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ASAPM Project

SOC & ASAPM Workshop

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Australian Government
Department of Defence
Defence Science and
Technology Organisation



Agenda

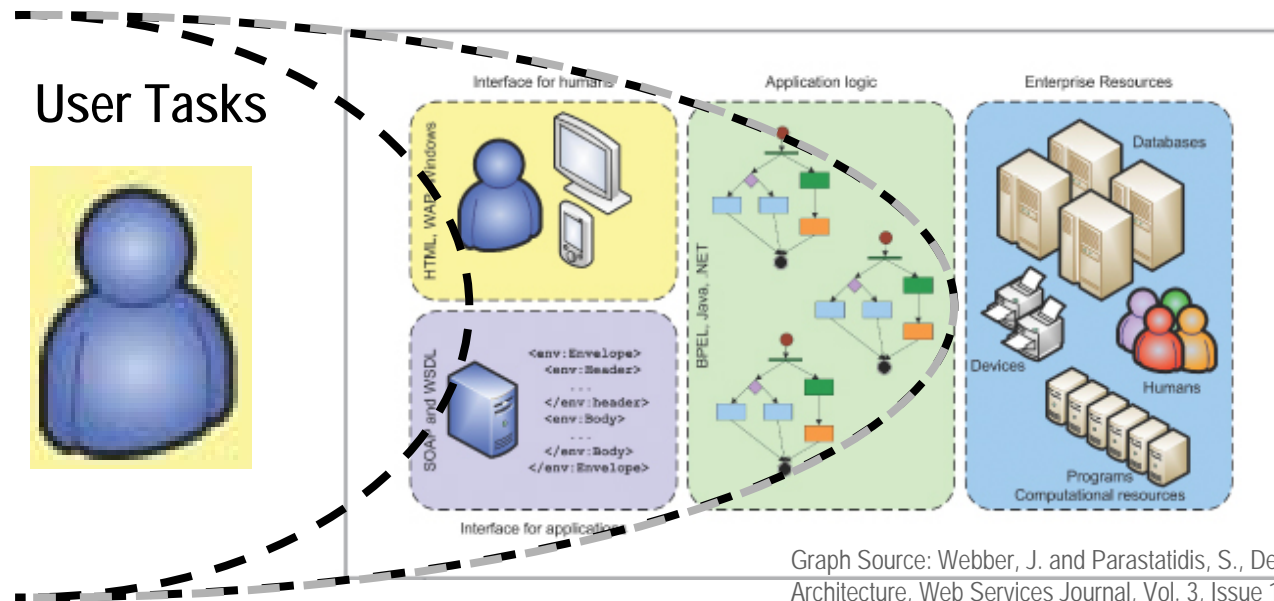


- Management of Service-oriented Systems
- ASAMP & ASG Projects
 - Objectives
 - Structure
 - Relationship
- ASAMP & ASG Concept and Lifecycle
- ASAMP/ASG vs SOA Advantages
- ASAMP & ASG Key Results

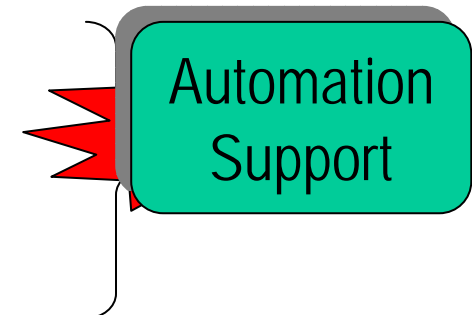
Management of Service-oriented Systems



- *Web Service* - programmatic access to underlying Web resources
- *Service-oriented system* is composed of services that implement business functions and user interfaces

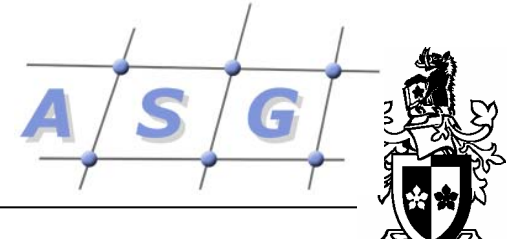


- Rich service description/registers
- Discovery and planning
- Composition and SLA negotiation
- Execution, monitoring and exceptions



Adaptive Services Grid (ASG)

Project Summary



- Objective: Develop a proof-of-concept prototype of an open platform for adaptive semantic service discovery, creation, composition and enactment in order to support:
 - automation of complex service construction
 - quality-of-service assured provision
- 2.5 years, €7.5m by EU FP6 IP, €11.53m total value
- 21 Partners from 7 countries
 - Siemens, DaimlerChrysler, Telenor, Telekomunikacja, Hanival...
 - HPI, Swinburne, DERI, Fraunhofer IESE, EU universities
- Project team (~60 personnel from research & industry)
- Swinburne – Adaptive Service Agreement and Process Management (ASAPM)

ASAPM Project Summary



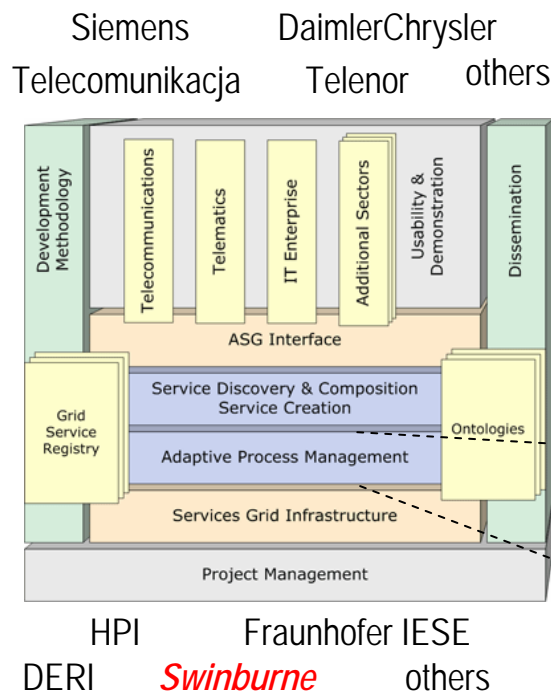
- Objective: Develop new techniques and software prototypes for *adaptive service agreement and process management* in order to ensure:
 - collective functionality,
 - end-to-end QoS,
 - adaptive coordination, and
 - seamless delivery of complex services
- 2.5 years, \$665k by DEST ISL, ~\$1.5m total value
- Partners (DSTO, EIN, Telstra)
- Collaborators (UQ, VU)
- Swinburne team (2 CI's, 6 RF/RA, PhDs)
- ASAPM contributes to ASG

Collaboration: EU ASG - AU ASAPM

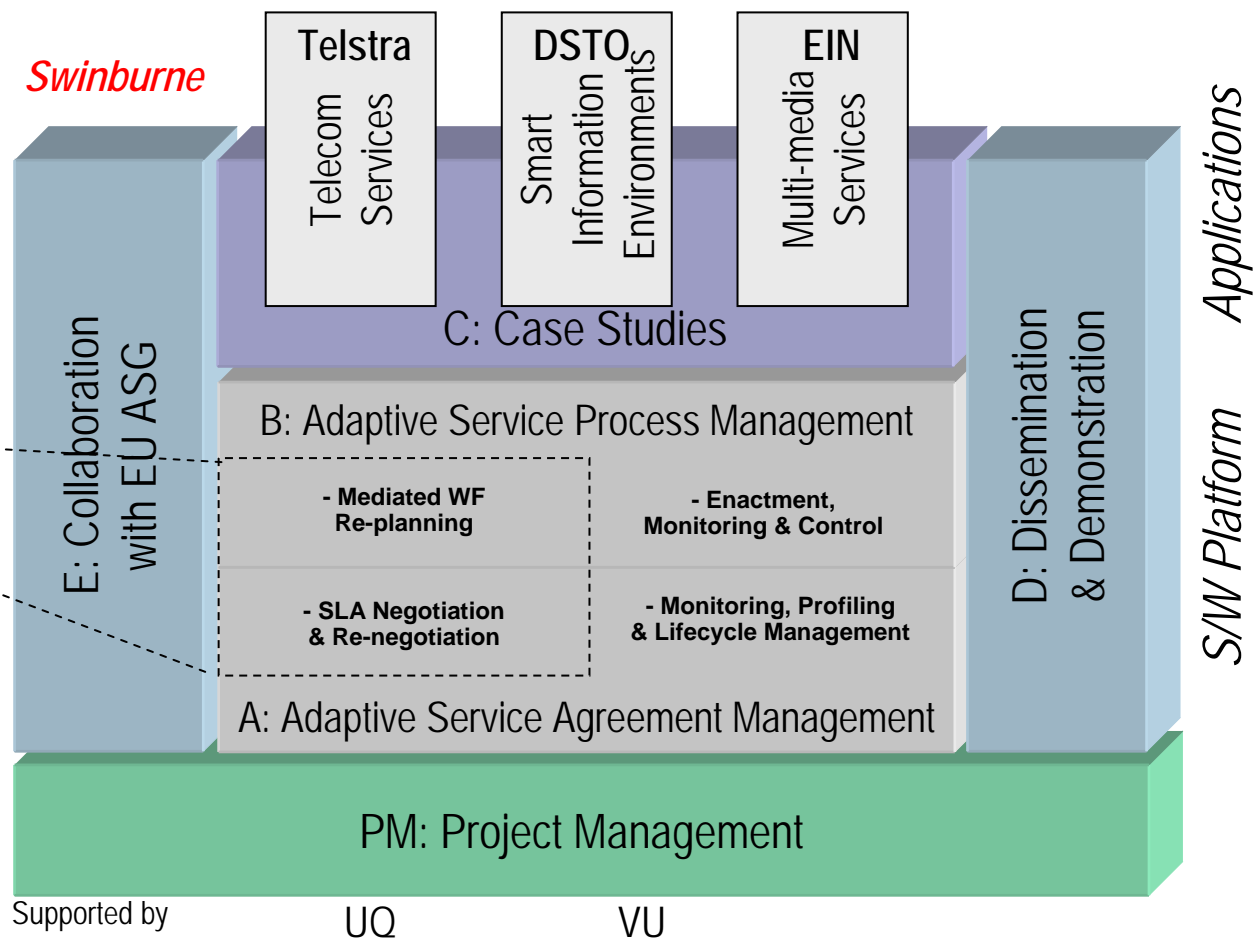


- ASAPM central part of EU-FP6 ASG
- Key collaboration with AU partners (DSTO, EIN, Telstra; UQ, VU)

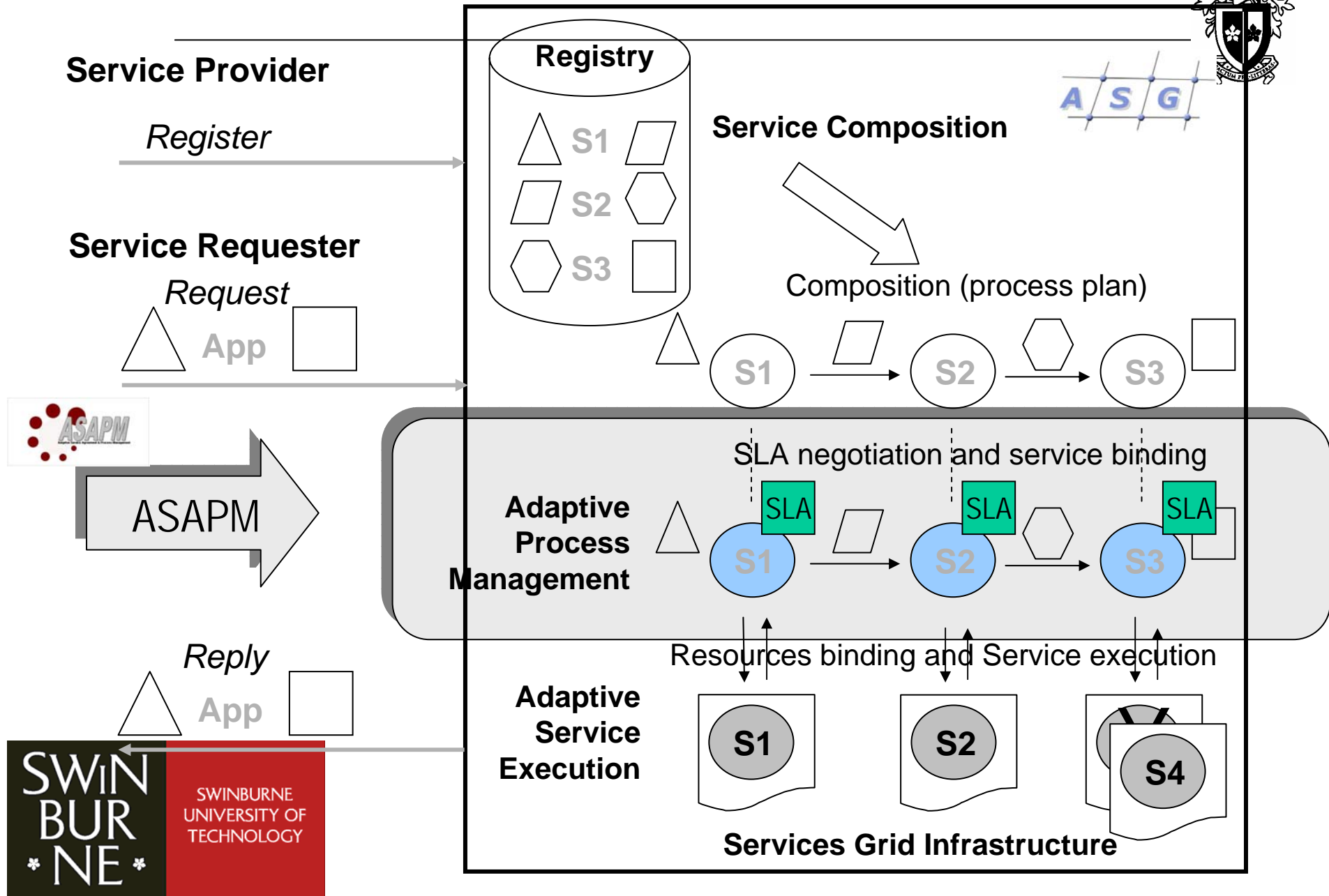
EU-FP6 IP ASG project



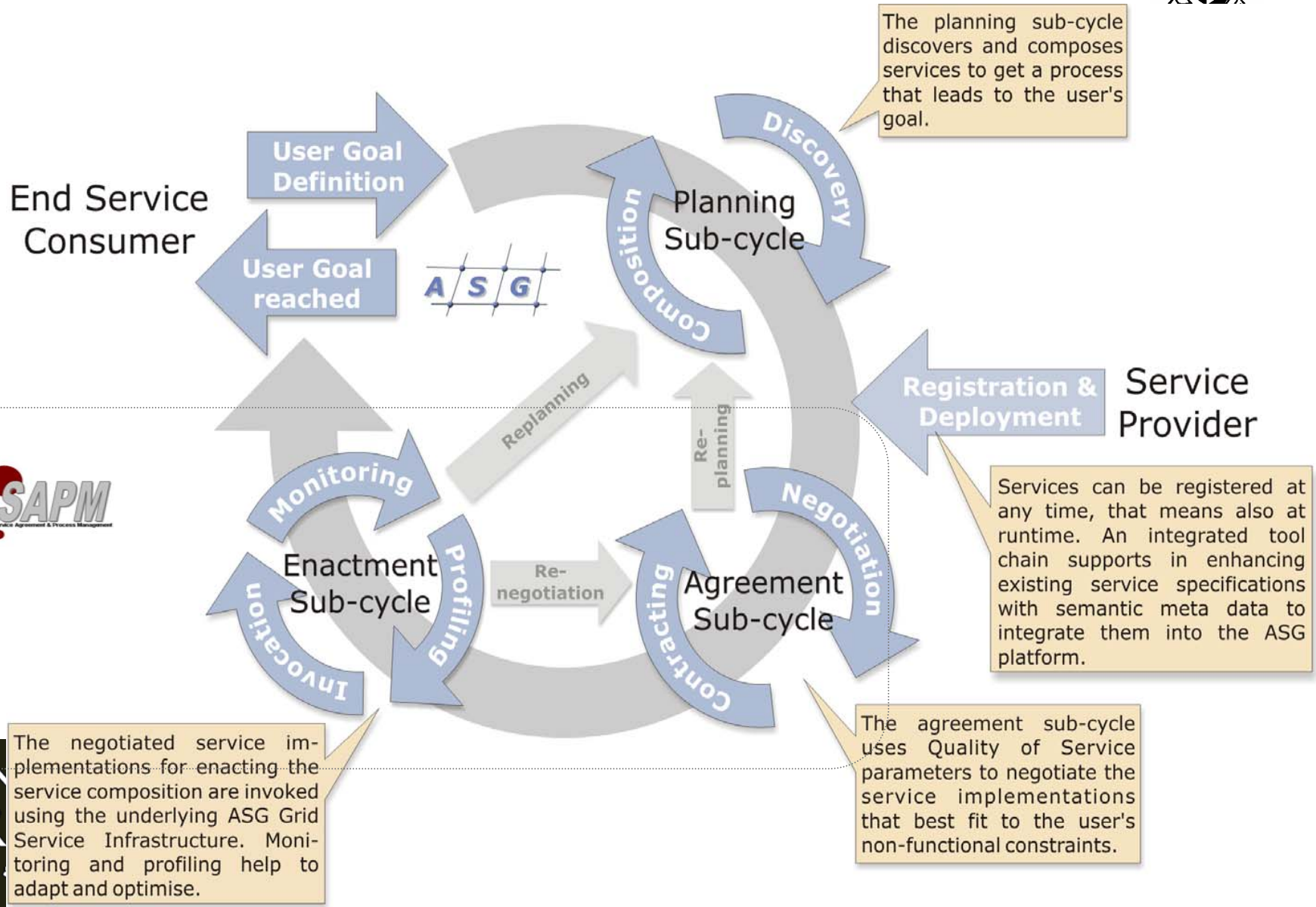
Australian DEST-ISL ASAPM project



ASG & ASAPM Concept



ASAPM & ASG Lifecycle

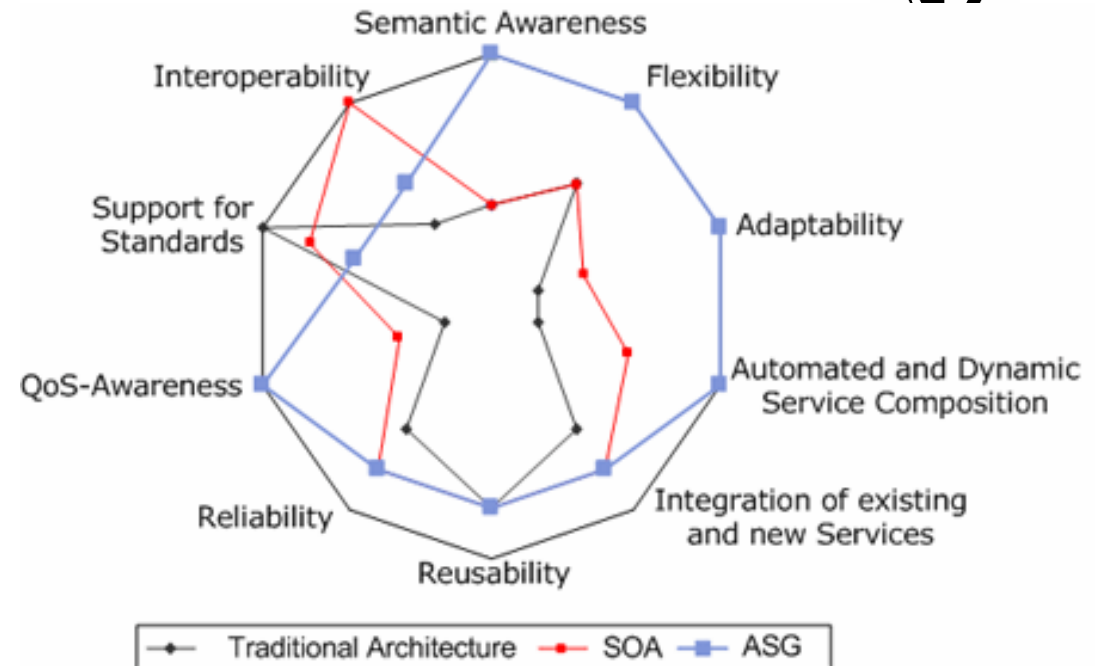


ASG/ASAPM vs SOA Advantages



ASAPM

- QoS awareness
- Flexibility
- Adaptability
- Reliability



	State of the Art SOA	ASG Platform
Reusability	The reuse of services is mainly based on technical descriptions of services.	Services functionalities can be reused based on the semantic information in ASG service specifications.
Standards	Based on standards like SOAP, WSDL, UDDI or BPEL.	Will be based on standards like SOAP, WSDL, UDDI or BPEL. As semantic-based enhancements are currently not standardised, ASG will contribute to standards in the Semantic Web Services area.
Adaptability	Selection of services are hard coded and therefore not adaptive. The service landscape is mainly comprised of a fixed service set.	Selection of services can be done dynamically at runtime and is therefore adaptive.
Transparent process planning	All available alternative service compositions need to be hard coded. A service composition is therefore static and need to be created manually.	Adaptive service composition according to constraints in the environment and the semantic service specifications.
Quality of service awareness	Little or no Quality of Service awareness.	Quality of Service parameters are attached to user requests and incorporated into service specifications.

	State of the Art SOA	ASG Platform
Openness	Clients do not automatically use new published services. These need to be integrated in running processes manually and at design time.	New published services are automatically used within service compositions. Publishing of a new service requires manual definition of semantics that are supported by ASG tools and service models.
Semantic awareness	Clients need to know atomic service functionalities due to the lack of semantics in their service specifications.	Tasks like discovery and composition of services based on functional service capabilities can be carried out automatically due to included semantics in service specifications.
Reliability	Reliability depends heavily on the availability of service implementations. Finding of semantically equivalent services needs to be done manually.	Reliability depends on the availability of service functionalities, regardless of the technical interfaces. Mediated renegotiation and re-planning mechanisms will find the desired service functionality based on the semantic service specification.

ASAPM Results (some in progress)



- ASAPM Architecture and Platform
 - Distributed agent-based architecture and its prototypical implementation
 - Dynamic Web Services – Agents integration middleware
- Adaptive Service Agreement Management Mechanisms
 - Service level agreement (SLA) negotiation for service compositions
 - Distributed SLA monitoring
 - Dynamic re-negotiation for service compositions at run-time
- Adaptive Service Process Management Mechanisms
 - Distributed agent-based enactment
 - Quality-of-service (QoS) monitoring
 - Mediation for distributed re-planning of service compositions at run-time
- ASAPM Industry Demonstrators (proof-of-concept prototypes)
 - Telecommunication services
 - Smart information environments (logistics)
 - Multimedia services

ASG Results (some in progress)



- Semantic Service Provisioning Architecture
 - Reference architecture and implementation of a semantic service provisioning platform
 - Semantic service description
 - Automated service composition
 - Dynamic selection and negotiation
 - Adaptive enactment and dynamic profiling
 - Integration of stateful real-world services
 - Dynamic service hosting, execution and monitoring on heterogeneous platforms
- Service Integration and Development Tool-Chain and Methodologies
 - Methodologies and tool chain prototype to enable seamless integration of heterogeneous external services
- Business Scenarios for Semantic Services
 - Attraction Booking
 - Dynamic Supply Chain

Thank you!



Q&A

