Facilitating the Semantic Discovery of eGovernment Services: The SemanticGov Portal

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Outline

- SemanticGov Portal Architecture
- Technical Overview
- Future work
- Online Demo
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Supported by the SemanticGov project
The SemanticGov Project

**Project full title:** Providing Integrated Public Services to Citizens at the National and Pan-European level with the use of Emerging Semantic Web Technologies.

**Consortium:** 11 partners from 7 EU countries

**Objective:** SemanticGov tries to address longstanding challenges faced by public administrations by:

- achieving interoperability amongst PA agencies both within a country as well as amongst EU countries
- facilitating the discovery of PA services by its customers
- facilitating the execution of complex services often involving multiple PA agencies in interworkflows
Portal Architecture
Portal Architecture

Citizen subsystem

Administrative subsystem
The Portal’s Ontologies

3 types of Ontologies:

- The Meta-ontology for Goal Tree Ontologies, which provides the building blocks for creating Goal Tree ontologies for public services;

- Goal Tree Ontologies. These ontologies are used to describe the public services that will be available via the SemanticGov Portal.

- Citizen ontologies which define concepts and attributes of the citizens as they are perceived by each national public administration. These ontologies are used in the Goal Tree Ontologies.
The Portal’s Ontologies (cont’d)

Goal Tree Ontologies

- Meta-ontology for Goal tree ontologies
  - instanceof
    - Italian Citizen ontology
    - Meta-ontology for Goal tree ontologies
  - imports
    - Change of Residence Goal tree ontology
    - Naturalization Goal tree ontology
    - Greek Citizen ontology

Goal Tree Ontologies
The Portal’s Ontologies (cont’d)

A Citizen Ontology

```
concept Citizen subConceptOf gea#PhysicalEntity
  hasParentCitizenship ofType (1 2)pupp#Citizenship
  hasCitizenship ofType (1) pupp#Citizenship
  isFellowGreek ofType _boolean
  hasBirthPlace ofType (1 1) protontop#Location
  hasBirthDate ofType (1 1) _date
  hasAge ofType (1 1) _integer
```

Axiom in a Goal Tree Ontology

```
axiom IsChildOfAlien
  nonFunctionalProperties
    dc#description hasValue
    "Checks if the applicant is the child of an alien"
  endNonFunctionalProperties
  definedBy
    ?x memberOf co#Citizen and
    ?x [co#hasParentCitizenship hasValue ?pc] and
    ?pc != co#Greek.
```
The Portal’s Ontologies (cont’d)

Meta-Ontology for Goal Tree Ontologies

Node in a Goal Tree Ontology

instance ChildOfAlien memberOf prtl#InternalNode

hasDescription hasValue
"A child of an aliens want to get the Greek citizenship"

hasChildNode hasValue AdoptedRecognizedByGreek

hasChildNode hasValue BornOnGreekTerritory

hasParentNode hasValue ChildAlien

hasQuestion hasValue qstnChildOfAlien

hasCondition hasValue "IsChildOfAlien"
The Citizen’s Part of the Portal – User Interface

• **Functionalties Provided**
  - Provides means for citizens’ interaction with the portal
  - Presents questions posed by Query Mechanism
  - Collects citizen’s answers and forwards them to QM
  - Presents the results

• **Technology Used**
  - Liferay Portal
  - JSP pages
  - Apache Tomcat 5.0.28
The Citizen’s Part of the Portal – Goal Tree Locator

• **Functionalities Provided**
  - Helps citizen choose the correct goal tree
  - Queries the Repository of WSML Goal Trees (using keywords inserted by the user)
  - Returns matching Goal Trees to User Interface

• **Technology Used**
  - Queries in SPARQL
  - ORDI’s java libraries for posing the queries to the repository
The Citizen’s Part of the Portal – Query Mechanism

- **Functionalities Provided**
  - **Core Component of the Portal – Traversal of the Goal Tree Ontology**
    - If current node is internal node:
      - QM verifies children nodes preconditions to decide the next step
    - If current node is leaf node:
      - QM forwards to discovery engine:
        - Postconditions of the specific Goal
        - Populated Instance of the Citizen Ontology (service-based Citizen Profile)

- **Technology Used**
  - wsmo4j libraries for parsing Goal Tree Ontology
  - IRIS Reasoner for axiom validation
The Citizen’s Part of the Portal – Repositories

- Repository of WSML Goal Tree Ontologies
- Repository of Citizen Ontologies
- User Profile Repository
The Administrative Part of the Portal

Functionalities
- Goal Tree Ontology Editor
- Citizen Ontology Editor
- Usage Statistics
- Account Management

WSMO Studio Plugins
Future Work

- Support of User Profiles and recommendation of PA services based on the profile
- Customization of the personal space of the citizen within the portal (myPortal)
- Support of User Groups/Communities
- Enhancement of the usability of the portal using Web 2.0 technologies
Online Demonstration

Citizen subsystem

http://212.89.165.182:8089/web/guest/home

Administrative subsystem