Process Interoperability for Seamless Government

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Semantic Process Interoperability for Seamless Government

Introduction
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Conclusions

Electronic Government

Electronic Government refers to the use of Information and Communication Technology, particularly the Internet, as a tool to achieve better government (OECD).

- aims
  - provide higher quality of services
  - improve efficiency in government processes
  - make more efficient use of public funds
  - ...

- e-gov is more about gov than about e-
Seamless government is public agencies working across boundaries to achieve a shared goal and an integrated government response to particular issues.

- **Seamless government**
  - **characteristics**
    - horizontal connections
    - vertical connections
    - infrastructure connections
    - connection among stakeholders: government, private sector, academic, NGOs

**Public service** a service performed for the benefit of the public, especially provided by a non-profit organization

**Seamless public service** a public service pro-actively delivered based on customers’ needs, usually through a one-stop contact

- **government customers:** citizens, businesses, civil servants, tourists, ...
- **public agencies, fulfillment agents and supplier agents** are hidden behind the **one-stop contact**

**Challenges**

- **legal challenges:** digital signature, privacy, unclear authority
- **budgetary challenges:** multi-annual funding across organizational boundaries
- **cultural challenges:** digital gap, poor ICT culture of public servants
- **organizational challenges:** organizational transformation, integration, collaborative work
- **computer science challenges**
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Types of interoperability solutions

- **Frameworks** set of standards and guidelines that describes the way in which organizations have agreed, or should agree, to interact with each other.
- **Enterprise architectures** aim at enabling a better management practice whereby the resources are aligned to improve the business performance and help the organization better execute its mission.

Existing frameworks and enterprise architectures

- **United Kingdom – e-GIF**
- **Germany – SAGA**
- **Hong Kong – HKSAR Interoperability Framework**
- **United States – FEA**

Evaluation

- Several limitations exhibit these solutions
  - Lack of formal model
  - They are not easily extended
  - No native electronic government support for existing solutions

G-EEG

- **Government-Enterprise Ecosystem Gateway (G-EEG)** is a high level communication and coordination platform for multi-organization processes and applications
- It enables processes and applications to build, apply and evolve complex communication structures, based on asynchronously exchanged messages
- It was developed as part of the e-Macao Program in 2006-2007, based on a rigorous use of modelling and analysis techniques
- Comprises a minimal core, and a library with some horizontal and vertical extensions
G-EEG components

- **G-EEG CORE** is a runtime framework allowing registered members to asynchronously exchange messages along dynamically created and subscribed channels.
- **G-EEG EXTEND** is a repository of process-independent and process-dependent extensions together with a mechanism to dynamically enable them on top of G-EEG CORE.
- **G-EEG DEVELOP** is a framework to specify, design, and verify messaging extensions.

G-EEG abstract specification

- **G-EEG formal model** is specified in three levels of abstraction:
  - G-EEG SPEC
  - G-EEG CORE
  - G-EEG EXTEND
G-EEG EXTEND low level abstraction

G-EEG evaluation

- G-EEG addresses very well some of challenges
- semantic interoperability may be solved by vertical extensions
- but it is not a complete solution....

Semantic interoperability challenges

- challenges
  - data integration
  - validation
  - discovery
- all can be partially addressed by mappings as vertical extensions in G-EEG

Data integration

- possible semantic conflicts between different ontologies
  - different interpretations of the same term
  - use of different levels of refinement for descriptions
  - use different vocabularies
- mappings between ontologies
- the vocabulary in public sector is highly dependant on regulations and policies with frequent changes
Validation

- to detect inconsistencies inside an agreed common vocabulary
- examples
  - monitoring fulfillment of agreements that define responsibilities for different agencies involved in the execution of a public service
  - advising customers with possible conflicts in an application for a benefit
- validating extensions may be solved by horizontal and vertical extensions
- validating problems in the customer side are due in general because misinterpretation of concepts

Conclusions

- seamless government is a new paradigm in e-gov with focus in reengineering processes and organizational units
- G-EEG is an extensible infrastructure solution for seamless government
- there are still some problems with semantic interoperability
- heavy interdisciplinary work for ontology designers, and tools to help them, are necessary

References

Thank you!