



Workshop on Grids, Clouds & Service Infrastructures

02 - 03 December 2009

IRMOS: The first step in
real-time technologies for
distributed systems

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Outline

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 - IRMOS at a glance
 - IRMOS Vision
- Behind the scenes
 - IRMOS Story
 - Two Phases Approach
 - Architecture Overview
- IRMOS Control Loops
 - Application Control
 - Environment Control
 - Virtualization Control
- Demonstrators
- Research Challenges
- Need for Standardisation
- Summary

At a Glance

- Duration
 - 36 months (Started on February 2008)
- Effort
 - 1.133 PM
- Budget
 - Total Cost: 12,6 M€
 - EC funding: 7,9 M€, under FP7, ICT-2007.1.2 Service and Software Architectures, Infrastructures and Engineering
- Consortium
 - 11 partners from industry and academia belonging to 6 European countries (DE, UK, GR, IT, NO, ES)



Service Oriented Infrastructures



□ Today

■ Numerous success stories

- Amazon EC2
- Sun Caroline
- ...

□ Tomorrow

■ Vision of future SOIs

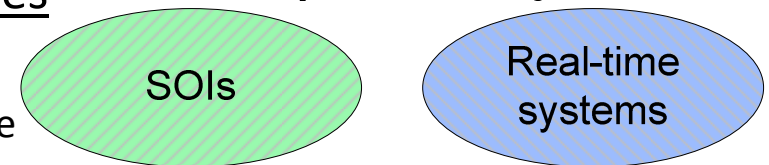
- Facilitate real-time interactivity
- Provide QoS guarantees
- Are economically viable
- Not only provide resources but also supporting tools to make the development and deployment of applications is easy

■ This is the territory of IRMOS

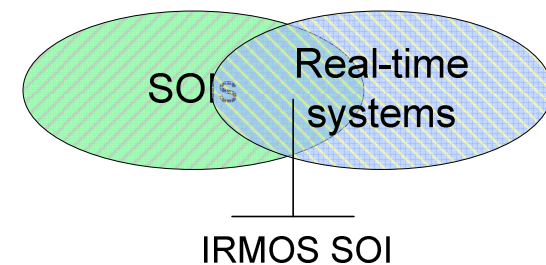
The IRMOS Vision

- Main outcome of the project:
 - **Service Oriented Infrastructure**, which allows the adoption of interactive real-time applications
- To make it feasible we have a set of challenges to face:
 - Enabling real-time attributes at various levels of the infrastructure (network, storage, processing, application)
 - Providing QoS Guarantees
 - Achieving automated SLA Negotiation
 - Mapping between high-level application terms and fine-grained resource-level attributes
 - Developing specification languages to describe real-time applications
 - Provisions of supporting tools to develop applications with predictable performance
 - ...

The picture today



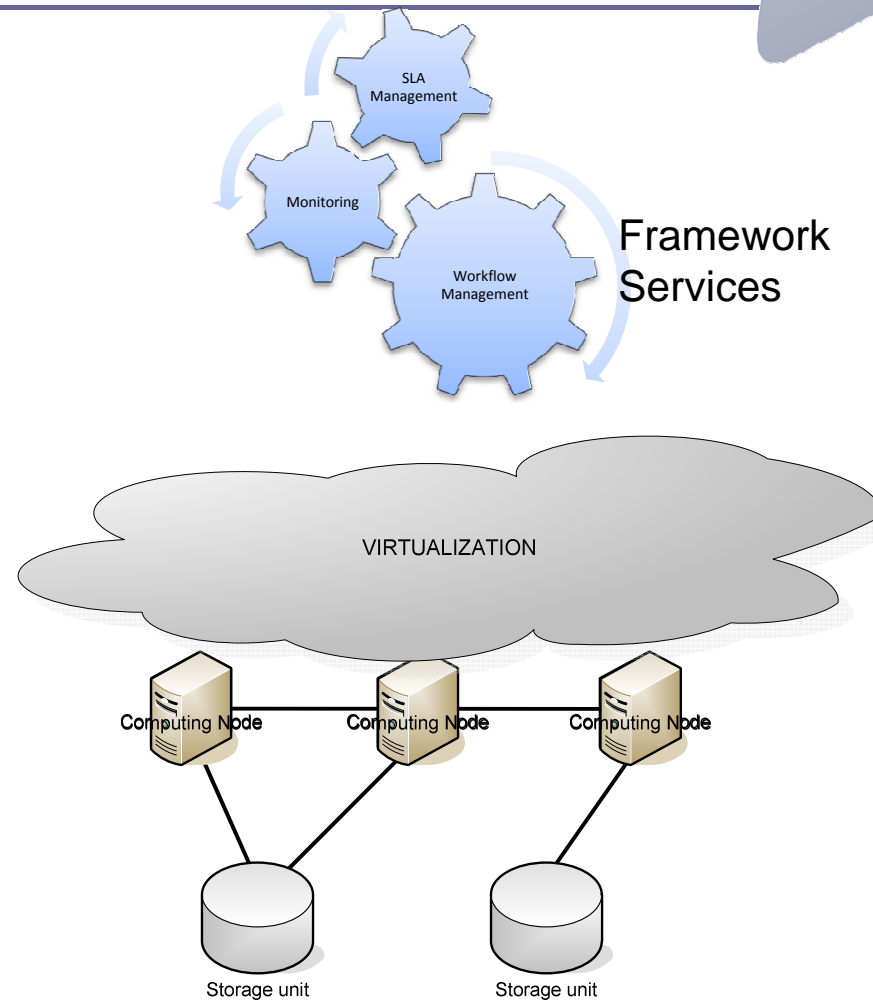
The IRMOS effect



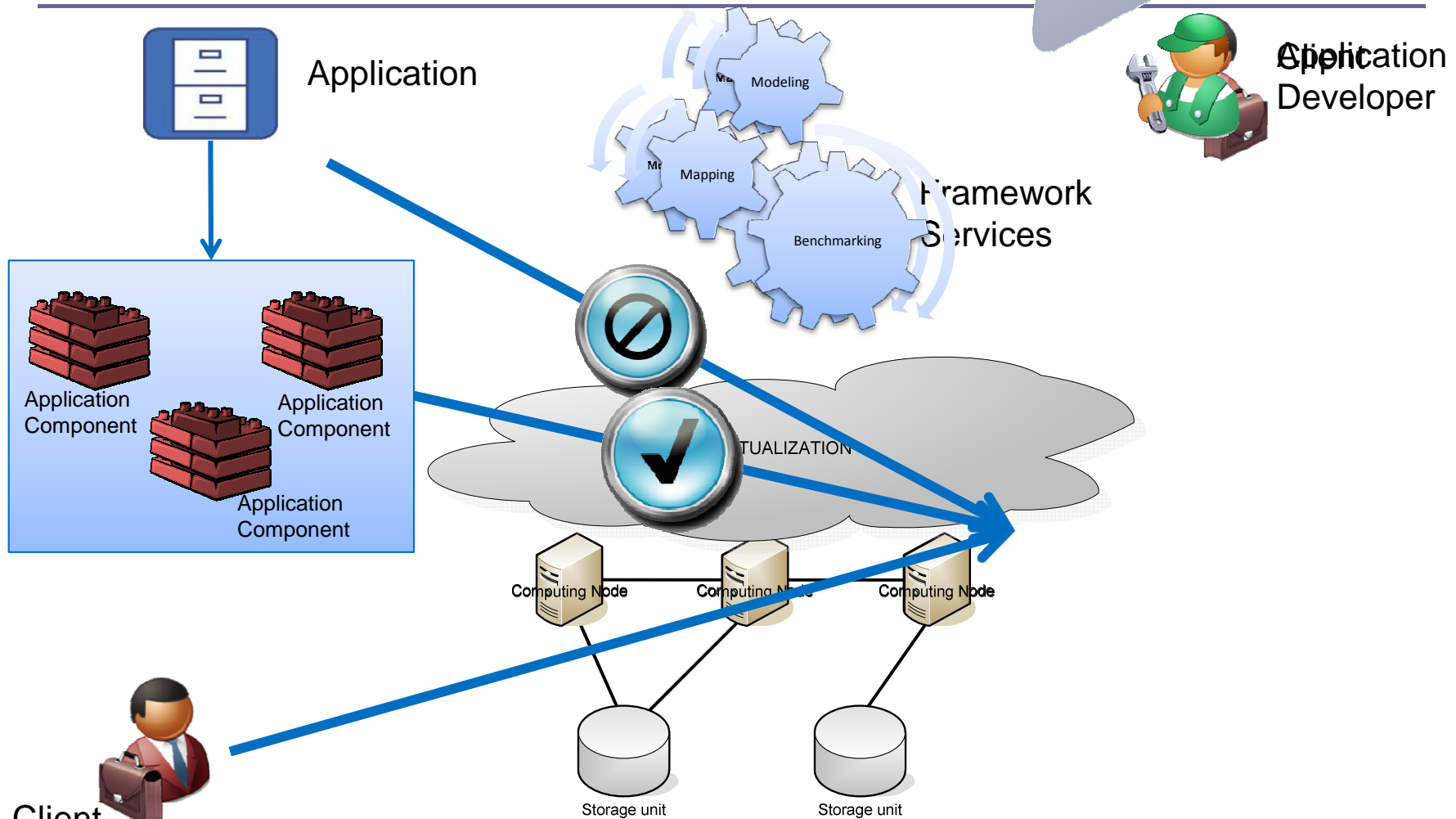
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The IRMOS Story



The IRMOS Story

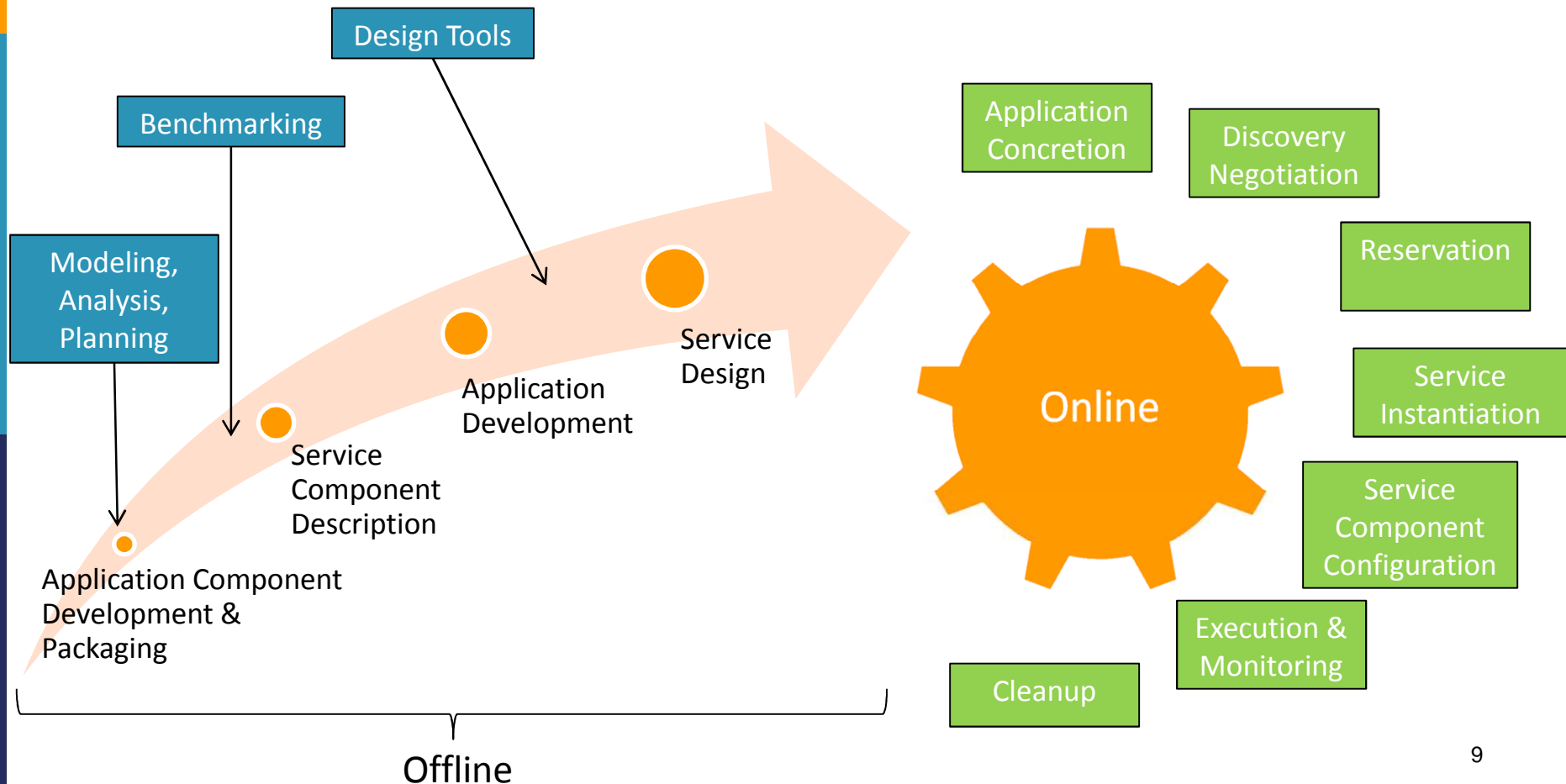


Client

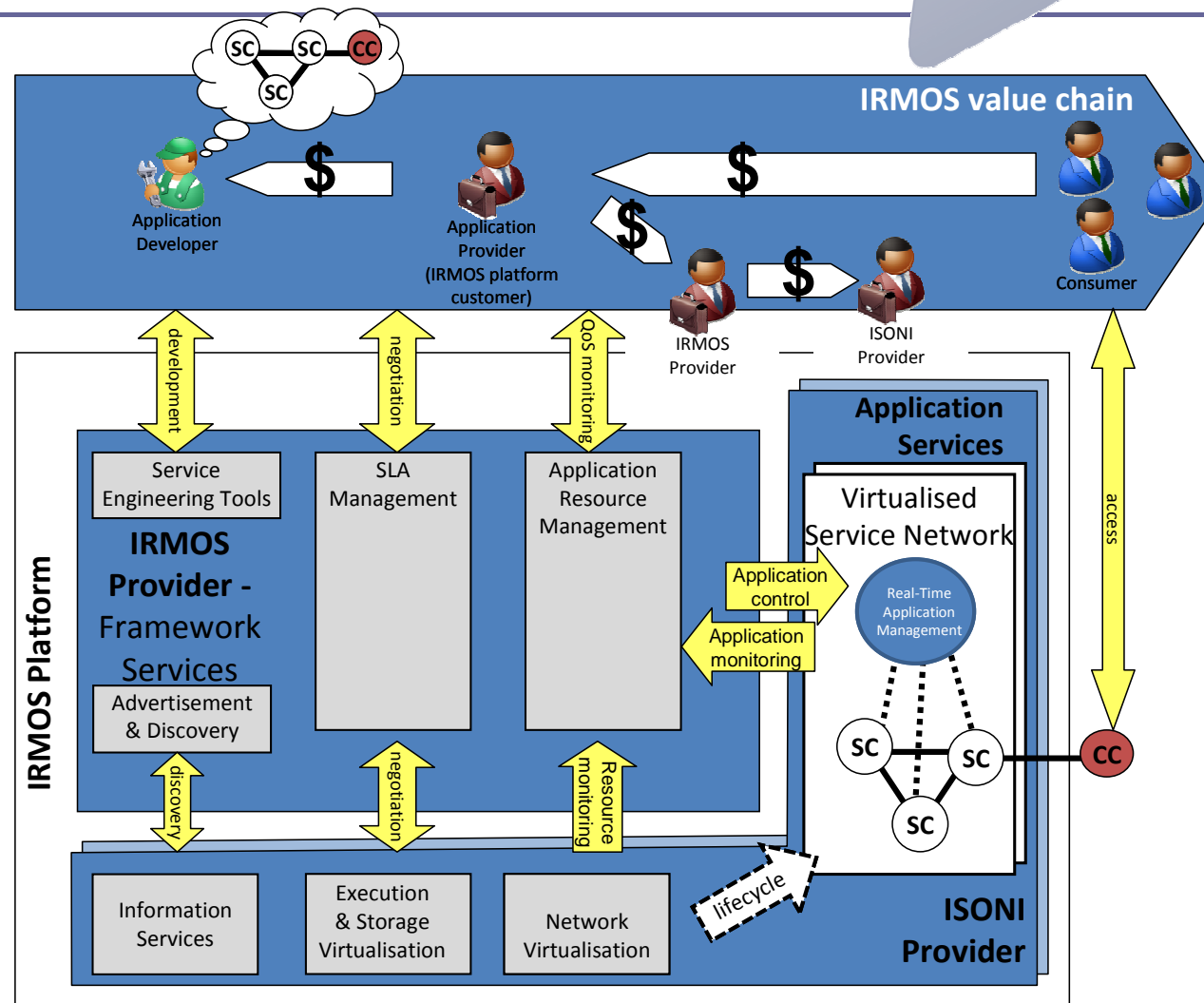
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The Two Phases Approach



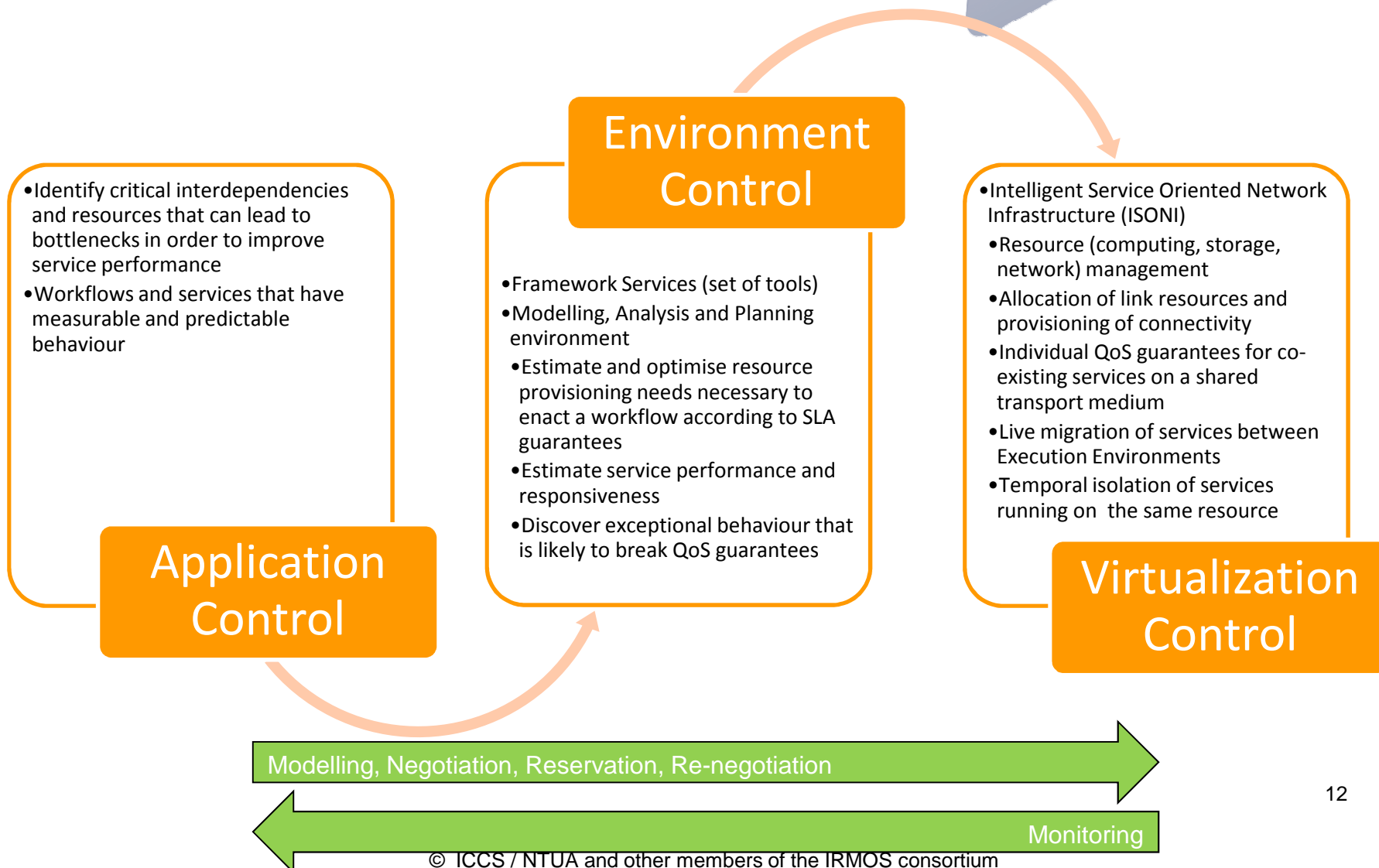
Architecture overview



Outline

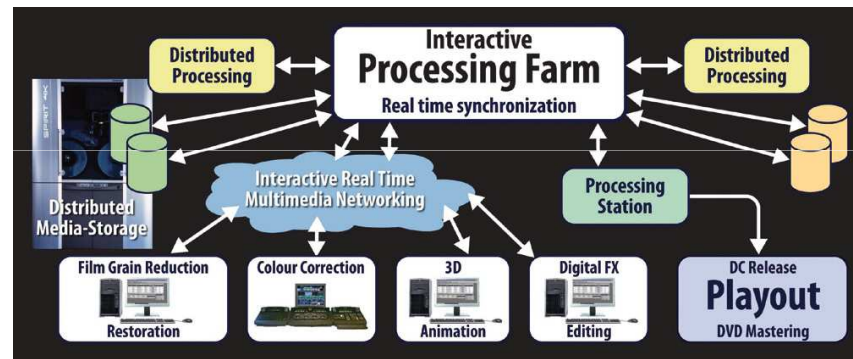
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IRMOS Control Loops

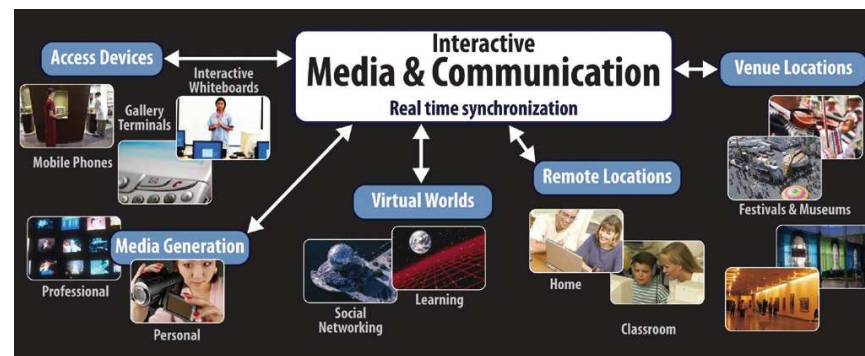


Demonstrators

- ❑ Collaborative Digital Film Postproduction
- ❑ Virtual and Augmented Reality
- ❑ Interactive collaborative e-learning



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Research Challenges

- Cross Boundaries Guarantees in Virtualized Infrastructures
 - Services running on resources of different virtualized infrastructures and therefore also different network and organizational domains
- Decision Support
 - Interlinking cost analysis, accounting and the capabilities required by the business activity to have a better risk analysis
 - Not only technical parameters will govern the decision process but also business ones (mainly cost but also business relations, internal policies, etc)
- Compatibility between Cloud Platforms
 - Compatibility and interoperability will also make feasible the migration from one platform / virtual infrastructure to another
 - Standardisation can serve as a means...

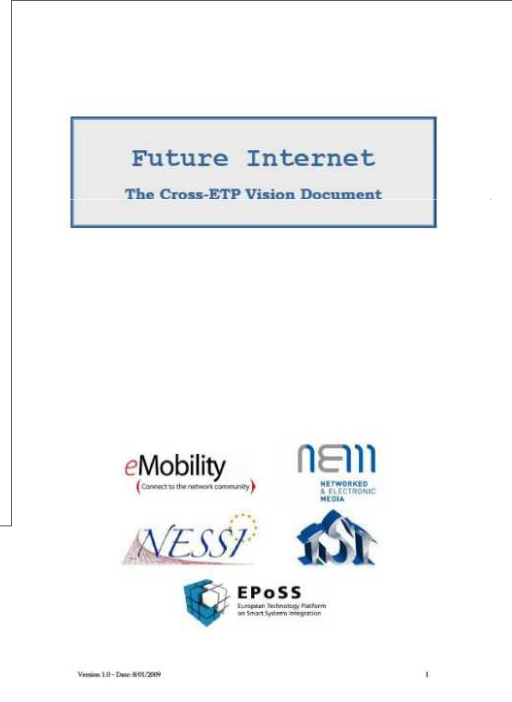
We need to Standardise...



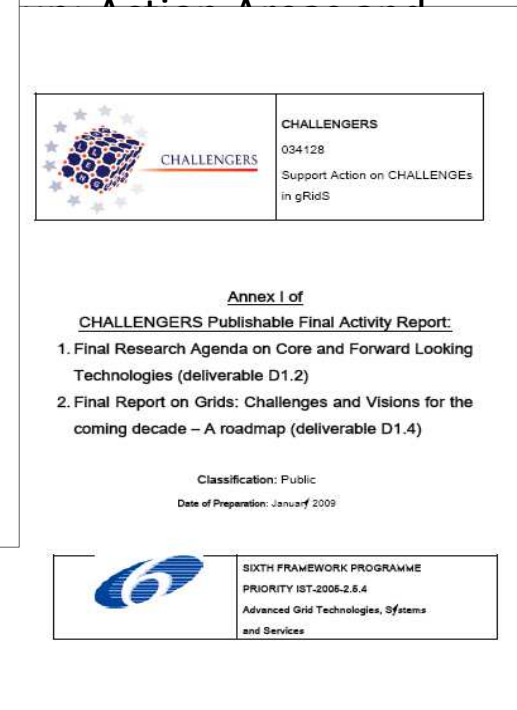
- Started from the early Akogrimo (FP6 EU Project)
- Up to now we have more...

Agenda: Why Grids have not been widely accepted yet?

Point – Future Internet: Opportunity



...areas of the Future Internet will be...
...ness as an innovation space.

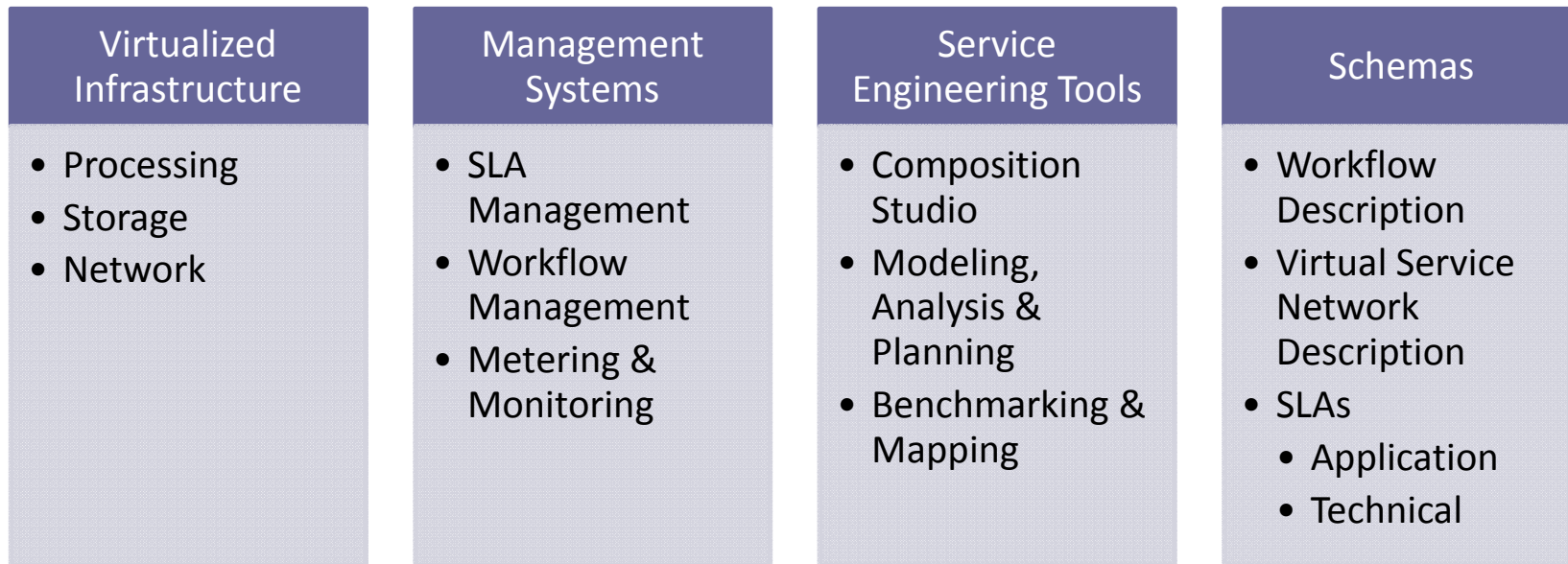


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Summary

- IRMOS Team is creating a platform that enables the real-time execution of interactive multimedia applications.
 - We have already very promising results, an initial IRMOS Integrated Prototype will be ready in February 2010.



The logo for IRAMOS, featuring the letters 'IRAMOS' in a bold, blue, sans-serif font. The letter 'O' is replaced by a blue play button icon. The logo is set against a background of a stylized hand holding a play button, rendered in shades of blue and grey.

Interactive Realtime Multimedia Applications
on Service Oriented Infrastructures

Thank you!

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Further Information

<http://www.irmosproject.eu>

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