Controlled Vocabularies And Metadata Sets For Public Sector Information Management

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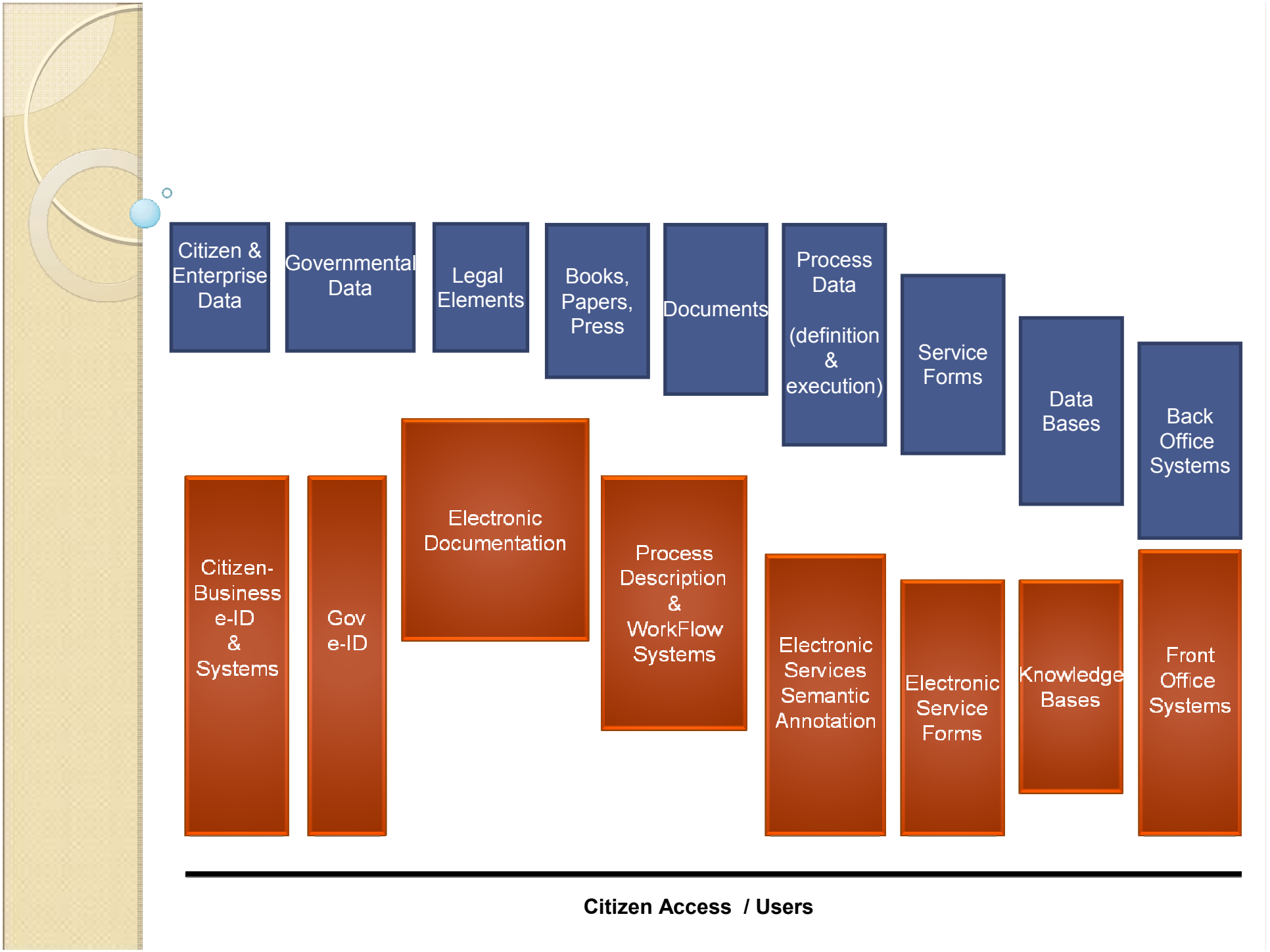
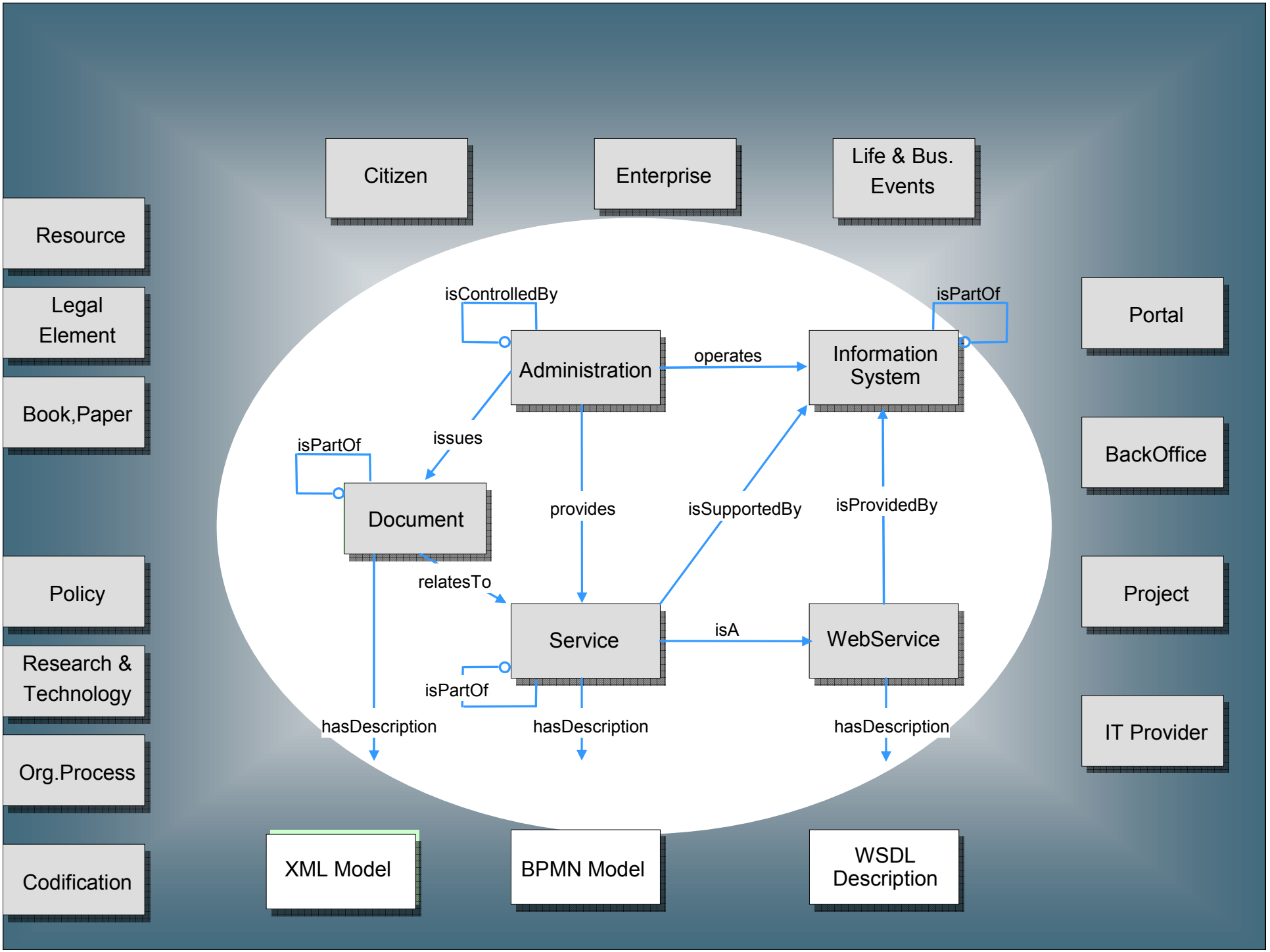
Motivation

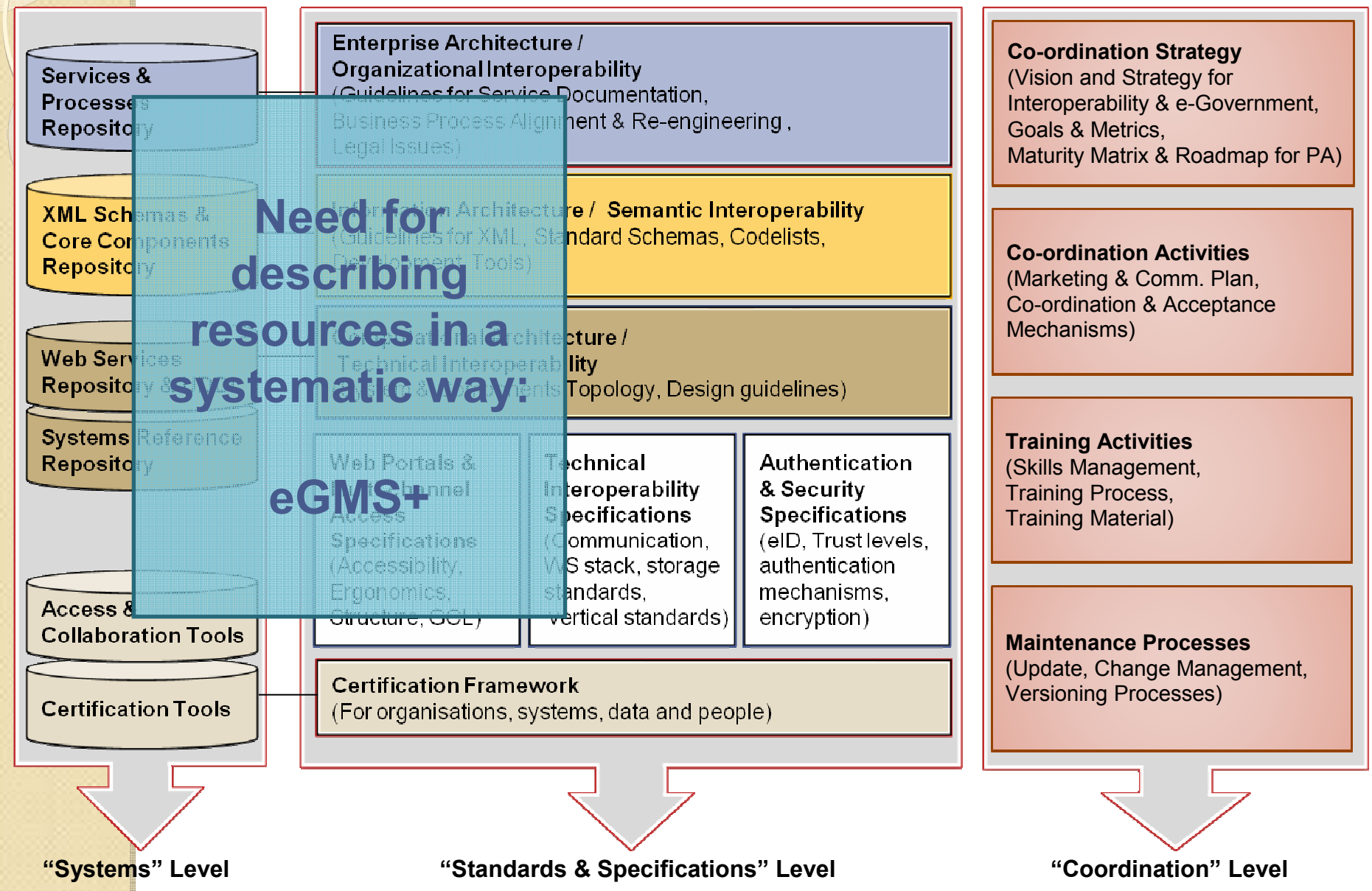
- Governmental resources metadata: an important ingredient to achieve standardised service description, retrieval, composition and cross-organisational collaboration
- Existing schemas present certain shortcomings:
- Pan-European standardisation of service metadata is essential. The ISA Core Standardisations are in the right way, but still cover very basic data.
- Metadata sets form parts in larger Government Ontologies, with applications in public knowledge management and semantic interoperability (Opendata, etc)


Citizen & Enterprise Data
Governmental Data
Legal Elements
Books, Papers, Press
Documents
Process Data (definition & execution)
Service Forms
Data Bases
Back Office Systems
Citizen-Business e-ID & Systems
Gov e-ID
Electronic Documentation
Process Description & WorkFlow Systems
Electronic Services Semantic Annotation
Electronic Service Forms
Knowledge Bases
Front Office Systems
Citizen Access / Users

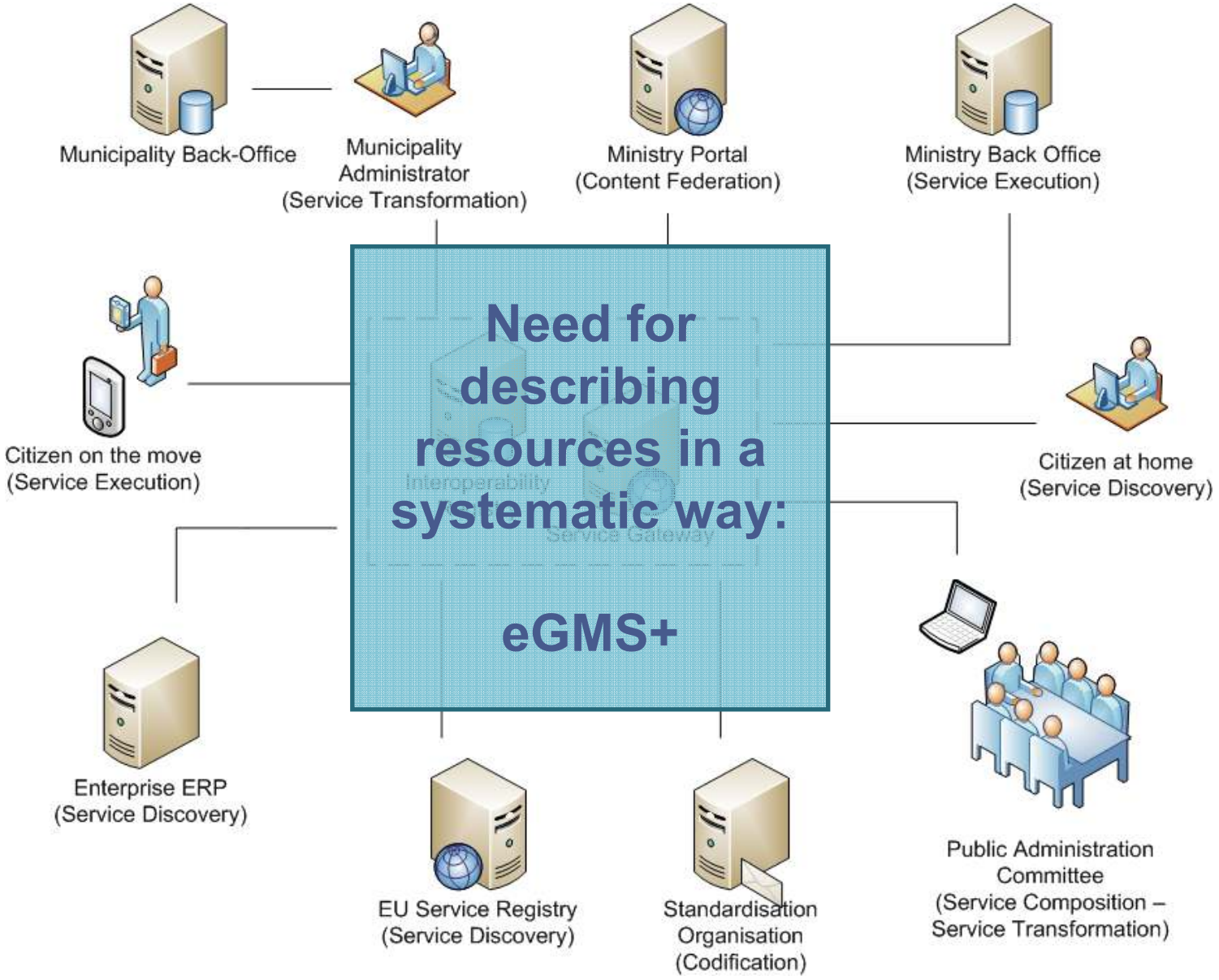

Citizen
Enterprise
Life & Bus. Events
Resource
Legal Element
Book,Paper
Policy
Research & Technology
Org.Process
Codification
Portal
BackOffice
Project
IT Provider
isControlledBy
isPartOf
Administration
operates
Information System
issues
isPartOf
Document
provides
isSupportedBy
isProvidedBy
relatesTo
Service
isA
WebService
isPartOf
hasDescription
hasDescription
hasDescription
XML Model
BPMN Model
WSDL Description

ICT Provider
Non-Governmental Organisation
Enterprise
Foreign Administration
Ontologically Managed eGovernment Knowledge
Administration
Visitor
Citizen
Researcher & Trainer

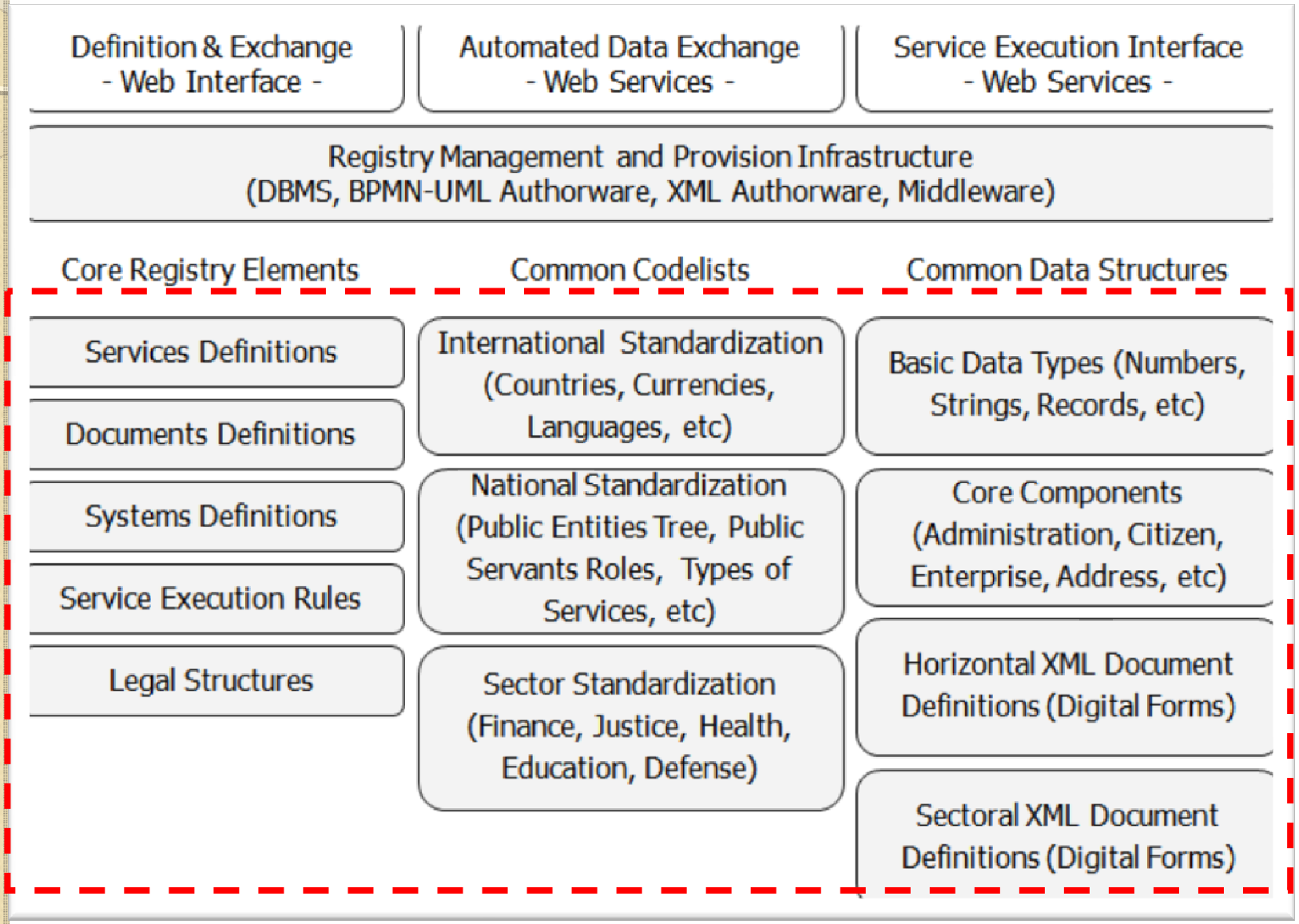
The Context: The Greek eGIF



The Context: Service Registries in eGovernment

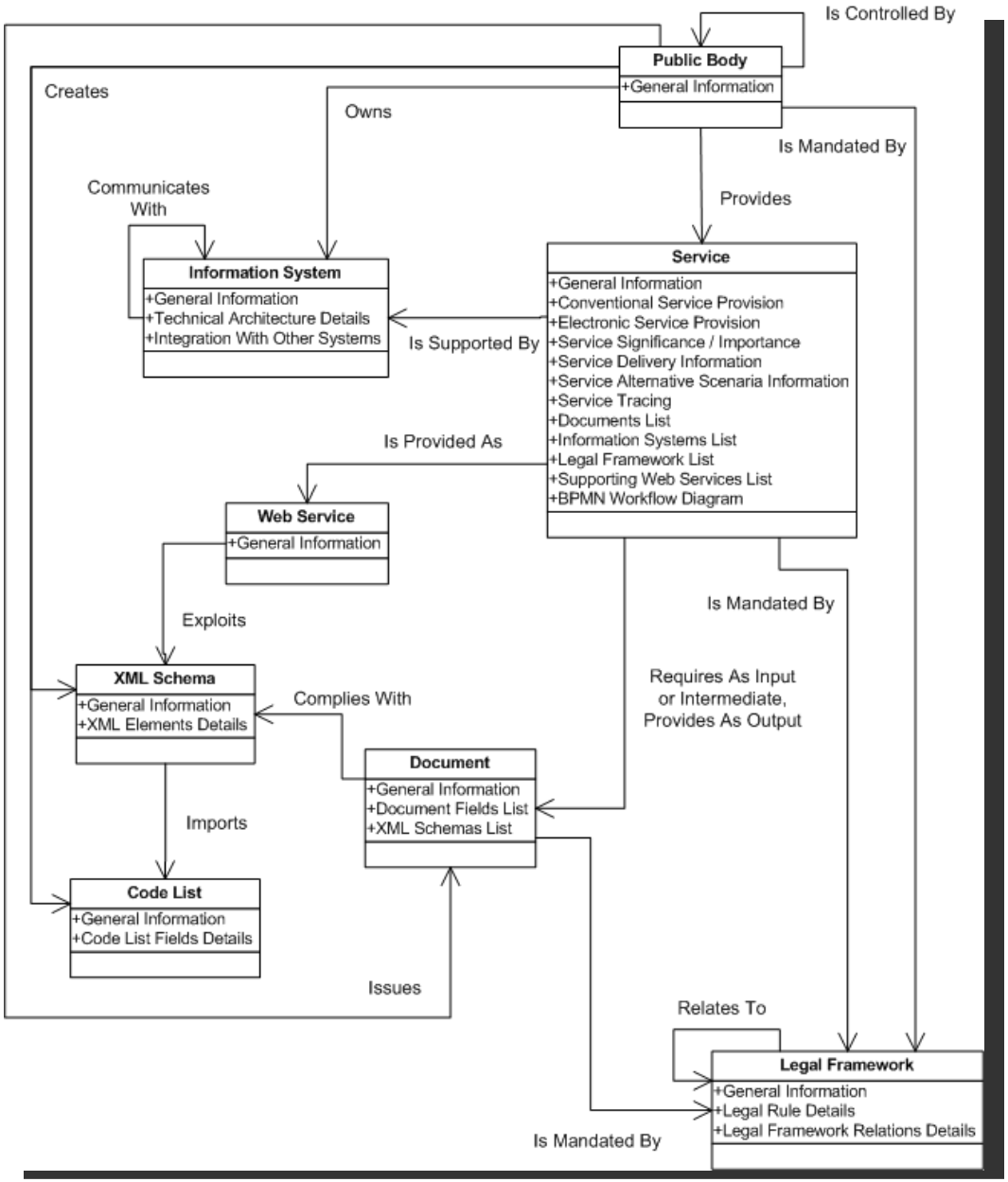


Metadata definitions within a Service Registry



e-Government Ontology

Extract



Metadata Set for Services
Part I

General Information		
Identifier	Title	Responsible Public Body
Final Service (*)	Addressee (*)	Type (*)
Aggregation (3 level-GCL) (*)	Life Event (*)	Business Episode (*)
Service In Abstract Level (*)	Parent Service	Service Delivery Channels (*)
Conventional Service Provision		
Demand On Physical Presence In Submission (*)	Demand On Physical Presence In Receipt (*)	Conventional Authentication Method (*)
Electronic Service Provision		
Website	Electronic Service Delivery Method (*)	Current Online Sophistication Level (*)
Target Online Sophistication Level (*)	Multilingual Content (*)	Offline Operation (*)
Progress Monitoring Support (*)	Personal Data Level (*)	Trust Level (*)
Required Authentication Level (*)	Current Authentication Mechanism (*)	Registration Process (*)
Service Significance / Importance		
Transactions Volume (per year)	Frequency of Service Requests	Based On European Policies (*)

Metadata Set for Services
Part II

Service Delivery Information		
Delivery Cost	Delivery Time	Responsible Department
Responsible Public Servant	Service Preconditions	
Related Announcements	Related Attachments	
Service Alternative Scenaria Information		
Identifier	Title	Conditions
Resources for Public Administration	Resources for Addressee	Total Resources
Cost for Public Administration	Cost for Addressee	Total Cost
Time for Public Administration	Time for Addressee	Total Time
Service Tracing		
Source	Date. Published	Date. Modified
Date. Valid (From-To)	State (*)	Language (*)
Documents List		
Identifier	Title	Position In Service (*)
Mandatory (*)	Replaces Document	Self-appointed Call (*)
Information Systems List		
Legal Framework List		
Supporting Web Services List		
BPMN Workflow Diagram		

Metadata Set for Documents

General Information		
Identifier	Title	Creator
Publisher	Type (*)	Subject
Coverage	Format (*)	Language (*)
Addressee	Audience	Mandate. Authorizing Statute
Source	Date. Published	Date. Modified
Date. Valid (From-To)	State (*)	
Document Fields List		
Name	Description	Aggregation
Filled In By	Mandatory (*)	Complex Type (*)
Multiple Values (*)	Predefined Values from Code List	
Type (*)	Length	
XML Schemas List		

Metadata Set for XML Schemas

General Information		
Identifier	Title	Creator
Version	Type (*)	Format (*)
Date. Published	Date. Valid (From-To)	State (*)
XML Elements Details		
Unique Identifier	Name	Dictionary Entry Name
Type (*)	Version	Definition
Object Class Term Qualifier	Object Class Term	Property Term Qualifier
Property Term	Associated Object Class Term Qualifier	Representation Term (*)
Date Type Qualifier	Primitive Type (*)	Qualified Data Type
Cardinality Min	Cardinality Max	Facets (i.e. Pattern, Length, Min/Max Length, Enumeration, Total Digits, Fraction Digits, Min/Max Inclusive/Exclusive)
Context: Business Process	Context: Organization	Context: Region (*)
Business Term	Example	Remarks

Metadata Set for Public Bodies

General Information		
Identifier	Title	Acronym
Type (*)	Supervisor Public Organization	Description
Location	Website	State (*)
Contact Details	Remarks	Date. Valid (From-To)

Metadata Set for Information Systems

General Information		
Identifier	Title	Owner Organization
Contractor	Project	Description
Type	Users (Total Number)	Date. Acquired
Date. Modified	Date. Valid (From-To)	State (*)
Preservation Mechanism (SLA)	Contact Details	Website
Technical Architecture Details		
Database Management System	Application Level	Network Infrastructure
Authentication Mechanism (*)	Security Mechanism (*)	Technical Standards (*)
Integration With Other Systems		
Identifier	Title	
Integration Mechanism (*)	Communication Frequency	

Metadata Set for Legal Framework

General Information		
Identifier	Title	Official Journal Identifier
Official Journal Page Numbers	Application Field (*)	Application Status (*)
Type (*)	Language (*)	Date. Issued
Date. Signed	Date. Valid (From-To)	Relevant Attachments
Legal Rule Details		
Identifier	Title	Description
Legal Framework Relations Details		
Legal Framework Identifier	Relation Type (*)	

Controlled Lists

Government Category List (1st Level out of 3)		
City Planning and Land Registry	Civilization and Free Time	Education and Research
Environment and Natural Resources	Finance and Economy	Health and Social Care
Information and Communication	International Affairs and European Union	Justice, State and Public Administration
People, Communities and Way of Living	Public Order and Defence	Services for Companies
Transportation Means, Trips and Tourism	Work, Insurance and Pension	
Service Type		
Request	Information Discovery	Declaration
Return	Registration	Participative Actions
Permit / Licence	Certificate Issuance	Payment
Life Event[1]		
Birth	Marriage	Divorce
Death in Family	Sickness	Employment
Dismissal	Retirement	Property Acquisition
Property Loss	Residence Change	Education
Travel Abroad	Military Service	Other …
Not Applicable	Unknown	
Service Delivery Method		
Service Provider Premises	Single Points of Contact (Citizen Service Centers in Greece)	Call Centers
Mail	Internet	Mobile Phone
Digital TV	Other	Unknown
Electronic Service Delivery Method		
Internet Browser	Web Service	Desktop Application
Other	Unknown	

Population of eGMS+

Entity	Population
Public Administration Organisations / Entities	1,797 / 18,000
Governmental Services Definitions	2,066
IT Systems Definitions	76
Service Execution & Orchestration Models – BPMN	614
Web Services Definitions – WSDL +	35
Government Category List Nodes	166
Life Events / Business Episodes	35 / 25
Other Taxonomies (Legal, Security, Quality, Channels, etc)	200
Documents Definitions	3,912
Unique Document Field Definitions	1,434
Standard Codelists (ISO, UN, EC, CEN, GR)	16
Standard Document Schemas – XSD	404
Reusable Business Information Entities – CCTS	154
Core Components – CCTS	36

Conclusions – Future Work

- Standardization of an ontology-based extended metadata set embracing the Government knowledge, from services and documents to code lists and information systems, which:
  - Effectively supports the Greek e-Government Interoperability Framework and the Interoperability Registry Prototype implementation.
  - Formalizes the exchange of information between portals and registries.
  - Includes metadata around service delivery scenarios that can guide any business process re-engineering effort in the public sector.
- Future steps include exploration of how such a metadata set can:

  (a) embrace policy modelling and intelligent governmental service front-ends

  (b) be further elicited in order to take into account citizens' feedback when designing public services.

  (c) automated metadata filling