eGovernment Services in Italy

State of the Art and Evolutionary Perspectives

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Outline & Goals

- Discuss Italian eGovernment Services ongoings, as a concrete scenario of Service Integration
  - Background
  - Requirements
  - State of the Art
- Evolutionary Scenario
  - How research could drive further developments
  - Your input will be seriously taken into account (top influencer are listening ...)

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Background: European Interoperability Framework

- The eEurope Action Plan 2005 (launched at Sevilla summit, 2002), called the European Commission “to issue an agreed interoperability framework to support the delivery of pan-European eGovernment services to citizens and enterprises”.

- The E.C. called the Community Programme IDABC (Interoperable Delivery of European eGovernment Services to public Administrations, Business and Citizens - DG for Informatics) to set up such a framework.

- An interoperability framework can be defined as a set of standards and guidelines that describes the way in which organizations have agreed, or should agree, to interact with each other (IDABC).
Examples of Public Services for Citizens

- Income taxes: declaration, notification of assessment
- Job search services by labor offices
- Social security contributions:
  - Unemployment benefits
  - Child allowances
  - Medical costs (reimbursement or direct settlement)
  - Student grants
- Personal documents (passport and driver's license)
- Car registration (new, used and imported cars)
- Application for building permission
- Declaration to the police (e.g. in case of theft)
- Public libraries (availability of catalogs, search tools)
- Certificates (birth, marriage): request and delivery
- Enrollment in higher education / university
- Announcement of moving (change of address)
- Health related services (e.g. interactive advice on the availability of services in different hospitals; appointments for hospitals.)

Action Plan to eEurope 2002
The Italian Interoperability Framework

Italian Digital Administration Code (C.A.D.)

- Access to admin.'s services
- Electronic documents exchange
- Digital signature
- Software reuse
- Public data base integration

Technical Rules for C.A.D. enforcement

- Common specifications for development, security, interoperability and quality of P.A.'s services and infrastructural services

Connectivity and Cooperation Public System (SPC)

- Nationwide infrastructure
- Public administration’s network made by multi-providers
- Infrastructural services for interoperability

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Services Integration on SPC (SPCoop)

- **Principles**
  - Qualification, Characterization
  - Federation, Decentralization, “Peering”
  - Savings (backward integration)
  - Business Development, Market Regulation

- **Elements**
  - WS Qualified Endpoints (a.k.a. eGov Gateways) to manage security & monitoring
  - Infrastructural Registry Services (SICA)
  - Service Agreements (not to be confused with SLAs)
    - (Annotated) WSDL-XSD Schemes
    - Semantic Specifications (Ontologies)
  - Centralized Directories
SPCoop Architecture

Infrastructural Cooperation Services (SICA)

SICA Nationwide - Infrastructural services for interoperability

- Services Registry & P.A.3 Directory
- Catalog of Schemas & Ontologies
- Meta-Directory of Public Employees
- Certific. Author. & Bridge CA
- eID Federation Mgmt Sys

Domain SICA registry & repository
Domain gateway
Support services for compliance verification

Txt Docs, SAWSDL
OWL
XSD

Back Office

Service Agreement
register
S1
Service
eGov Domain Gateway

request
reply

eGov Envelope

Service Agreement
register

Back Office

S2
Service
eGov Domain Gateway
SAWSDL

- W3C Recommendation (2007)
- Allows attaching semantic specifications to WSDL and XSD, through extensions
- Not about modeling services like OWL-S or WSMO
- Powerful mapping support
- Agnostic w.r.t. ontology languages
Infrastructural Interoperability Services (SICA)
SICA Use Cases (sketch)

- **Define a service**
  - Reuse of available XML Schemas in the Catalog

- **Semantic annotation**
  - Join semantics information to WSDL and XSD using SAWSDL

- **Sharing semantic services**
  - Publishing Service Agreements with semantic annotation to the SICA Registry

- **Search a service by concepts**
  - Support to semantic searches through Catalog on Service Agreements with Semantic Annotations

- Reuse of schemas and ontologies encouraged (but not mandatory)
- Semantic specification up to service providers

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SICA Catalog of Schema and Ontologies

- Catalog management based on proprietary components (IBM IODT) and OS (Pellet)
  - Tbox satisfiability & classification
  - Tbox navigation
  - Query management
- Search function to retrieve services agreements based on concepts
  - E.g. all services related to 'civil status'
- Conceptual relations are taken into account
- No 'global ontology'
Example: Searching a Service Agreement

Type the keyword to search a concept in the Catalog.

The query can be performed on Concept Label, or Description, or See also (one at time).

The query result for each concept contains URI, label, a comment, validity (deprecated or not).

User can view the details of a selected Concept.

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Example: Searching a Service Agreement

- Query: get all Service Agreements related to Civil Status (as defined by CNIPA)

\{ x | ServiceAgreement(x) \land \text{contains}(x,s) \land (\text{ServiceSchema}(s) \lor \text{DataSchema}(s)) \land \text{annotatedWith}(s,c) \land c \subseteq \text{cnipa.it\CivilStatus) } \}
Status & Plan

- 1995: Start designing SPC ancestor (RUPA)
- 2005: SPC & App Coop specification
- 2009: SICA Released
- 2010?: Population?
- ? Actual Cooperation?

- 1\2009 Service On line
- 1\2009 Client Available
- 3\2009 Training Program Started
- 3\2009 Convergence Plan Ongoing
- 2010? Population
- ? Run Cooperation
SPCoop Maturity - As is by design (in my understanding)

The Open Group Service Integration Maturity Model (draft), 2008
SPCoop Maturity – As it may become (in my opinion)

The Open Group Service Integration Maturity Model (draft), 2008
New Political Agenda

- Reti Amiche (Friendly Networks, 2008)
  - Facilitate citizens' access to public services
  - Extend integration to private services (e.g. banking)
  - Any standard allowed
  - Development driven by citizens' feedback
  - New accessibility to generate new integration demand
Data Integration \ Exchange

Most of eGov services are informative (e.g. queries on public registers). They are likely to expose existing back-office databases. However, such databases are greatly heterogeneous. This has been recognized as one of the major issues of eGov development in Italy (eGov Strategic Guidelines, 2007)

- Issues
  - Semantics of conceptual mapping and query answering
    - Epistemic (Doxastic) Semantics?
  - Sharing Individuals
    - Need to manage keys (not addressed by OWL)
Automatic Services Composition

Complex transactional services (e.g. change of civil status) might not be natively supplied, but could be obtained by combining existing services. The availability of a great number of services (including private ones) could raise the need of performing (semi) automatically these tasks.

- **Issues**
  - Integration \ Exchange
    - All the issues mentioned in the previous chart
  - Agreement Specification
    - 'Meta-level', 'contextual', non-functional requirements (e.g. SLA, QoS) representation and reasoning
Mapping ontologies pairwise is expensive and cumbersome. Moreover, 'odd ontologies' are behind the corner (see figure). A 'top-level' ontology could greatly facilitate both the task of developing high quality 'domain' conceptualizations and the task of mapping them the one another.

**Issues**

- Set general 'ontological commitments'
  - Carved out from discussions \ documents?
  - Provided by law \ authorities?
- Build consensus
  - Involve stakeholders in a controlled way
- Deal with 'social objects'
  - Not just space and time
Conclusion

- The Italian eGoverment infrastructure provides the basis for integrating public services and to increase their value for citizens.
- Understanding requisites and priorities is crucial to drive the development of concrete integration projects.
- Public bodies, Research, and Industry must work together to set the agenda of next long term actions.
- Thanks for your contribution.