Interoperability and Service Integration in the Context of European Research Projects

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Interoperability

- **Def.**: Interoperability is the *ability* of ICT systems, and of the business processes they support, to exchange data and to enable the sharing of information and knowledge. (In: EIF for Pan-European eGovernment services, 2004)

- **Aspects**: organisational - semantic - technical

- **Types**:
  - geographical (Pan-European / cross-border / regional / local)
  - organisational (governmental / non-profit / business org.)
  - of various service types (on-line - electronic / web services; off-line / asynchronous / face-to-face services)

- **Enabling technologies**: SOA, Web services / SWS, knowledge representation & semantic technologies

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Interoperability: EU initiatives

- **2007-10**: FP7 ICT: Challenge 1 - *Pervasive and Trustworthy Network and Service Infrastructures*
- **2008**: SEMIC.EU launched ([http://www.semic.eu](http://www.semic.eu))
- **2006-08**: EIF for Pan-European eGovernment services. ver. 2.
- **2005**: i2010 - A European Information Society for growth and employment.
- **2004**: EIF for Pan-European eGovernment services. ver. 1.
- **2003**: Linking up Europe: The Importance of Interoperability for eGovernment Services.
- **2002-06**: FP6 IST: *Networked businesses and governments*
- **2002-05**: eEurope 2005: An information society for all.
Interoperability: EU projects (1)

eGOV (IST 28471). One-stop government, GovML language
ATHENA (IST 507849) Global IOP framework for enterprise networks
EU-PUBLI.COM (IST 35217) Definition of a ‘Unitary European Network Architecture’ to achieve PA interoperability
NeOn (IST 027595) Semantic interoperability, service-oriented open infrastructure + methodology
ONTOGOV (IST 507237) Semantic platform for composition, re-configuration and evolution of e-government services
SATINE (IST 002104) Semantic-based Interoperability Infrastructure for Integrating Web Service Platforms to Peer-to-Peer Networks
SmartGov (IST 35399, smartgov.e-gov.gr) A knowledge-based platform that assists PA employees to generate online transaction services

Interoperability: EU projects (2)

TERREGOV (IST 507749) Interoperability for local and regional governments.
USE-ME.GOV (IST 2294) Platform for mobile government services.
SemanticGov (IST 027517, www.semantic-gov.org) Infrastructure for enabling the semantic web services in PA.
OPUCE (IST 034101, www.opuce.tid.es) Infrastructure for collaborative and dynamic loosely coupled services
SUPER (IST 026850, www.ip-super.org) Modular architecture for semantic BPM
STASIS (IST 034980, www.stasis-project.net) eEconomy services, semantic interoperability
TUK&IS experiences in EU projects

SPIKE: eBusiness, semantics + services

• eLearning + semantics

Access-eGov: eGov, semantics + services

• eGovernment, BPM, CMS + semantics.

• eGovernment, CMS + semantics

KnowWeb (FP4 ESPRIT 29015): Semantics, SME business

FP6 IST project Access-eGov

Full title: Access to e-Government Services Employing Semantic Technologies
Web: www.access-egov.org

Duration: January 06 - April 09
Contract No.: FP6-2004-27020

Consortium: 11 partners, 5 countries (GE, GR, PL, SK, Egypt)
Coordinator: Technical University of Kosice, Slovakia

Main goal: To develop and validate a platform for composition of gov. services into complex process definitions (life events) enabling semantic interoperability of particular eGov services.

Milestones:
• 1st Prototype: autumn 2007; 1st Pilot trials: Oct.07 - Jan.08
• 2nd Prototype: end of 2008; 2nd Pilot trials: Dec.08 - Jan.09
• Final release: April 2009
AeG: Architecture & Control flow

A) - F): Initialization
1. - 4.): Run time

AeG resource ontology

Access-eGov platform

User information consumer

Personal Assistant client

Service discovery: semantic matching of capability interfaces between goals and services

Methodology: 7-step procedure of requirement-driven approach

External services


 Ontology designer: knowledge engineer

• Slovakia: Land-use planning and processing a request for a building permit.

• Poland: Establishing an enterprise - the process of company registration.

• Germany: An upgrade and field test based on the existing good practice “Zustaendigkeitsfinder” ("Responsibility Finder"), by introducing a semantic layer (securing semantic interoperability between national and local governments).
    Use-case: Getting married.

• Egypt (German University in Cairo): Usability testing from outside EU.
AeG: Achievements

• Platform for semantic integration of services of all types: on-line, electronic & web services, traditional face-to-face services;
• Goal-oriented user interface (*life-events approach*);
• Methodology for systematic creation of ontologies, based on user requirements (*requirement-driven approach*);
• Semantic matching of user goals / life events with particular services;
• Enhanced WSMO-based process model;
• Web grabbing functionality.

FP7 ICT project SPIKE

Full title: *Secure Process-oriented Integrative Service Infrastructure for Networked Enterprises*  
Web: www.spike-project.eu

Duration: Jan. 2008 - Dec. 2010  
Contract No: FP7-2007-217098
FP7-ICT-Call1, Challenge 1: *Pervasive and Trusted Network and Service Infrastructures*, Objective 3: *ICT in support of the networked enterprise*

Consortium: 8 partners from 5 countries (GE,A,FIN,ESP,SK)  
Coordinator: University of Regensburg, GE

Main objective: Development of a software service platform for an easy, secure, and fast start-up and maintenance of short-term and project-based virtual business alliances.

Pilot applications: 3 application cases in Austria and Finland
SPIKE: Vision

SPIKE Alliance

Collaborative Value Chain:

Semantic service bus
- registering, discovering and contracting services, service message routing;

Semantic BPM engine
- handling customized processes, workflows and distributed processes;

Security infrastructure
- attribute management, authentication, workflow and service access control, auditing;

Repositories
- storage of process models and ontologies;

Portal server extension
- semantic context capturing and communication;

Portal-based interfaces
- user-friendly administration of alliances, ad-hoc workflow modeling and process handling.

SPIKE: Approach
SPIKE: Technology

Open Source, Java-based

Ontologies and semantic annotation: WSMO framework, WSMO Studio (www.wsmostudio.org)

BP modelling: based on BPMN/BPEL,
- BPMO Modeller (of WSMO Studio), sBPEL ontology.

Enterprise Service Bus:
- Java Business Integration (JBI) compliant ESB (Apache ServiceMIX, OpenESB)

Portal integration layer: Intalio Tempo

Security: Single Sign On service & Authentication:
Simple Authentication and Security Layer (SASL), PERMIS infrastructure for authorization

SPIKE: Pilot applications

- 1. Information hotel: Documentation management process.
  - Use cases: uploading, sending, receiving docs from supplier, verifying uploaded docs, verifying received docs near deadline, sending reminder messages to suppliers, ...

- 2. Legacy applications: Location of partners' services, integration into workflows.
  - Use cases: maintenance of service providers, service information and configuration, tracking services, contracting and ordering services,...

- 3. Identity federation: Accessing the inner infrastructure of alliance partners to support effective collaboration.
  - Use cases: collaboration setup and maintenance, role and resource management
SPIKE: Achievements, future work

Work done so far:
• User requirements specified for all the pilot applications;
• Guidelines and toolchain for semantic modeling provided;
• Platform architecture designed, functional components specified;
• 1st project review (January 2009) successfully accomplished.

Future work:
• Implementation of the 1st prototype is ongoing, should be ready in October 2009;
• 1st trial of the pilot applications, validation of the SPIKE platform on the application cases (October - December 2009)

Summary, conclusions
• Service interoperability: important feature of the ITC solutions nowadays, it becomes an imperative in future.
• Semantics: not necessarily in the form known today (ontologies, etc.); leads to standardisation
• Pan-European interoperability
• Identity management - for one-stop Government
• Knowledge enhanced Government - “Smart Government”
• eGovernment + Business Intelligence
• eGovernment + IT Service Man.: ITIL v.3, ISO/IEC 20000
Thank you for your attention!

Questions?

More information:
• Access-eGov: www.access-egov.org
• SPIKE: www.spike-project.eu