Semantics Utilised for Process management within and between Enterprises (SUPER) – use-cases

SUPER is a future EU-funded project kicking-off in February 2006. It is concerned with adding semantics to Business Process Management and developing one consolidated technology, also by leveraging the results of the SEKT and DIP IPs. Together with the other semantically-related projects it strives to further strengthen the global leadership of EU-funded technology development in area of semantic technologies.

Business Process Management focuses on managing the execution of IT-supported business operations from a business expert’s process view rather than from a technical perspective. The underlying motivation for BPM is that organizations need to continuously align their running business processes, as executed within multiple heterogeneous systems, with the required processes as derived from business needs. BPM has gained significant attention in both research and industry, and a range of BPM tools are available. However, the degree of mechanization in BPM is currently very limited. The major obstacle preventing a coherent view on business processes is that the business processes are not accessible to machine reasoning. Additionally, businesses cannot query their process space by logical expressions, e.g. in order to identify activities relevant to comply with regulations. Founded on ontologies Semantic Web technology provides scalable methods and tools for the machine-readable representation of knowledge. Semantic Web Services (SWS) make use of Semantic Web technology to support the automated discovery, substitution, composition, and execution of software components (Web Services). BPM is a natural application for Semantic Web and SWS technology, because the latter provide large-scale, standardized knowledge representation techniques for executable artifacts.

The major objective of SUPER is to raise Business Process Management to the business level, where it belongs, from the IT level where it mostly resides now. There are two main reasons for doing this:

- It will put Business Process Management back into the hands of business people.
- It will enable Business Process Management to scale up to a new level of complexity.

This objective requires that BPM is accessible at the level of semantics of business experts. Semantic Web and, in particular, Semantic Web Services technology offer the promise of integrating applications at the semantic level. Therefore, we aim at providing a semantic-based and context-aware framework, based on Semantic Web Services technology that acquires, organizes, shares and uses the knowledge embedded in business processes within existing IT systems and software, and within employees’ heads, in order to make companies more adaptive.

Use-cases developed within SUPER project

Telecoms Use Case Framework and Ontology

Within this use-case, vertical telco domain and process ontologies and a semantic framework for telecommunication are developed and ongoing experiments with SUPER life-cycle tools take place. Major outcome is a telecom framework called YATOSP (Yet Another Telecom Ontology, Service and Process framework). This framework will build over available developments on
Telecommunications Business Area such as TMF’S NGOSS. SUPER will collect and analyse available information and specifications on telecommunications domain as well as particular processes with proved validity and usability. In addition, it will make emphasis on the areas covered by SUPER application use cases, since they cover some of the most meaningful fields and interests of Telecommunication providers on last, and forthcoming, years.

With those general requirements and information and with the addition of specialized requirements, a Telecoms vertical process ontology will be developed that supports the implantation of SUPER framework over envisaged test-sites. Process ontology will make emphasis on particular needs from use cases as high level B2B and B2C interactions and systems specifications (mainly from CRM and Billing Suite use case), or communications and network management (principally from Traffic Routing, Management, and Troubleshooting and some from Mobile environments) and mobility, shared environments, context modelling and multimedia distribution (from Mobile environments use case). YATOSP will output on an open and flexible framework for Semantic Enhanced Telecommunications. The vertical domain ontology will be released as an open ontology that can be extended by new areas on telecommunications domain. On a same manner, the ontology for business processes will be totally modular so new specialized processes can be mapped into it to cover novel areas of development.

**Telecoms Semantic Business Process Applications**

Three telecommunication use cases have been selected covering important fields: fixed telephony, traffic routing and management (through VoIP communications) and mobile environments with innovative devices and technologies. The aim is to provide a set of demonstrators covering the aforementioned scenarios and providing suitable validation and testing frameworks for the entire project. To achieve this objectives a methodology will be followed and repeated on some interactions:

- Analyse available platforms and infrastructure to get input requirements for SUPER semantic business process executions.
- Extend the applications on those points where enhanced operation can be provided by SUPER system.
- To design uses cases in detail selecting particular applications/functionalities and defining:
  - Devices and roles to be included on the scenarios.
  - Functional requirements of the selected applications.
  - Non-functional requirements on the scenarios (security, mobility, real-time responses) that can be accomplished by SUPER platform or integrated with it (being performed by specific systems on demonstrators).
- To develop abstract definitions of business models and involved processes. At definition time (if SUPER modelling tools are not already available), UML and BPM tools can be used to describe processes to be tested. Interfaces with external components will be also provided at this phase. With those requirements and specifications, next step covers the definition of the business processes and testing and validation plans, as well as, the implementation of the prototypes integration local infrastructures with SUPER platform.
- To prepare testing and validation plans to execute over the test-sites.
• To implement final prototypes installing components, preparing communications, developing basic services and integrating with SUPER infrastructure. At this moment, final demonstrations over real platforms can be done showing the effects of the SUPER platform inclusion.

• To put in practice validation and testing plans. This should cover the collection of feedback results and new requirements for next iterations of the project. Posters or scenarios refinement (business models, integration and business processes).