

**TED Conference on e-Government
Electronic Democracy: The challenge ahead**

**e-Government:
A Legislative Ontology for the ‘SIAP’
Parliamentary Management System**

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*** Founder Partner of CRC Information Technologies
[//www.crcit.es/SIAP](http://www.crcit.es/SIAP)**

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- 4. Parliamentary **Legislative Ontology, LO**
 - The **Legislative Initiative Ontology** Component
 - The **Legislative Emendation Ontology** Component
 - The Proposed **Legislative Semantic Web**
- 5. Conclusions

Motivation: 1) From the **Semantic Web** point of view

Motivation

SIAP System

Overview
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LI Initial Text
Emendation Text
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Conclusions

■ The Web grows exponentially:

- ✓ Server Sites (>40 million) & Web Information Systems (WIS)
- ✓ Available information (>1.6 Giga-page)
- ✓ User Humans (>650 million)

■ Analysing web sites faces two challenges:

- ✓ The huge amount of on-line published data. According to UC Berkeley, the world produces 1–2 hexabytes of new data every year.
- ✓ The complex structures found in these sites

...but it is **semantically** anarchic...

■ Current Semantic Web only offers '*hot*' semantic isolated points

- ✓ An Important Challenge is going on joining these points in order to achieve a Unified/Universal Semantic Scope, tailored to a concise specific domain

Motivation: 2) *From the **Web Information System** perspective*

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- **Institutions are claiming Wisdom WIS**
- **It is essential to improve the virtual integration of heterogeneous and distributed e-Government WIS.** (Pre-existing and Legacy WIS).
- **Additionally, it is fundamental to build new WIS regarding to current and future Semantic Web.**

Motivation: 3) *From the e-Government point of view*

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■ **Governments and Institutions face new Web challenges:**

- ✓ The huge amount of political documentary information, with a paramount diversity of contents.
- ✓ They need to provide easy access to the information content, guaranteeing the safety and custody of what they hold.
- ✓ This Information needs to be integrated, shared and reused.

For these reasons, we are researching a generic architecture for the semi-automatic integration of multiple Web Parliamentary Sites, allowing queries against several data sources independently of their location and content, as if they were only one.

Motivation: 4) From the *Legislative World* point of view

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- **The double goal of a Parliament:**
 - ✓ To control the executive (the government) that has power over a concise society: country, autonomy, etc.
 - ✓ To promote laws as the legislative power basement.
- **Parliamentary Initiative (PI) Typology**
 - ✓ The PI is the politician's regulated way in order to make the political job into any Parliament.
- **The Legislative Initiative(LI) is a PI type, which goal is the Law promulgation**
 - ✓ **Three kinds of LI:**
 - ✓ **Law Project** (from the government's political party)
 - ✓ **Law Proposition** (from another party)
 - ✓ **Popular LI** (rarely, it needs thousand of signed person-name)

Motivation: 4) *From the **Legislative World** point of view*

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- **We still have not any integrated web solution for ‘adding’ Laws to a Unified Legislative Semantic Web environment.**
- **So, the web user is unable to access a virtual, dynamic, global and integrated Legislative Information providing a unified and universal semantics.**

...this paper wants contribute in this direction...

SIAP: Integrated Parliamentary Information System



SIAP: The Integrated Parliamentary Management System

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- **SIAP is successfully running at the Asamblea of Madrid since 1999**
- **SIAP manages Parliamentary Activity**
 - ✓ It controls the workflow of parliamentary documentary information
 - ✓ It structures Political Initiative and Parliamentary Activity

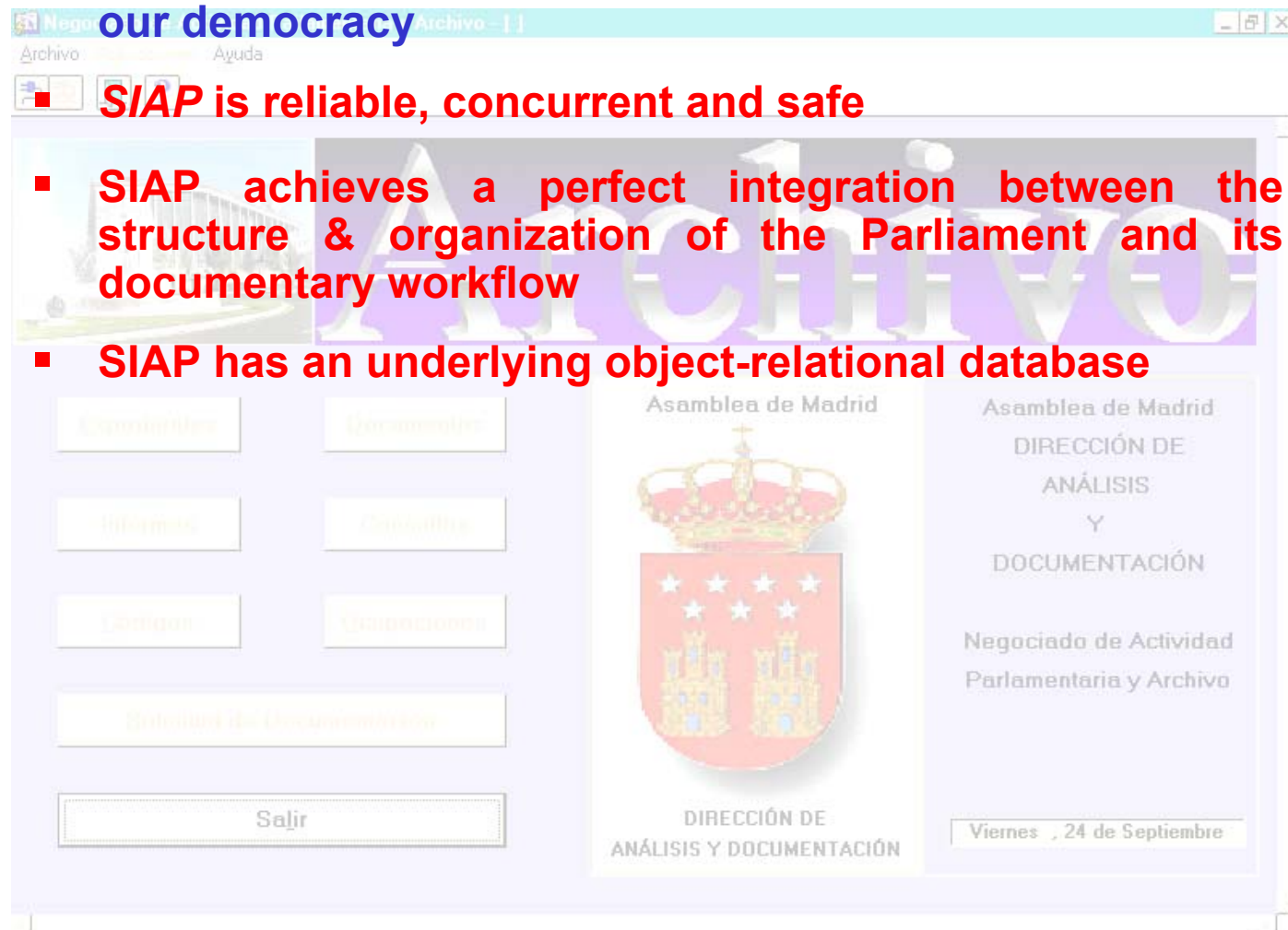
SIAP: Integrated Parliamentary Information System

- Thanks to SIAP, the Asamblea of Madrid has totally digitized its documentary fonds, since the beginning of our democracy

- SIAP is reliable, concurrent and safe

- SIAP achieves a perfect integration between the structure & organization of the Parliament and its documentary workflow

- SIAP has an underlying object-relational database



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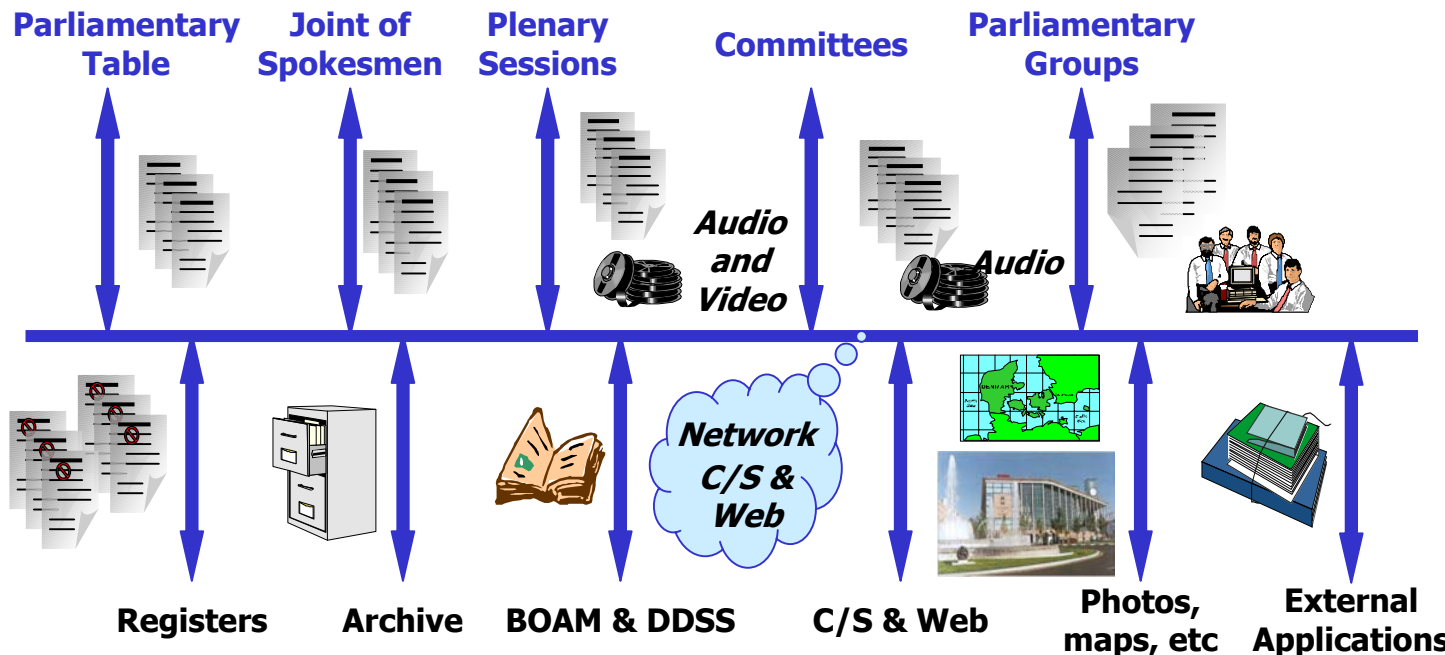
- **SIAP's Objectives and Capabilities:**
 - ✓ Management of information generated by political Institution' activity
 - ✓ Control of regulated workflow
 - ✓ Semantic control Applications and GUIs software
 - ✓ Control of Grants and Privileges
 - ✓ Integration with Offimatic Environment

- ✓ More details about Modules and Applications, please see:
www.crcit.es/SIAP

SIAP: Integrated Parliamentary Information System

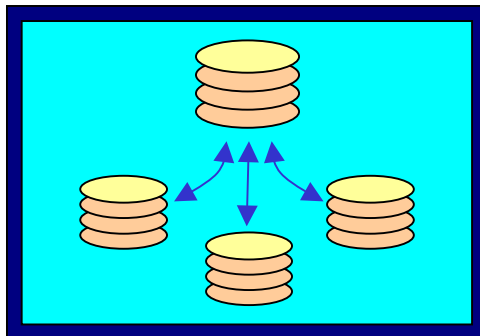
- It has two functional architectures:
 - Client/Server (two tiers)
 - Web (three or more tiers)

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SIAP has been introduced in many Spanish Parliamentary and Political Parties Conferences (since 1999), and it is considered a powerful and complete Parliamentary IS.

- **SIAP is powerful and ideally advanced for the web**



Web Multi-parliamentary

✓ It's worth make a previous appointment on how easy is to get dynamic interoperability on the web when data sources have the same WIS (same design and semantic control, similar software, etc.), as figure shows. With similar WIS, e-government web information capabilities will grow in a spectacular way.

✓ However, in HWIS environments it could be hard to provide easy and powerful access to a global e-government information.

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- The Parliamentary Activity Management main screen, through which the LI is automatically processed.
- The Legislative Management is included in the broader SIAP system.

SIAP: Parliamentary Legislative Initiative, *LI*

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The Budget Law Project Application belongs to the Parliamentary Activity Management

- Hierarchical levels of the *LI* text (LP, LProp): Title, Chapter, Section, Article, etc.
- LIO (LI Organization) application loads the *LI* text from a file, organizes and publishes it.

<input type="checkbox"/>	Motivations
<input type="checkbox"/>	Articled:
<input type="checkbox"/>	Title
<input type="checkbox"/>	Chapter
<input type="checkbox"/>	Section
<input type="checkbox"/>	Article
<input type="checkbox"/>	Apart
<input type="checkbox"/>	Subapart
<input type="checkbox"/>	Additional Dispositions
<input type="checkbox"/>	Derogatory Dispositions
<input type="checkbox"/>	Transitory Dispositions
<input type="checkbox"/>	Final Dispositions

SIAP: Parliamentary Legislative Initiative, *LI*



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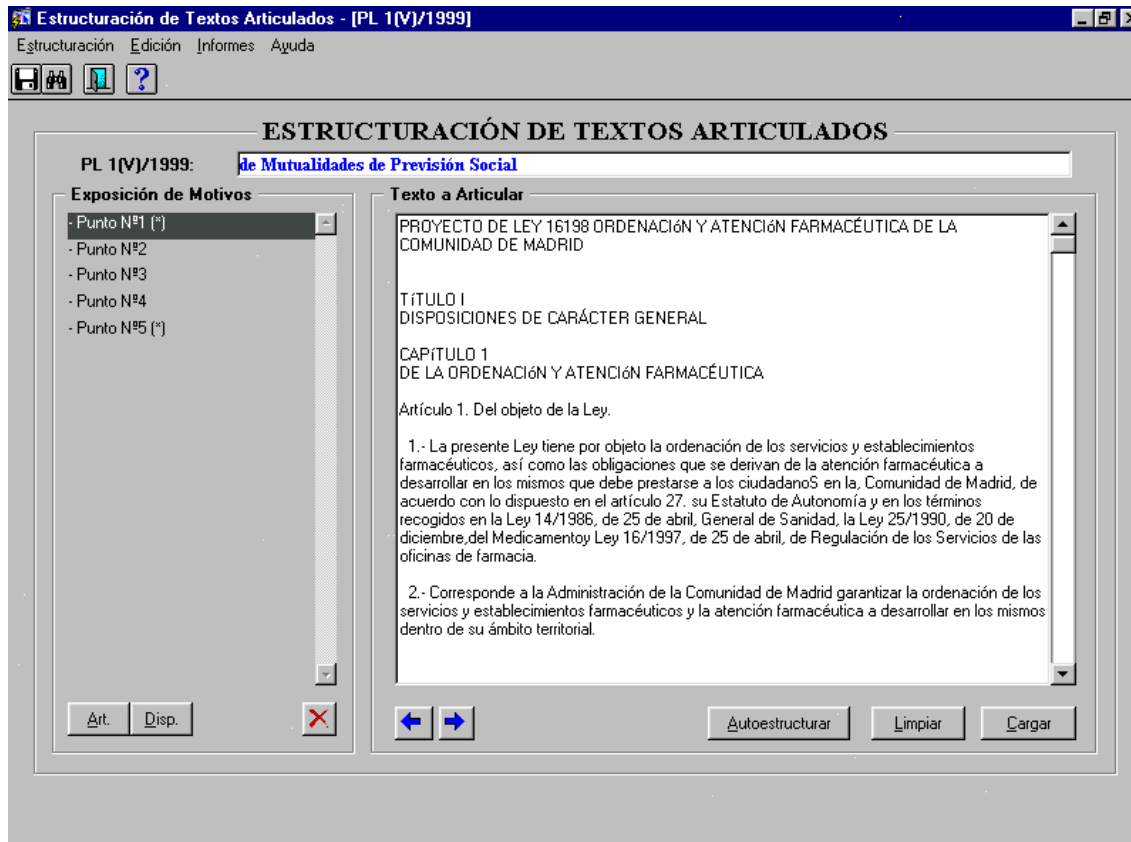
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The main
screen of *LI*
organization

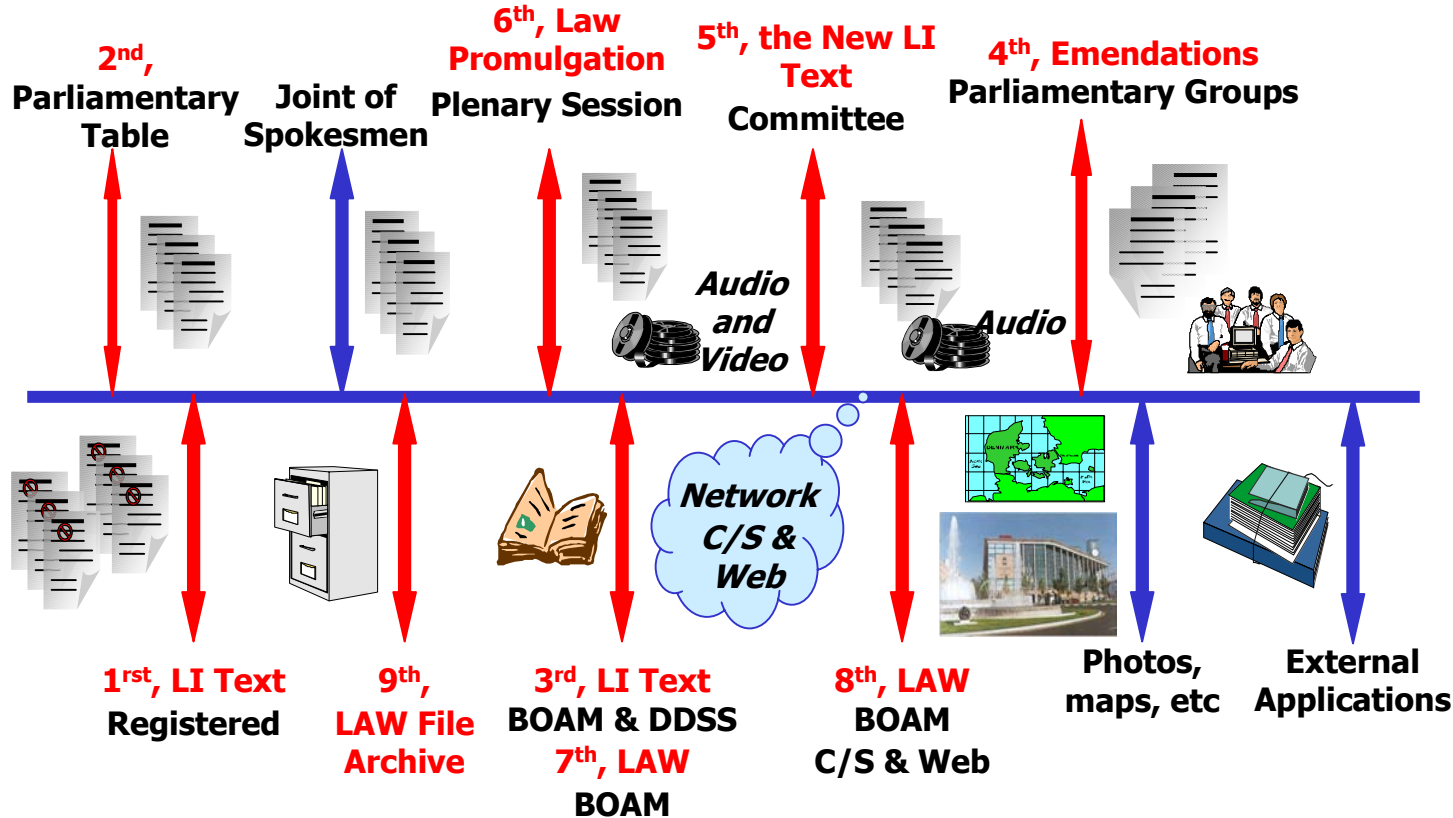
- Once the *LI* arrives to the Parliament, the *LIO* application can publish it on the Official Bulletin automatically.
- In order to publish the *LI* on the Official Bulletin, *SIAP* applies the format layout used at the Parliament.

SIAP: Legislative Initiative Procedural Steps, *LI*

...since the LI arrives until the Law is promulgated...



- Parliamentary legislative Initiative, LI
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SIAP: Legislative Initiative Procedural Steps, *LI*



Parliamentary legislative Initiative, LI Emendations

Ontologies

Legislative Ontology

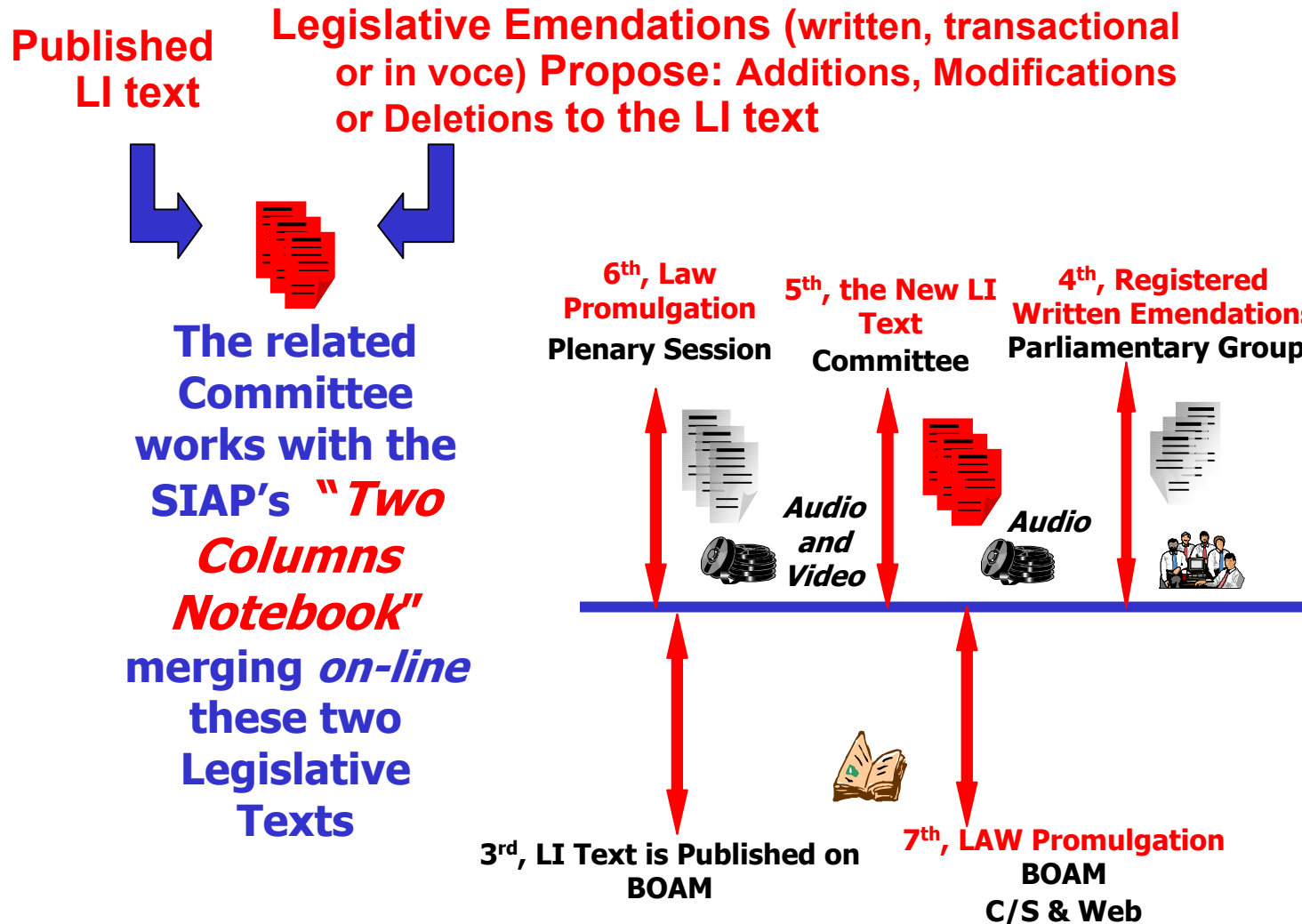
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SIAP: Legislative Initiative Procedural Steps, *LI*



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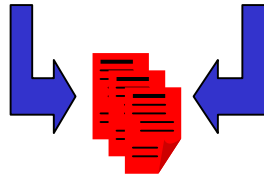
Emendation Text

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LI text Emendations



the SIAP's
"Two
Columns
Notebook"
merges *on-line* these
two kind of
Legislative
Texts

- Two Columns Notebook is built from the syntactic links between the *LI* text and the Emendations. *SIAP* is able to insert, update and remove elements inside a *LI* from the Emendations.
- SIAP lacks of semantics, so, it cannot 'understand' the changes it makes. Thus, it is impossible to automatically detect inconsistencies or integrity lacks inside each new merged *LI* text.
- The lawyer is the person in charge of assuring this kind of semantics among the original *LI* text and all the approved Emendations.

1st *LO* reason:, to build a Legislative ontology that monitors the semantics of this final text.

Ontologies for Semantic Web

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- **An Ontology** describes shared knowledge on a specific domain in order to establish a communication via between humans and programs
 - Applications could speak to each other and interpret without ambiguity the information
- **XML**
 - It is a mature technology
 - **But it is not semantic**
- **RDF, RDFS, DAML+OIL and OWL... constitute the current semantic languages**

Ontologies for e-Government Semantic Web

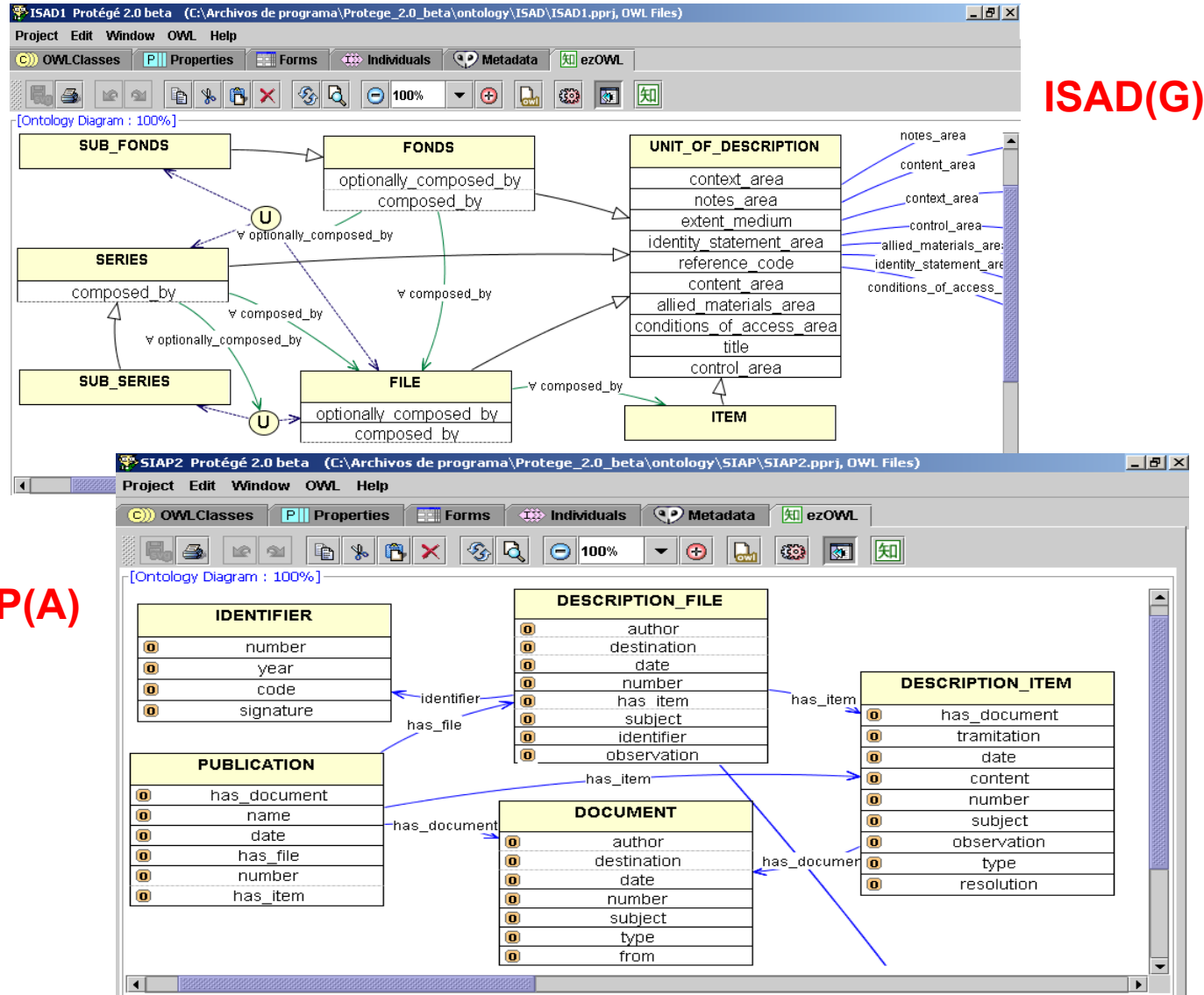
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- We have built 3 previous ontologies:
 - **ISAD(G)**
 - **ISAAR(CPF)** } Archival Standards of the International Council on Archives
- **SIAP(A)**, Parliamentary Archive ontology. It has been built from SIAP starting from its Archive Management Subsystem
- Besides, we have adopted:
 - **DCMI (Dublin Core Metadata Initiative)**, from the Online Computer Library Center, ANSI/ISO Z39.85 & ISO 15836-2003 standards
- **But the interest goes further on:**
 - We follow a step-by-step methodology, that provides a flexible and scalable way for adding other kinds of specific e-Government ontologies (municipal and parliament Governments, administration, education, etc.).

Previous Ontologies for e-Government Semantic Web

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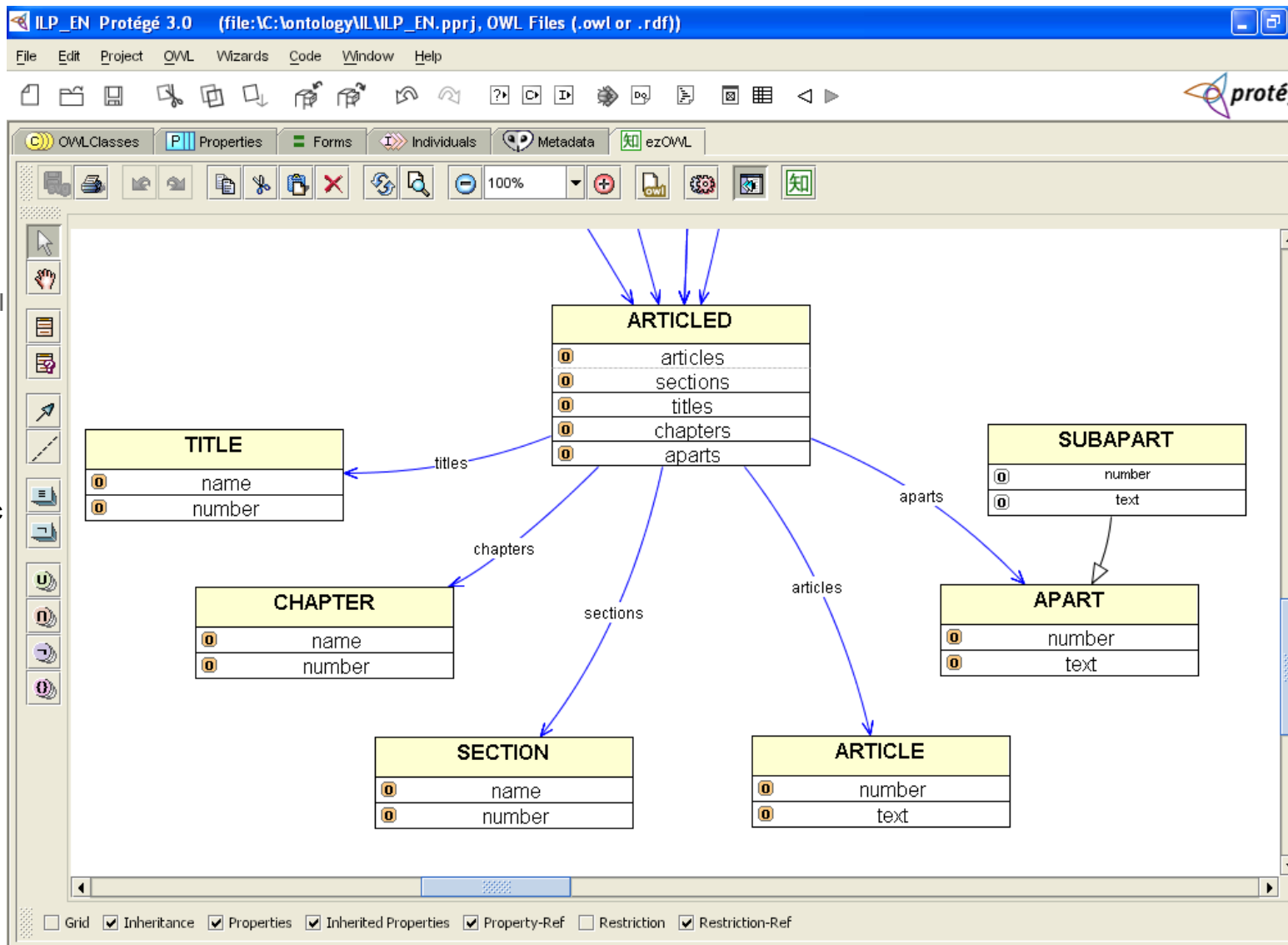
SIAP(A)



ISAD(G)

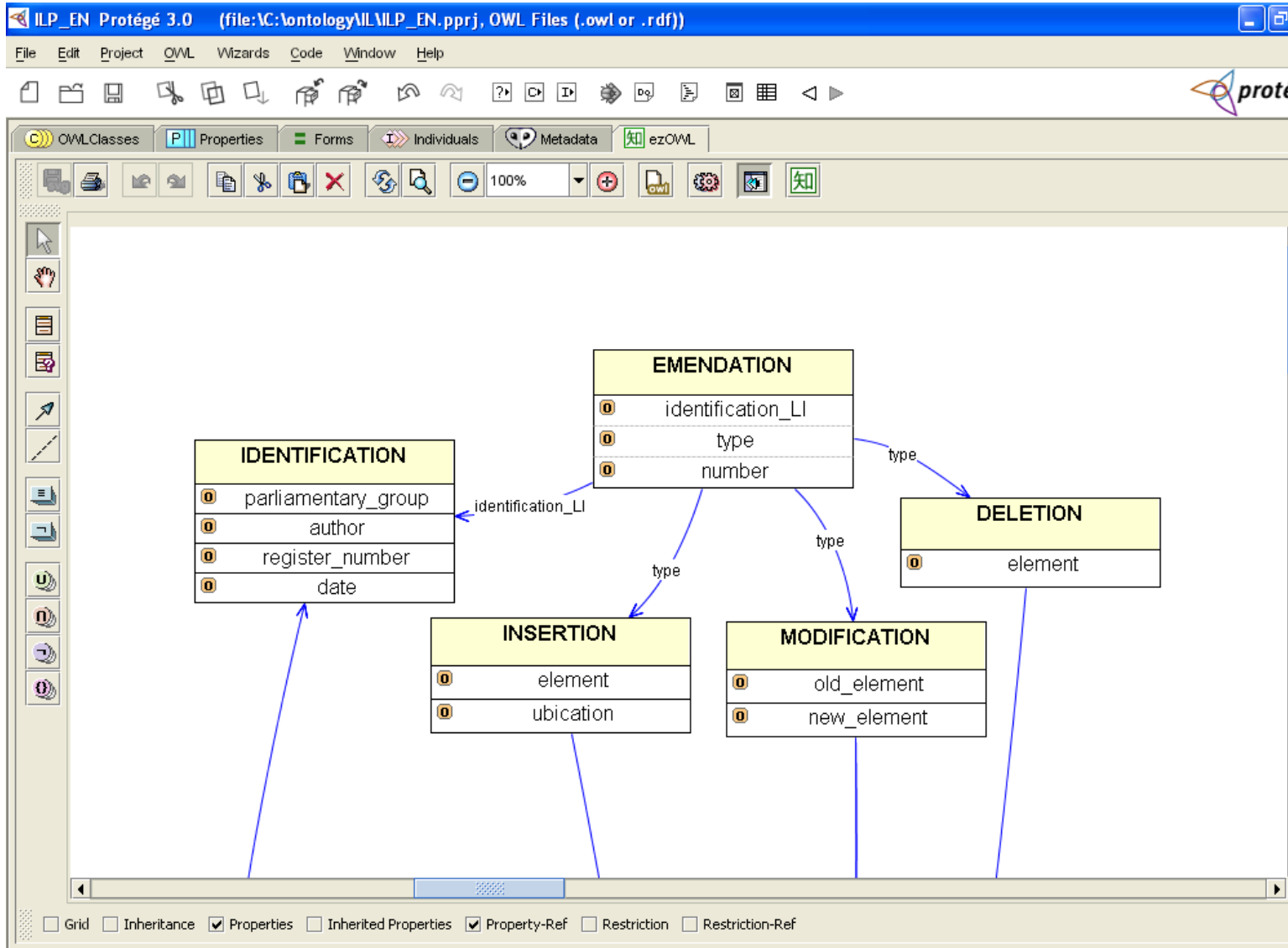
e-Government Semantic Web: the Legislative Ontology, *LO*

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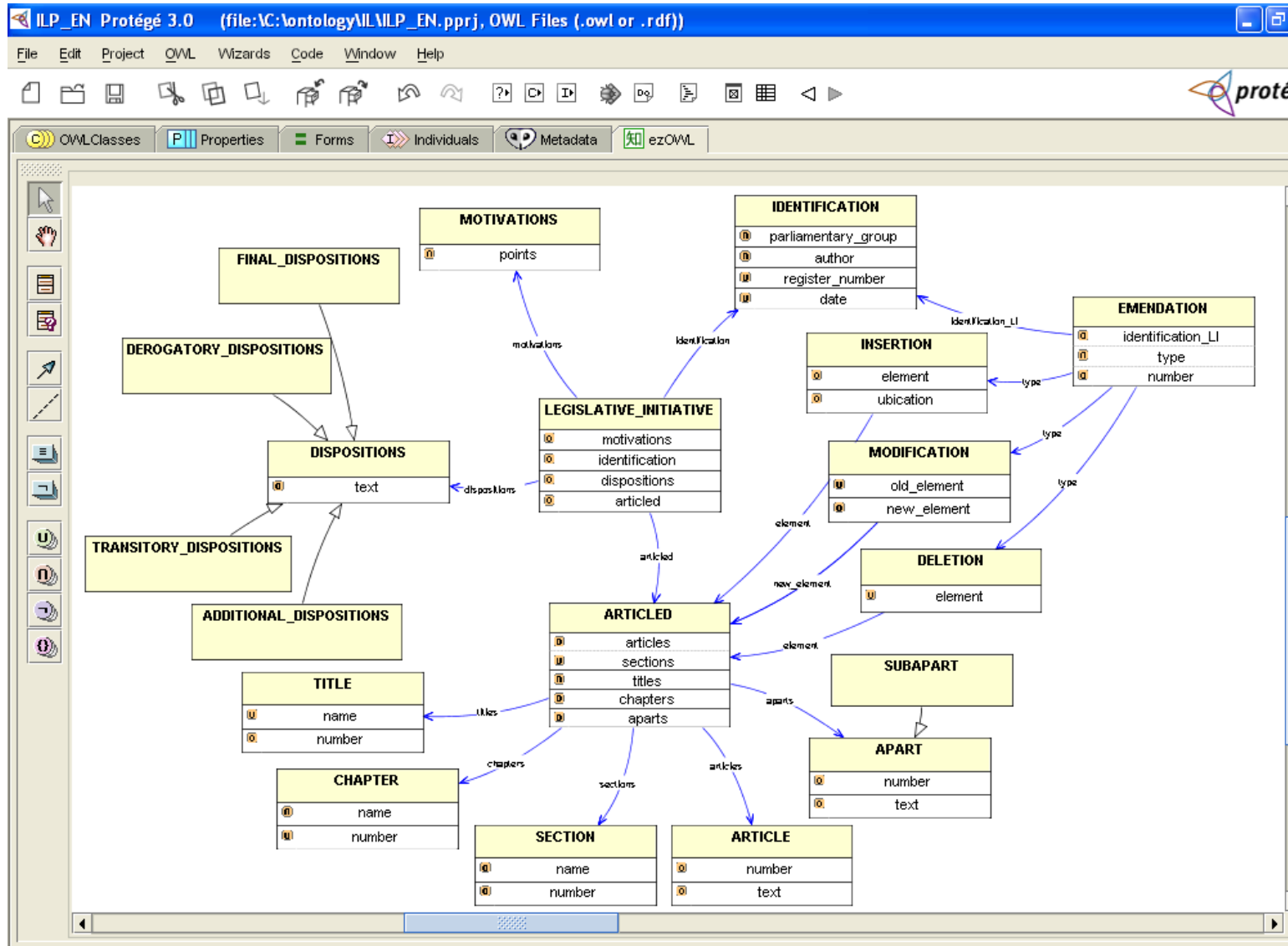
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e-Government Semantic Web: the Legislative Ontology, LO

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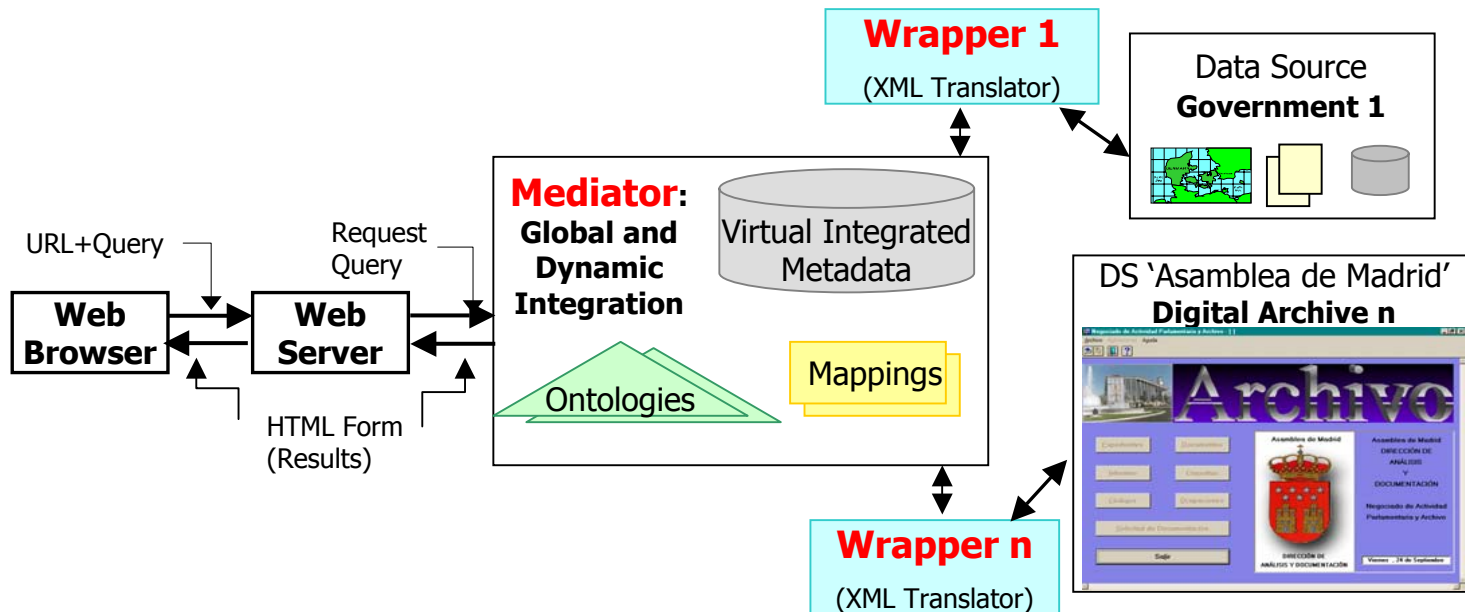


e-Government Semantic Web Architecture

Virtual and Dynamic Web Integrated Architecture

based on a **Wrappers layer** (saving the data sources heterogeneity using XML) **and a Mediator layer** (composed of ontologies, mappings and data repositories)

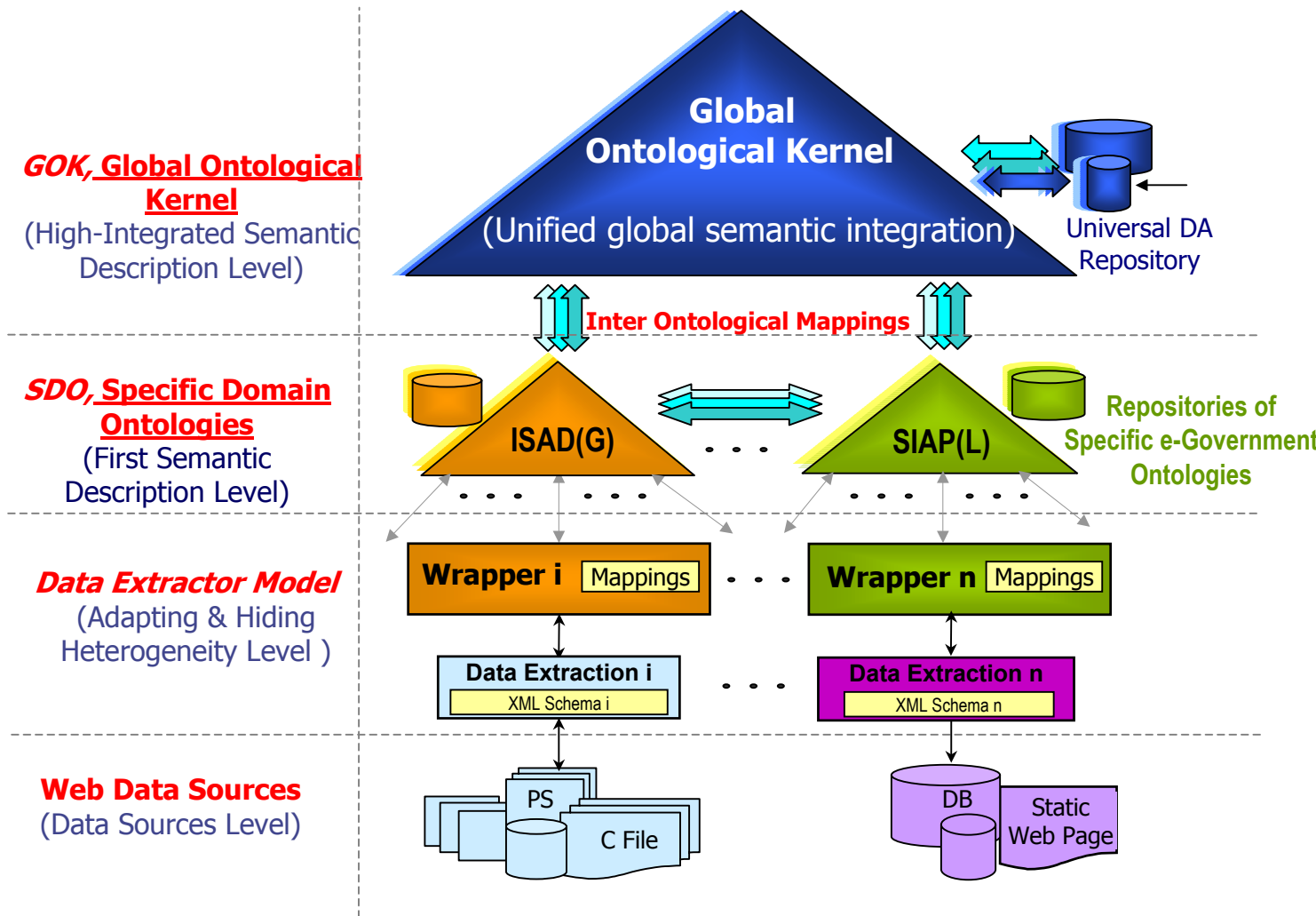
Implementation: Service-based, J2EE compliant, Java libraries



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Integration Model based on the Ontological Unification

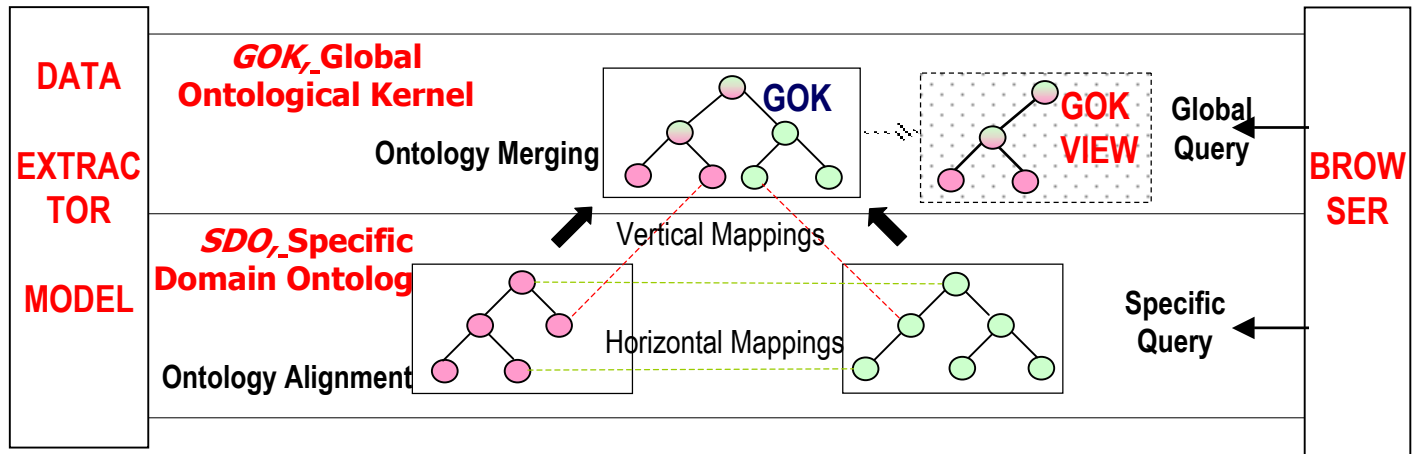
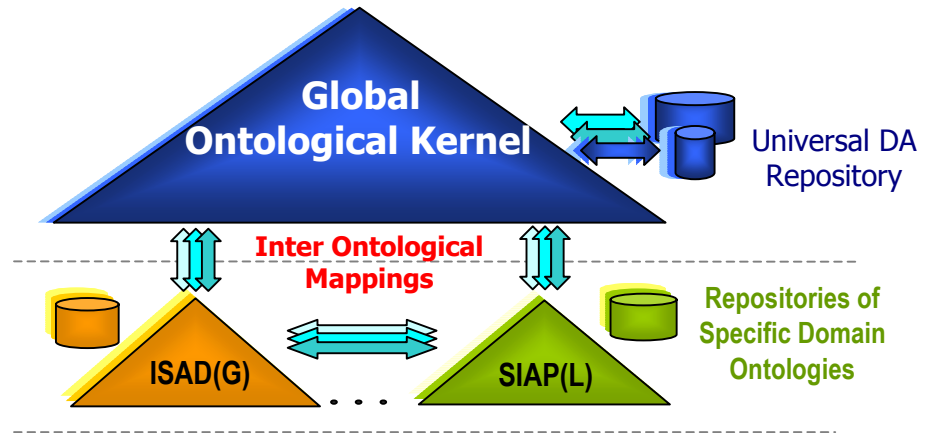
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The Unified DA Ontological Model (Mediator)

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- From *SIAP* (at Parliament of Madrid), the gained experience is very valuable and relevant for us.
- Our current research is focused on the **Integration of Heterogeneous Governmental WIS**
- We are looking for a **virtual, flexible and dynamic Integrated Architecture** based on **Mediator and Wrapper** layers
- We research on a **Universal Unification of Governmental concepts** by means of **GOK and SDO semantic levels**
- Our **step-by-step methodology** provides a flexible and empirical way for ‘*adding*’ other kinds of specific governmental ontologies
- This paper is part of the **Semantic Web e-Government Architecture** we are investigating. It adds a **new Legislative Ontology** to this researched framework

Many Thanks

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Any questions?..