



## Managing Context in Akogrimo

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### Outline



- The Akogrimo Project
- Challenges
- Tools and Technologies
- Implementation Experience
- Issues
- Future Plans

## Akogrimo Overview



### The Project

- Akogrimo: Access to knowledge through the Grid in a mobile world.
- Aim to design a grid middleware prototype capable of supporting mobility.

### Mobility

- Mobility is rapidly becoming part of our lives.
- Technologies include 802.11 – UMTS -GPS
- Applications – mobile internet, vehicle tracking / navigation.

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## Challenges



We focus on two main areas:

### Connection

- Loss in connection - train through tunnel
- Physical address change

### Context

- Change in resource location – data movement from EU to China
- Change in environment – UMTS – GPRS handover

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## The Challenge of Mobile Hell



## Context Hell?

## Akogrimo Butler ...

- Select correct presentation for audience, language, software, times etc
- Fault in GPS sensor could result in wrong context alert.
- Could result in inappropriate behaviour.

## Focus on Context



### What is context?

*"Context can be seen as both technical in that it conceptualizes the link between human interaction and computing actions, and notional, in that context needs to be understood within the intellectual frames that give them meaning"*

**P Dourish 2004**

- Within Akogrimo essentially linked to architecture and the workflow

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## Focus on Context



### How it is used?

- Main focus in Akogrimo is the use of mobile sensors as opposed to static sources of context.
- Workflow is central to context definition and interpretation.
- Both are supported by the architecture.

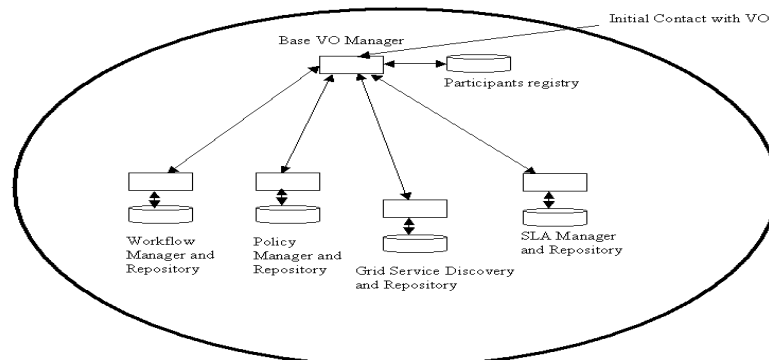
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## Tools and Technologies



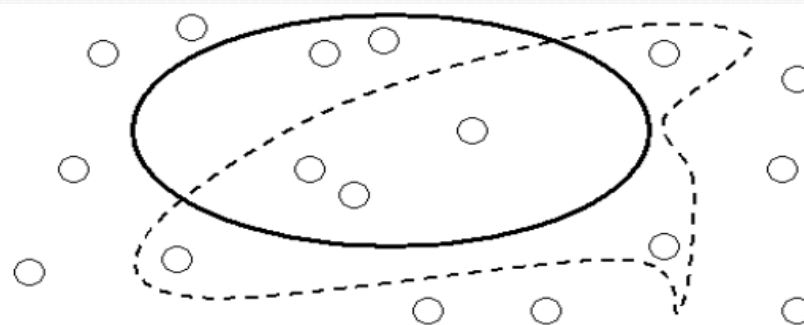
- This mapping needs to be expressed in the software.
- Akogrimo achieves this via the use of Grid services around a specific set of core services.




### Akogrimo Base Architecture



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## Service Management Architecture



- |   |  |
|---|--|
|  | Services Registered with the Base Virtual Organisation |
|  | Base Virtual Organisation boundary                     |
|  | Operative Virtual Organisation boundary                |

## Akogrimo's Focus Context



### Context Mapping

Context mapping can be seen as the main process of turning raw information into a format that makes sense.

Thus Context must be expressed in a uniform manner  
A process that has been formalized by Ailisto et al in a five-layer model

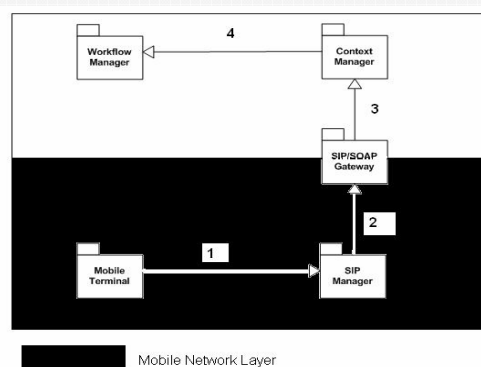
Application
Storage Management
Pre-processing
Raw data retrieval
Sensor

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## Tools and Technologies



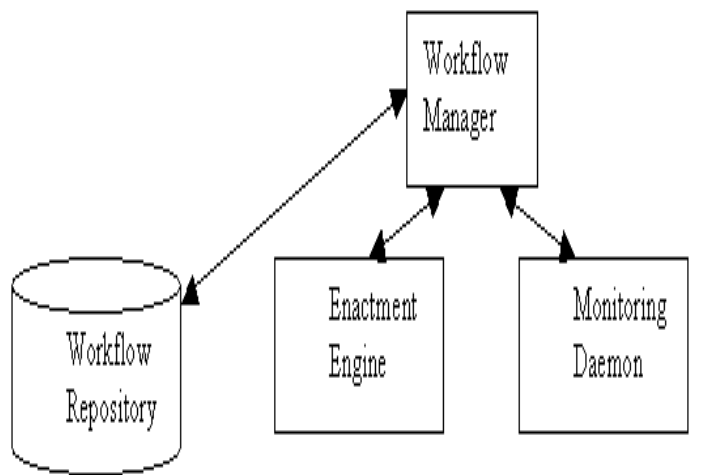
### Extracting Context



Network and Grid Layers are bridged based on semantics of technology and workflow.

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## Workflow Architecture

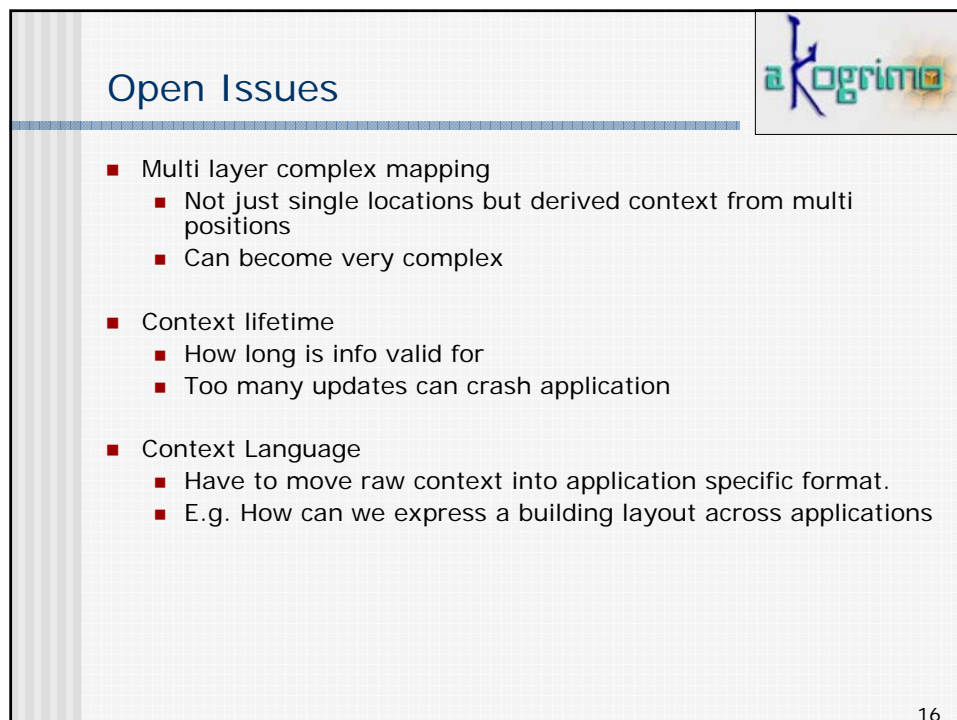
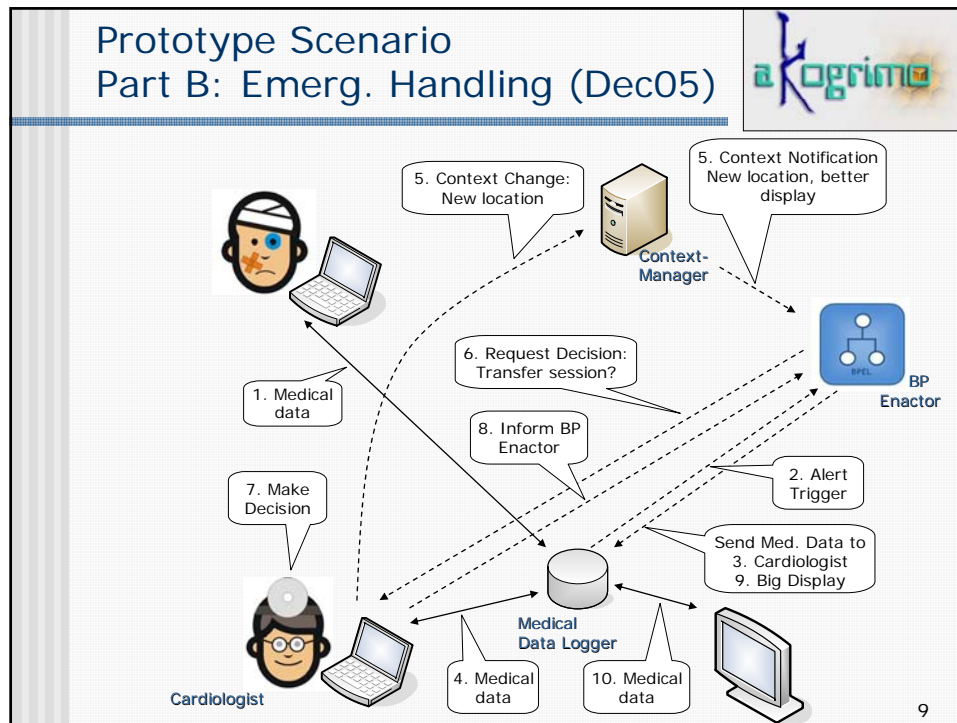


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## Implementation

- So far we have the Emergency response scenario.
- Context Manager and Workflow Management components implemented by using GT4 WS-Core Services.

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## Future



- New Testbeds
  - E-Health
  - E-Learning
- Technology
  - Replace RFID with GPS
  - Refine Globus / WS versions
  - Develop SIP / SOAP use
- Context Use
  - Introduce Context Models i.e. buildings
  - Enhance context manager and its relationship with other services

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*Thanks for listening*

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