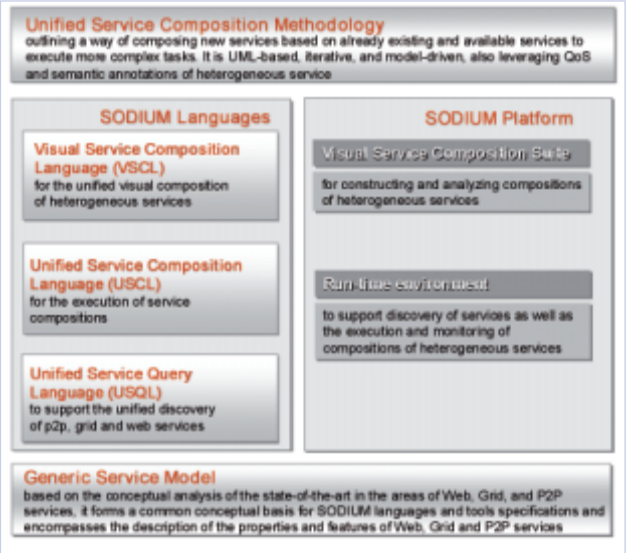
SODIUM

Scope

One of the key enabling concepts in the software and services area is Service Oriented Architecture (SOA) which facilitates the exposure of independent, loosely coupled and highly interoperable services. To reap the real benefits of SOA, a number of challenges need to be addressed which are further exacerbated by the heterogeneity of available services employing different/incompatible architectural models, protocols, and standards for service description, discovery and composition, and the lack of infrastructure or tools available for facilitating the integration and interoperability of such services.
Sodium aims to bridge this gap by providing a solution which comprises a collection of models, languages and open-source corresponding middleware, and supports the comprehensive (i.e., from modelling to application implementation) visual service composition, analysis, execution, management and monitoring of heterogeneous services (i.e. Web, P2P, and Grid services), in an open and unified manner.

Advances

The Sodium solution comprises a collection of models, languages and Open Source corresponding middleware we refer to as Service-Oriented Development In a Unified fraMework (Sodium) including:



Positioning in global context

The Sodium solution key features with respect to competition are as follows:

- Employment of a Unified Approach: addressing Web, P2P and Grid services in a seamless manner, hence leveraging the interaction with legacy middleware and services.
- Full life-cycle support: facilitating the design, development, deployment and management of service compositions.
- Technology-Independent: the Sodium methodology and tools have been defined and implemented at a higher level of abstraction and can be used regardless of the specific technological solution adopted.
- Open and Extensible: Sodium tools have been built as independent Eclipse plug-ins that can be easily integrated with other Eclipse components.
- Provided as Open Source: under LGPL, with the potential for integration in any commercial environment.
- Incorporating and advancing state of the art: through the development of the Generic Service Model (GeSMO), languages and tools for visual service composition, unified service discovery, and unified service as well as the Sodium methodology.

Contribution to standardization and interoperability issues

The Generic Service Model and the Visual Service Composition Language (VSCL) provided valuable input to the development of a UML Profile (SOA-Pro UML Profile) addressing OMG's UPMS request for profile for the description of services (OMG document soa/2006-09-09).

Target users / sectors in business and society

Target users of the Sodium results are service integrators who will use Sodium for heterogeneous service composition to develop applications and/or services.

Overall benefits for business and society

By providing a solution for unified discovery and composition of heterogeneous services, Sodium promotes the wide utilisation and broad adoption of Service-Oriented technology. Important contributions of the project also include:

- **Building a user community**

A large user community is being built around the Sodium run time environment. It has been downloaded more than 7,000 times.
The Sodium platform is especially useful for the grid community, as its Visual Composition Suite makes it possible to compose grid services in a graphical way while its Monitor tool enables the visualisation of the progress of execution in a state-full way.

- **Current and Future Synergies**

Synergies have been achieved with the FP6 IST IP SECSE project though the integration of the Sodium research results on discovery and composition of heterogeneous services with the respective solutions available in the Secse platform.

Further synergies can be established with projects focused on GRID computing, and others could be pursued in general wherever a distributed environment is assumed and transparent access to resources is requested.

Examples of use

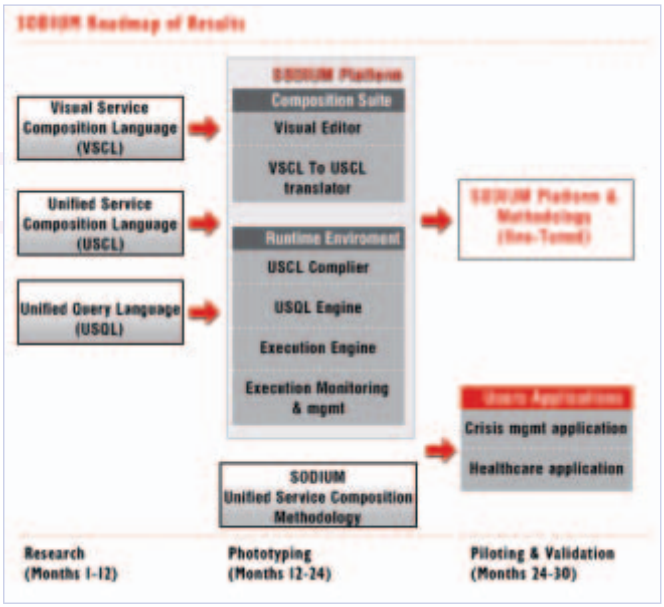
Sodium results were validated in specific critical domains for the crisis management and healthcare sectors as follows:

- The first case involved LOCUS, an IT Solutions provider from Norway, which composes applications from existing Web, P2P and Grid Services. In this pilot, the ability of a highly skilled development team of a commercial IT company to integrate the Sodium assets in their standard development, as well as service provision and maintenance work were assessed. Indeed, Sodium technology enabled Locus to improve the quality and financial efficiency of a specific service by composing existing and already known services.
- The second case involved the MEDISYSTEM Hospital in Romania as a typical end user who employs Web, P2P and Grid Services for building an industrial strength application in a hospital environment where reliability and availability are very important. In this pilot, the ability of an average-skilled industrial IT department to integrate Sodium assets in their standard development and maintenance work has been tested. In this case, Sodium technology was used by an end-user, in order to maximize the effectiveness of their systems at a minimum degree of investment and uncertainty regarding the quality of Services.

Achievements

Sodium provides methodology and tools supporting the visual service composition, analysis, execution, management and monitoring of heterogeneous services (i.e. Web, P2P, and Grid services), in an open and unified manner.

Related work has been recognised academically : Roy Grønmo, Michael C. Jaeger "Model-Driven Methodology for Building QoS-Optimised Web Service Compositions" won: «Best paper award» in the 5th IFIP International Conference on Distributed Applications and Interoperable Systems (DAIS) Athens, Greece, June 2005.



Sodium results are provided as Open Source under the LGPL License and are available for downloading under the respective section Downloads of the project web site: http://www.atc.gr/sodium.

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