this already in the TAS3 architecture. Implementing with obligations is more problematical since this may require two phase commit type protocols.

7.18.3.2 Collaboration with other NESSI projects in the context of the standards contribution

We have already had one collaboration meeting as part of the PrimLife cluster, in which obligations were discussed and it was agreed that further standardisation is needed. This led to a joint paper between TAS3 (Kent) and SWIFT (NEC) into a W3C meeting on access control standardisation.

7.18.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	Yes
Do you propose the standard contribution to be supported as "NESSI Strategic Standards Contribution" towards the standards organization and the European Commission by NEXOF and NESSI?	Yes
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	Yes
Further activities – we need one or more projects that are concerned with distributed obligation enforcement to pilot the work and standardise the results	Yes

7.19 Tas³ SAML Core

7.19.1 Details about the standards organization and the concerned standard

7.19.1.1 Standardization Organization

Standards Organization:	OASIS
Receiving body of the Contribution:	SAML
Contact Name:	David Chadwick
Role:	SAML TC member

E-mail: d.w.chadwick@kent.ac.uk

7.19.1.2 Standard concerned

Standard concerned: SAML Core
Specification concerned: V2+
Status of the specification: Standard

7.19.1.3 General Milestones relating to the standard

None yet

7.19.1.4 General online references relating to the standard

Type of Reference	Link
SAMPO	To provide link?

7.19.2 Details about the standards contribution

7.19.2.1 Summary of the standards contribution

The SAMLv2 standard is deficient when it comes to combining Authentication and Attribute request messages into a single message. When sent separately, the Attribute request message can dynamically list the attributes that should be returned. When sent in one combined message it is not possible (other than via a pointer to a pre-determined metadata structure) since the combined message is a patched Authentication request message rather than a proper combined message.

On two occasions, firstly by Sampo and secondly by myself, we have provided a draft contribution that provides an enhanced request message, and have discussed these with members of the SAML TC, but so far the idea has got a cool reception.

7.19.2.2 References on details of the standards contribution

7.19.2.3 Supporters of the standards contribution

TAS3 supports this.

7.19.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
No progress to date until sufficient momentum can be gained in the SAML TC		

7.19.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.19.3.1 Relation to NEXOF architectural patterns

This should be the initial Authentication Request message

There should not be any particular concerns or restrictions in instantiating the standard and the provided contribution in the context of the NEXOF architectural patterns.

7.19.3.2 Collaboration with other NESSI projects in the context of the standards contribution

There have been no collaborations at the moment with other NESSI projects in the context of this standards contribution activity. However, if there had have been we might have been able to push this more in the SAML TC.

7.19.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	Yes
Do you propose the standard contribution to be supported as “NESSI Strategic Standards Contribution” towards the standards organization and the European Commission by NEXOF and NESSI?	Yes
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	Yes
Further activities – we need other NESSI members who recognise the deficiency in SAMLv2 to join with us to push the SAML TC to define the new combined Authn and Attribute request message	Yes

7.20 PrimeLife: ISO/IEC 24760, 29100, 29101

7.20.1 Details about the standards organization and the concerned standard

7.20.1.1 Standardization Organization

Standards Organization:	ISO/IEC JTC 1/SC 27/WG 5
Receiving body of the Contribution:	ISO/IEC JTC 1/SC 27/WG 5
Contact Name:	Hans Hedbom
Role:	Liaison Officer
E-mail:	Hans.Hedbom@kau.se

7.20.1.2 Standard concerned

Standard concerned:	24760 (CD), 29100 (CD), 29101 (WD)
Specification concerned:	
Status of the specification:	24760 (CD), 29100 (CD), 29101 (WD)

7.20.1.3 General Milestones relating to the standard

7.20.1.4 General online references relating to the standard

Type of Reference	Link
Homepages of Sc 27 including list of projects	www.jtc1sc27.din.de

7.20.2 Details about the standards contribution

7.20.2.1 Summary of the standards contribution

ISO/IEC JTC 1/SC 27/WG 5 is currently in the process of standardizing framework standards within the IdM and privacy area rather than specific solutions. PrimeLife has entered in the middle of the current efforts therefore PrimeLife's contributions have largely been in suggesting improvements and new ideas into the ongoing projects. This in effect means that our contributions are physically scattered across the documents and that some of the contributions are of oral form participating in the debates that are part of the work process. Regarding areas of contributions we have mainly contributed to the terminology, lifecycle process and structure of the Identity Management

Framework 24760 where one of the Editors is a member of PrimeLife and members of the consortium have also participated in ad hoc working groups to advance the document. Generally we believe we also have contributed in strengthening the privacy aspect of the standards in development within WG 5.

7.20.2.2 References on details of the standards contribution

The contributions can be found as liaison statements from PrimeLife to WG 5 on ISO's livelink. However, the documents are restricted to members of ISO/IEC JTC 1/SC 27 and liaison organizations to WG 5. The liaison statements and information on our ISO efforts can also be found on the PrimeLife WiKi but are in this form restricted to consortium members. All standardization documents that we are contributing to are on CD or WD level and thus work in progress.

7.20.2.3 Supporters of the standards contribution

7.20.2.4 Status of the standards contribution

Standards Contribution Activity	Date	Status
Comments to 29100 and 24760 for autumn meeting of WG 5	15 September 2010	planned
Comments to 29100, 29101 and 24760 for spring meeting of WG 5	April 2011	planned

7.20.3 Details about the relation of the standards contribution to NESSI and NEXOF

7.20.3.1 Relation to NEXOF architectural patterns

7.20.3.2 Collaboration with other NESSI projects in the context of the standards contribution

7.20.3.3 Requested activities from NESSI and NEXOF in relation to the standards contribution

NESSI / NEXOF support activity	(yes/no)
Do you propose the standard contribution to be endorsed and referred to in the context of the NEXOF architectural patterns mentioned above?	No
Do you propose the standard contribution to be supported as “NESSI Strategic Standards Contribution” towards the standards organization and the European Commission by NEXOF and NESSI?	No
Do you agree to NEXOF and NESSI referring to the standards contribution as part of the overall NESSI standards activities in public communication?	Yes