Interactive Realtime Multimedia Applications on Service Oriented Infrastructures

ICT FP7-214777

WP 9a Standardisation, Collaboration and Exploitation

D9.5.2 Updated Version of Collaboration Plan

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More information
The most recent version of this document and all other public deliverables of IRMOS can be found at http://www.irmosproject.eu

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Glossary of Acronyms

Acronym	Definition
D	Deliverable
DRS	Document Review Sheet
CWG	Collaboration Working Group
EC	European Commission
EEA	European Economic Area
FP6	Framework Programme 6
FP7	Framework Programme 7
IP	Integrated Project
IRMOS	Interactive Realtime Multimedia Applications on Service Oriented Infrastructures
PM	Project Manager
PO	Project Officer
QoS	Quality of Service
SLA	Service Level Agreement
SOI	Service Orientated Infrastructure
SSAI	EC FP7 Service and Software Architectures, Infrastructures and Engineering unit
WG	SSAI Collaboration Working Group
WP	Work Package

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1.   Executive Summary

Collaboration for the IRMOS project is in two distinct areas, within and without the FP6/FP7 funding framework. This document sets the ambitions of IRMOS in collaborating in these two areas along with the processes for determining the optimum use of IRMOS resources to maximise benefit both to the project and to the European Economic Area (EEA).

As an Integrated Project (IP) the IRMOS project takes a lead role in the joint collaborative activity primarily centred on other projects approved for funding in the same call. This collaborative activity operates on multiple levels from the sharing of technical know how through to training, dissemination and exploitation activities.

We have developed objectives for our involvement based on both the value from the work groups and the potential value IRMOS technology and exploitation opportunities we bring to the work groups. It is important that membership of any work group is based on mutual value with clear outcomes and scope of work defined at the outset. These objectives will be part of our internal process for deciding which work groups are appropriate for us to participate in. Collaboration activity is reported in formal reports as part of specific deliverables and also listed on the IRMOS web site www.irmosproject.eu

IRMOS is currently co-chair on two work groups:
- Virtualised Service Platform with Alcatel-Lucent as our lead partner
- QoS & SLA with NTUA and Telefónica I+D leading our representation

Beyond the immediate mandate of the Commission for all projects to participate within the EC framework up to at least 2% of grant there are other external opportunities for participation. These opportunities will arise at both a national and international level between commercial and academic partners involved in similar research. It is through this wider participation that the value of the project is amplified and European research realising its full value.

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2.   Introduction

Objectives for this document

This deliverable is D9.5.2 "Updated Version of the Collaboration Plan" of the EU IST-2007- 214777 IRMOS project, as specified in the Annex 1- "Description of Work".

The purpose of the document is to describe the mechanisms through which IRMOS will determine appropriate collaboration activities, the mechanisms for reporting the planning and execution of these engagements and the outcomes of such collaborative engagements. The identified opportunities are documented with reports describing specific contributions to the community throughout the project lifetime.

The collaboration plan is updated at regular milestones in specific timed deliverables D9.5.1 (PM12), D9.5.2 (PM24, Current Version) and D9.5.3 (PM36).

The primarily collaboration routes are fostered through groups set up by the EC at the level of Obj 1.2 Software and Services and the cross-objective working groups of the Future Internet. As an Integrated Project (IP) IRMOS is involved in a number of working groups. This document sets out the process for selection and the involvement in the groups along with information on specific activities actually undertaken as presented through the collaboration activity reports (D9.5.4 to D9.5.8 which are attached to the periodic management reports). In addition to the formal groups we recognise that there are a number of opportunities for bi-lateral interactions between IRMOS and other FP6/FP7 projects. This document will set out the process for undertaking these engagements from the gaining of initial approval of the wider project team through to effective reporting of meetings and visits.

Alongside the mandated FP7 collaboration we acknowledge and encourage collaboration with other projects, funded by the EC, local & national governments and other sources. Again this document will lay out the processes for these engagements to ensure that there is no inappropriate activity and that the benefits of the IRMOS project remain within the EEA.

Within IRMOS the term "collaboration" is taken as meaning joint design & development, joint exploitation, joint dissemination, joint training and joint standardisation activities. The aim of this is to ensure that, wherever possible, IRMOS is more able to perform well in its objectives through working within a wider group. Inevitably there is a strong relationship between Dissemination activities planned and reported. These are covered as part of deliverables D9.1.x with attendance at events across the world often in collaboration with other groups or initiatives.

The structure of the remainder of this document is as follows: Section 3 looks at the status and forward looking Working Group opportunities; Section 4 looks at bi-lateral project to project collaboration; and Section 5 then details the reporting process for collaborative actions within the IRMOS project.

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3. Collaboration working groups

3.1. Objectives of collaboration group involvement

When engaging with collaboration working groups the IRMOS project aim is to ensure effective use of EC resources in reduction of duplicated effort between projects. We anticipate that this will come from the sharing of ideas and thoughts to foster mutual understanding, the sharing of opportunities for training and dissemination actions and appropriate re-use of material between projects when possible under the terms of our collaboration agreements.

Our engagement may be at any one of a number of levels and we expect the partners and the technical board of IRMOS to determine the best path for a given workgroup. Where appropriate we will take active steps to co-ordinate groups whilst recognising the significant time implications for the co-ordinators.

3.2. Process for group selection

Different levels of collaboration may take place between the projects:
- Concepts and Ideas: The collaboration takes place in terms of the exchange of ideas between the projects.
- Architecture, Design, Major Innovations: At this level, the projects not only exchange general concepts and ideas but also additional artefacts resulting from architecture definition and design concepts and other major innovative approaches.
- Software Components: Exchange of developed software components.
- Joint Developments and Demonstrations: The collaboration not only in terms of exchange of results but in terms of joint work, leading to developed components

The collaboration may take place at a different scale:
- Bidirectional/multidirectional: mutual exchange of results between projects
- Unidirectional: just one project delivers its results to other(s).

Table 1 includes the current Collaboration Working Groups within the SSAI unit.
- New for FP7 or pre-existing: in the case of the pre-existing groups, some of the participant projects came from FP6 and had results available already. In these cases, the collaboration has been the review of architectural designs and results as well as ideas and approach.
- Between FP6 projects, the collaboration may already be occurring in a bilateral way.
- Most activity takes place with the newer FP7 projects where there are identified common interests in the topic and have initiated a collaboration starting from the basic level of exchange of ideas.
- Through early 2010 a number of new FP7 projects will be starting and these will be reviewed for relevant cross over of concepts, interests and potential re-use of ideas or practical activities performed through IRMOS.

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- Chairing working groups: every collaboration working group has a chair and a co-chair project. Their selection has been made based on the topic and the fact that the topic is one of the key areas within the project. These projects will lead the group, encourage the participants to share their results in an effective way and share their own results.
- IRMOS involvement: (co)Chair: Chair or co-chair of the group
- Participate: active participation in the group, with exchange of results with other projects (either unidirectional or bi/multidirectional)
- Monitor: monitor the progress in the group in order to identify potential collaboration areas.
- Undefined: not yet involved in the group, but do not discard to be in the future.

The main criteria to decide the level of involvement of IRMOS in the collaboration working group is the following:

- Relevant topics for IRMOS where the project plans to achieve major results and innovation: **Chair or Co-chair** of the group, if the position is vacant. Otherwise **active participation** is foreseen, with the intention to influence the group in the direction the project is progressing, the collaboration is going in more of a **unidirectional way**, from IRMOS towards the projects. Bi/multi directional collaboration is also welcome.
- Relevant topics for IRMOS where the project would like to reach a common understanding with the projects in the area: in this case an **active participation** is foreseen, and the collaboration in a **bi/multi directional** way.
- Topics addressed by IRMOS, but where the project does not have enough resources for deep research: **Participation** of IRMOS must take place, with the intention to request and receive input from those projects that we can invest more resources in the topic. A **unidirectional** collaboration from the projects towards IRMOS is foreseen.
- Topics potentially addressed by IRMOS in the future: The **monitoring** of the group is foreseen, by following the mailing lists (if any), meeting minutes and eventually attending the face-to-face meetings of the working group. A **unidirectional** collaboration from the projects towards IRMOS is foreseen. IRMOS will follow the status and progress of the group and decide on more active participation if the work is progressing in an interesting direction for the project.
- Topics not foreseen to be addressed by IRMOS: **Undefined** collaboration is planned in this case. Collaboration with this group will take place only in punctual cases where IRMOS is required or specifically informed about a topic of interest.

Figure 1 summarises the FP7 Obj 1.2 Call 1 projects and their relative areas of research, this has been used to create many of the alliances between working groups created over the project period.

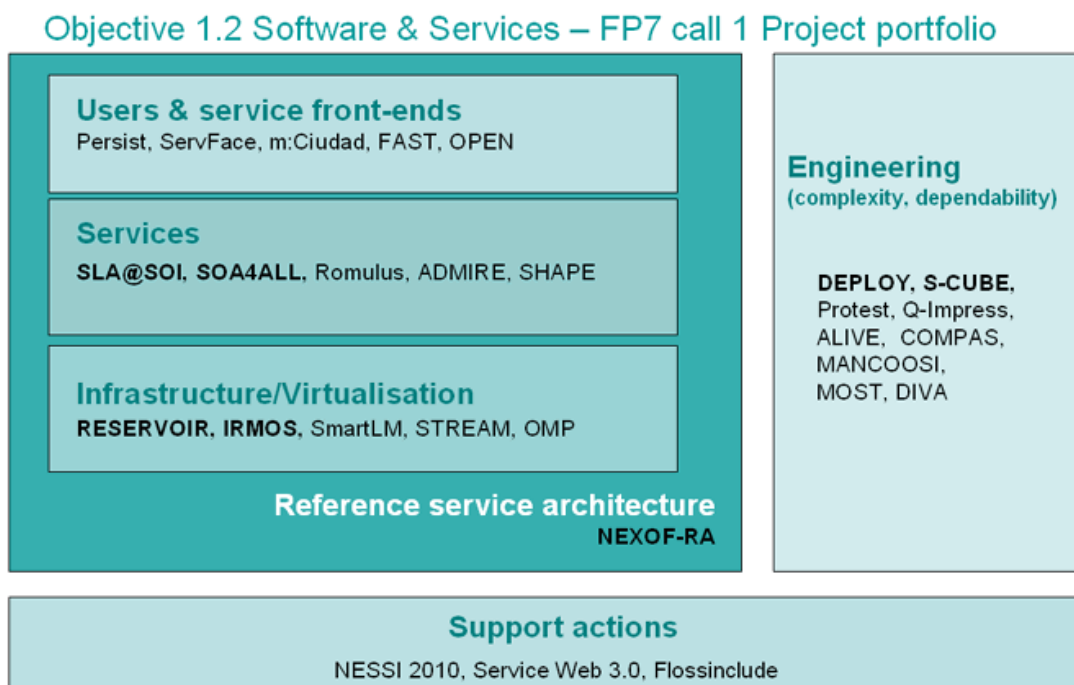| IRMOS	IRMOS_WP9a_D9_5_2_ v1_0.doc
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Figure 1 Overview of the first batch of Seventh Framework Programme (FP7) projects of objective 1.2 'Services and Soft ware Architectures, Infrastructures and Engineering' [1]

Table 1 shows the involvement of IRMOS in the collaboration working groups. This will change as the project and the different group's progress. The existing working groups and their leaders are also listed below. If IRMOS wished to join them or collaborate the leader project should be contacted. Additional information on the activities of these groups can be found on http://www.eu-ecss.eu/contents/collaboration-working-groups.

Table 1 - Current Collaboration with Working Groups within SSAI

Group Name	New for FP7 or pre-existing	Chairing projects	IRMOS involvement
Service Architectures	New	NEXOF-RA / S-CUBE	
Service Engineering	New	COMPAS / DIVA / S-CUBE	Participate through ITInn
Semantics	New	SOA4ALL	Monitored through USTUTT
Service Front Ends	New	FAST	
Collecting Use Cases	New	S-CUBE	
QoS and SLAs	New	IRMOS SLA@SOI	Co-chair from ICCS/NTUA
Virtualised Service Platform	New	RESERVOIR / IRMOS	Co-chair from ALUD
Coordination of contribution to Standards	Pre-existing	CORE Grid / SLA@SOI / NEXOF-RA	Participation through ALUD and TID
Repository	Pre-existing	Unknown	

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Group Name	New for FP7 or pre-existing	Chairing projects	IRMOS involvement
Collaboration on Dissemination	Pre-existing	S-Cube	Participation through USTUTT
Future Internet Assembly	New		Participate heavily through ALUD & ITInn
Data Management	Pre-existing	Unknown	
Trust & Security	Pre-existing	BREIN	
Virtual Organisations	Pre-existing	XtreemOS	
Business Models & SLAs	New	Unknown	
Formal methods for SOA and Future Internet	New	Unknown	
Joint Training Activities	New	S-Cube	Strong participation from ICCS/NTUA resulting in sessions at summer school

3.3. Collaboration Groups co-chaired by IRMOS

3.3.1. Virtualised Service Platform

3.3.1.1. Group Scope

The scope of the Virtualised Service Platform working group has been defined as:

- Define what is meant by a service, and determine the set of requirements a service must meet in order be supported. This will take into account envisioned future Internet trends such as sensors, RFIDs, "smart dust" etc.
- Identify other FP7 stakeholders in a virtualised service platform and solicit their involvement.
- Formulate the non-functional requirements on a virtualised service platform from an application provider point of view.
- Verify the set of requirement against contributed use-cases.
- Start working on a common definition of the interfaces required by service/application providers for lifecycle management.
- Examine the objectives of the other CWGs (e.g. Service Architecture) to identify potential overlaps and points for collaboration.

Representatives from the following projects have indicated their interest with respect to the VSP invitation for collaboration: RESERVOIR, IRMOS, AutoI, 451 group, SmartLM SLA@SOI, PrimeLife, Master, NEXOF-RA."

3.3.1.2. IRMOS Contribution and Outcomes

IRMOS is co-chairing the Virtualised Service Platform Collaboration Workgroup (CWG). The first action undertaken by IRMOS (ALUD) was to produce a draft version of the WG's objectives and scope collaborating with the co-chair of the "Virtualised Service Platform" Working Group (Eliot Salant, RESERVOIR project). Later, a number of further actions items have been identified, prepared and executed:

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- Contribution to the definition of the Collaboration Group's scope, involving all IRMOS partners
- Preparation of a brief description of the network virtualisation topic from the IRMOS perspective
- Scope and objectives definition in preparation of the presentation at the collaboration meeting on September 22-23, 2009 in Brussels (http://cordis.europa.eu/fp7/ict/ssai/events-20080922-23-cm-soft_en.html).
- Preparation of a networking session during the ICT 2008 conference in November 2008 in Lyon (http://www.eu-ecss.eu/private-area/virtualised-service-platforms/presentation-charts-of-ict-2008-networking-session-n35/)
- Preparation of a session during the Internet of Services 2009. Collaboration Meeting for FP6 and FP7 projects on June 11-11, 2009 in Brussels (http://ec.europa.eu/information_society/events/ssai/ios/index_en.htm).

3.3.1.3. Future Plans

As described in the previous sections, the level of collaboration within the Virtualised Service Platform Collaboration Working Group (organisation of networking sessions, hosting of sessions during collaboration events etc.) has resulted in a good level of visibility level for IRMOS. However, the activities of parties and projects other than RESERVOIR and IRMOS projects have remained low during the lifetime of this CWG. Therefore the CWG has decided to continue the work in a mainly bilateral RESERVOIR-IRMOS cooperation mode.

The future work of this CWG will be to put a stronger focus on the definition of a limited set of work items of common interest between the RESERVOIR and IRMOS projects. Additionally, it has also been discussed between the co-chairs to use the inputs from presentations during the collaboration meeting in 2009 to consolidate the user requirements for Virtualised Service Platforms as a way forward.

Recently, a particular new topic baptised "Monitoring Bus" has been proposed by RESERVOIR as a future collaboration topic for the VSP CWG, the scope of which requires further definition, both RESERVOIR and IRMOS projects are committed to identify suitable contact persons to further elaborate on this specific topic.

Finally, a mutual exchange of the publicly available documents and source code from either project will occur.

The working group will next convene at the SSAI collaboration meeting on 19-20 October 2010.

3.3.2. QoS & SLA

The QoS & SLA Collaboration Working group has been created when FP7 - Call 1 Projects were launched in March 2008. Given that research is ongoing on several topics related to QoS & SLAs, many projects have joined the group to collaborate and exchange ideas. The focus of the specific group as well as the involvement of IRMOS partners and the future plans is briefly presented in the following paragraphs.

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3.3.2.1. Group Scope

The objectives of the QoS & SLA Working Group are briefly drafted as follows:

1. Share **mutual understanding of QoS & SLAs** across various projects (terminology, functional and non-functional requirements, relevant standards & technologies). For example, what does "QoS" mean in SOI (QoS on different layers, vertical QoS issues, model-driven approaches to the QoS domain etc). Define common terms such as quality attributes (e.g. performance), metrics (e.g. average execution time) and annotations (to specify QoS aspects in service models).

2. Develop a **mediation framework** that allows for translation between different perspectives. This framework will include the following information:
   - main terminology concepts
   - (Meta) models and views as supporting technologies
   - artefacts with which SLAs are associated (e.g. business process, Web service, application container, DB, server, network, etc)
   - quality attributes
   - metrics for assessing service level objectives / QoS
   - lifecycle issues
   - used standards
   - influence factors and parameterised QoS specification
   - required QoS vs. Measured QoS vs. Predicted / Estimated QoS
   - decomposition / aggregation across the vertical service stack
   - QoS annotations and the relation to MARTE & SPT.

3. Drive **joint initiatives** towards broader communities (e.g. NEXOF-RA, Future Internet Assembly, standardization)

4. Identify the **dependencies / barriers etc between QoS provision and SLAs**

5. Examine the role of **QoS & SLAs in the Future of Internet** (e.g. are the current SLA schemas able to serve the needs posed by the Future Internet trends - such as sensors) and produce a position paper detailing the work outstanding in the area of QoS & SLAs to facilitate a Future Internet.

6. Identify other FP7 stakeholders and check their involvement in this WG. Examine the objectives of the other WGs to identify points for collaboration.

3.3.2.2. IRMOS Contribution and Outcomes

IRMOS is co-chairing this group. Up to now a list of actions have been identified, and has begun to be implemented or planned for the future with the collaboration from other partners.

Following the first action that was undertaken by IRMOS (Dimosthenis Kyriazis) in order to produce a draft version of the WG's objectives collaborating with the co-chair from SLA@SOI Project (Tariq Ellahi) and circulate it to other projects, a number of projects confirmed their participation in the WG. Current participating projects are:
- Q-ImPrESS (Steffen Becker, Mircea Trifu)
- RESERVOIR (Eliot Salant, Juan Cáceres)

- STREAM (Ricardo Jimenez-Peris)
- COMPAS (Schahram Dustdar)
- OMP (Colin Tattersall)
- CONTRACT (Steven Willmott)
- SMART-LM (Wolfgang Ziegler, Josep Martrat)
- SORMA (Nikolay Borissov)
- SLA@SOI (Wolfgang Theilmann, Tariq Ellahi)
- IRMOS (Georgina Gallizo, Karsten Oberle, Dimosthenis Kyriazis)

Moreover, FP6 projects have participated in the WG but since they finished they are no longer participating. These projects are:

- BEinGRID (Igor Rosenberg)
- AssessGrid (Igor Rosenberg)
- ARGUGRID (Vassiliki Pouli)
- EGEE (Vassiliki Pouli)
- BREIN (Bastian Koller, Roland Kuebert)

Besides co-chairing this group, IRMOS partners have performed a number of actions in the framework of the WG activities:

- Contribution to the whitepaper being prepared by the WG outlining the current research outcomes from the participating projects
- Contribution to the Services & Service Level Objectives document being prepared by the WG members
- Scope and objectives definition in preparation of the session at the Collaboration Meeting, September 22-23, 2008, Brussels. Presentation of IRMOS outcomes in the area of QoS & SLAs. (http://cordis.europa.eu/fp7/ict/ssai/events-20080922-23-cm-soft_en.html).
- Scope and objectives definition in preparation for the session at the Internet of Services 2009 Collaboration Meeting, June 11-11, 2009, Brussels. Presentation of IRMOS outcomes in the area of QoS & SLAs. (http://ec.europa.eu/information_society/events/ssai/ios/index_en.htm).

3.3.2.3. Future Plans

IRMOS partners will continue being heavily involved in this WG since the main outcomes of the project address many challenges in the area of QoS & SLAs. In the coming months, given that we expect many tangible outcomes out of IRMOS (e.g. demonstrators), we will have many results to share with the research community and one of the identified channels will be through the QoS&SLAs WG.

Furthermore, the chairs of the QoS&SLAs WG were informed by the chair of another WG, the "Business Models & SLAs" one that the latter will be renamed to "Software Service Economics" and therefore the main forum for discussion on SLAs will be the QoS&SLAs WG. A list of projects and contacts that have been participating to the Business Models & SLAs WG will be sent to the QoS&SLAs chairs in order to proceed with invitations of new members.

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Given that Economics and SLAs are tightly coupled, it is within our plans to co-allocate the next WGs F2F meetings in February - March 2010. The main focus of this meeting will be to discuss on specific technical issues with the projects that participate in the WG (such topics include the mapping of application terms to resource parameters, the different SLA schemas and the QoS parameters / service level attributes that should be included).

Finally, and given that Call 5 projects will start in summer 2010, we plan to disseminate the IRMOS outcomes in the framework of QoS&SLAs WG in all European Events (e.g. Collaboration Event 2010, ICT 2010, etc).

The working group will next convene at the SSAI collaboration meeting on 19-20 October 2010

3.4. Major Collaboration & Dissemination Events

There have been annual collaboration events held in Brussels in 2008 and 2009 (concertation meeting in Brussels (22-23 September 2008), and the Internet of Service - IOS 2009 event (10-11 June 2009). The 2009 event [2] was jointly organised and managed by IRMOS and SLA@SOI & SOA4ALL. Feedback received from attendees and organisers which included over 27 projects and around 240 attendees confirmed this to have been highly successful with extensive collaboration presentation and discussion sessions hosted and managed by the various CWG on their specific interest areas.
Both the VSP and QoS &SLA CWG's break out meetings were co-chaired by IRMOS partners, See [3] for detailed Summary and conclusions of the event.

It is currently planned that the major event of 2010 will be
- IOS2010 meeting planned for Oct 19-20, 2010 the objectives for which are:
  - To consolidate the collaboration activities among the projects in order to build an even stronger community; to include the newly started projects in Collaboration Working Groups.
  - Give the newly starting projects the opportunity to understand key results of the already running projects/collaboration working groups in order to facilitate reuse of these results.
- ICT2010 exhibition and conference being held 27-29 September this will be at a time IRMOS will be able to show operational demonstrations and research outcomes to a wide audience.
  - Give the already running projects/collaboration working groups the opportunity to exploit their results better by finding synergies with the newly started projects.
  - To achieve a better understanding of the results of the FP6 & FP7 projects in the "Internet of Services" area.

- IBC2010: For a wider public audience showing the results of the project attendance at the International Broadcast Convention - IBC 2010 is also planned, this is a major event which drew some 45,500 visitors with over 1,300 exhibitors in 2009, with conference and exhibition, this could result in significant dissemination, collaboration and potential exploitation opportunities as it covers

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all aspects of the media and entertainment industry through Europe and worldwide.

3.5. Other Collaboration Groups joined by IRMOS.

As described in detail in D9.4.3 & D9.4.4 [4], the project is also participating in the Collaboration WG on joint training activities and particularly collaborating with the S-Cube project which is the coordinator of theis working group and organiser of Summer schools to which IRMOS contributed in 2009 and plans to also provide teaching at the 2010 event. These events provide collaboration, teaching and dissemination opportunities with other projects as well as to a wider audience. 10 different projects were present at the 2009 school including SOA4ALL, PERSIST, COMPASS, IRMOS, GREDIA, SCube, NEXOF-RA, DIVA, BREIN and SLA@SOI, along with around 80 attendees across Europe.

During the 2009 event, IRMOS gave two presentations regarding the architectural scope and the virtualization topics tackled within the project. We also attended the other presentations and this was an excellent opportunity for exchanging ideas with the relevant projects in the area of IRMOS involvement.

For the 2010 event, IRMOS is planning to participate with a demo session regarding the functionality provided by subcomponents in the platform, relevant to the specific scope of the training process and the interests of the audience. An initial program for the event can be found in [5].

IRMOS attended and gave a short presentation in the collaboration workshop on "Service Front End technologies in the future Internet of Services", organised by the FAST project, that chairs the Services Front End (SFE) Collaboration Working Group in FP7.

Within the framework of the Collaboration on Dissemination working group, IRMOS works with the responsible authority for the ECSS portal (http://www.eu-ecss.eu) to advertise news of interest for the SSAI unit projects (e.g. release of Newsletter issues). Furthermore, the RSS News Feed of IRMOS (http://irmosproject.eu/News/rss.aspx) has been provided to the EC in order to be included within the Cordis "syndicated news" web page (http://cordis.europa.eu/ictfeeds/syndicated-news.cfm), where news from all SSAI projects is collected.

3.6. The Future Internet Assembly

European ICT research supported by the EU 7th framework programme aims to develop key technologies for the Internet of the Future helping to sustain economic growth and improve social welfare of European citizens. To achieve this objective European Future Internet research has created a Future Internet Assembly (FIA) that has been structured according to five research areas Content, Networks, Security, Services and Things with an additional Testbed area for large scale experimental testing. The objective of the FIA

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is to identify, understand and resolve convergence challenges between these technology domains and to give Europe the lead edge over other competing global initiatives.

IRMOS has made significant contributes to the Future Internet Assembly (FIA). The FIA structure, working groups and topics have changed significantly since its initiation in 2008, but IT Innovation remains actively involved and a core member of the organising committee.

3.6.1. IRMOS Contribution and Outcome

March 31 - April 2, 2008, 1st Future Internet Conference, Bled
IT Innovation attended the initial FIA meeting in BLED, Slovenia on 31 March 2008 and actively participated in the Services, Content, Security and Network sessions. IT Innovation presented convergence issues between content and services in the Content session showing how IRMOS is a key project addressing cross-cutting issues of the Future Internet. This was followed up by a meeting between at the EC between representatives from each area and collaboration leaders in the commission, which IT Innovation attended to help understand the flow of ideas between collaboration groups in the Unit and the FIA. IT Innovation has also published a report to the FIA IOS group on convergence issues and how to structure the FIA group to achieve greater impact and effective dialog.

IT Innovation has attended three FIA IOS teleconferences and meetings and discussed the original proposed cross-cutting topics from BLED, including:
- Architecture and Infrastructure
- Management and Governance
- Trust at scale and high granularity

IT Innovation proposed a 4th topic on Lifecycle engineering for Future Internet Applications to begin dialog on vision and operation models for the future internet and a cross-domain dialog from engineering lifecycle perspective. The proposed topic is to look at a broader notion of engineering applied to services, content, things etc. that addresses the interplay between them through the various lifecycles they have and seeks to decouple these lifecycles from each other. IT Innovation has started discussion between Services and Networks and how lifecycle can be considered in the context of socio-economic issues that are currently examined. These issues are key to the success of IRMOS and ideally aligned so that IRMOS can benefit from this wider discussion and dissemination.

December 9-10, 2008, 2nd Future Internet Assembly, Madrid
IT Innovation presented a position statement on the socio-economics panel focusing on choice, uncertainty and innovation. The talk resulted from the proposed lifecycles topic outlined earlier. The talk highlighted how a new foundation or ICT services may be needed for economic sustainability of the Future Internet. Many challenges exist that require real innovation. For example, how can business models evolve to support underlying notions of value and value creation in the new marketplaces, and the role of ICT as potentially a utility (e.g., interoperability services) and value enabler? How can stakeholders assess and mitigate economic threats introduced by greater customisation

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in service offerings? How can the service economy provide the right amount of choice and customisation to avoid monopolies and to support economic growth? These are all challenging questions that need to be answered for the Future Internet to become a successful technology.

The argument was that choice through customisation will be the enabler for creativity in an uncertain Future Internet. Exploiting uncertainty will create winners and losers but have no doubt that exploitation of commodity digital assets in a near perfect market is going to be very hard.

IRMOS service engineering and management infrastructure is directly contributing the supporting uncertainty management in resource provisioning in service networks. The talk linked the long term goal of the Future Internet with the innovations being developed in IRMOS.

Joint paper on Future Internet Socio-Economics – Challenges and Perspectives[1]
IT Innovation contributed to a joint position paper including contributions from many FP7 projects in Challenge 1. The aim of this paper was to present and discuss challenges and perspectives related to "socio-economic" issues in the Future Internet. It was hoped that this will lead to new insights on how to structure the architecture and services in the Internet of the future. IT Innovation contribution was focused on the Internet of Services perspective. The paper was accepted and published.

May 11-13, 2009, 3rd Future Internet Conference, Prague
IT Innovation co-chaired the FISE session including outlining a process for interaction with other groups.

Figure 2: FISE Collaboration Process
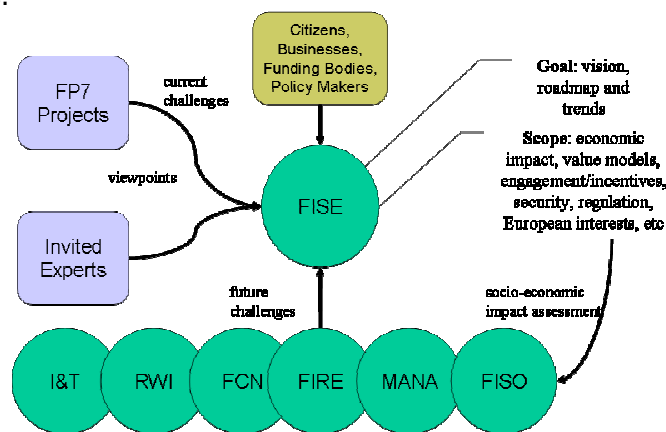
The outcome of the meeting was the identification of key discussion topics
  ➢ Can technology help people behave in accordance with their values and those shared by the society they live in?
  ➢ How much choice can be sustained by service and network APIs and where is it needed?

[1]http://www.future-internet.eu/fileadmin/documents/madrid_documents/FISE/FISE_position_paper_final.pdf

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> ➢ How will autonomics and virtualisation in management infrastructures affect European jobs?
> ➢ Can regulatory approaches be incorporated considering the nature of emerging threats, speed of threat propagation, policy development lifecycles and philosophical conflicts about Internet regulation?
> ➢ How will innovation be incentivised in the Digital Economy?

November 23-24, 2009, 4th Future Internet Assembly, Stockholm
IT Innovation co-chaired the FISE session at FIA Stockholm. This included organising plenary speakers, chairing the FISE group discussion and reporting feedback during the final session.

In preparation for FIA Stockholm the IT Innovation assessed the proposed topics and selected thoughts most appropriate to socio-economics. This included architectures and business models, smart cities, smart enterprises and how to measure trust. IT Innovation helped identify a representative from FISE to attend each of the selected groups either as a presenter or an observer during the topic sessions on 23 Nov 2009 to provide socio-economic viewpoints during discussions. Each representative summarised the outcome of topic sessions during the FISE working group meeting on 24 Nov.
> o Architectures and business models
> o Smart cities
> o Smart enterprises
> o How to measure trust?

IT Innovation led a brainstorm and discussion session focusing on identifying and exploring socio-economic topics. The following topics were discussed.
> o Incentives for the digital economy
> o Europe's response to globalisation
> o User modelling and technical design

Full minutes from the meeting are available here [6]

3.6.2. Future Plans

April 14-16, 2010, 5th Future Internet Conference, Valencia
IT Innovation is convening the session on Economics of Information at FIA Valencia [7]. A summary of the session is given below. Understanding the nature of digital information, how it can be used for societal and economic benefit, and how it is governed will be essential for the success of the Future Internet. This is directly related to the IRMOS value chain especially the relationship between application service providers and ISONI providers. Asymmetry in the access, accuracy and timeliness of QoS information between from ISONI to the application provider will significant impact the infrastructures ability to deliver real-time performance especially during periods of degraded performance.

Digital information is the principal asset of the Internet and systems are increasingly focusing on evolving networks of autonomous applications and people interacting with processes for the production, publication and retrieval of information. The growth in Internet usage and system-to-system interaction will require infrastructures that

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support billions of information exchanges and understanding of the micro- and macro dynamics in terms of structure, information, behaviour and economics. Digital information is now the enabler for creativity, innovation, decision making, economic output and enjoyment. Information sharing is a complex issue with many deep socio-economic concerns, phenomena and tussles. It is related to aspects such as open vs. closed cultures, intellectual property, privacy, information value, risks and rewards, incentives and even societal freedoms and values. The objective of this session will be to examine information sharing from an economic perspective as the basis for providing insights into how smartness can be achieved in the Future Internet.

- o Information as an economic good and implications for business models
- o Information value and the long term preservation of digital assets
- o Information asymmetry and tussles between service providers and network operators
- o The changing nature of risk perception and the disclosure of personal information or Making public data public
- o The exploitation of non-personal government data.

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4.   Other collaboration actions

4.1. Objectives of wider collaboration

The collaboration working groups work well to define a set of ambitions that cut across multiple projects and then to foster mutual co-operation and sharing of ideas in a multi-lateral manner. IRMOS also acknowledges that there are a number of additional benefits that may be obtained through bi-lateral collaboration activities. The key outcomes are similar to those for the collaboration groups however the collaboration can be deeper in nature as authoring appropriate mutual non-disclosure agreements on a bi-lateral basis can prove easier than for a full collaboration group. These bi-lateral engagements are directly between appropriate partners of IRMOS and the 3rd party rather than as a full project engagement.

IRMOS believes that engagement with non FP6/ FP7 funded projects also allow us to leverage know-how that has been developed through other funding schemes. These engagements are undertaken with a strict ambition of reducing the potential for the same work to be undertaken in multiple locations in isolation.   Through collaboration with these activities we are able to provide a more complete solution to the IRMOS problem.

 The geographic distribution of collaboration actions is centred on the EEA, however the IRMOS project does not restrict itself to this geography. There are many research activities operating in other parts of the world that we maintain an awareness of whilst ensuring that there is no leakage of technology benefits from IRMOS to organisations outside the EEA. We acknowledge that this is a challenging ambition but there have already been projects elsewhere in the world that are complementary to the IRMOS project and where IRMOS does benefit from using their technical developments.

4.1.1. Desired inputs to IRMOS

- A participation in the Trust and Security group can be beneficial for IRMOS. Security is an important aspect of SOI's, however, the IRMOS project does not have the necessary resources to design and develop a complete security infrastructure. For this reason, inputs on this topic from other projects are welcomed.
- Collaboration and Dissemination: Input on joint dissemination events within the SSAI unit are of great interest in order to have a common place where projects with the same interests can disseminate their results. These joint events are a way to share logistics and preparation costs and to attract a bigger number and variety of attendees.
- Joint Training activities: The same as with dissemination, input on joint training activities within the SSAI unit are of great interest in order to have a common place where projects with the same interests can teach about their results.

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- Inputs on Semantics and Ontologies: ontologies are of great relevance to IRMOS for the description of hardware resources (computing, network, storage) and QoS parameters.
- Storage QoS: QoS on storage devices is a live topic of research in many research groups around the world. Other researchers have developed theoretical frameworks for QoS the underlying storage technology of which IRMOS has been able to leverage into a working solution with additional development of unique IP. In addition there have been 'heroic failures' where researchers have followed blind alleys, through engagement with these groups IRMOS is able to avoid replication of this failed research work.

4.1.2. Potential outputs from IRMOS

IRMOS strives to be part of collaboration activities. The benefits from this effort derive from identifying new partners and possibly new combined fields of technology or new implementations and areas of adaptation of IRMOS technology innovations.

For business partners one key objective is to investigate possibilities and partners for the implementation of IRMOS platform or subcomponents of it in other areas and other applications than the ones described within the project.

For academic partners the goal is to find common areas of interest with other groups and exchange knowledge and expertise on known issues regarding the topics dealt within IRMOS or investigate joint research activities inside this area or in subjects created by the union of components from different areas.

A number of interesting topics within IRMOS can be identified that could be used in collaboration activities:

Framework Services
- Software tools and associated modelling environments to enable real-time interactive applications to be written to target the IRMOS framework
- Specification languages that unify the various parameters and characteristics used to describe real time applications on SOIs, and allow value chain participants to collaborate in the design, deployment and execution of networks of services (also in accordance with the Execution Environment).
- SLA mapping process of application high level requirements to low level parameters (CPU cycles, memory, storage, network latency etc.)
- Reservation mechanisms for QoS provisioning (provided as a service)

Execution Environment (EE)
- Intelligent Storage Node
- Virtualisation techniques
- Real-time architecture of EE
- Mechanisms for Fault Tolerance (life migration etc.)
- Reservation mechanisms for QoS provisioning (provided as implementation)

Intelligent Networking

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- Network overlay enabling automated SLA negotiation and monitoring to enable delivery of QoS assurances as required by Real-Time interactive applications
- ISONI and general network mechanisms (addressing, path supervision, flow control architecture)

Collaboration opportunities arise also from the Standardisation activities carried out by IRMOS since the beginning of the project, which brings the ability to cooperate with a variety of specialists, thus benefiting from their collective expertise. IRMOS will also explore the participation in the "Coordination of contribution to Standards" CGW [8], as IRMOS shares the WG mission and goals. With so many different and potentially parallel standardisation activities, it is important to have a joint strategy to co-ordinate FP7 efforts to strengthen European collaboration and to increase the impact of European standardisation activities on the world stage.

- General SOI architecture
- Network virtualization
- Addressing schemes for service isolation to avoid unwanted crosstalk
- Network resource management to deliver real-time QoS assurances.
- Path supervision for monitoring and SLA violation reporting on network level
- Policing of individual service overlays to guarantee the required level of QoS for co-existing service overlays on a shared transport medium
- Providing means for technical SLA negotiation for the network part of the SOI architecture approach

4.2. Other EC funded projects

The main focus is on projects with similar time plan to IRMOS. This means that we must concentrate mainly on FP7 funded projects. Similar ones in comparison to IRMOS include:

- STREAM [9](Scalable Autonomic Streaming Middleware for Real-time Processing of Massive Data Flows): A growing number of applications require the ability to process massive amounts of streaming data in real time: for example fraud detection in cellular telephony, security for enterprise networks, automatic trading, processing of the output of large scale ad-hoc networks, etc. Stream aims to provide a highly scalable middleware platform to enable a new breed of such applications. Stream's real time requirements meet IRMOS target of providing such QoS guarantees.
  There has been a face-to-face meeting and also an interchange of public documentation in order to understand in more detail the internal operation of the STREAM project. The STREAM project is completely focused on the real-time processing of data streams, in this case the nature of the data streams is composed of events of individual information registries (like accounting records on a cellular telephonic network) that can be processed in an independent way, this is different than in IRMOS where the data streams are related to video and audio signal processing. This makes that the techniques used in the real-time processing of the information (such as data mining tools, or different algorithms

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to process the data streams) completely different to the ones used on IRMOS. IRMOS will continue this contact with the STREAM project to evaluate the improvements in one interesting aspect related with the increase of the IO network speed of data streams performed in this project.

- NEXOF-RA [10]: aims to build the 'Reference Architecture' for the 'NESSI Open Service Framework' (NEXOF), leveraging research in the area of service-based systems, and to consolidate and trigger innovation in service-oriented economies. IRMOS has contributed with a document entitled "Guaranteeing QoS with Dynamic and Automated SLAs in real-time aware SOIs" that describes the project innovations for automated and dynamic SLAs with respect to the real-time QoS requirements of the end users and their applications. As a follow-up action several members of the IRMOS project are part of the investigation team in NEXOF-RA related to different aspects of the SLA Management and QoS monitoring.

IRMOS also targets projects that are not inside the SSAI sector, especially the ones that have to do with media and networks, due to the fact that IRMOS use scenarios cover areas such as Virtual Reality and eLearning so the platform with its real time guarantees can be used as an infrastructure for media applications. IRMOS can collaborate with these projects through exposing functionalities of the platform and especially the integration of applications on this. For this aim the sector of Networked Media is the most appropriate one. Indicative projects from this with interest for IRMOS are:
- 3DPresence: The 3D Presence project will implement a multi-party, high-end 3D videoconferencing concept that will tackle the problem of transmitting the feeling of physical presence in real-time to multiple remote locations in a transparent and natural way.
- My-e-Director 2012 (Real-Time Context-Aware and Personalised Media Streaming Environments for Large Scale Broadcasting Applications): The main idea of My-e-Director is to research and develop a unique interactive broadcasting service enabling end-users to select focal actors and points of interest within real-time broadcasted scenes. The service will resemble an automated ambient intelligent director that will operate with minimal or even without human intervention.

In addition to FP7 funded projects, IRMOS has actively sought to use the output from previous projects to avoid duplicating work where appropriate. In particular IRMOS has looked at the Akogrimo and BREIN projects for results to re-use as these have concrete results that are well understood and available to the consortium. A summary of these projects follows.

- Akogrimo [11]: The Akogrimo framework is targeted to scenarios where mobile dynamic virtual organizations (MDVO) require the ability to dynamically adapt the organisational structure to changing local situations, to dynamically establish and process complex workflows, and to access data and compute

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intensive services from distributed, sometimes even mobile resources. Of particular relevance is the integration of location based services and spontaneous usability.

- BREIN [12]: Currently first steps are taken within research projects to foster uptake and use of Grid in business and society. To lead these ambitions to a success, BREIN takes the e-business concept developed in recent Grid research projects, namely the concept of so-called "dynamic virtual organisations" towards a more business-centric model, by enhancing the system with methods from artificial intelligence, intelligent systems, semantic web etc. Thus, the BREIN project will enable business participants to easily and effectively use Grid technologies for their respective business needs.

IRMOS is also aware of other EC funded projects that are likely to be of relevance to IRMOS and with which collaboration may well be useful. These include:

- SHAPE: The SHAPE project aims to support the development and realization of enterprise systems based on a Semantically-enabled Heterogeneous service Architecture (SHA). SHA extends Service Oriented Architectures (SOA) with semantics and heterogeneous infrastructures (Web services, Agents, Semantic Web Services, P2P and Grid) under a unified service oriented approach. To achieve this, the consortium of the SHAPE project will develop a Model-Driven Engineering (MDE) tool-supported methodology and will take an active role in the standardization of meta-models and languages for SHA. The project is co-funded under the IST 7th Framework Programme (ICT-2007-216408) http://www.shape-project.eu.

- MODELPLEX: Model-driven engineering (MDE) is an approach to Software Engineering that has proven benefits of cost reduction and quality improvement. Although Models can indeed provide the necessary abstractions that enable human comprehension, communication, simulation and analysis, and synthesis of implementation artefacts which is key for complex systems engineering, applicability still remains a challenge. MODELPLEX will define and develop a coherent infrastructure specifically for the application of MDE to the development and subsequent management of complex systems within a variety of industrial domains. The project is co-funded under the IST 6th Framework Programme (contract number 034081) http://www.modelplex.org.

- XtreemOS: The aim of this project is the integration of the Grid Computing technology into the operating system. XtreemOS offers an abstraction of the complexity of the Grid providing the user the illusion of using a traditional computer. When a user runs an application on XtreemOS, the operating system automatically finds all resources necessary for the execution, configures the security on the distributed resources and starts the application. The XtreemOS operating system provides three major distributed services to users: application execution management, data management and virtual organization management. Part of the work developed in the project consists on the integration of the mobile phone with the functionalities provided by XtreemOS, IRMOS is looking

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closely at one use case that allows a mobile phone to access storage in the Grid environment and how this can be improved with the storage QoS guarantees and techniques investigated in IRMOS. IRMOS will continue the work in this area to evaluate in more detail the architecture and the possible contributions. The project is co-funded under the IST 6th Framework Programme (contract number 033576) http://www.xtreemos.eu/.

4.3. National level projects

IRMOS will collaborate with further projects that are funded by national and local sources. All partners will actively search for appropriate opportunities through the life of IRMOS. Some examples of routes to finding these projects and potential national level projects with which IRMOS may collaborate are detailed in this section. .

IRMOS will strive to investigate collaboration opportunities with projects funded from the Hellenic State. The main contacts will be performed through the General Secretariat of Research and Technology and mainly its sub-department, the National Documentation Centre [13], which is also the coordinator of the Hellenic Innovation Relay Centre, a member of the European IRC Network, aiming to the promotion of innovative technologies and services, and the facilitation of international technology transfer agreements. Through this bureau collaboration possibilities with other national funded projects can be discovered and implemented.

In Spain, the main national level projects are promoted by Centre for the Development of Industrial Technology (CDTI) [14], under the Ministry of Industry, Tourism and Trade, whose objective is to help Spanish companies to increase the technological profile of said companies. The main programme is called CENIT and it provides for the financing of major integrated projects for industrial research of strategic nature, large size and long term scientific and technical scope. TID takes part in several CENIT projects as the biggest private company dedicated to R&D in Spain. TID will explore the possibilities of collaboration with projects and initiatives at Spanish national level in those areas of interest for IRMOS.

SLA4D-Grid (DE)
SLA4D-Grid [15] is a research project funded by the German Federal Ministry of Education and Research (BMBF) in which IRMOS partner USTUTT is participating. The main goal of the project is to design and realise a Service Level Agreement layer for the Germany's national Grid infrastructure D-Grid. It is planned that SLA4D-Grid incorporates, within this layer, some of the IRMOS results related to the SLA Management Framework. SLA4D-Grid is still in its first year, therefore, in the next months it is foreseen a concept and documentation exchange (rather than implementations).

SOA i Praksis (NO): This Norwegian project (SOA in practice translated) is a networking project where leading practitioners and researchers in the area of SOA take part. The goal is to exchange knowledge and experiences and drive research in the appropriate direction.

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In Italy, the main national level projects are promoted and funded by the Italian Ministry of Education, University and Research [16] (MIUR). Various types of projects with different funding schemes are supported, among which the following are particularly worth to mention:

- funding of industrial/applied research (FAR)
- funding of basic/fundamental research (FIRB)
- funding of nation-wide interesting projects (PRIN)

We could identify a few projects that might have some relevance for the purposes of collaboration activities with IRMOS:

- PRIN projects approved in the 2006 selection batch, in the area of industrial and computer engineering
  o *"NADIR (2007-2009): design and performance evaluation of distributed protocols and algorithms for mesh networks with Quality of Service"*, was *"progettazioNe e valutazione delle prestazioni di protocolli e Algoritmi DIstribuiti per Reti mesh con qualità del servizio"*, lead by prof. Luciano Lenzini at University of Pisa;
  o *"Methods and tools for migration of software systems towards service-oriented web architectures: experimental, evaluation, usability and technological transfer"*, was *"Metodi e strumenti per la migrazione di sistemi software verso architetture web e orientate ai servizi: valutazione sperimentale, usabilita' e trasferimento tecnologico"*, lead by prof. Andrea De Lucia at University of Salerno;
  o *"PUODARSI: User-oriented product development based on interactive augmented reality and simulation"*, was *"Sviluppo prodotto orientato all'utente basato su Realta' Aumentata e simulazione interattiva"*, lead by Prof. Monica Bordegon at Polytecnic of Milan.

In the context of high performance and GRID computing, it is worth to mention the INFN Grid project [17], that is the general container used by INFN — Italy's National Institute for Nuclear Physics — to develop and deploy the Grid middleware services which allow its various user communities to transparently and securely share the computing and storage resources together with the applications and technical facilities, available in the different administrative domains of the various Institutions and geographical sites.

4.4. Collaboration with the wider world

IRMOS will collaborate with non EEA projects where there is mutual benefit from so-doing. This engagement is likely to be a lightweight 'monitoring' and exchange of public domain information but may extend further.

The following levels of engagement have been determined:

- Monitoring: Partners within IRMOS will be free to discuss public domain information from IRMOS with projects outside the EEA in return for which we expect the non-EEA project to discuss and describe its public domain information. The benefit of opening discussion comes from the additional description around the public information. Since this process is part of normal scientific endeavour it will not be subject to approval by the IRMOS technical committee.

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- Partner level bi-lateral: Partners within IRMOS will be free to discuss IP that they have both developed within IRMOS and have full ownership of with non-EEA collaborators. In return for this IRMOS partners expect to be given similar levels of access to information. It is important to note that the IP of other partners within IRMOS is not available for discussion although the 3rd party collaborator will need to be aware of the potential for high level discussion of their IP with the wider IRMOS consortium. This type of engagement will be discussed and minuted in the technical committee calls prior to its commencement. Partners wishing to engage in this type of interaction will be encouraged to consult the IRMOS collaboration agreement to ensure that all terms are adhered to.
- Full engagement: There may be occasions when the IRMOS project can benefit form a full, formal, engagement with a project not located within the EEA. These benefits may include the fostering of inter-operability of solutions and the opportunity for exploitation of IRMOS technologies. This type of engagement inherently carries the risk of technology benefit leak to locations outside the EEA. As such this type of engagement is subject to steering board approval.

Japan EU Symposium on the "Future Internet"

IRMOS Partner ALUD was invited to participate in the second meeting of this symposium. The major objective this event was to explore prospects for deeper exchange and collaboration between the Japanese and European research communities in the area of what is referred to as "New Generation Network (NWGN)" in Japan and "Future Internet (FI)" in Europe. See, http://www.prime-pco.com/nict-nwgn/events/2ndEUJsymposium/

The event follows the EU-Japan Co-operation Forum on ICT research which was held in Tokyo 4 – 5 March 2008, see, http://www.eurojapan-ict.org/event_report_forum1.php

On this occasion, it was concluded that deeper collaboration between the research communities would be of mutual benefit for both sides, in particular as there are certain possibilities for cross participation in respective research programmes. This Forum was a follow up to the first symposium in Brussels on 9-10 June 2008, where EU and Japanese activities were introduced. The full set of presentation of this past event can be found at: [18]

With this second iteration, EU and Japanese researchers are offered an opportunity to be updated on the respective research status. The event is designed to address both industry and academic interests and to provide interested Japanese partners with an opportunity to participate in EU research related to the Future Internet.

This event will introduce a broad set of research activities currently running in Japan and under the European 7th Framework Programme for collaborative research

European Web sites of interest:

http://www.future-internet.eu/

http://ec.europa.eu/information_society/activities/foi/index_en.htm

Japanese web sites of interest:

http://www.prime-pco.com/nict-nwgn/events/2ndEUJsymposium/

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4.5. Process for identification of Collaboration Opportunities

All partners are encouraged to maintain an awareness of the world-wide context of their work. This enables partners to identify other research efforts that have relevance to them. In addition partners are encouraged to regularly assess the EC funded project landscape for new and existent projects where there may be mutual benefit from collaboration.

When a partner identifies an opportunity for collaboration they will:
1. Write a description of the opportunity including the type of opportunity and the proposed level of engagement. This will be uploaded onto the project workspace (BSCW).
2. Inform the technical manager of the project that there is an opportunity to discuss on the next technical steering group call. If the opportunity is associated with a tight deadline there will be the option of requesting that a special call is convened to discuss the opportunity.

In its discussions the technical committee will consider:
1. Technology advancements that accrue to IRMOS
2. Level of engagement requested
3. Potential for cost reductions for dissemination or training
4. Potential for creation of an exploitation route
5. Cost of engagement in terms of both financial commitment and technology fed into the opportunity

The recommendation of the technical board will be one of the following:
1. Stop engagement with the potential collaborator(s)
2. Collect specified further information and return to the technical committee
3. Progress with collaboration as requested
4. Progress with collaboration with an alternative level of engagement (note that this may be lesser or greater than the originally suggested level of engagement)

If the partner identifying the opportunity is in disagreement with the decision of the technical committee they shall have the right and opportunity to raise an issue with the steering board. The steering board will consider the opportunity using the same criteria and their decision will be binding (subject to conflict resolution guidelines as stipulated in the consortium agreement).

4.6. Review of IRMOS involvement in CWG actions

In 2010 a further review is planned of the IRMOS involvement in all the Collaboration Working Groups. The aim of this review is to ensure that IRMOS and the wider FP7 project group are able to gain maximum benefit from the resources consumed by the collaboration activity. The groups that IRMOS is or could be involved in will be audited to see what IRMOS is able to contribute to and what IRMOS is able to gain from continued involvement in the group. If either of these was considered to be small in

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value engagement in that CWG was terminated to allow focussing of resource on the remaining groups. This is planned to be timed to occur when the next round (Call 5) of projects is being established and finalised to ensure new programs can leverage IRMOS outcomes to maximum advantage.

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5. Reporting of Collaboration activity

As already identified in D9.1.2 "Initial Dissemination & Exploitation Plan" [19], the project's involvement must be based on both the value extracted from the work groups and the potential value IRMOS technology and exploitation opportunities brings to the work groups. Mutual value and clear outcomes and scope must exist in order to justify the benefit of the participation in this activity.

About 20 days prior to the meeting, involved partner should inform the consortium about the event, its purpose and what is expected to be presented as contribution. Possible benefits also derived from this meeting could be helpful. Agreement of the Consortium on the content presented should be pursued. Especially this should be implemented when sharing of technical know-how takes place and it concerns more than one partner's involvement in the project.

With respect to each Collaboration Group, an IRMOS "collaboration proxy" per individual Working Group shall be identified in order to ensure that IRMOS always speaks with one IRMOS voice with the respective collaboration group.

After the event, a brief description of the collaboration activity that took place will be given in order to be included in according deliverables and reports and in the project website possibly. This description will contain details on the activity (time, place, involved parties). Furthermore it will contain references and details about the information published under the IRMOS logo (e.g. presentations). Another topic that should be covered is the results of this activity, problems stated and conclusions reached and possible action items that are produced from it. A consolidated input of collaboration actions will be through the monthly reports. In this document is a section entitled "collaboration" this may be used by partners rather than the original separate collaboration reporting template in an effort to reduce the administrative burden of the project.

At the end of the 6monthly periods a consolidated report D9.5.4 to D9.5.9 is produced covering all the activities.

IRMOS	IRMOS_WP9a_D9_5_2_ v1_0.doc
Interactive Realtime Multimedia Applications on Service Oriented Infrastructures	Created on 25/01/2010
D9.5.2 Updated Version of Collaboration Plan	

6. References

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[3] http://ec.europa.eu/information_society/events/ssai/ios/finalreport.pdf

[4] D9.4.4 Updated Version of Training Plan

[5] http://www.ssaie.eu/.

[6] http://fise.smoothit.org/uploads/Main/20091124FIA-FISE-WG-stockholm-report-draft0.1.pdf

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[11] Akogrimo project overview page: http://www.mobilegrids.org/modules.php?name=AddFile&file=addfile&datei=scen_overview

[12] BREIN project homepage http://www.eu-brein.com/

[13] National Documentation Centre – Greece http://www.ekt.gr

[14] The Centre for the Development of Industrial Technologies – Spain http://www.cdti.es

[15] SLA4D-Grid Project, http://www.sla4d-grid.de/

[16] Ministero dell'Istuzione dell Universita della Ricerca -More information is available (in Italian) at the URL: http://www.miur.it

[17] INFN Grid – The Italian Grid Infrastructure - More information is available at the URL: http://grid.infn.it.

[18] http://www.ict-fireworks.eu/events/eventview/article/1st-japan-eu-symposium-on-the-new-generation-network-and-the-future-internet.html

[19] G. Gallizo et al. "Initial Dissemination & Exploitation Plan" IRMOS deliverable 9.1.2 July 2008