

Adaptive Services Grid

The goal of the Adaptive Services Grid project is to develop an architectural blueprint and a proof-of-concept prototype of an open development platform for adaptive and reliable discovery, composition, and enactment of services. ASG involves in total 22 partners from six European countries and Australia.

To achieve this goal, the Adaptive Services Grid (ASG) project addresses advanced scientific and technological issues and makes use of the knowledge and expertise of major European research institutions with significant contributions from the software, telecommunications, and telematics industry. ASG provides the integration of its sub-projects in the context of an open platform, including tool development by small and medium sized enterprises. Based on semantic specifications of requested services by service customers, ASG discovers appropriate services, creates composed services and enacts them in a seamless fashion.

At A Glance: ASG

Adaptive Services Grid

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Duration: Sept., 2004 – Feb., 2007

Project funding (EC/total):

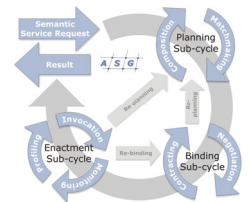
€7.5m / €11.5m

Further Information

- **Europe's Information Society: Thematic Portal:**
http://europa.eu.int/information_society/

The ASG project has developed a reference architecture and blueprint for semantic service provisioning platforms. Major features of an ASG-compliant platform are summarized as the ASG service provisioning features. These features are achievements on the technological level, which are appointed by the application of an ASG compliant platform for service provision. On the business level these achievements lead to a reduction of costs in development and maintenance. Furthermore the platform supports continuous adaptation of service centric applications in response to environmental changes and upcoming business needs. The features are:

1. **Seamless integration of heterogeneous external services:** External service integration is achieved by the provision of an elaborated methodological approach embedded into a set of integrated tools. These tools assist the user in her task of integrating external services into the ASG platform. A starting point for integration is a domain-specific ontology from which a specific type system for data exchange is derived. ASG supports the mapping of existing heterogeneous services to this specific type system. Integrated services are augmented with semantic descriptions regarding service functionality and non-functional properties. This achievement reduces the maintenance and modification costs for large numbers of external services. It has the potential to ease integration of services and data formats. The envisaged architecture allows an easy discovery and interoperability of integrated services.



ASG Service Delivery Lifecycle

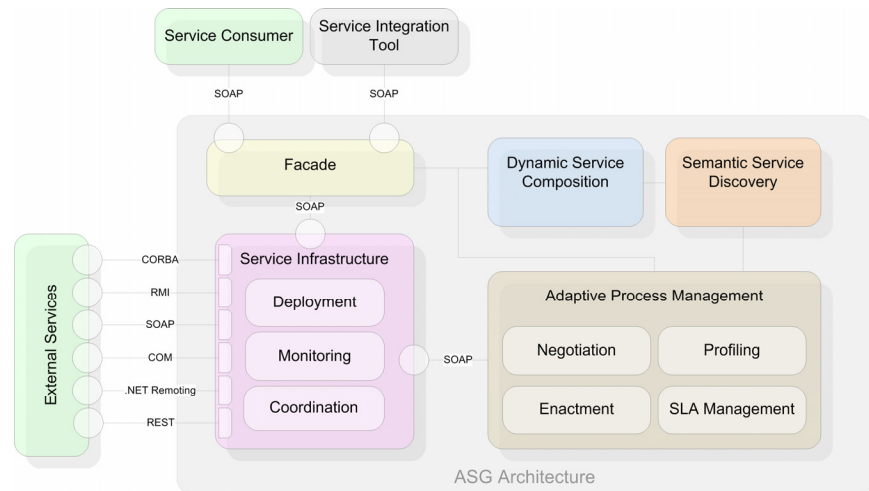


2. On-demand creation of service compositions:

Automated semantic-enabled service composition allows creation of new services by composing existing services on-demand and at run-time for individual user requests. For this purpose, the semantically described functionality of services is used. Current service integration, based on manual programming, makes it hard to cost-effectively maintain and modify the complex service world. ASG lifts the interface to services from a manual to a logical level, and supports service composition based on automated tools. The adaptive service composition implies a cost reduction in service provision.

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- ASG supports the description, negotiation and realisation of non-functional service quality parameters for the individual and composed services. In cases of service failures or violations of agreed quality parameters, the platform reacts adaptively through re-enactment, re-binding or re-composition activities. The future service world will be based on global and dynamic services, which can be composed to answer the needs of complex service requests. Dynamic service re-enactment, re-binding or re-composition provide alternative solutions for non-reliable services, thus provides the end-customer with a reliable service delivery.

To provide a systematic and easy-to-use support for the development and tailoring of external



The Adaptive Services Grid Architecture

services with the ASG platform, our project provides service integration and development methodologies. Furthermore a prototype of an integration tool chain is supplied to rise applicability of the methodologies. In addition the tool chain facilitates mechanisms for supporting development of ASG-compliant services by dynamically generating new services from service templates according to given semantic service specifications. The methodologies and tool chain are key enabler for the above mentioned feature "seamless integration of heterogeneous external services".

For evaluation and preparation of practical applications of the ASG architecture, the reference platform, tool chain and methodologies business scenarios have been developed. Two of these scenarios, namely the "Attraction Booking" and the "Dynamic Supply Chain" scenarios have been implemented on the basis of the ASG platform to provide more detailed experiences.

Further information on the ASG architecture and its detailed description including the ASG Service Delivery Lifecycle are provided at our project homepage: <http://asg-platform.org>

The ASG project is part of the European Semantic Systems Initiative (ESSI)

The European Semantic Systems Initiative is made of six European 6th Commission Framework Projects that collectively work together to strengthen European research and industry through world-wide standardisation. ESSI combines Semantic Web Services and Semantically empowered system solutions with semantically empowered service-oriented architectures. Each project specialises in certain aspects of the Semantic Web, such as building the infrastructure, developing and exploiting Semantic web-based knowledge technologies, enriching existing web services with semantic metadata and supporting the transition process of Ontology technology from Academia to Industry.

For further Information please refer to <http://www.essi-cluster.org>