D8.1.2

Update on Akogrimo Training Activities

Version 1.0

WP 8.1 Training

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SIXTH FRAMEWORK PROGRAMME

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Information Society

Grid for complex problem solving

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Context

Activity 8	**The objective of this activity is to provide training courses on Akogrimo concepts, both from an academic focus and from an industry focus.**
WP 8.1	**Training**
Dependencies	**This deliverable updates the information provided in D8.1.1.**

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0.2	22-10-2007	Víctor A. Villagrá (UPM) Peter Racz (UniZH) Thomas Bieser (UHOH)	All the sections.
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0.9	23-10-2007	Víctor A. Villagrá (UPM)	All the sections.
1.0	25-10-2007	Víctor A. Villagrá (UPM)	All the sections.

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Abbreviations

Akogrimo	Access To Knowledge through the Grid in a Mobile World
CoreGRID	European Research Network on Foundations, Software Infrastructures and Applications for large scale distributed, GRID and Peer-to-Peer Technologies
MDVO	Mobile Dynamic Virtual Organization
SIP	Session Initiation Protocol
OGSA	Open Grid Services Architecture
QoS	Quality Of Service
A4C	Authentication, Authorization, Accounting, Auditing and Charging.

1. Summary

Activity 8 of Akogrimo is devoted to provide training related to the concepts, technologies and results achieved in the project. This activity has been designed with two specific focuses: academic focus, providing training courses on Akogrimo concepts and results, and industry focus, providing training courses on Akogrimo application. This document updated the training activities and related events that have taken place from the month 22 of the project until the end of the project. The training activities that took place from the beginning of the project until month 21 were described in deliverable D8.1.1 – Report on Akogrimo Training Activities [1].

In this period, the training activities have focused on the objective of explaining the main results and contributions of the project, both from an academia point of view and from an industry point of view, taking into account potential practitioners of the Akogrimo platform.

This report includes the following information:

- Second Akogrimo training seminar held at Zurich on September 13th, 2007
- Internal Training Seminars held at each partner's premises and Regular courses created or influenced by the Akogrimo project
- Training material produced from those events
- Cooperation on Training with other projects

The training activity has progresses during the second half of the project, with some already planned events, like the second Akogrimo training seminar hold in Zurich and collocated with a General Assembly meeting, and the participation of Akogrimo in the CoreGrid summer school in September 2007.

All these activities have been more focused on the training of researchers. For training of practitioners, it was needed first to disseminate adequately the projects results and to convince the involved audiences of the exploitation potentials of the Akogrimo platform, so training in this area was oriented towards helping the dissemination and exploitation workpackages to reach their objectives in this area.

2. Second Akogrimo Public Seminar

The second training seminar organized by the Akogrimo project was held on 2007, September 13th, in the University of Zurich premises (UniZH).

The lectures were given by senior researchers involved in the Akogrimo project and experts in their area, and the approach for defining the contents was focusing on the main technical contributions of the project in the areas of mobility and ubiquity management (SIP with SOAP, Mobile Dynamic Virtual Organizations, Adaptation of Grid Middleware platforms), and cross-layer security, authentication, authorization, accounting, auditing and charging (A4C application and Cross-Layer Identity Management), as well as two presentations more generic about the project itself and the Mobile Dynamic Virtual Organization (MDVO) approach.

The final structure was the following:

- ✓ 09.00 – 09.20: The Akogrimo Project. Vision and Challenges.
  Stefan Wesner
  Universität Stuttgart

- ✓ 09.20 – 10.00: The Akogrimo MDVO concept. Applicability to scenarios and business models.
  Thomas Bieser
  University of Hohenheim

- ✓ 10.00 – 10.40: Convergence of Grid and Mobile Services: the SIP with SOAP approach.
  Victor Villagrá & Vicente Olmedo
  Technical University of Madrid

- ✓ 10.40 – 11.00 Break

- ✓ 11.00 – 11.40: Cross-Layer Identity management.
  David Lutz
  Universität Stuttgart

- ✓ 11.40 – 12.20: Application of an A4C Infrastructure in the Akogrimo Platform.
  Cristian Morariu & Peter Racz
  University of Zurich.

- ✓ 12.20 – 13.00: Adaptation of Grid Middleware Platforms for Mobile and Ubiquitous Grid Services.
  Antonis Litke & Kleopatra Konstanteli
  National Technical University of Athens

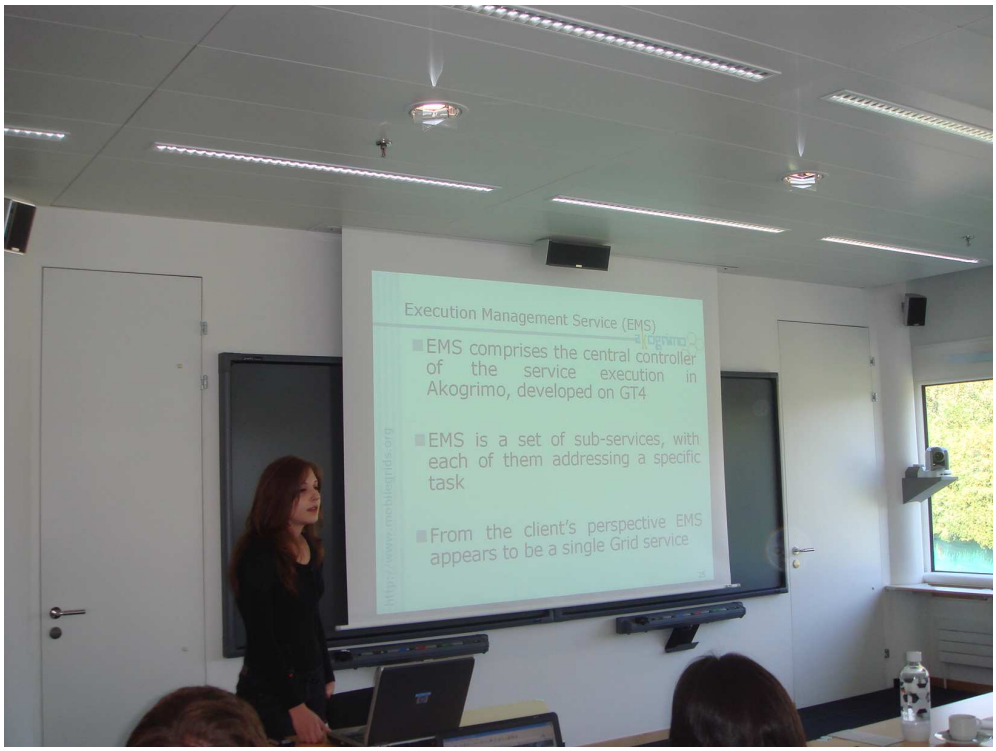

Figure 1: Lecture in Akogrimo Seminar

The training seminar was announced in the Zurich local environment, to universities and potential interested business in the area, as well as in several distribution lists and also through the IST Grid collaboration, on training mailing lists to other Grid projects.

Figure 2: Lecture in Akogrimo Seminar

The attendance to this training event was composed by about 25 physical attendees, including:

- UniZH undergraduate students
- UniZH PhD Students
- Akogrimo partner researchers
- External enterprises researchers
- Other universities researchers.

Figure 3: Akogrimo Seminar attendance

3. Akogrimo Internal Seminars

This section includes training seminars taught internally in the universities involved in the Training activity, which are related or influenced to/by the Akogrimo findings and technologies. Most of these seminars and courses are repeated yearly, so most of this information was also included in the deliverable 8.1.1 [1], but they are also included in this deliverable since they have been hold also in the time period in the scope of this document, along with the new seminars held in this period.

3.1. UPM Seminars

The Telematic Systems Engineering Department of the Technical University of Madrid is responsible for teaching in the following areas:

- Regular Undergraduate Lectures, with a focus on the speciality of Telematics of Telecommunication Engineering curricula
- PhD Lectures and Activities, in the area of Telematics Engineering
- Postgraduate courses, in the scope of several Master (one-year) and Specialities (four months) related with Telematic Network and Services.

In all those areas, the research group working in Akogrimo is responsible for lecturing several subjects, where Akogrimo-related concepts are being introduced in a gradual way.

Additionally, several specific internal seminars were organized in order to show, teach and demonstrate the Akogrimo technologies.

3.1.1. Undergraduate

The courses that were influenced by the participation in the Akogrimo project in this time period were the following

- Switching Technologies I. 4th year course, including the basis of the circuit-switched networks and their evolution to the integrated networks, explaining switching and control aspects for different networks like Intelligent Networks with SS7, GSM, ATM, UMTS and VoIP. Signalling with SIP for VoIP networks is one of the topics that is being progressed with the knowledge gained in the Akogrimo project. This course now includes also the SIP integration in a cross-layer architecture allowing its usage for controlling any type of sessions, like Web-Service sessions, and not only multimedia sessions.
- Communications Software. 4th year course including the concepts and techniques used in the design and development of communication software. In this course, we are explaining the basis of Web Services, and influenced by Akogrimo, we are now also including some OGSA and Grid Services fundamentals.
- Telecommunication Network Management. 5th year course including the concepts of Network Management and Security. Web Services Security is being included in the "Security of Applications" topic, and also a more detailed explanation of the A4C architectures as influenced by the Akogrimo project.

3.1.2. PhD courses

These courses have included or updated their contents influenced by the Akogrimo project:

- Applications and Advanced Services in Internet. One of the use cases shown in the course is the Akogrimo project, in which it can be clearly appreciated the problematic of the cross-layer interactions between network and services
- Telecommunication Network Security: A new proposed case-study for students is the A4C system in the Akogrimo project and its interaction with SAML assertions at the service level.
- Advanced Subjects in Computer Networks. A more in-depth description of Mobile IPv6 is included here and also a new case-study for the students about the possible QoS interactions from service to network, as done in the Akogrimo project.

3.1.3. Postgraduate courses

Some simplified variations of the previous courses are offered also in several postgraduate programs, like the Telecommunication Systems and Network Master or the Mobile Communication Master. In specific areas these courses have also progressed including topics taken from Akogrimo. The list of topics is not included again since they are very similar to those presented before.

3.1.4. Master's and PhD Thesis

There are several finished and ongoing thesis related to the Akogrimo project. Specifically:

- Finished Master thesis. David Davila: "Development of a Policy-Based Network Management infrastructure. Application to SIP-related policies".
- Ongoing PhD thesis: Vicente Olmedo. "Contribution to the application of session management infrastructures for mobile and ubiquous Grid and Web services"

3.2. UHOH Seminars

The academic teaching activities of the Chair of Information Systems II of the University of Hohenheim focus on the field of (Business) Information Systems. The chair is responsible for lectures in three study courses a Bachelor and a Master programme (B.Sc./M.Sc. in Information systems) and a Diploma course on economics and business administration with a major on information systems. Within these fields two lectures have a strong relation to topics under research in the Akogrimo project. The following paragraphs provide an overview about the major topics, the learning goals and the targeted audience of the "E-Business" and the "Telematics and Society" lectures.

3.2.1. E-Business

The lecture "E-Business I" was given the most recent time in the last winter semester. It is repeated every year for the students of the Bachelor of Science programme in information systems and consists of 14 units (90 min). For students it is mandatory to visit the lecture and to write the test, the result leads into their final reports.

Goal of the lecture is to teach students about the main differences (from a scientific and practical point of view) between "usual" and "electronic" business concepts. In second part of this lecture, held from another chair, students deepen their knowledge. Technical basics (architectures, middleware, software-standards like XML, etc.) and economical basics (digital goods, disintermediation, provider and customer strategies) of business concepts are given. This was followed by an introduction to business models (types, services, transaction phases, etc.). Finally in last lecture new trends in electronic and mobile business are introduced. In last lecture there was an introduction to new possible business models via mobile Grid Computing. We introduced

the Akogrimo project, its challenges and the Akogrimo value chain. We also introduced the eHealth scenario to the students.

3.2.2. Telematics and Society

The lecture "Telematics and Society" is compulsory to all students of the Master of Science programme in Information Systems. It will be presented once per year partially in German and English and addresses an audience of about 20 students. The lecture is divided into three main subject areas with an overall duration of 14 units (90 min)

(1) Introduction of the main technologies for Telematics (formed by concatenating the words "télécommunication" and "informatique") applications like wireless networks (3G, Bluetooth, Zigbee, Near Field Communication) and positioning systems (GPS/Galileo, RFID) and protocols (Mobile IPv6, A4C). This section should enable the students to understand the basic concepts of the technologies (their characteristics, limitations and risks when using it) and to assess the suitability of the technologies for particular application purposes.

(2) Analysis of typical properties of Telematics applications like the support of different kinds of mobility, context awareness and close orientation on the underlying hardware (especially the mobile terminal) and the resulting implications on software development processes and business models.

(3) Discussion of case studies in the logistics domain (toll collection, traffic management) and the healthcare domain (patient monitoring - Akogrimo e-health testbed - , health Telematics infrastructure in Germany). Analyzing the use cases the students should understand requirements on Telematics applications specific to different domains and learn how to set up new business in this field successfully or enhance existing products by using Telematics-based services.

Future lectures will be enriched further with the results of Akogrimo. In particular it is planned to introduce the Mobile Dynamic Virtual Organization concept, the technical concepts and inventions of Akogrimo as well as the results of the final demonstrator phase.

3.3. UniZH Seminars

The Communication Systems Group CSG at the University of Zurich (UniZH) organizes seminars for undergraduate students as well as for PhD students in the area of communication systems, mobile systems, and Internet economics.

3.3.1. Undergraduate

The University of Zurich (UniZH) series of seminars is based on a twofold tradition: Internet Economics and Mobile Systems form the two key seminar series topics. Additionally, communication systems in general are offered as a seminar. Thus, during the course of action within Akogrimo - starting in mid 2004 - the Communication Systems Group CSG at the Department of Informatics IFI organized the following seminars so far:

A. Mobile Systems II (Winter Term 06/07)

B. Internet Economics III (Summer Term 07)

C. Communication Systems II (Autumn Term 06)

The typical approach taken to address those tasks was that a researcher with CSG defined the topics, a task description, and provided a list of initial references. The group of students would start working on this and provide a draft written report, which would be discussed and corrected

by the researcher in at least two iterations. The final report does contain worked at material from the list of references provided and papers researched from the group. The content of this report has been presented in a 45 min talk and a succeeding, moderated discussion during the seminar with about 30 people in the room.

Concerning the detailed talk topics worked at and presented the following list indicates those ones, which address major areas of technical and business interest in the context of Akogrimo, indicating the running talk number, the students responsible and the topic.

A. Mobile Systems II

1. J. Bielik, C. Vonesch, F. Wirz. "Mobile Ad-hoc Networks"

2. U. Hofstetter, P. Hunberbühler, A. Kandrical. "Operating Systems for Mobile Devices"

3. M. Hämmig, S. Näf, M. Vazquez. "WiMAX Wireless Network Technology"

4. D. Eisenring, N. Kleisli, T. Wolf. "Wireless Sensor Networks"

5. D. Heuberger, R. Kallupurackal, M. Lanz. "Delay Tolerant Networks - Challenges and Solutions"

6. A. C. Leemann, A. Sadat. "Push Email Systems"

7. R. Estermann, R. Meuris, P. Hochstrasser. "Intrusion Detection in Wireless and Ad-hoc Networks"

8. P. Fauquex, S. Derungs, M. Schill. "Virus and Spam Threats on Moblie Devices"

9. F. Hensel, A. Petralli, P. Suter. "Voice and Video Transmission over Wireless Networks"

10. A. Bossard, D. Dönni, D. Rickert. "Routing in Multi-hop Mesh Networks"

11. M. Aggeler, M. Hochstrasser, H. Ma Seung. "QoS-enabled MAC Schemes for Wireless Networks"

12. M. Alder, S. Eugster, P. Kräutli. "Mobile-Inhalteanbieter und Netzneutralität"

B. Internet Economics III

1. S. Mang, M. Probst, S. Amstein. „A Market for Management Systems for Biometric Data"

2. A. Caligari, D. Gassmann, D. Muri. „Switzerland's Mobile Communications Market"

3. R. Kallupurackal, D. Heuberger, M. Hochstrasser. „The Technology and Market of Content Distribution Networks"

4. R. Schmidiger, L. Wälli, L. Knauer. „Internet Gaming and Real World Economics"

5. R. Geiger, M. Roth, S. Ruckstuhl. „Internet Service Provider Markets"

6. M. Furrer, A. Locher, A. Bucher. „Digital TV Solutions and Markets"

7. C. Vonesch, F. Wirz. „Strategies for Selling Music and Movies over the Internet"

8. P. Hämmerle, D. Rickert, D. Dönni. „Bandwidth Trading"

9. O. Stanek, M. Hämmig, K. Salinas. „Secure Payment Systems"

10. R. Hodel, A. Brugger, J. Bielik. „Overview of Collecting Procedures for Copyright-protected Media Content"

C. Communication Systems II

1. R. Blatter. "P2P Storage Networks"
2. L. Fries. "Ethernet Passive Optical Networks (EPON)"
3. T. Ineichen. "VPNs and Their P2P Alternative P2P@i"
4. A. Kobler. "Web Services - Technology and Security"
5. L. Graf. "Biometric Systems and Data Protection Laws"

Note that due to the teaching language being German at the University of Zurich, some talks and reports have been written in German. All of them are accessible to the public at the following URL http://www.csg.uzh.ch/publications/ by selecting the publication type "Technical Report".

3.3.2. PhD Student Seminar

The Department of Informatics (IFI) of the University of Zurich (UniZH) organizes seminars for PhD students, where PhD students present their research work. Within this series of seminars the Communication Systems Group CSG at IFI had the following presentation related to the work performed in the Akogrimo project:

- C. Morariu: Accounting and Charging in Mobile Grids, CSG doctoral seminar, UniZH, Zurich, Switzerland, 9 Jan 2007.

3.3.3. Master Thesis

The following diploma theses have been finished at the Communication Systems Group CSG related to the Akogrimo project.

- M. Ziltener: Design and Implementation of an Auditing Mechanism for Mobile Grids, Aug 2006.
- M. Hagnauer: Sea Cage Gateway – Fish Farming Supported by Mobile Grids, Dec 2006.
- M. Sonderegger: Sea Cage Gateway – Optimal Mobile Grid Support in Aquaculture, Feb 2007.

3.4. NTUA Seminars

The Telecommunication Systems Lab of the National Technical University of Athens (NTUA) provides courses and lectures of undergraduate, master and PhD level. The research fields of this lab include grid technologies, biometrics, multimedia and network systems. The research team working in Akogrimo project is responsible among others for presenting Akogrimo-related architectures, concepts and technologies through the courses they teach and seminars they organize. In the paragraphs that follow a description of these courses is provided as well as the training seminars presenting Akogrimo-related technologies, specifications and architectures are described.

3.4.1. Undergraduate courses

Undergraduate NTUA courses that are influenced and thus updated by the Akogrimo project are:

- "Network Programming" (8th semester course in Electrical and Computer Engineering department of NTUA) by Professor Theodora Varvarigou. This course includes two units: "Internet technologies" and "Java". The first one is an introduction in the distribution and the analysis of technologies on which Internet is based. It refers to a number of structural elements of Internet for each of which it develops and presents its main role, its use and its application in the Internet. The areas covered include among others: TCP/IP namespace, communication links and protocols, client server applications, World Wide Web, HTTP, HTML, e-commerce, programming techniques for text, links, images and forms. Apart from that server side programming, CGI scripts and Perl area also covered, whereas a general reference to future applications to be developed in Internet is also presented. The second one comprises an introduction to object-oriented programming, Java programming language and its packages. The issues covered are object oriented programming features (classes, objects and inheritance), Java features (interfaces, exceptions, packages, concurrency, garbage collection, etc.), packages (lang, util, io, networking, awt), applets and security issues. Moreover, students become familiar with web services, SOAP (Simple Object Access Protocol), UDDI (Universal Description, Discovery and Integration), WSDL (Web Services Description Language) followed by a brief introduction in the Grid and grid services. Each of the areas covered includes a small project as a practical approach to the course.

3.4.2. PhD courses

NTUA provides PhD courses which among others present current advances in grid architectures and technologies. The context of these courses that relate to the Grid is influenced by Akogrimo. These courses include:

- "Embedded Systems" (Electrical and Computer Engineering department of NTUA). This course focuses on the main issues concerning embedded systems. It includes a presentation of distributed systems and distributed time, scheduling protocols and techniques with special focus on CAN and TTP protocols, security techniques such as FMEA and FTA and issues of authentication, validation and validity of results. An introduction to the Grid and the main concepts it represents are presented followed by a brief description of the current grid technologies.
- "Fault tolerant Systems" (Electrical and Computer Engineering department of NTUA). This course includes an introduction to the theory of fundamental problems of systems and applications with fault tolerance The types of faults in Computational systems, methods used for their detection, system reliability, reconstruction from faults in multiprocessing systems, QoS, fault tolerance in high performance applications and embedded applications of hyper-computers with fault tolerance are described in this course followed by an introduction to grid computing and grid technologies.
- A course providing an overview on Grid computing and leading related technologies is going to be introduced in the near future in the list of courses offered to the students of postgraduate course with title "Technical-Economical Systems" (National Technical University of Athens, National and Kapodistrian University of Athens, University of Piraeus). This degree enables students to combine the study of advanced computing systems with economics by studying roughly equal amounts of the two subjects, while having the opportunity to focus on one area slightly more than the other.

3.4.3. Specific Akogrimo seminars

- In the context of the EGEE (Enabling Grids to E-sciencE) project, NTUA has hosted a grid-related seminar including a presentation of Akogrimo technologies as part of existing and developing Grid technologies. This seminar was entitled "Introduction to EGEE" and was held on the 20th and 21st March 2006 in Athens, Greece. The total duration of this seminar was 18 hours (9 hours per day) with the audience being mainly from the academic and the business field with technical orientation reaching the number of 30 people. The scope of this seminar was the introduction to EGEE followed by a presentation of a retrospect of Grids, the current status of Grid technologies, the capabilities offered by the Grid technologies to Science, Grid applications development and Grid administration. The Akogrimo related part of this seminar was actually a presentation of Akogrimo technologies, and more specifically WSRF. This presentation included a brief introduction to mobile grids and OGSA specification as well as a description of the middleware used in Akogrimo in conjunction with OGSA.
- In celebration of one hundred and seventy years of continuous presence in the academic field, NTUA hosted in its premises a scientific symposium on the 21st of September 2007 titled "NTUA's role in research and technology innovation" aiming to highlight NTUA's role in the advancement of research and technologies as well as in the overall development of Greece's economy. The audience consisted of approximately 50 participants both from the Greek industry and academic area, as well as undergraduate and postgraduate students from various Greek universities. In the context of this symposium, an extended presentation of the Akogrimo project and NTUA's contribution to it took place, aiming to increase people's awareness of Grid technology while at the same time focusing on the way the latter can be used to support mobility

3.5. USTUTT Seminars

3.5.1. Undergraduate course

Mr. Stefan Wesner, deputy director of the HLRS, uses ongoing research work from Akogrimo in a regular lecture about "Software Engineering for Technical Systems" to exemplify selected lecture topics with current research. Students are offered to deepen their knowledge about large scale distributed systems in seminars and student thesis.

3.5.2. Specific Akogrimo seminars

- **Hands-on Seminar: Web-services Based Distributed Systems:** A yearly one day training seminar for mechanical engineering students was held in the summer semester. The seminar introduced Web- and Grid-services for distributed systems. Participants were guided in developing their own Web-service using Apache Axis.

3.5.3. Master's and PhD Thesis

- Finished Student thesis: **Extending the Axis Toolkit to Transport and Process Context Information.** In an ongoing student thesis the ability to intercept and process messages using the Apache Axis toolkit is being evaluated. Using a filter, messages are separated into management/context information and application dependent content.

4. Akogrimo Training Material

4.1. Public Training Material

This section describes the training material prepared for the lectures of the Akogrimo Second Training seminar held on September 13th, 2007 in the UniZH premises in Zurich. The target group as mentioned before was a group of telecommunication technology undergraduate and graduate students. All this training material is available in the project web server http://www.akogrimo.org, in the download/presentations section.

Also a video was recorded including all the training classes. This video will be made available in the project website, as well as in other scientific dissemination video websites, like http://www.scivee.tv

4.1.1. Lecture on the Akogrimo Vision and Challenges

26 slides including the following subjects:

- A short story of Grids
- The driving vision in Akogrimo
- Selected Key Challenges in Akogrimo

4.1.2. Lecture on the Akogrimo MDVO Concept

35 slides including the following subjects:

- Concept of Virtual Organization
- Concept of Mobile Dynamic Virtual Organization
- The Akogrimo MDVO Architecture
- The Akogrimo MDVO Use Cases: Scenarios

4.1.3. Lecture on Convergence of Grid and Mobile Services: SIP with SOAP approach

31 slides including the following subjects:

- The Session Initiation Protocol
- Web Services Overview
- Challenges of Web Service Mobility
- SIP Usage for Web Service Mobility: SIP with SOAP approach

4.1.4. Lecture on Cross-Layer Identity Management

34 slides including the following subjects:

- Problem Statement
- State of the Art on Federated Identity
- Cross Layer Identity Management, Identity Tokens

- Security Issues

4.1.5. Lecture on Application of an A4C Infrastructure in the Akogrimo Platform

40 slides including the following subjects:

- Introduction, terms and Definitions
- Background
- A4C Infrastructure in Akogrimo
- A4C Functions in Detail
- A4C Implementation Architecture

4.1.6. Lecture on Adaptation of Grid Middleware Platforms for Mobile and Ubiquitous Grid Services

43 slides including the following subjects:

- The need for Grid technologies
- Background: The Open Grid Services Architecture (OGSA), WSRF: From Web services to Grid services
- The Akogrimo Grid Layer : Goals and challenges (OGSA compliancy, SLA Enforcement and Mobile awareness), Services & Architecture.
- Execution Management Service (EMS) (Objectives, Design and Architecture, Functionality)

4.2. Other Training Material

4.2.1. UHOH Lectures

4.2.1.1. E-Business:

For this lecture German presentation slides have been prepared (in average 25 Slides per learning unit)

Conceptual basics

Unit 1/2: E-Business understanding and definition, reference model

Technical basics

Unit 3/4: architectures, middleware, transaction standards (e.g. EDI, XML)

Economical basics

Unit 5: Net effects and positive back coupling

Unit 6: Digital goods and disintermediation

Unit 7: Relations of market participants, participants' strategies

Business models

Unit 8: Typing of e-business models and business strategies

Unit 9: Web-services and transaction phases

Unit 10/11: e-Business models: portals, market places, shops, malls, auctions

Unit 12: Management of supply chain and contents

Unit 13: New "innovative" business models in e-Business: mobile Grid Computing, electronic Healthcare

4.2.1.2. Telematics and Society:

For this lecture partially German and English presentation slides have been prepared (in average 25 Slides per learning unit)

Telematics technologies

Unit 1: Telematics: Introduction, Terms, Reference Models, Information Theory (English)

Unit 2/3/4 Overview on requirements on network architectures, ISO OSI architecture, network protocols and APIs (German)

Unit 5: Mobile communications fundamentals: network architectures, Air interface access techniques, Hand off/Hand over, 1G/2G network fundamentals (English)

Unit 6: Mobile network technologies: UMTS, W-LAN, Bluetooth, Zigbee, Near Field Communication (NFC) (English)

Enhanced concepts for Telematics application support

Unit 7/8: Context models and formalization, context processing, positioning approaches in mobile networks: cell locating, single cell time advance, triangulation; satellite-based positioning, RFID technologies (English)

Unit 9: Mobility supporting and enabling protocols: Mobility Management, IP Mobility Requirements, IPv6, MIPv6, AAAC fundamentals (English)

Unit 10: Market and business models for telematics applications (German), Domination strategies in supply chain (domination of standards e.g. i-mode), mobile payment systems (German)

Telematics applications and case studies

Unit 11: Toll collection system in Germany (invited talk, German)

Unit 12: Telematics applications in the automotive and logistics industry: fleet management, traffic management, tracking and tracing applications; platforms and standards) (German)

Unit 13/14: Telematics in Healthcare: electronic physician's letter, electronic receipt; Health Telematics Infrastructure in Germany (German)

4.2.2. UniZH Technical Reports

- Burkhard Stiller, Cristian Morariu, Peter Racz, Martin Waldburger: Internet Economics I. IFI Technical Report, No. ifi-2005.05, March 2005.

- Burkhard Stiller, Cristian Morariu, Peter Racz, Martin Waldburger: Mobile Systems I. IFI Technical Report, No. ifi-2005.06, July 2005.

- Burkhard Stiller, Thomas Bocek, Cristian Morariu, Peter Racz, Martin Waldburger: Internet Economics II. IFI Technical Report, No. ifi-2006.02, February 2006.
- Burkhard Stiller, David Hausheer, Cristian Morariu, Peter Racz, Gregor Schaffrath, Martin Waldburger: Communication Systems I. IFI Technical Report, No. ifi-2006.09, August 2006.
- Burkhard Stiller, Thomas Bocek, Cristian Morariu, Peter Racz, Gregor Schaffrath, Martin Waldburger (Eds.): Mobile Systems II. IFI Technical Report, No. ifi-2007.04, March 2007.
- Burkhard Stiller, Thomas Bocek, Hasan, Pascal Kurtansky, Cristian Morariu, Peter Racz, Gregor Schaffrath, Martin Waldburger (Eds.): Internet Economics III. IFI Technical Report, No. ifi-2007.09, July 2007.
- Burkhard Stiller, Thomas Bocek, Fabio Hecht, Cristian Morariu, Peter Racz, Gregor Schaffrath (Eds.): Communication Systems II. IFI Technical Report, to appear (planned January 2008).

4.2.3. NTUA Tutorial

In the training seminar on "Introduction to EGEE" the training material included slide presentation enriched with enlightening diagrams and source code fragments. Especially, the Akogrimo related presentation slides focused on an introduction to mobile grids and a brief description of Akogrimo technologies, and more specifically WSRF, emphasizing on the middleware used based on OGSA specification.

4.2.4. UPM Lectures

UPM has training material available for all the lectures and courses introduced in section 3.1. Most of this training material is available as a set of slides in Spanish to be presented in the lectures, although there is also additional material in English.

4.2.5. USTUTT Lectures

In the internal training seminar about Web-services Based Distributed Systems a combination of slide presentation and source code fragments was used to explain the problem domain on the one hand and provide guidance for the hand-on Web-services programming on the other hand. Selected sections of public Akogrimo deliverables are used as illustrations in the lecture on "Software Engineering for Technical Systems" to give examples of how the lecture topics are put into practice in an IP project.

5. Akogrimo Training Cooperation

In the context of the Collaboration Task 7 [2], Training Activities performed in collaboration of the Grid related projects funded by the FP6 IST Call 2, under Strategic Objective "Grid-based systems for solving complex problems", Akogrimo project has contributed to:

- Continuous contact for dissemination of training events. In particular, the Akogrimo training public seminar was announced to the rest of the Grid project through this channel.
- Participation in coordinated training events. Akogrimo has participated in the CoreGrid Summer School in 2006 and 2007.
- Collaboration for writing the task deliverables [3].

5.1. Akogrimo lecture in CoreGrid Summer School 2006

CoreGrid Summer School 2006 was focused on "Current and Future Generation Grid Technology". The main objective was to introduce researchers and students to the concept of GRID and to practice some existing tools for deploying GRID systems and applications. Additionally, there were two main topics in the lectures: Resource Management and Monitoring in Grids, and Life Science Grid Applications.

The summer school took place in Bonn (Germany) from 24 to 28 July 2006. Akogrimo participated in this summer school with one lecturer (Robert Piotter, from University if Stuttgart), with a lecture about "Mobile Networks and Resource Management Systems" in a session about "Grid RMS and Monitoring"

The topic of the lecture was related to specific concepts that Akogrimo is providing in the scope of the resource management area, explaining the cross layer relationship taken in the Akogrimo project with the Network Quality of Service and Mobility Management.

5.2. Akogrimo lecture in CoreGrid Summer School 2007

CoreGrid Summer School 2007 took place in Budapest (Hungary) from 3 to 7 September 2007. Akogrimo participated in this summer school with one lecturer (Vicente Olmedo, from UPM), with a lecture about "Akogrimo: The Mobile Grid concept" in a session about "External projects panel".

The topic of the lecture was explaining the integration between the mobile networks and Grid Services in the mobility management scope, focusing on the fact that the Grid platform must be aware of the mobility and ubiquity capabilities of the underlying network infrastructure. The lecture explained the mechanisms used in Akogrimo for using the Session Initiation Protocol (SIP) to offer the network's capabilities to the Grid layers, in order for Grid services to become mobility- and ubiquity-aware.

References

[1] Akogrimo Deliverable D8.1.1 "Report on Training Activities"

[2] Training Roadmap. Workpackage "Collaboration with IST Grid- related projects". Task 7: Training activities

[3] CoreGrid Deliverable CPC1- T7: Draft Collaboration Plan for Task 7: Training activities.