Project no. IST-033576

XtreemOS

Integrated Project
BUILDING AND PROMOTING A LINUX-BASED OPERATING SYSTEM TO SUPPORT VIRTUAL ORGANIZATIONS FOR NEXT GENERATION GRIDS

Collaboration report and plan including commitments for contributions to task 1 to 8 (PC4) D5.3.4

Due date of report: August 31st, 2009
Actual submission date: September 28th, 2009

Start date of project: June 1st 2006

Type: Deliverable
WP number: 5.3

Name of responsible person: Christine Morin
Editor & editor's address:
Institution & address: INRIA
Campus Universitaire de Beaulieu
35042 Rennes Cedex - France

Version 1 / Last edited by Sandrine L'Hermitte / Date: 28/09/2009

Project co-funded by the European Commission within the Sixth Framework Programme		
Dissemination Level		
PU	Public	✓
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Keywords: Collaboration Gateway, collaborating working group,

Revision history:

Version	Date	Authors	Institution	Sections Affected / Comments
0.0	10/08/2008	Sandrine L'Hermitte	INRIA	Initial report
0.1	21/08/2009	Sandrine L'Hermitte	INRIA	Extensions
0.2	26/08/2009	Sandrine L'Hermitte	INRIA	Integration of Christine Morin's comments (INRIA)
0.3	26/08/2009	Sandrine L'Hermitte	INRIA	Collaboration with Deploy – Michael Schöttner's comments (UDUS)
0.4	23/09/2009	Sandrine L'Hermitte	INRIA	Collaboration with Nimbus project - Thilo Kielmann's comments (VUA)
0.5	24/09/2009	Sandrine L'Hermitte	INRIA	CWG about collecting use cases – Marjan Sterk's comments (XLAB)
0.6	28/09/2009	Sandrine L'Hermitte	INRIA	CWG about data management

Reviewers:

XtreemOS team leaders and members of WP5.3

Tasks related to this deliverable *

Task No.	Task description	Partners involved °
T5.3.1	Collaboration gateway activities	All except CDC
T5.3.3	Collaboration with other ICT projects	All except CDC

° This task list may not be equivalent to the list of partners contributing as authors to the deliverable

* Task leader

Executive Summary

The liaison and co-operation activities with other ICT projects is a key issue that aims at exploiting synergies between these projects and at increasing the impact of the ICT initiative.
By collaborating, the involved projects will reduce duplicated efforts, as well as learn from each other.
To that purpose XtreemOS has established two parallel courses of action:

- Contribution to the concertation/collaboration gateway activities initiated by the European Commission, and
- Independent collaboration activities with other EU-funded projects or other research groups (at XtreemOS own initiative).

Besides the traditional collaboration activities, XtreemOS has collaborated with BREIN project to organize the Internet of Services 2008 – EU concertation days event (together with the European Commission services).
This deliverable D5.3.4 is structured around these two collaboration focuses and describes the achievement for the M24-M39 period.

Table of Content

Abbreviations and acronyms

BEinGRID	Business Experiments in GRID
BREIN	Business objective driven Reliable and Intelligent grids for real busiNess
CWG	Collaboration Working Group
EC-GIN	Europe-China Grid InterNetworking
ECSS	European Community for Software and Software Services
EGEE	Enabling Grids for E-sciencE
FIA	Future Internet Assembly
FP6	Sixth Programme Framework
FP7	Seventh Programme Framework
NESSI	Networked European Software & Services Initiative
NEXOF-RA	NESSI Open Framework - Reference Architecture
OGF	Open Grid Forum
RESERVOIR	Resources and Services Virtualization without Barriers
SAGA	Simple API for Grid Applications
S-CUBE	Software Services and Systems Network
SSAI	Service and Software Architectures, Infrastructure and Engineering
SSAI&E	Service and Software Architectures, Infrastructure and Engineering
VO	Virtual Organization

1. Introduction

The XtreemOS project has implemented a Collaboration Gateway in the work package WP5.3 "Collaboration with other Grid related ICT projects", which includes the activities planned in the Cross Project collaboration work package initially edited by Clemens-August Thole from Fraunhofer Institute SCAI and Mark Parsons from EPCC, and now within the context of the inter-project collaboration between ICT projects under the WP2007/2008 objective "Service and Software Architectures, Infrastructure and Engineering" (SSAI&E).
This document aims to detail the contribution of XtreemOS to the collaboration process (from XtreemOS perspective) and it is divided in two parts. The first one deals with the XtreemOS participation in the Collaborative Working Groups, including the management of the working group on Virtual Organizations and the planned activities. The second one reports on the collaboration between XtreemOS and other (EU-funded) Grid projects and the pursuance of these collaborations.

2. Participation of XtreemOS in collaboration activities

The aim of the collaborative working groups is to foster collaboration between projects and leverage knowledge sharing and joint learning, apply each other's (intermediate) research results, and increase awareness of novel developments beyond projects to harmonize and adjust their goals accordingly.

The collaborative working groups have been re-structured and SSAI&E collaboration groups ("Service and Software Architectures, Infrastructure and Engineering") were inaugurated during the European launch event, on March 5th 2008. Inter-project collaboration between ICT SSAI&E projects builds upon previous collaboration activities already started in FP6 in the areas of Software & Services and Grid Technologies.
The rational behind these activities is to allow the ongoing research projects to benefit from each other and exploit potential synergies.

Some of the FP6 SSAI Collaboration and Technical Groups still exist and have been continued as part of SSAI&E collaboration groups. Some other activities and working groups that had previously been identified as interesting for XtreemOS are now closed (many FP6 projects have now come to an end and the collaboration tasks they led have been discontinued or suspended).

An updated list of Grid-related projects in which XtreemOS partners are involved can be found in Appendix 1.

In the following section we will give an overview of the (new) CWGs and outline XtreemOS involvement and/or future commitment wherever applicable.

2.1 Service Architectures

2.1.1 Presentation of the CWG

For the moment, collaboration in this working group follows the activities of the NEXOF-RA project (http://www.nexof-ra.eu/).
NEXOF-RA, a NESSI Strategic Project, is building an Open Reference Architecture for service frameworks through a collaborative open process. The overall ambition of NEXOF-RA is to deliver a Reference Architecture for NESSI Open Framework (ranging from the infrastructure up to the interfaces with the end users) leveraging research in the area of service-based systems to consolidate and trigger innovation in service oriented economies.

CWG Chairs:
- Stefano de Panfilis (project: NEXOF-RA): stefano.depanfilis [AT] eng.it
- Klaus Pohl (Project S-CUBE): klaus.pohl [AT] sse.uni-due.de

NEXOF-RA presently seeks contribution on the following topics:
Core Service Framework Area
- Service Description
- Design Time Service Composition
- Service Discovery
- Interoperability of Message-Based Service Interaction

User Interaction Area
- Declarative Authoring Language for User Interfaces
- Context Model and Universal APIs

Infrastructure Area
- Definition of Infrastructure Services

Security Area
- Dynamic identity management for SOA
- Privacy Management in SOA

Quality of Service Area
- Scalable Approaches to Service Oriented Infrastructures
- Highly Availability for Multi-Tier Architectures

2.1.2 XtreemOS involvement and commitment

The two last topics (Quality of Service Area) may be of interest for the XtreemOS project whereas the first mentioned topics are out of the scope of our project. XtreemOS is currently not an identified contributor but will follow the progress of this CWG (and will collaborate if deemed appropriate by the consortium).

2.2 Service Engineering

2.2.1 Presentation of the CWG

The objective of the Service Engineering CWG is to enable the development of a joint research agenda for the area of Service Engineering.

CWG Chair:
- Schahram Dustdar (project: COMPAS/S-CUBE): dustdar [AT] infosys.tuwien.ac.at

In the first meeting the working group participants identified the following research challenges:
- Specification of Services
- Engineering of Service Compositions
- Service Engineering Methodology
    - Relationship to Software Engineering Methodology
    - Relationship to Business Process Modeling techniques
    - Relationship to Ontology-driven techniques
    - Model-driven approaches
    - Mashup-approaches
- Autonomic Adaptation - Service Engineering Techniques
    - Engineering of Self-* properties
- Service Testing and Simulation
- Service Governance Techniques
    - Management and Monitoring techniques for services

- Service Evolution and Versioning
- Engineering techniques for Human provided Services

These research challenges will provide the basic structure for a future book.

2.2.2 XtreemOS involvement and commitment

XtreemOS is not involved in this CWG as the topics addressed are not linked with XtreemOS.

2.3 Semantics Technologies

2.3.1 Presentation of the CWG

The mission of this working group is to provide a forum for collaboration amongst projects, primarily within the Software and Service Architectures unit, on the application of semantics to SOA.

CWG Chair:
- John Domingue (project: SOA4ALL): j.b.domingue [AT] open.ac.uk

In particular the working group will focus on:

- Generic ontologies for describing services. Current initiatives in this area include the Web Services Modelling Ontology (WSMO).
- Generic ontologies for describing Grid entities. A Grid Resource Ontology was recently developed while there are ongoing efforts for the development of SLA, QoS and Security related ontologies.
- Architectures and infrastructures for managing semantic SOA systems and applications. An example of this includes the Semantic
- Execution Environment currently being standardised within OASIS.
- Architecture and methodologies for the development of Semantic Grid infrastructures such as the S-OGSA reference architecture.
- Semantic languages and representation formalisms for representing services.
- Use cases that demonstrate the business value delivered from the adoption of semantics in a SOA environment.

2.3.2 XtreemOS involvement and commitment

This working group and the topics discussed are out of the scope of our project.

2.4 Service Front Ends

2.4.1 Presentation of the CWG

The Services Front End (SFE) Collaboration Working Group aims to set up a collaboration schema among projects in order to effectively deliver:

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

When agreed, results of these joint efforts will be submitted for adoption by the NEXOF-RA initiative promoted by NESSI.

CWG chair: Juanjo Hierro (project: FAST): jhierro [AT] tid.es

2.4.2 XtreemOS involvement and commitment

This working group and the topics discussed are out of the scope of our project.

2.5 Collecting Use Cases

2.5.1 Presentation of the CWG

The objective of this CWG is to enable the creation of a repository of use cases that could be used as a reference by the various projects in the area. The information about use cases will be enriched over time with pointers to the specific solutions for these cases, including their evaluation in realistic contexts.

CWG chair:
- Elisabetta di Nitto (project: S-CUBE): dinitto [AT] elet.polimi.it

2.5.2 XtreemOS involvement and commitment

Although XLAB is not formally involved in this CWG, they are working on the SLA@SOI/Reservoir cooperation that will run SLA@SOI use-cases on Reservoir infrastructure (SAP and TID are also involved in these two projects as shown in Appendix 1). We will contact the CWG chair to know how XtreemOS could possibly contribute.

2.6 QoS and SLAs

2.6.1 Presentation of the CWG

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

- Share mutual understanding of QoS & SLAs across various projects (terminology, functional and non-functional requirements, relevant standards & technologies). Forexample, what does "QoS" mean in SOI (QoS on different layers, vertical QoS issues etc).
- Develop mediation framework that allows for translation between different perspectives. This framework refers to an annotated version of tables, which include the following information:
    - main terminology concepts
    - artifacts with which SLAs are associated (e.g. business process, Web service, application container, DB, server, network, etc)
    - metrics for assessing service level objectives / QoS
    - lifecycle issues
    - used standards
- Drive joint initiatives towards broader communities (e.g. NEXOF-RA, Future Internet Assembly, standardisation)
- QoS & SLAs: Identify the dependencies / barriers etc between QoS provision and SLAs
- 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?)
- Identify other FP7 stakeholders and check their involvement in this WG. Examine the objectives of the other WGs to identify points for collaboration.

CWG chairs:
- Eddie Townsend (project: IRMOS): eddie_townsend [AT] xyratex.com
- Wolfgang Theilmann (project: SLA@SOI): wolfgang.theilmann [AT] sap.com

2.6.2 XtreemOS involvement and commitment

XtreemOS is not formally involved in the QoS & SLA Working Group but some project members follow the activity and actions taken by the CWG participants (and report any important news/decisions to the consortium).

2.7 Virtualised Service Platforms

2.7.1 Presentation of the CWG

The main activities of this working group are:

- 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 virtualized service platform and solicit their involvement.
- Formulate the non-functional requirements on a virtualized 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.

CWG Chairs:
- Eliot Salant (project: RESERVOIR): salant [AT] il.ibm.com
- Eddie Townsend (project: IRMOS): eddie_townsend [AT] xyratex.com

2.7.2 XtreemOS involvement and commitment

XtreemOS will take actions to get involved in this CWG. The collaboration with the S-Cube/Reservoir projects somehow goes in that direction too (see Section 3.6).

2.8 Coordination of contribution to standards

2.8.1 Presentation of the CWG

The mission of this group is to “Support and foster the collaboration, co-ordination and dissemination of standardisation efforts for ICT Service and Software Architecture, Infrastructures and Engineering projects within the Framework Programme 7”.

CWG chairs:
- Philipp Wieder (project: SLA@SOI): philipp.wieder [AT] udo.edu
- Franz Kudorfer (project: NEXOF-RA): franz.kudorfer [AT] siemens.com

2.8.2 XtreemOS involvement and commitment

Several partners of the XtreemOS Consortium (CNR, ZIB, VUA, etc.) are part of the Open Grid Forum (OGF). XtreemOS is also an OGF silver organizational member (and appears as such on the OGF website: http://www.ogf.org/Members/members_members.php). The actions of XtreemOS carried out in the OGF framework have been made more visible on our project website: XtreemOS involvement in the OGF community appears now clearly on the homepage and a specific webpage give more information too (http://www.xtreemos.eu/collaboration-gateways/).

XtreemOS was promoted at OGF23 in Barcelona, Spain, with a booth offering promotional

materials (flyers, pens…) and a poster commented by Oscar Sanchez (INRIA). XtreemFS was also presented at OGF24 (in Singapore) with ZIB representatives. XtreemOS will take future OGF meetings as an opportunity to promote the second system release and try to attract developers/users from the OGF community.
Thilo Kielmann (VUA) is also one of the leaders of the SAGA working group and the work on XOSAGA directly influences this working group. XtreemOS will also try to get involved in OGF working groups dealing with clouds.

2.9 Repository

2.9.1 Presentation of the CWG

There is a desire to build a Repository of OSS reference implementations for software emanating from the SSAI Projects. This will maximise the impact of the projects by focusing on innovative research rather than repetitive software development. This Repository could also become a key component for dissemination and exploitation within technology platforms such as NESSI.
The following three repositories are available to contributions from the SSAI Projects:

- The BEinGRID project is making available Gridipedia, its project repository to external contributions from other projects. The BEinGRID
  project will be fully in charge of this process and will vet all contributions for: quality, applicability and external maintainability.
- The S-Cube network will be making its Knowledge Map repository available,
- The NEXOF-RA project will also be making its repository available.

CWG chair:
Kostas Kavoussanakis (project: BEinGRID): kavousan [AT] epcc.ed.ac.uk

2.9.2 XtreemOS involvement and commitment

XtreemOS has promoted its first software release and software repository on the European Community for Software & Software Services website (http://www.eu-ecss.eu/) and on Gridipedia too (www.gridipedia.eu).
It was decided to wait for a more stable version of the XtreemOS system before starting huge promotional and marketing actions, as XtreemOS 2.0 would integrate new, advanced (grid) features and more differentiating factors than release 1, to make a stronger "selling" strategy, as well as it would also be significantly easier to install and configure.
After the second release of the XtreemOS system, the promotion actions will be intensified (fall 2009) and contacts will re-activated with BEinGRID (See below Section 3.7).
XtreemOS also got closer to S-Cube (see below Section 3.6).

2.10 Dissemination

2.10.1 Presentation of the CWG

There are numerous projects and initiatives active in the field of Service and Software Architectures, Infrastructure and Engineering. The collaboration group “Dissemination” aim to assist these projects in their dissemination efforts.
The focus is on establishing a joint platform for the stakeholders in the field of Software & Software Services, where they cannot only access information on related projects and events but also disseminate their own activities, knowledge and outcomes.

CWG Chairs:
- Production of books - Mike Papazoglou (project: S-CUBE): mikep [AT] uvt.nl
- Summer schools - Christos Nikolau (project: S-CUBE): nikolau [AT] tsl.gr

- Web site- Tiziana Lombardo: t.lombardo [AT] metaware.it

2.10.2 XtreemOS involvement and commitment

As a general rule, each dissemination event organized by the XtreemOS project has been/will be advertised not only through the appropriate academic or industrial channels, but also directly to all SSAI&E projects interested to participate (via project coordinators) and on the ECSS website (www.eu-ecss.eu).

↳ Organization of the Internet of Services 2008 event (collaboration meeting)
XtreemOS co-organized the Internet of Service 2008 event in Brussels on September 22-23, 2008 (with BREIN project and the EC services): http://cordis.europa.eu/fp7/ict/ssai/events-20080922-23-cm-soft_en.html
This was a meeting for FP6 and FP7 projects in the area of Software & Services, Grid and Software and Service Architectures and Infrastructures.
This collaboration meeting included discussion panels (about Future Internet), round tables ("Open Source in FP projects", "Technology transfer and exploitation in FP projects", "International collaboration") and working groups meetings.

↳ XtreemOS summer school (September 7-11, 2009, Oxford, UK)
The first XtreemOS summer school will take place from September 7-11,2009 in Oxford, UK (http://www.xtreemos.eu/xtreemos-events/xtreemos-summer-school-2009).
We promoted this event through different FP6/FP7 projects and through promotion tools (SSAI Events Calendar and news section on ECSS website, Belief / Mancoosi / Reservoir projects website etc.)

Appendix 2 shows examples of XtreemOS promotional actions towards EU-funded grid projects.

Furthermore, the XtreemOS members endeavoured to participate in the events organized by other projects, provided that such participation is beneficial for XtreemOS or for the event itself.
It is thus noticeable that XtreemOS members participated in major Grid-related events. Below is a snapshot of some Grid events attended by XtreemOS:
- BEinGRID Industrial Event, Barcelona, Spain, June 2008,
- CoreGRID summer school 2008, Dortmund, Germany, July 2008
- CoreGRID symposium, Las Palmas de Gran Canaria, Spain, August 2008
- Internet of Services 2008, Brussels, Belgium, September 2008
- EGEE'08 conference, Istanbul, Turkey, September 2008
- Middleware 2008 conference, Leuven, Belgium, December 2008
- Eurosys'09, Nürnberg, Germany, April 2009
- Euro-Par 2009, Delft, The Netherlands, August 2009
- CoreGrid workshop, Delft, The Netherlands, August 2009.

↳Future action: promotion of XtreemOS v2.0 among EU-funded Grid projects (and future updates, intermediate releases) along with XtreemOS scientific results and events.

2.11 Future Internet Assembly

2.11.1 Presentation of the CWG

The Assembly is structured to permit open interactions and cross-fertilization across technical domains, reaching out to whoever has talent.
It works towards:

- Common deliverables creating value for the projects concerned
- Joint strategic research agenda regarding common actions and requirements
- Developing a consolidated calendar of events aiming at avoiding fragmentation of efforts

FIA website: www.future-internet.eu
FIA wiki: http://services.future-internet.eu/index.php/Main_Page#Topics

CWG Chairs:
John Domingue: j.b.domingue [AT] open.ac.uk
Bruno Francois-Marsal: bruno.francois [AT] thalesgroup.com

2.11.2 XtreemOS involvement and commitment

XtreemOS is not formally involved in the organization of FIA's activities.

2.12 Data Management

2.12.1 Presentation of the CWG

Today's growing wealth of digital data in Europe is poorly exploited. Advances in storage, pervasive computing, digital sensors and instrumentation have led to massive growth in the volume of data collected and the number and complexity of data repositories. This growing wealth of data has an increasing potential to yield great benefits to citizens, science and business as it contains vital hidden knowledge.
The DM-CWG has particular interests in technologies that can help in the management and interpretation of these increasingly large and complex data sets.

CWG chair:
- Rob Baxter (project: ADMIRE): r.baxter [AT] epcc.ed.ac.uk

2.12.2 XtreemOS involvement and commitment

This CWG is in relation to the following XtreemOS work package:
- WP3.4 – Data Management (XtreemFS file system and Object Sharing Service)
Jan Stender (ZIB) participated in the meeting of this CWG at the 2008 concertation meeting in Brussels.

2.13 Trust & Security

2.13.1 Presentation of the CWG

Trust and Security covers a very broad area including technical issues such as the need and mechanisms for authentication, business issues such as the grounding of trust in business processes or in Virtual Organisations, and operational issues such as the need for user training and software maintenance.
It is clear that there are distinctive requirements for dealing with trust in industrial or commercial projects such as those from the IST programme, when compared with (e.g. Grid-based academic research activities). This makes it inappropriate to focus on the much narrower topic of Security technologies, as Trust plays a crucial role differentiating IST Software and Services projects from previous e-Science work in EU and National programmes.

CWG chairs:
- Mike Surridge (project: THINK TRUST): ms [AT] it-innovation.soton.ac.uk
- Joris Claessens (project: PERSIST): joris.claessens [AT] microsoft.com

2.13.2 XtreemOS involvement and commitment

This CWG is in relation with the following XtreemOS work packages:
- WP2.1 – VO support in Linux,
- WP2.3 – VO in Linux for mobile devices, and,
- WP3.5 – Security in VOs

XtreemOS endeavours to attend this CWG meetings that are incidentally often co-located with the CWG about Virtual Organizations (co-led by XtreemOS project leader). The two working groups have common research topics and addresses linked technical issues. Alvaro Arenas (STFC), who is leading the task on formal analysis of security properties, is a regular participant in these meetings.

2.14 Virtual Organisations (ex-TG8)

2.14.1 Presentation of the CWG

The VO working group focuses on all aspects of virtual organization management in next generation Grid architectures. Several ICT Grid-related projects are interested in VO management. This collaborative working group‘s goal is to give the opportunity to share knowledge, to compare the different approaches studied by the various projects and to identify topics of common interest to be further investigated.

CWG chairs:
- Christine Morin (project: **XtreemOS**): christine.morin [AT] inria.fr
- Lukazs Dutka (project: GREDIA): dutka [AT] agh.edu.pl

2.14.2 XtreemOS involvement and commitment

A face-to-face meeting on VO management was held in Paris on July 2-3, 2008. The meeting was organized in three parts:
1- Technical presentations from participants,
2- TG8 white paper - report from action chairs,
3- Discussion on the organization of the future works in TG8.

The participants in that meetings came from 8 different EU-funded projects as shown by the below list:
- Christine Morin, INRIA (XtreemOS)
- Lukasz Dutka, Cyfronet (Gredia)
- Vladimir Vlassov, KTH Stockholm (Grid4all)
- David Brossard, British Telecom (BeInGrid)
- Sylvain Jeuland, INRIA (XtreemOS)
- Kostas Stathis, Royal Holloway, Univ. of London, (ArguGrid)
- Yvon Jégou, INRIA (XtreemOS)
- Alvaro Arenas, STFC (GridTrust/CoreGRID)
- Dave Kelsey, STFC (EGEE)
- Erica Yang, STFC (XtreemOS)

The last TG8 meeting took place in June 2009 during the collaboration day meeting in Brussels (June 10-11, 2009), co-organised by the IRMOS, SLA@SOI and SOA4ALL projects and the European Commission. The agenda of this CWG is available in appendix 2.
About 20 people attended this session, most of them being involved in ongoing projects:
- GREDIA - Bartosz Kryza
- XtreamOS - Alvaro Arenas
- Grid4All - Vladimir Vlassov

- ViroLab - Piotr Nowakowski
- GridTrust - Alvaro Arenas
- edutain@grid - Bassem Nasser
- BeInGRID - Angelo Gaeta & Stéphane Mouton

A new physical meeting, possibly co-located with the Trust and Security group, is still to be scheduled.

2.15 Software Service Economics

2.15.1 Presentation of the CWG

The objective of this working group is to provide a forum for exchanging new ideas and research around Grid business models and SLAs. The working group will foster discussions on topics related to business models and economics of not just Grid but also of software services. The major topics include business model analysis, quality of service, market dynamics, user needs, legal issues, economic models, regulatory and taxation aspects.

CWG chair:
Jorn Altmann: jorn.altmann [AT] acm.org

2.15.2 XtreemOS involvement and commitment

The activities of this CWG are not directly relevant to XtreemOS.

2.16 Formal Methods for SOA and Future Internet

2.16.1 Presentation of the CWG

This Group Discussion aims at determining how formal methods would contribute to the specification, design, development and deployment of service oriented architectures, based on potential or real error risks analysis.

CWG Chair:
- Alexander Romanovsky (project: DEPLOY): alexander.romanovsky [AT] ncl.ac.uk

2.16.2 XtreemOS involvement and commitment

XtreemOS does not participate as a core group member but will follow the activities of this group discussion.

3. XtreemOS collaboration with other FP6/FP7 Grid projects

3.1. Collaboration with EC-GIN project (www.ec-gin.eu)

EC-GIN (Europe-China GridInterNetworking - http://www.ec-gin.eu) is a Specific Targeted Research Project in response to IST Call6 in the area "International Cooperation on Grid Technologies" with China as target country.

The research and development planned by EC-GIN project is complementary and share common interests with the XtreemOS project. As a matter of fact, EC-GIN aims at developing new communication protocols and optimizing already existing ones, for their use in Grid environments.
That is why the XtreemOS consortium expressed interest in collaborating technically with EC-GIN.

Collaboration efforts with EC-GIN for M24-M39:
EC-GIN project is coming to an end (end date: November 2009) is now communicating its

results through Gridipedia (BEinGRID). NS-2 code for Grid simulation is the first such contribution among many public deliverables to follow.
XtreemOS may collaborate again with EC-GIN via Gridipedia when XtreemOS v2.0 is ready.

3.2. Collaboration with NESSI platform (www.nessi-europe.com)

The goal of NESSI is to provide a unified vision and strategic research agenda for European research in software and services by establishing the technological basis and developing strategies that will speed up the transformation of the European economy towards a knowledge-based economy through service-oriented business models.

Collaboration efforts with NESSI for M24-M39:
Nessi Grid as project is over. We made our contributions to the Strategic Research Agendas (mainly via SAP and TID): http://www.nessi-europe.com/Nessi/Portals/0/Nessi-Repository/SRA/Documents/NESSI-Grid-SRA_v2.0.pdf
This second SRA version features a complete coverage of a multitude of envisioned business scenarios including their associated requirements and challenges. Furthermore, it incorporates community input collected by more than 40 independent research/infrastructure projects as well as experts of the field.

XtreemOS will keep an eye on the NESSI activities and satellite initiatives (NSP: NESSI Strategic Projects are, for instances, NEXOF, RESERVOIR, SOA4ALL, SLA@SLOI).

3.3. Collaboration with EGEE (Enabling Grids for E-SciencE / www.eu-egee.org)

Enabling Grids for E-sciencE (EGEE) is the largest multi-disciplinary grid infrastructure in the world, which brings together more than 120 organisations to produce a reliable and scalable computing resource available to the European and global research community.

It is noticeable that EGEE representatives actively participated in the TG8 meetings and EGEE representative were invited to the workshop related to the CWG on VO last July 2008.
The EGEE'08 Conference was held from 22 to 26 September 2008 in Istanbul and it offered a vast exhibition and demo area where businesses and Grid projects were invited to present their innovations and services to the Grid community, to meet and network with users, partners in EGEE and collaborating projects. An XtreemOS poster was presented by Sylvain Jeuland (INRIA).

- "XtreemOS: A Grid Operating System Providing Native Virtual Organization Support", Yvon Jégou, Christine Morin, Oscar D. Sanchez, Sylvain Jeuland - EGEE'08 conference, Istanbul, Turkey, 22-26 September 2008.

The resources currently coordinated by EGEE will be managed through the European Grid Initiative (EGI) as of 2010.
EGEE sponsor many Grid events and XtreemOS members will quite probably attend some of these meetings.

3.4. Collaboration with Grid4All (www.grid4all.eu)

The Grid4All project as part of the European Union's Sixth Framework Programme, Information Society Technologies, intends to promote the vision of democratizing the Grid as a ubiquitous utility where domestic users, small organisations and enterprises share their resources and services inside virtual organizations, and use resources via the Internet, thus reducing the otherwise necessary investment in computing resources.

A joint meeting was organized on July 1-2, 2008 in Paris, France, between a delegation of representatives from XtreemOS and from Grid4All. This meeting consisted in mutual presentations to try to identify common research topics and shared interests.

The presentations of both projects and additional information are available on our project website: http://www.xtreemos.eu/collaboration-gateways/xtreemos-meets-grid4all

Grid4All project is now almost finished (started in June 2006 and funded for 3 years). Like EC-GIN Grid4All is now collaborating through Gridipedia. We have established contacts for a research collaboration on specific topics.

3.5. Collaboration with GridCOMP (www.gridcomp.ercim.org)

GridCOMP main goal is the design and implementation of a component based framework suitable to support the development of efficient grid applications. The framework will implement the "invisible grid" concept: abstract away grid related implementation details (hardware, OS, authorization and security, load, failure, etc.) that usually require high programming efforts to be dealt with.

XtreemOS invited representatives from the GridComp project *(http://gridcomp.ercim.org/)* to a meeting organized in Bohinj, Slovenia, on October 8th, 2008.
GridCOMP project main goal is the design and implementation of a component based framework suitable to support the development of efficient grid applications.
This joint meeting was a good opportunity to identify common research interest and to investigate possibilities for cooperation or at least a coordinated information exchange. We namely identified suitable level(s) for possible interfacing between (future) prototypes and potential benefits/impact if this is technically possible and successful (XtreemOS covers lower layers while GRIDCOMP addresses higher layers of the grid system architecture).
GridCOMP was funded for 3 years since 2006 and it is now over.

3.6. Collaboration with Reservoir and S-Cube projects

The aim of the Reservoir project is to provide a foundation for a service-based online economy, where - using virtualization technologies - resources and services are transparently provisioned and managed on an on-demand basis at competitive costs with high quality of service (http://www.reservoir-fp7.eu/).
S-Cube, the European Network of Excellence in Software Services and Systems, aims at establishing an integrated, multidisciplinary, vibrant research community (http://www.s-cube-network.eu/).

During our last general technical meeting in Amsterdam (March 2009), half a day was dedicated to a joint meeting with both Reservoir and S-Cube projects. This joint meeting was quite valuable and each project respectively presented its research activities, ongoing work and goals. From our XtreemOS point of view this was the appropriate time to organize such a joint session given that the first public release of the XtreemOS system was available (concrete results to show / demos to run). We also explored the technical opportunities for collaboration between Reservoir and XtreemOS and S-Cube and XtreemOS. A follow-up technical meeting is planned next winter 2009 for scientific and technical presentations on common research topics. Below is a draft list:
- Virtualization
- Resource provisioning from clouds
- Service adaptation
- Using XtreemOS to build clouds
- Cloud federation / distributed clouds
- Virtual organizations
- Monitoring & service adaptation
- Service high availability
- Service platforms on top of XtreemOS

- Data management in clouds
- (…)

The SAP team involved in XtreemOS also initiated collaboration concerning value-based assessment with the Reservoir project via link to the SAP team involved in that project.

3.7. Collaboration with BEinGRID (www.beingrid.eu)

The BEinGRID consortium is composed of 95 partners who are running 25 Business Experiments (BEs), designed to implement and deploy Grid solutions in industrial key sectors

The repository of Gridipedia, a part of the BEinGRID (Business Experiments in Grid) IST project, is organized with Grid software components and solutions that are designed to meet common business requirements. Information on these components can be found in the Technical Solutions section of their portal. Released components can be downloaded via the Component Access page on their portal.
Other contents include: Information on how the components relate to business needs, design patterns providing solutions to common Grid problems, an explanation of what the Grid is, including a classification of Grids and a glossary, information on how Grid technology is being applied to business today, and, information about the leading Grid middleware.

The first release was not promoted to the highest extent because it was not stable enough: XtreemOSv2.0 will also offer new differentiating, advanced grid functionalities. After the second release of the XtreemOS system it is planned to re-activate the connections between XtreemOS and BEinGRID to investigate the opportunities to test and validate XtreemOS system on top on the BEinGRID business experiments/use cases, and, of course, to make XtreemOSv2.0 software available on Gridipedia.

3.8. Collaboration with other Grid- and cloud-related projects

In the 7th framework program, XtreemOS may be interested in the SLA@SOI project too (SAP coordinator, TID + XLAB involved). This may be prospective collaboration and the XtreemOS consortium will keep an eye on progress of this project (SAP).
UDUS people also had an internal meeting how OSS (WP3.4) could be used within Deploy. We plan to have a student doing this work within a bachelor or master thesis.
XtreemOS has also somewhat “collaborated” with BREIN about the organisation of the Internet of Services 2008 event / collaboration days. This event gathering projects funded by the EC took place on September 22-23, 2008 in Brussels (see Section 2.10.2).

Through OGF events and the XtreemFS demo at HPDC 2008 in Boston, XtreemOS (by partners INRIA, VUA, and ZIB) came in contact with the Nimbus project from Argonne National Lab. Since, both projects loosy collaborate. Currently, virtual machine images of XtreemOS can be used within Nimbus scientific clouds. Ongoing work is investigating to which extent XtreemOS could become a platform on top of which Nimbus clouds could be deployed.

4. Conclusion

The collaboration opportunities described here show clear potential to significantly increase the impact of the XtreemOS project and the valuable contributions XtreemOS can give to European cooperation activities.
Project partners are obviously interested in the XtreemOS project itself, i.e. publishable results and achievements, but they also find important to make connections with other European initiatives related to the XtreemOS research domains (Grid/cloud computing, open

source software, data management, virtual organizations, security etc.). This allows to widen the impact of XtreemOS.
A follow-up workshop with S-Cube and Reservoir representatives will be organized in winter 2009 and will consist in scientific and technical presentations on topics of mutual interest (virtualization, cloud federation, resource provisioning from clouds etc.).
The release of the 2nd version of the XtreemOS system will also be an excellent opportunity to re-activate contacts with the BEinGRID project.

Appendices

Appendix 1:

Appendix 2: List of FP7 projects with XtreemOS partners involved

Research area: ***ICT-2007.1.2*** Service and Software Architectures, Infrastructures and Engineering

Project Acronym	Project coordinator	E-mail address	XtreemOS partners involved	End date
ADMIRE	Baxter, Robert	r.baxter@epcc.ed.ac.uk		2011
SLA@SOI	Theilmann, Wolfgang	wolfgang.theilmann@sap.com	XLAB, TID	2011
COMPAS	Dustdar, Schahram	dustdar@infosys.tuwien.ac.at		2011
DEPLOY	Romanovsky, Alexander	alexander.romanovsky@ncl.ac.uk	SAP, UDUS	2012
DIVA	Horn, Geir	geir.horn@sintef.no	INRIA	2011
FAST	Carillo Pacheco, Miguel	mcp@tid.es	TID, SAP	2011
IRMOS	Varvarigou, Theodora	dora@telecom.ntua.gr	TID	2011
M:CIUDAD	Gil, Guillermo	guille@robotiker.es	TID	2010
MANCOOSI	Di Cosmo, Roberto	roberto@dicosmo.org	EDGE-IT	2011
MOST	Ramijan, Barbara	barbara.ramijan@comarch.com	SAP	2011
NESSI 2010	Evain, Nicolas	nicolas.evain@fr.thalesgroup.com		2010
NEXOF-RA	De Panfilis, Stefano	stefano.depanfilis@eng.it	TID	2010
OMP	Keur, Patrick	patrick.keur@philips.com	INRIA	2009
OPEN	Paterno, Fabio	fabio.paterno@isti.cnr.it	CNR, NEC, SAP	2010
PERSIST	Doolin, Kevin	kdoolin@tssg.org		2010
PROTEST	Derrick, John	J.Derrick@dcs.shef.ac.uk		2011
Q-IMPRESS	Trifu, Mircea	Mircea.Trifu@fzi.de		2010
RESERVOIR	Salant, Eliot	salant@il.ibm.com	TID, SAP	2011
ROMULUS	Iglesias, Carlos	cif@germinus.com		
S-CUBE	Pohl, Klaus	klaus.pohl@sse.uni-due.de	INRIA	2012
SERVFACE	Goebel, Steffen	Steffen.Goebel@sap.com	SAP, CNR	2010
SOA4ALL	Ristol, Santi	santi.ristol@atosorigin.com	INRIA, SAP	2011
SHAPE	Berre, Arne-jorgen	Arne.J.Berre@sintef.no	SAP	2010
ALIVE	Vazquez, Javier	jvazquez@lsi.upc.edu	UPC-BSC	2010
SERVICE WEB 3.0	Simperl, Elena	elena.simperl@sti2.at		2009
STREAM	Jimenez-Peris, Ricardo	rjimenez@fi.upm.es	UPC-BSC, TID	2011
SMARTLM	Martrat, Josep	josep.martrat@atosresearch.eu		2010

Appendix 2: Promotion of XtreemOS events through EU-funded projects

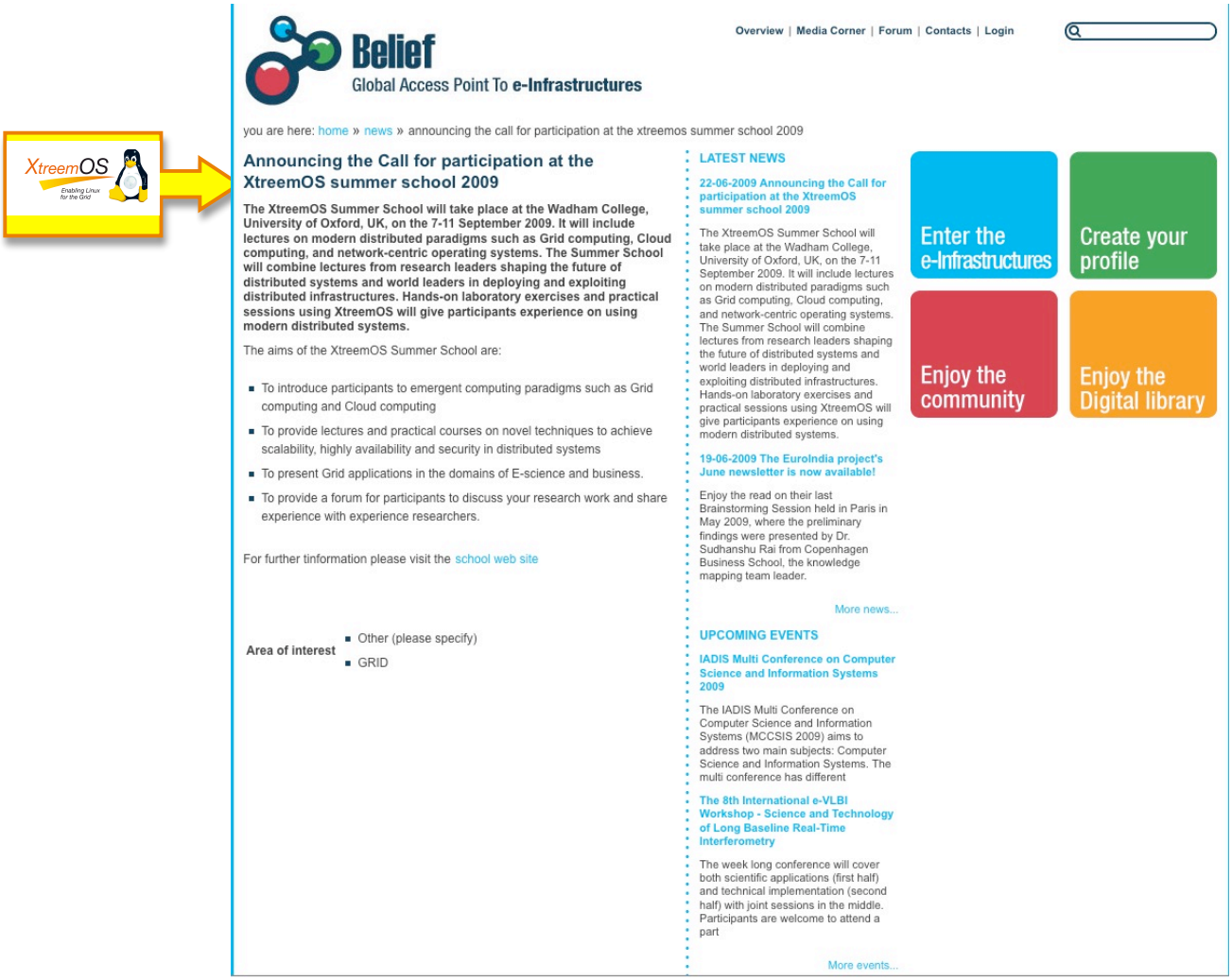


Figure 1 Call for Participation at XtreemOS summer school on Belief-project website

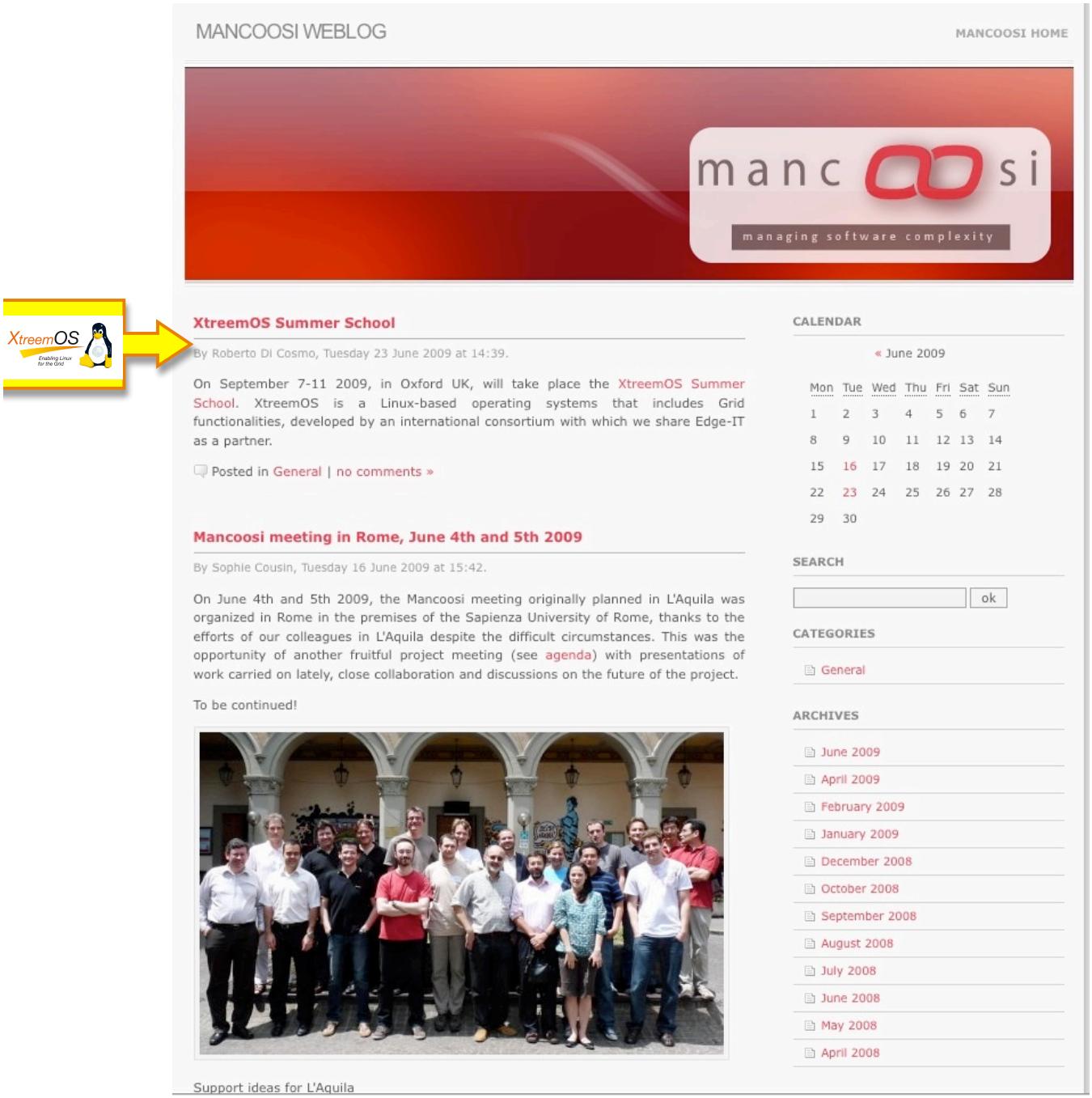
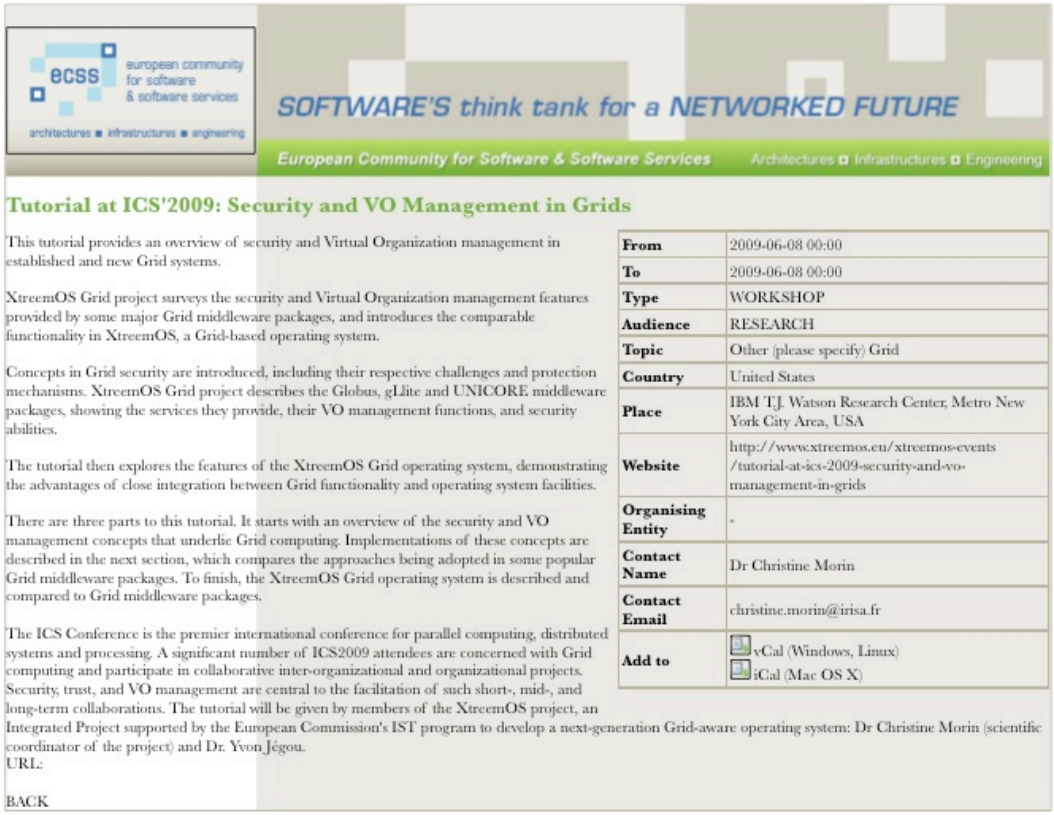


Figure 2 Announcement of XtreemOS summer school on Mancoosi blog

Figure 3 XtreemOS summer school promoted on RESERVOIR website



ecss european community for software & software services
architectures ■ infrastructures ■ engineering

SOFTWARE'S think tank for a NETWORKED FUTURE

European Community for Software & Software Services Architectures ■ Infrastructures ■ Engineering

Tutorial at ICS'2009: Security and VO Management in Grids

This tutorial provides an overview of security and Virtual Organization management in established and new Grid systems.

XtreemOS Grid project surveys the security and Virtual Organization management features provided by some major Grid middleware packages, and introduces the comparable functionality in XtreemOS, a Grid-based operating system.

Concepts in Grid security are introduced, including their respective challenges and protection mechanisms. XtreemOS Grid project describes the Globus, gLlite and UNICORE middleware packages, showing the services they provide, their VO management functions, and security abilities.

The tutorial then explores the features of the XtreemOS Grid operating system, demonstrating the advantages of close integration between Grid functionality and operating system facilities.

There are three parts to this tutorial. It starts with an overview of the security and VO management concepts that underlie Grid computing. Implementations of these concepts are described in the next section, which compares the approaches being adopted in some popular Grid middleware packages. To finish, the XtreemOS Grid operating system is described and compared to Grid middleware packages.

The ICS Conference is the premier international conference for parallel computing, distributed systems and processing. A significant number of ICS2009 attendees are concerned with Grid computing and participate in collaborative inter-organizational and organizational projects. Security, trust, and VO management are central to the facilitation of such short-, mid-, and long-term collaborations. The tutorial will be given by members of the XtreemOS project, an Integrated Project supported by the European Commission's IST program to develop a next-generation Grid-aware operating system: Dr Christine Morin (scientific coordinator of the project) and Dr. Yvon Jégou.
URL:

BACK

From	2009-06-08 00:00
To	2009-06-08 00:00
Type	WORKSHOP
Audience	RESEARCH
Topic	Other (please specify) Grid
Country	United States
Place	IBM T.J. Watson Research Center, Metro New York City Area, USA
Website	http://www.xtreemos.eu/xtreemos-events/tutorial-at-ics-2009-security-and-vo-management-in-grids
Organising Entity	-
Contact Name	Dr Christine Morin
Contact Email	christine.morin@irisa.fr
Add to	vCal (Windows, Linux) iCal (Mac OS X)

Figure 4 Promotion of XtreemOS tutorial at ICS'09 on ECSS website

Figure 5 Promotion of Mancoosi IWOCE workshop on XtreemOS project website

Figure 6 Promotion of FIA-related event on XtreemOS website

Appendix 3: Agenda of the TG8 meeting in June 11, 2009

ICT Challenge 1.2
Service and Software Architectures, Infrastructures and Engineering

Internet of Services 2009

Collaboration Meeting for FP6 & FP7 Projects
Brussels, 10 & 11 June 2009

Working Group: *Virtual Organisation*

Chairs: *Christine Morin (christine.morin@inria.fr),*
Lukasz Dutka (dutka@agh.edu.pl)

Abstract - Objectives of the Session

The meeting is intended to summarize collaboration effort during the last years within this group and sketch plans for the future research planed by the group members. There are many projects finishing their activity within next couple months so we need to catch the results in the VO domain.

Detailed Agenda

Time	
13:45	Introduction to session
13:50	Presentation of the current group status by the chair
14:00	Presentation of the partners achievements in VO area (20 min presentations) Bartosz Kryza – Project GREDIA Alvaro Arenas – Project XtreemOS Alvaro Arenas – Project GridTrust Vladimir Vlassov – Project Grid4All Piotr Nowakowski – Project ViroLab
16:00	Summary of the current group status and plans for the nearest future
16:30	Closing the session