



Integrated Prototype and Demonstration Overview

AKOGRIMO WP5.1 Partners:
UPM/USTUTT/TID/TN/CCLRC/CRMPA

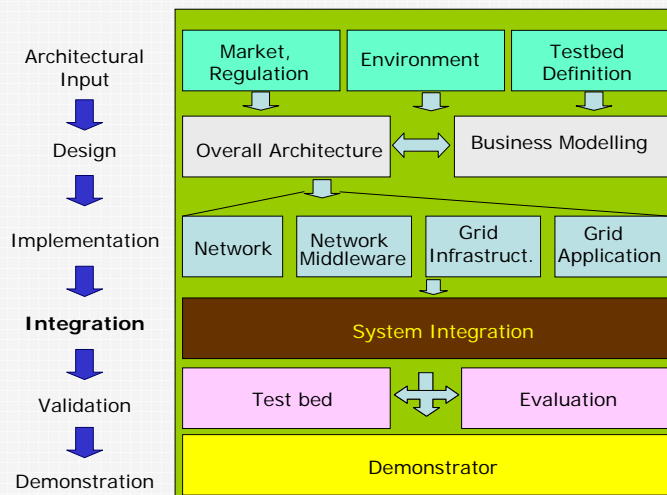
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Technical University of Madrid (UPM)

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- Integration methodology
- Physical Architecture
- Demonstration Scenario
- Demonstration Sequence

Where are we?



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The Integration in AKOGRIMO



- One of the most complicated tasks:
 - Inputs from two environments: Network / Grid world
 - But ... integration was planned from the beginning and included in the development WP4.x
- Detailed integration plan:
 - Integration methodology (roles, software delivery platform, etc.)
 - Physical Architecture for integrating the modules
 - Check modules software requirements and infrastructure
 - Functional tests for checking integration of modules
 - Setting up an integration site
 - Needed computers and infrastructure
 - Installation, configuration and integration of modules
 - Functional test
 - Setting up a demonstration in that integration site

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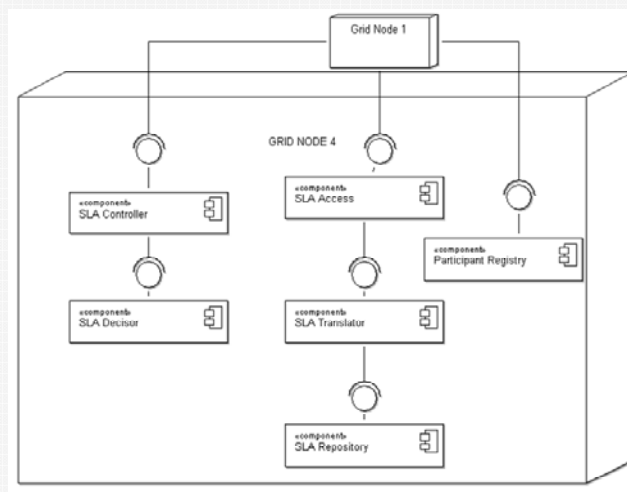
Detailed Physical Architecture: the Mobile Terminal (II)



OS	Module	Programming Language	Modules needed (dependencies)	Related SW infrastructure	WP
Linux	Mobile IP+FHO	C	None	Linux Kernel	4.1/IT
Linux	JAIN SIP stack	JAVA	Mobile IP + FHO	JVM 1.5	4.1/UPM
Linux	SIP User Agent	JAVA	JAIN SIP stack	JVM 1.5	4.1/UPM
Linux	SIP Presence UA	JAVA	SIP User Agent	JVM 1.5	4.2/UPM
Linux	Session Control Logic	JAVA	SIP User Agent	JVM 1.5	4.1/TID
Linux	Media Manager	JAVA	JMF	JVM 1.5	4.1/TID
Linux	Context Manager – Terminal capabilities	JAVA	SIP Presence UA, Session Control Logic	JVM 1.5	4.2/TN
Linux	QoS Mark/Signalling	C/C++	-	-	4.1/IT
Linux	Network Auth Client	C++	-	-	4.1/UniZH
Linux	A4C Java/JNIClient	JAVA	Opendiameter	libACE5.4, libboost, libxerces26, JVM 1.5	4.2/UniZH
Linux	VideoConf. Application	JAVA	SIP PUA	-	4.1/TID
Linux	E-Health Testbed Application	JAVA	UA Client/ BVO Mgr Client / A4C client	-	4.4/UHOH
Linux	UA Client and BVO Manager Client	JAVA	-	-	4.4/UHOH

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Detailed Physical Architecture: the Grid Node 4 (I)



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Detailed Physical Architecture: the Grid Node 4 (II)



OS	Module	Programming Language	Modules Needed	Related SW Infrastructure	Responsible WP/Partner
Windows Server 2003	Participant Registry	C#		WSRF.NET v2.1.0 with Xindice	WP4.4 /CRMPA
Windows Server 2003	SLA Access	C#	SLA Translator	Framework .NET v1,1; Xindice	WP4.4/CRMPA
Windows Server 2003	SLA Repository	C#		framework .NET v1,1; Xindice	WP4.4 /USTUTT
Windows Server 2003	SLA Translator	C#	SLA Repository	framework .NET v1,1; Xindice	WP4.3/ATOS
Windows Server 2003	SLA Decisor	C#		.NET Framework 1.1, WSE 2.0 SP3, IIS 6.0, Xindice 1.1b4	WP4.3/ATOS
Windows Server 2003	SLA Controller	C#		.NET Framework 1.1, WSE 2.0 SP3, IIS 6.0, Xindice 1.1b4	WP4.3/ATOS

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Functional Tests



- Tests:
 - Local: included in software delivery packages
 - Integration: Generic scenario specifications
 - Testing combination of integrated modules
 - Application-Level test (defined in WP5.3)
- Integration Tests
 - Definition of the tests to be performed to the software for accepting it in the integration WP
 - Checking its functionality in local and combined scenarios.
 - About 47 integration tests defined.

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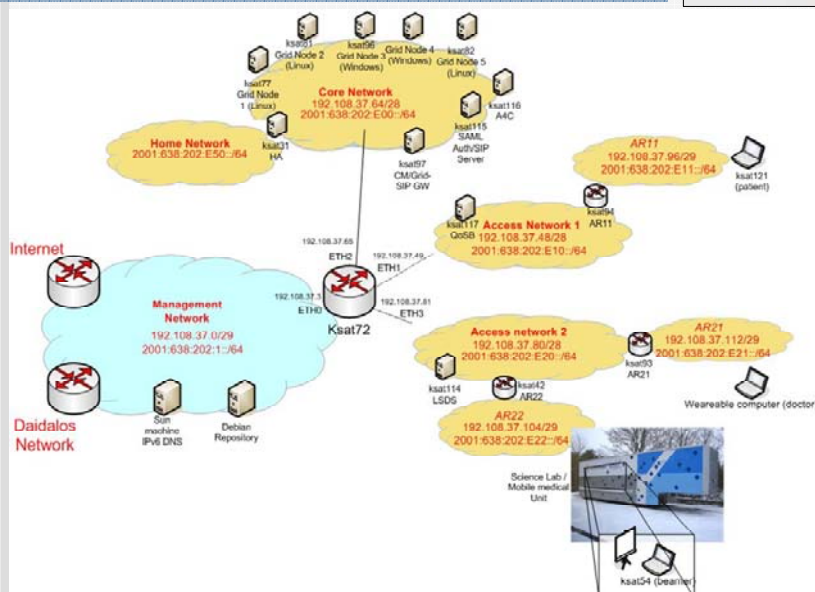
Demonstration Scenario



- Demonstration: 17 computers
 - 3 Mobile Terminal (Mobile IPv6)
 - 3 Access Routers
 - Home Agent
 - QoS Broker
 - SIP Server + SAML Authority
 - A4C Server
 - Context Manager + SIP/Grid Gateway
 - LSDS (Local Service Discovery Service)
 - Grid Node 1: Grid middleware + VO Management
 - Grid Node 2: WorkFlow Related Modules
 - Grid Node 3: User Agent + Service Agents
 - Grid Node 4: SLA Infrastructure + Participant Registry
 - Grid Node 5: E-Health services + Metering
- All nodes with IPv6
- DNS server specific for IPv6 resolution

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Demonstration Network



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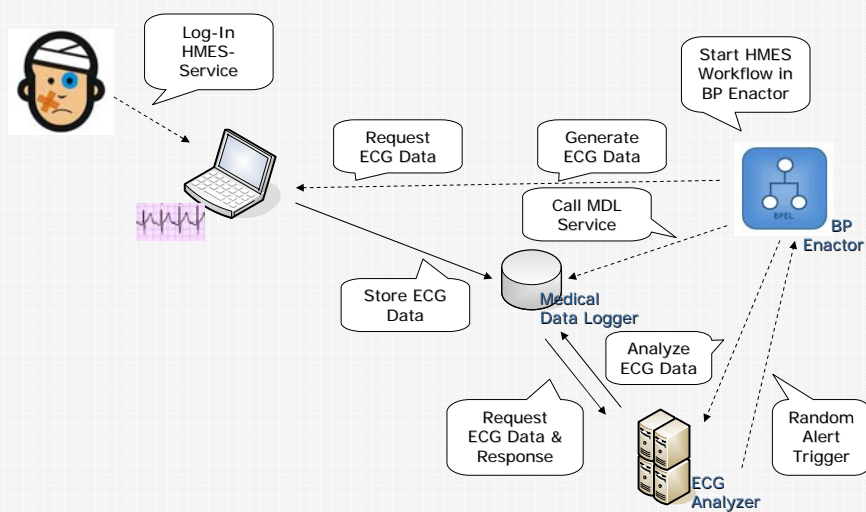
Demonstration Storyboard



- Patient under treatment with a mobile ECG device connected permanently
- The sent data are analyzed. If there is a potential hazard:
 - The system triggers a videoconference between the patient and a doctor
 - The doctor searches for a place with a big screen
 - Automatically, the big screen is detected and the system:
 - Transfer the videoconference to the big screen
 - Launches a visualization of the ECG data in the big screen

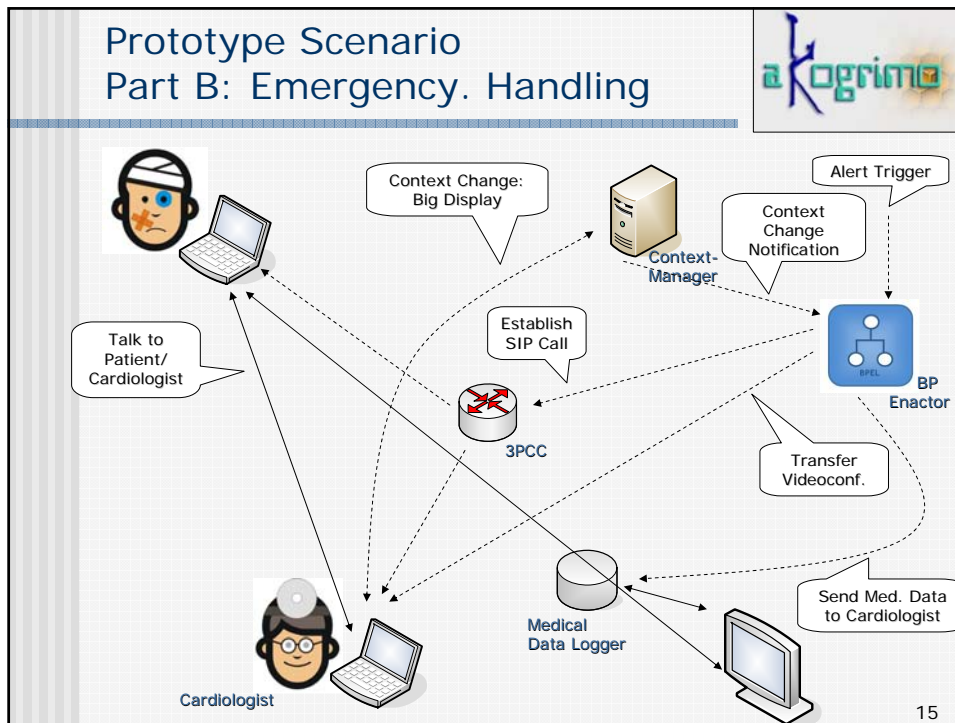
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Prototype Scenario Part A: Heart Monitoring



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Prototype Scenario Part B: Emergency. Handling



Demonstration Technical Steps



- Offline Setup
- Log-In
- Starting Workflow
- Data Generation / SLA Monitoring
- Data Analyzing
- Grid-initiated Videoconference
- Context Change
- Grid-initiated Transfer of Videoconference
- Data Visualization

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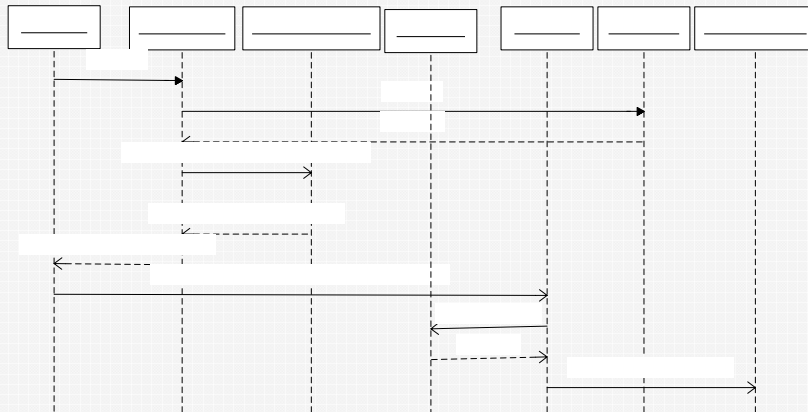
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- The diagram illustrates a sequence of steps or transitions. At the top, there are 10 boxes, each containing a horizontal line. Below these boxes are 10 vertical dashed lines. Horizontal arrows connect the boxes to the vertical lines, with some arrows being solid and others dashed, indicating a sequence of steps or transitions.

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Step 3: Starting Workflow



- The user starts the application. It is checked with the OpVO and the business process is launched



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Patient MT

BVO Manager

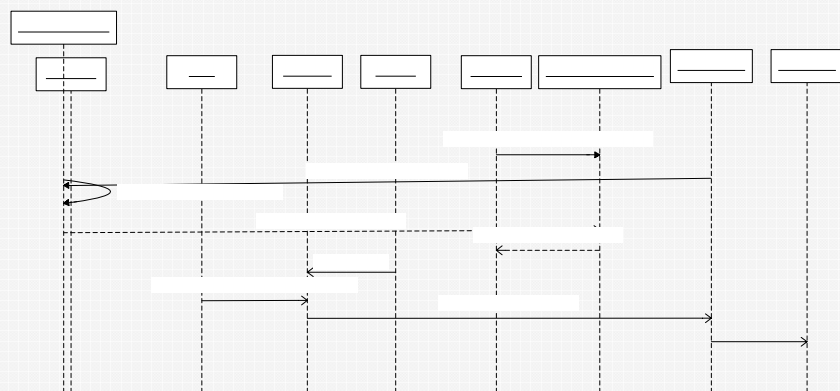
Participant Registry

GetApp

Step 4: Data Generation/SLA Monitoring



- ECG Data are sent to the system. Monitoring is receiving events from Metering and QoS Broker and checks for SLA Violations

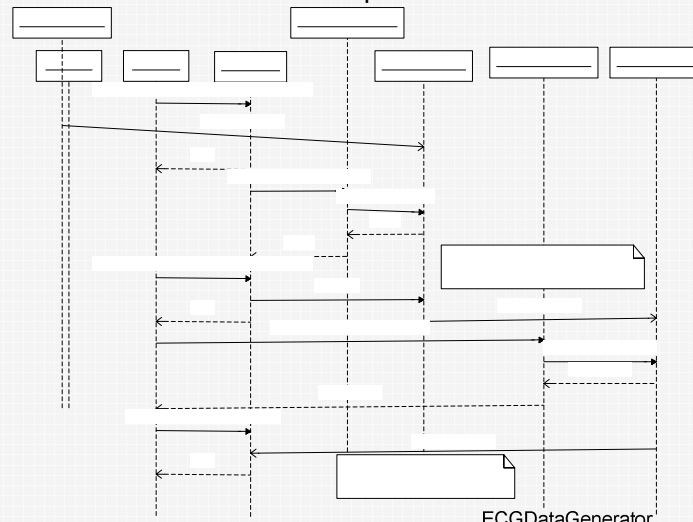


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Step 5: Data Analyzing



- ECG Data is copied to the ECG Data Analyzer. It analyzes them and alerts if there is a potential heart attack



ECGDataGenerator

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SA MedicalID

Patient MT

WF Engine

DataManager

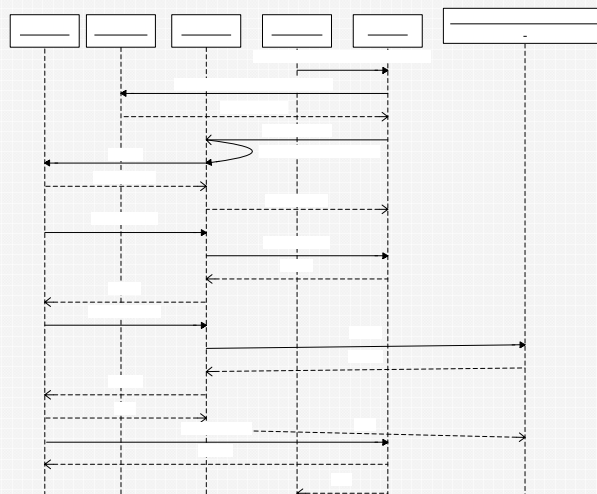
invoke (transfer [userID srcUri destUri])

ECG Data Flow

Step 7: Grid-initiated Videoconference



- The WF requests to setup a videoconference between a doctor and the patient (SIP 3PCC)



ACK

invoke(wrapData [destUri srcUri destUri])

wr

srcUri

serID srcUri destUri])

Transf

ACK

invoke(analyze

heart t

dData [params])

ACK

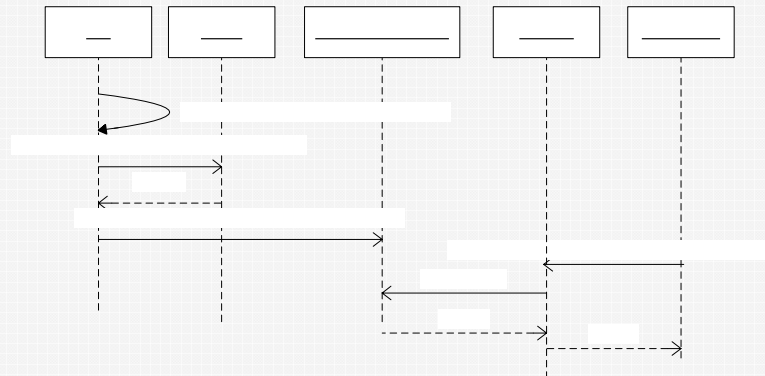
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EC

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Step 8: Context Change



- The doctor enters in a room with a big display and this context change is detected and notified (RFID readers)



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Step 9: Grid-initiated transfer of the videoconference

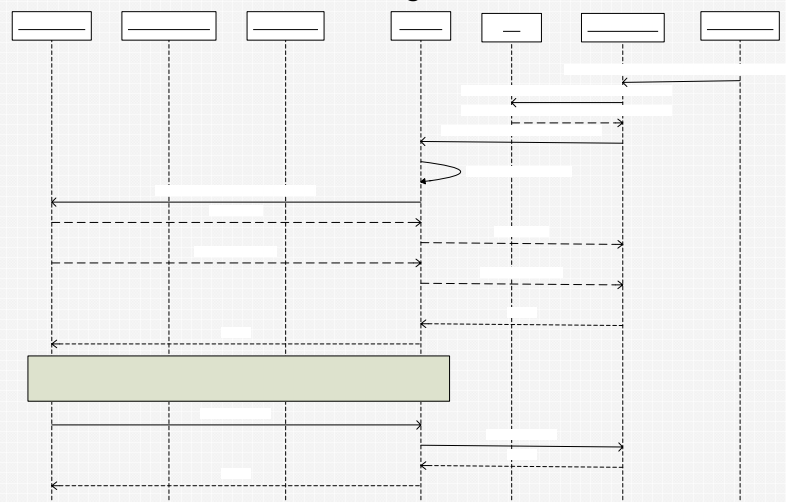
CM

LSDS

Monitoring



- The WF Engine invokes to transfer the videoconference from the doctor's terminal to the big screen

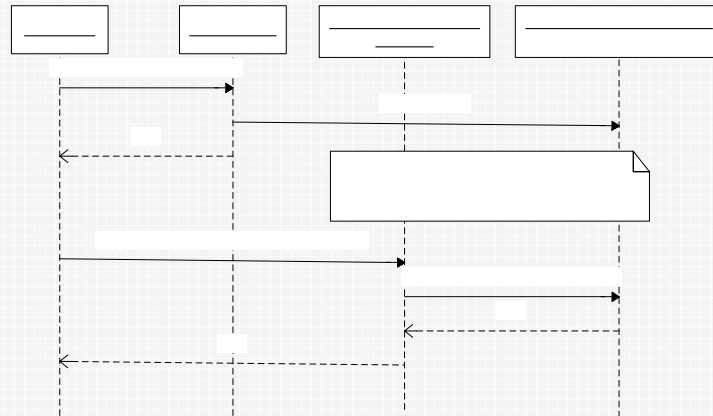


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Step 10: ECG Data Visualization



- The WF Engine invokes to visualize the ECG Data in the big screen



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WF Engine

DataManager

SA_E

invoke(retrieveData, [params])

ACK

ECG
is o
Visu

invoke(visualizeSimpleData,[patientName])

ACK