



C.I.R.S.F.I.D
Alma Mater Studiorum Università di Bologna
Research Centre of History of Law,
Philosophy and Sociology of Law,
Computer Science and Law

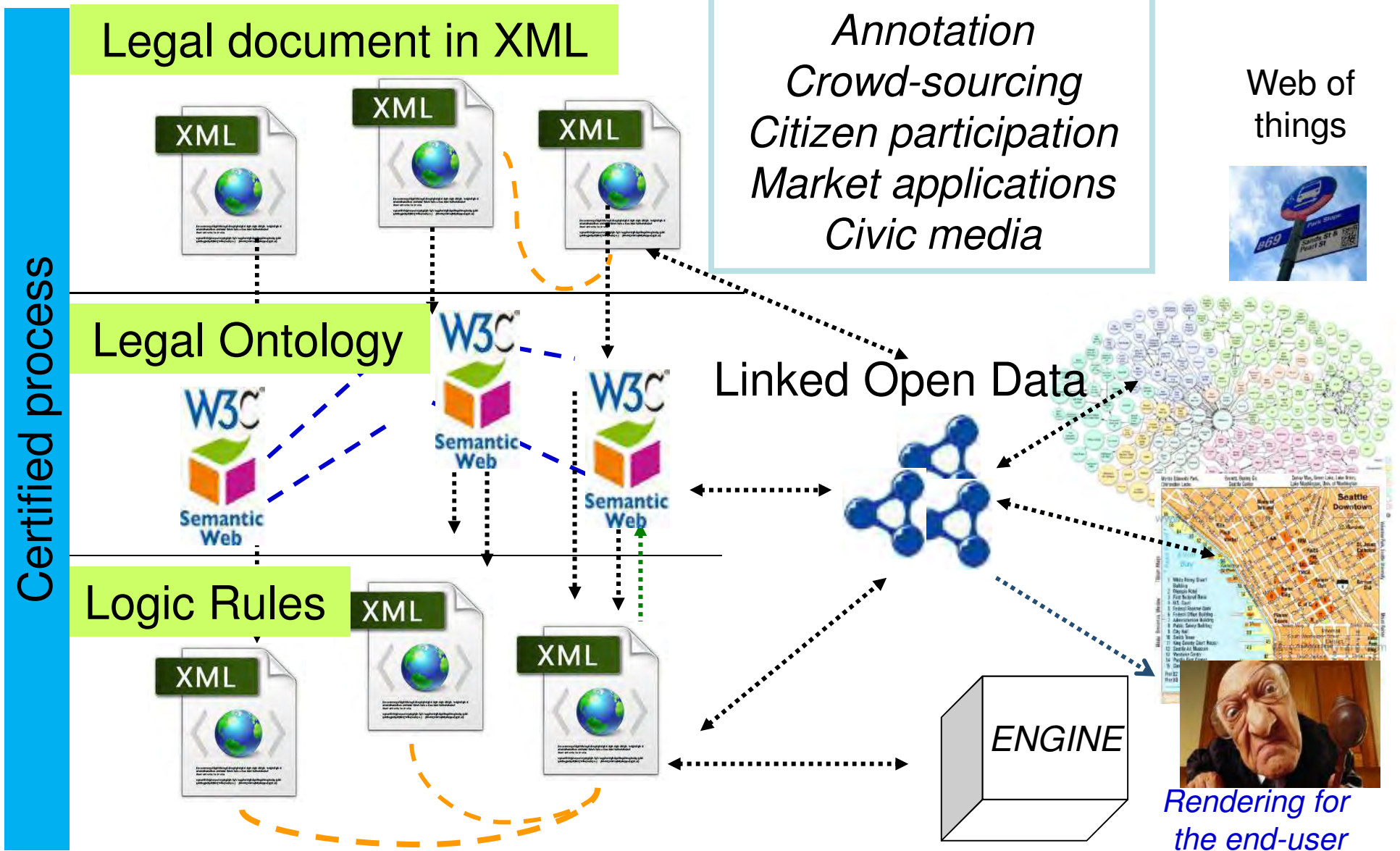
Akoma Ntoso for Parliamentary Documents

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«Things should be as simple as possible, but not simpler»
Albert Einstein



Legal Document, Legal Rules, Legal Ontology



Long-term preservation



Editors'
metadata

Authentic content

Presentation

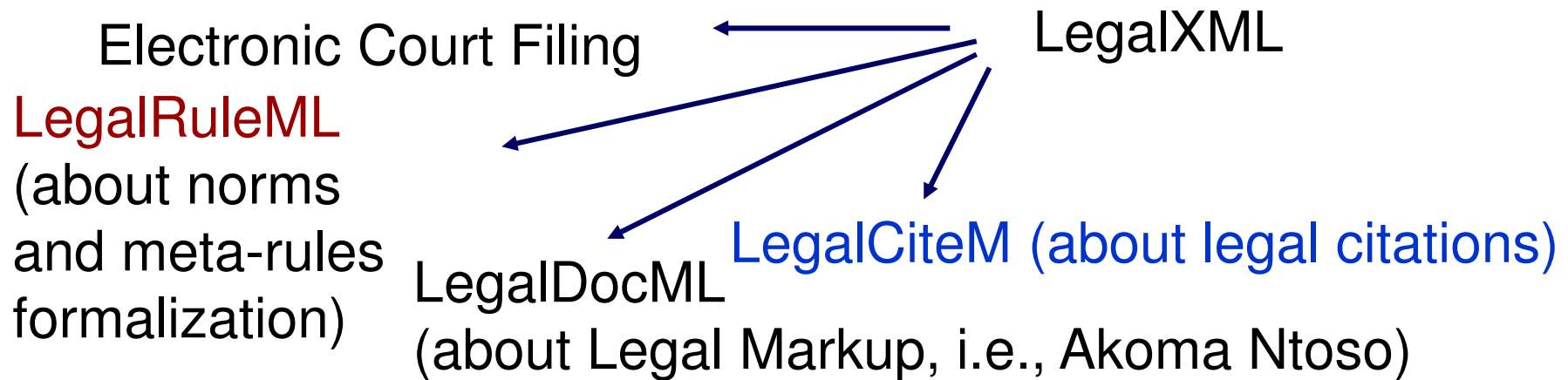
Accursio Magna
Glossa XI
Corpus iuris
civilis
CODEX

OASIS and LegalXML



<http://www.legalxml.org>

- LegalXML.org Community – 1998.
 - Legal, court, business, academic, and technology professionals.
 - Collaboration on non-proprietary standards for the legal community.
- OASIS LegalXML Member Section – March 2002.



AKOMA NTOSO



- An open XML standard for any legal document used in Parliamentary processes and judiciary systems
- Started in 2004-2005 within the project “Strengthening Parliaments’ Information Systems in Africa”, promoted by the UNITED NATIONS Department for Economics and Social Affairs (UNDESA)
- Akoma Ntoso means “**Linked Hearts**” and it is a symbol used by the Akan people of West Africa to represent understanding and agreement
- Now in OASIS standardization process: LegalDocML

Legal XML standards in the world

- 1997 • EnAct - Tasmania, Australia, New Zealand e Canada
- 1999 • FORMEX data model - EUR-LEX
- 2001 • NormeinRete – Italy
- 2002 • MetaLex and SDU BWB - Netherland
- 2003 • LexDania – Denmark
- 2003 • eLaw - Austria
- 2004 • CHLexML - Swiss
- 2006 • **AKOMA NTOSO - United Nations for Pan-African Parliaments**
- 2008 • Crown XML Schema for Legislation - United Kingdom
- 2008 • Chile XML
- 2009 • House of Representatives
- 2013 • USML schema 2007-2009

2013



OASIS LegalXML



Generations of Legal XML vocabularies

First generation – 1998

- long lists of tags
- typographical or database approach - SGML
- no division between content and metadata

F o r m e x

Formalized Exchange of Electronic Publications

Second generation – 2000

- separation of content and metadata
- no abstract categorization of tags in classes



Third generation – 2005

- Pattern-based
- Strong separation of content, metadata, and presentation

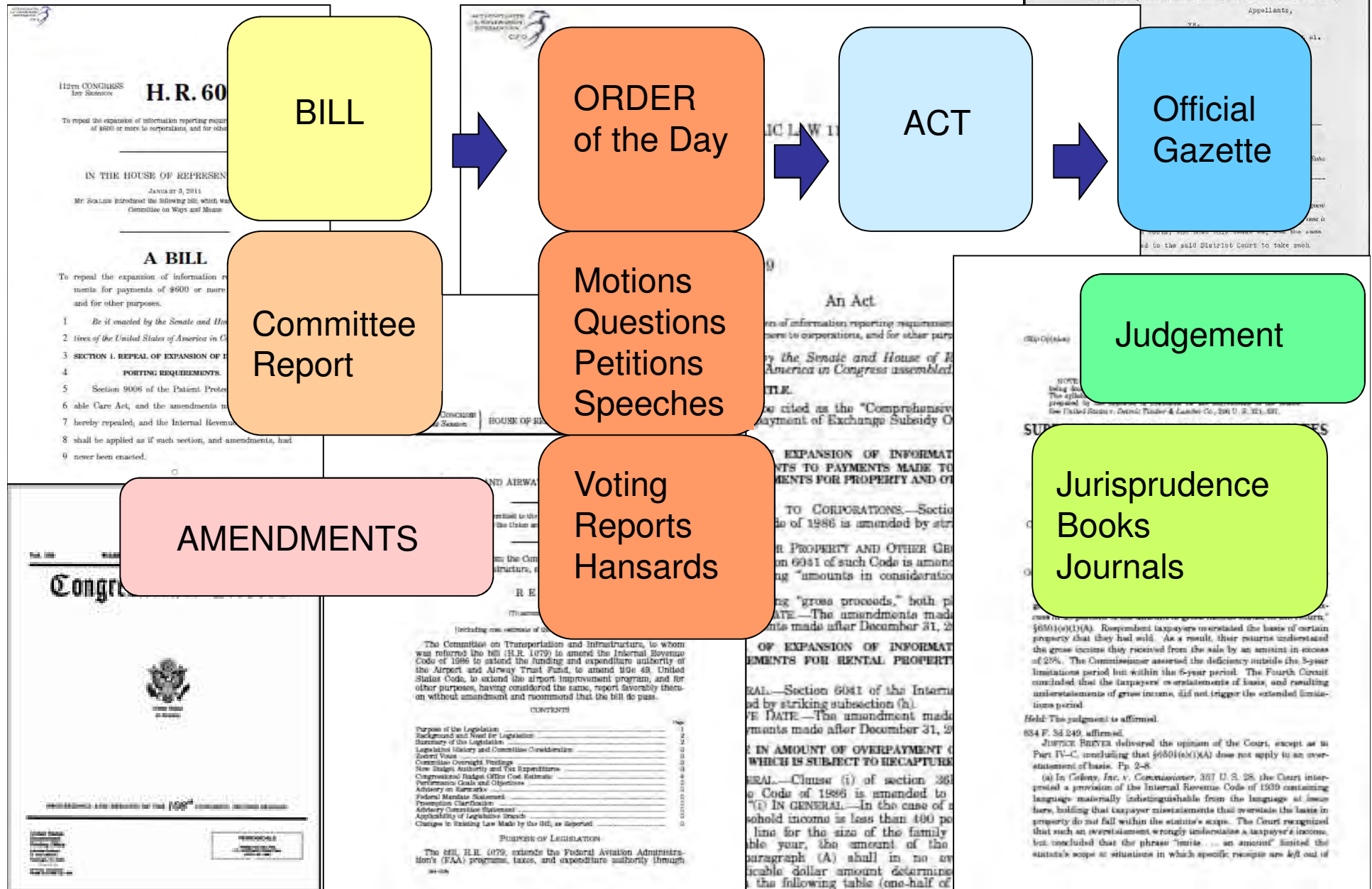
MetaLex/CEN |



Fourth generation – 2010

- Pattern-based schema with additional constraints (and co-constraints) to help local customizations

Akoma Ntoso document types

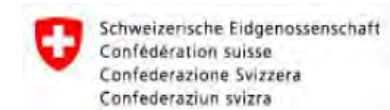


Success stories of Akoma Ntoso

- Senate of Brazil (act, bill, consolidation, point-in-time)
- **European Parliament** (bill and amendments)
- Library of Congress of Chile (bill and debates)
- Senate of Italy (bill publication in open data)
- Parliament of Uruguay (bill workflow)
- US Code Consolidation service (code management)
- State of California (xml standard for document management)
- Hong Kong City State (xml standard for document management)
- Kenya Law Report (xml standard for document management)
- Federal Chancellery of Switzerland (publication in gazette)
- High Court of Cassation of Italy (xml standard for document management)
- UK The National Archives
- FAO - UN
- South Africa SAFLII




Senato della Repubblica



<http://www.saflii.org/content/partners>

A network of legal knowledge for transparency



United States of America


Congressional

PROCEEDINGS AND DEBATES OF THE 113th

Vol. 160 WASHINGTON, TUESDAY, MAY 27,

House of Representatives

The House met at noon and was called to order by the Speaker pro tem- THE JOURNAL The SPEAKER pro tempore The



IB

Union Calendar No. 331

H. R. 4660


[Report No. 113-448]

113TH CONGRESS
2^D SESSION

Making appropriations for the Departments of Commerce and Justice, Science, and Related Agencies for the fiscal year ending September 30, 2015, and for other purposes.

May 27, 2014

H. Res. 570: Mr. HASTINGS of Florida.



AMENDMENTS

Under clause 8 of rule XVIII, pro-

CONGRESSIONAL RECORD — HOUSE

H.R. 4660

OFFERED BY: MR. BRIDENSTINE


AMENDMENT NO. 2: At the end of the bill (before the short title), insert the following:
SEC. ____ . None of the funds made available by this Act may be used for the National Technical Information Service.

H. R. 4660

17 ceeds the amount of proposed new budget authority is \$0.

18 This Act may be cited as the “Commerce, Justice,

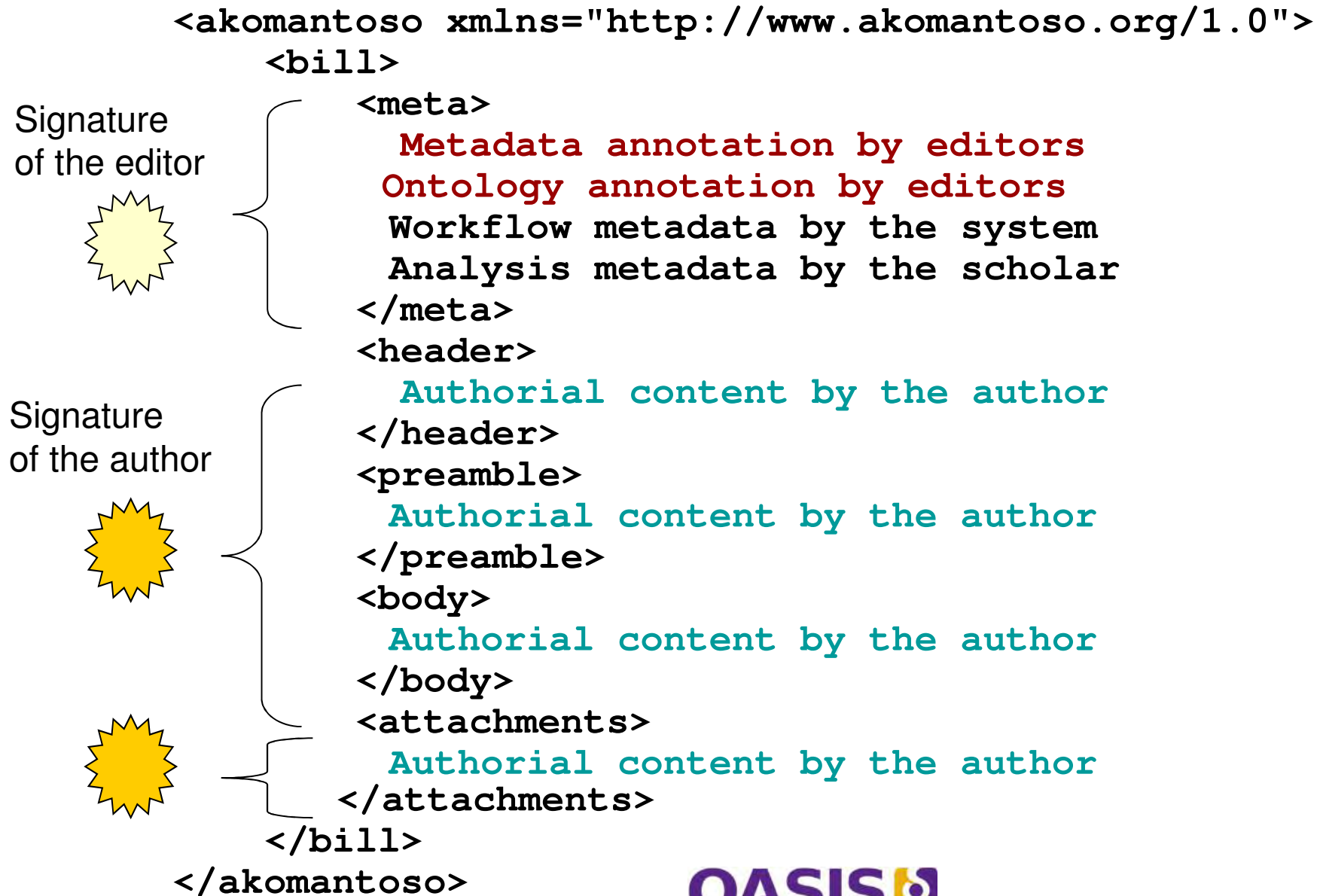
19 Science, and Related Agencies Appropriations Act, 2014



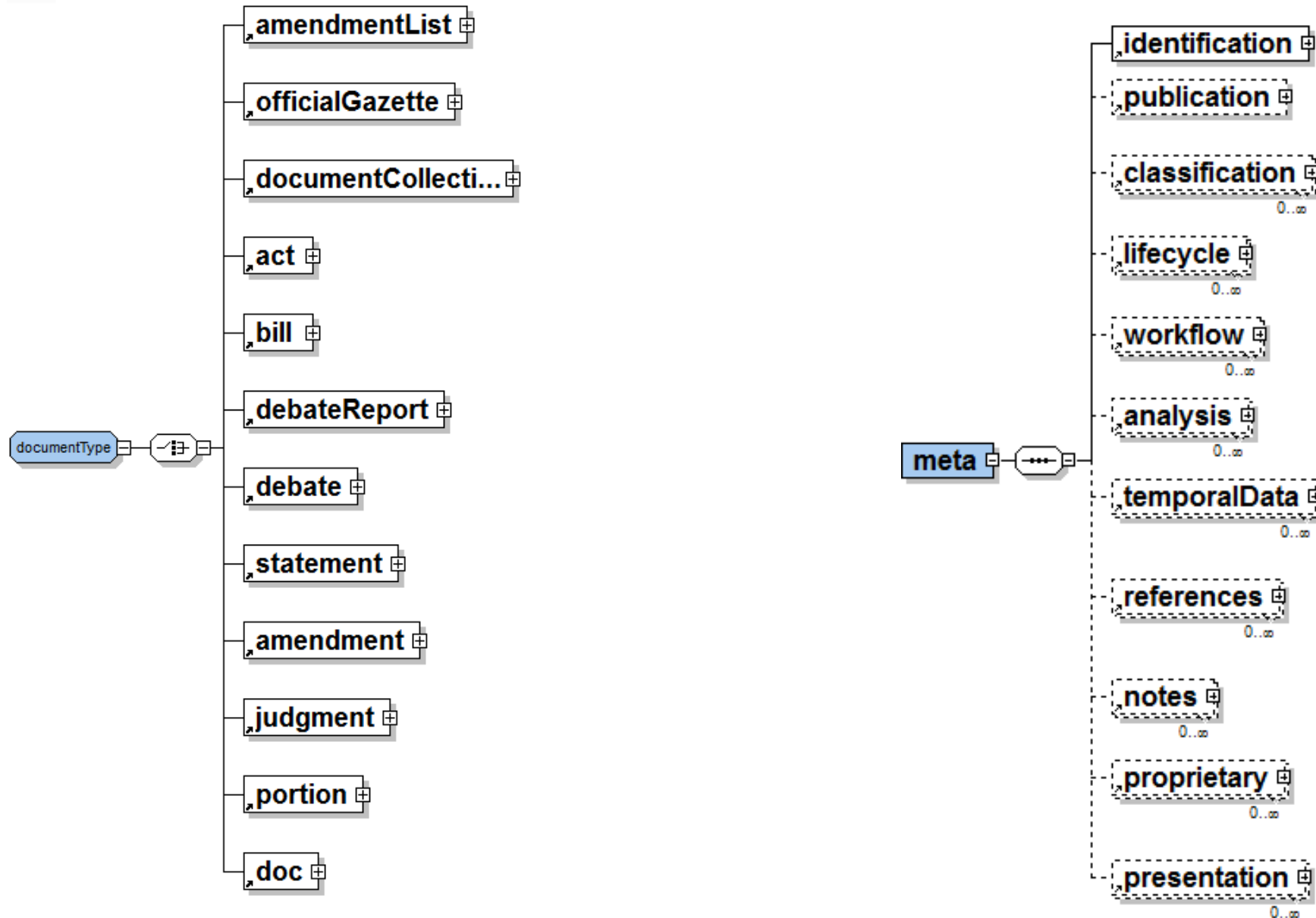
NE
f the bill
following:

New version of the H.R. 4660 in real time

Akoma Ntoso: separation of metadata



Type of Documents and Meta



AKN characteristics

1. **Document oriented** – document is the central
2. **Self-contained and Self-explainable**– document is autonomous
3. **Descriptive** – document is well described also in odd structure
4. **Prescriptive** – document is checked in quality
5. **Separation of concerns** - content, metadata, presentation are separated
6. **Ontology-oriented** – the ontology level is external of the document
7. **Technology Natural** – independent from technology
8. **Persistent over time** – long term preservation for archiving
9. **Workflow-oriented** – document is part of a legislative process

Fundamental technical design issues of Akoma Ntoso

- **Abundant vocabulary** – for full descriptivity of document instances across countries, languages, jurisdictions, ages
- **Strict vocabulary patterns** - all elements belong to one and only one of 6 fundamental patterns... No exceptions.
- **Strict separation of contributions** - authorial content is physically separated from editorial content (markup, metadata, editorial footnotes, scholarly additions, etc.)
- **Layering of document properties** - Fully based on ICLA-FRBR concepts to distinguish and connect under a common umbrella different physical files in different data formats in different versions and variants
- **Naming convention** – give explicit and meaningful names (addresses IDs and URIs) to documents in all their characterizations and instantiations

FRBR – URI in Akoma Ntoso

(compliant with ELI)

/eu/act/1995-02-20/95-2-ec/fra@2004-01-29/main.xml

/eu/act/1995-02-20/95-2-ec/eng@2004-01-29/main.xml

work

expression

man.

work

/ak/act/2002/main

expression

/ak/act/2002/main/eng@

manifestation

/ak/act/2002/main/eng@/main.xml

manifestation
of the expression
in force in 2003

/ak/act/2002/eng@2003-03-18/main.xml

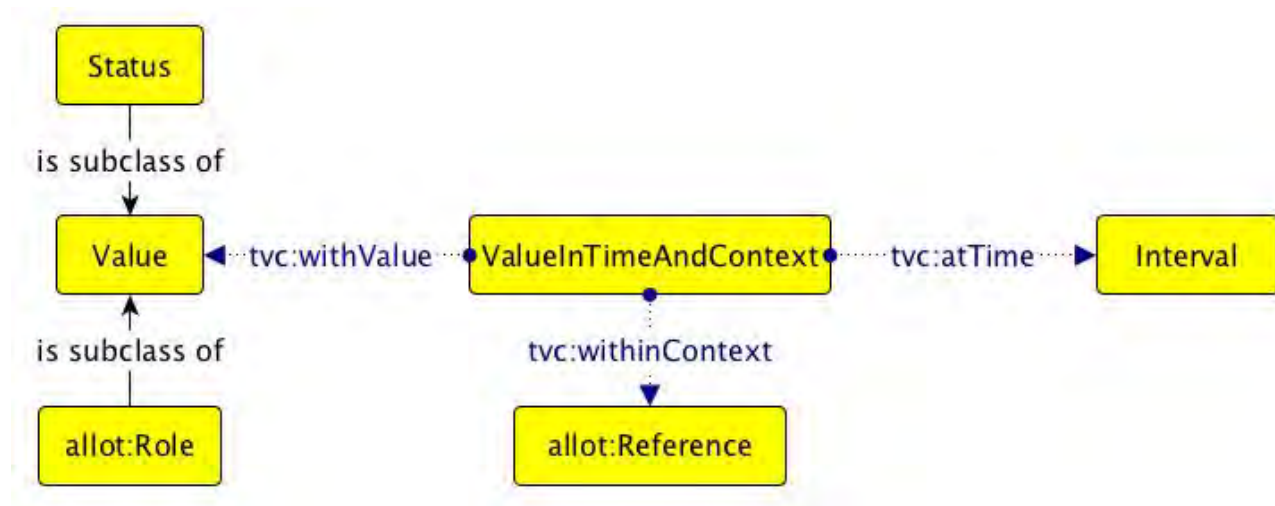
/ak/act/2002/eng@2003-03-19;2005-03-10/main.xml

manifestation of the expression in force at 2003 but with the view of 2005

- **Resolver:** <http://akresolver.cs.unibo.it/>

Top Level Class

- date
- time
- person
- organization
- concept
- object
- event
- location
- process
- role
- term
- quantity
- def
- entity



<https://unsceb-hlcm.github.io/onto-undo/index.html>

Linguistic annotation: UN Challenge

To achieve the above mentioned objective the project is divided in tasks:

- **Detect NER** role, event, organization, location, date
- **Classify the sentences** using the definitions of the SDGIO
- **Qualify the sentences** in operational and **preambulary** using linguistic patterns
- **Recognise the document structure** in the main parts: **coverPage, preface, preamble, mainBody, conclusions, annexes**
- **Convert** all the extracted knowledge in **Akoma Ntoso**
- **Interpret** the extracted knowledge and to create semantic assertion using to the existing ontologies (e.g., ALLOT, UNDO, SDGIO, etc.). The idea is to create a RDF repository with those assertions

UN-Challenge 2019

- <https://gitlab.com/CIRSFID/un-challenge-2019>

<paragraph eId="para_5">

<num>5.</num>

<content>

<p>We reaffirm the crucial importance of universal ratification of the

<organization refersTo="#un">United Nations</organization>

Convention against Transnational Organized and <ref

eId="ref_3"

refersTo="#theProtocolToPreventSuppressAndPunishTraffickingI

nPerson sEspeciallyWomenAndChildren" href="">the

Protocol to Prevent, Suppress and Punish

Trafficking in Persons, Especially Women and

Children</ref>, supplementing the <organization

refersTo="#un">United Nations</organization>

</p>

</content>

</paragraph>

UN-Challenge 2019

- <https://gitlab.com/CIRSFID/un-challenge-2019>

CONCEPT/ONTOLOGY

```
<TLCConcept eld="concept_sdg_5" href="/akn/ontology/concepts/un/sdg_5"
showAs="SDG 5"/>
```

KEYWORD

```
<keyword eld="keyword_5" dictionary="SDGIO" value="goal_5"
href="/akn/ontology/concepts/un/sdg_5" showAs="SDG 5"
refersTo="#concept_sdg_5"/>
```

CLASSIFICATION

```
<proprietary source="#cirsfidUnibo">
  <akn4un:source href="#para_3">
    <akn4un:sdgGoal value="#keyword_5" confidence="1.2315473556518555"
name="SDGIO"/>
    <akn4un:sdgTarget value="#keyword_5_5.2"
confidence="1.6334762573242188" name="SDGIO"/>
  </akn4un:source>
```

Debates example of the three layers

ORAL ANSWERS TO QUESTIONS
BANDITRY MENACE IN GALOLE
Mr. Kofa

ORIGINAL TEXT

Mr. Kofa asked the Minister of State, Office of the President

- whether he is aware that Councillor Abdi Sole of Asako Location was seriously injured and two homeguards were shot dead and their guns stolen while pursuing bandits on 20th May, 1995;

```
<heading>ORAL ANSWERS TO QUESTIONS</heading>
<subdivision name="question" id="qaal-que1">
  <heading>BANDITRY MENACE IN GALOLE</heading>
  <question by="Kofa" to="MS">
    <from>Mr. Kofa</from>
    <p>Mr. Kofa asked the Minister of State, Office of the President</p>
    <ul id="qaal-que1-ul1">
      <li>whether he is aware that Councillor Abdi Sole of Asako Location was
    </ul>
  </question>
```

STRUCTURE

TOP LEVEL CLASSES
METADATA

```
<TLCPerson href="/ontology/person/ken/MP/ken.John.Kofa" id="Kofa" showAs="Mr. Kofa" />
<TLCRole href="/ontology/role/political/MS" id="MS" showAs="Minister of State, Office of the
President" />
```

Tenth Parliament

(No.125)



Fourth Session

(2037)

REPUBLIC OF KENYA

NATIONAL ASSEMBLY

TENTH PARLIAMENT – (FOURTH SESSION)

ORDERS OF THE DAY

TUESDAY JANUARY 18, 2011 AT 2.30 P.M.

PRAYERS

1. Administration of Oath
2. Communication from the Chair
3. Petitions
4. Papers
5. Notices of Motion
6. Questions (as set out in the Appendix)
7. Statements

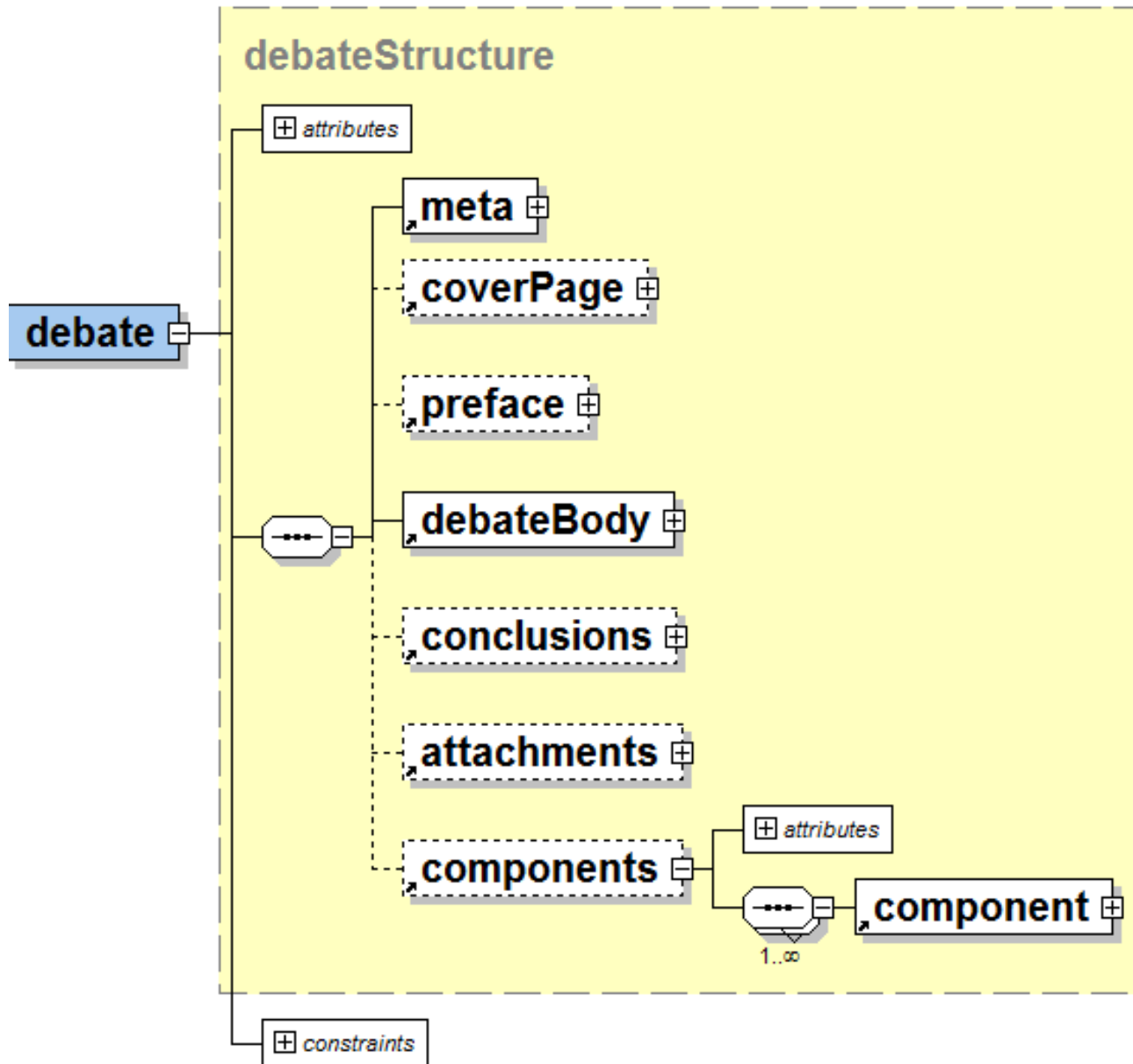
COMMENCEMENT OF BUSINESS

- 8*. THE JUDICIAL SERVICE BILL (BILL NO.17 OF 2010)
(The Minister for Justice, National Cohesion and Constitutional Justice)

Second Reading

- 9*. MOTION - (Chairperson – Departmental Committee on Administration
and National Security)

Debate



NATIONAL ASSEMBLY

OFFICIAL REPORT

Tuesday, 7th December, 2010

The House met at 2.30 p.m.

[Mr. Speaker in the Chair]

PRAYERS

PAPERS LAID

The following Papers were laid on the Table:-

Report of the Kenya Parliament delegation to the 12th Annual Conference of the Association of Public Accounts Committees of the Republic of South Africa held from 11th to 14th October, 2010 at the Inkosi Albert Luthuli International Conference Centre in Durban, South Africa.

Report of the Public Accounts Committee on the Government of Kenya Accounts for the year 2007/2008.

(By Dr. Khalwale)

The Quarterly Economic and Budgetary Review, Fourth Quarter, 2009/2010

The Quarterly Economic and Budgetary Review, First Quarter, 2010/2011

Debates

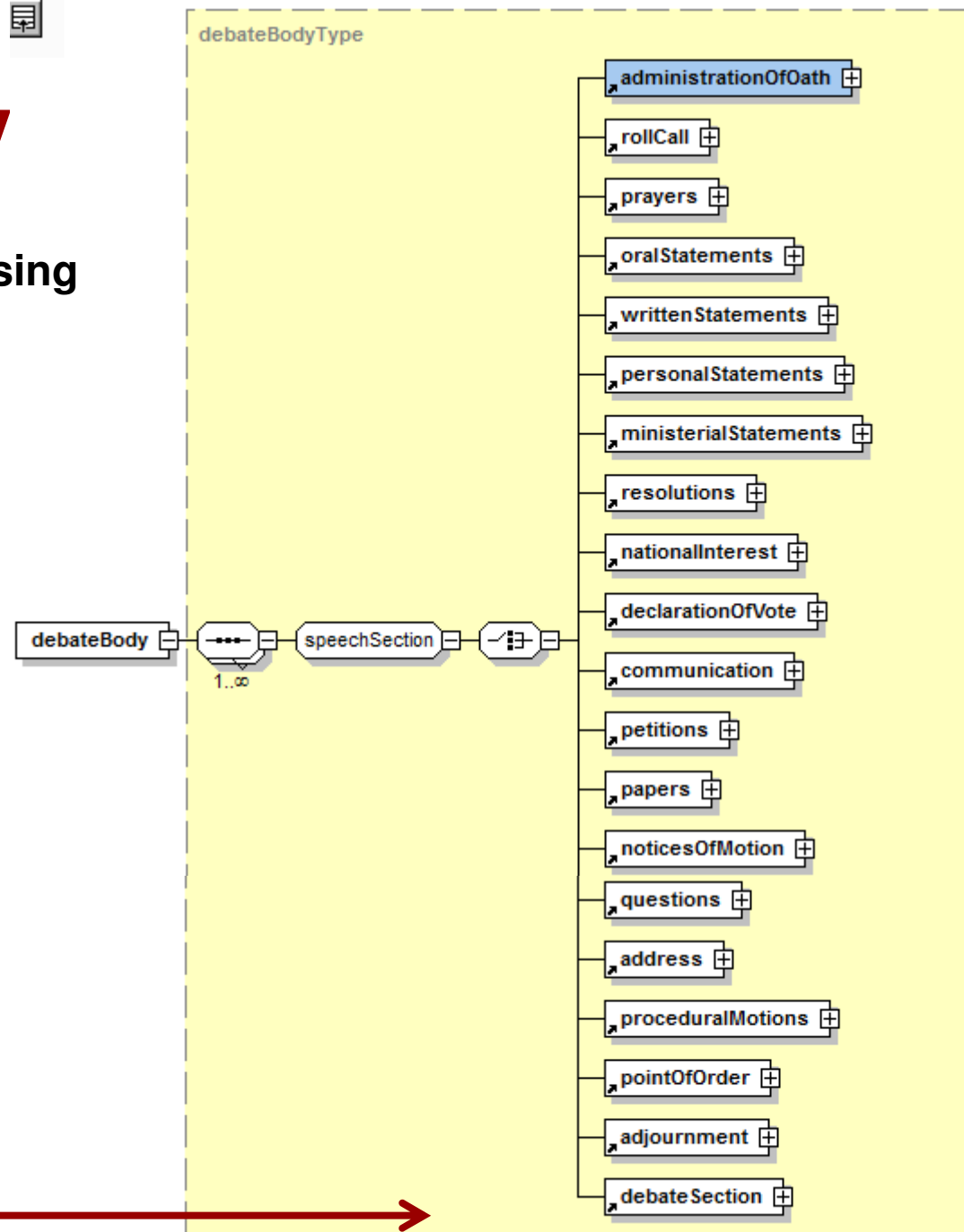
preface

debateBody

debateBody

debateBody can be modelled using parliamentary regulation

functions



Among the others we find
<debateSection>

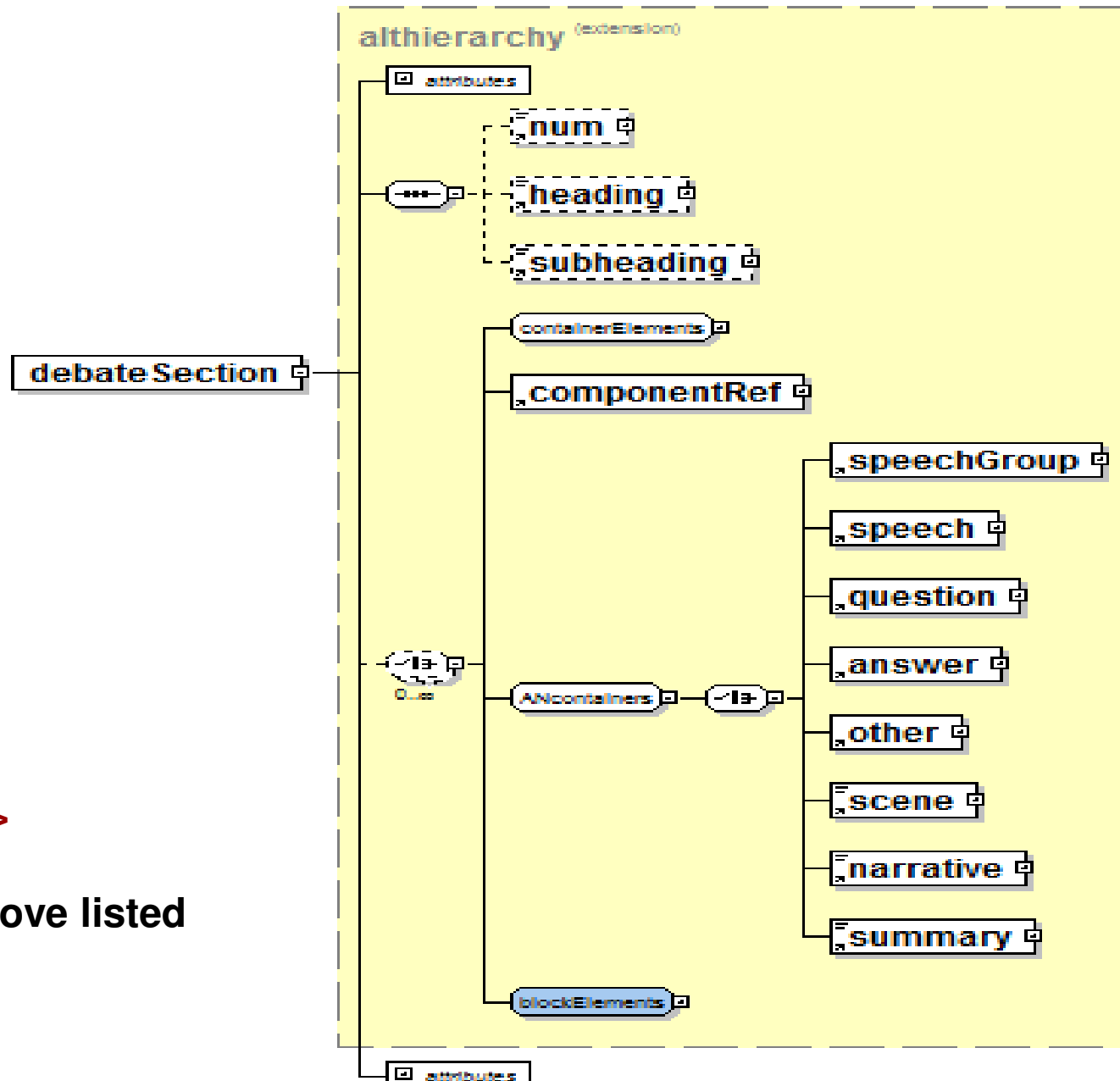
debateSection

<debateSection>

Includes

- <speech>
- <question>
- <answer>
- <scene>
- <narrative>
- <summary>

Multiple elements above listed
could be wrapped
in <speechGroup>



NOTICE OF MOTION

debateSection

speech

from

ADOPTION OF 2007/2008 PAC REPORT

Dr. Khalwale: Mr. Speaker, Sir, I beg to give notice of the following

Motion:-

THAT, this House adopts the Report of the Public Accounts Committee on the Government of Kenya Accounts for the year 2007/2008 laid on the Table of the House today 7th December, 2010.

Speech - by, to, as

```
<debateSection name="notice" eld="notice_1">  
  <heading><process refersTo="#adoption">ADOPTION  
  OF 2007/2008 PAC REPORT</process>  
  <speech by="#khalwale" to="#speaker" as="#pm">  
    <from refersTo="#khalwale">Mr.  
Khalwale</from>  
    <p>Mr. Speaker, Sir, I beg to give notice of the  
following Motion:-</p>  
    <p>THAT, this House adopts the Report of the  
Public Accounts Committee on the Government of Kenya  
Accounts for the year 2007/2008 laid on the Table of the  
House today 7th December, 2010.</p>  
  </speech>  
</debateSection>
```

Question – by, to, as

```
<debateSection name="question" eId="question_1">  
  <heading>ENGINEERING COURSES OFFERED BY  
  Bungeni UNIVERSITY</heading>  
  <question by="#delta" to="#mhest" as="#pm">  
    <from to="#mhest">Mr. Delta</from>  
    <p> Mr. Speaker, Sir, I beg to ask the  
    Minister for Higher Education,  
    Science and Technology the following Question by  
    Private Notice.</p>
```

narrative, summary, scene

<narrative>(By the Assistant Minister, Office of the Deputy Prime Minister and Ministry of Finance (Dr. Beta), on behalf of the Deputy Prime Minister and Minister for Finance)**</narrative>**

<summary>(Question deferred)**</summary>**

<scene>(Laughter)**</scene>**

Adjournement

adjournment

ADJOURNEMENT

The Temporary Deputy Speaker (Mr. Chachu): Hon. Kaino, you will have 18 minutes next time. Hon. Members, it is time for the interruption of business. The House stands adjourned until tomorrow, Wednesday, 8th December, at 9.00 a.m.

date

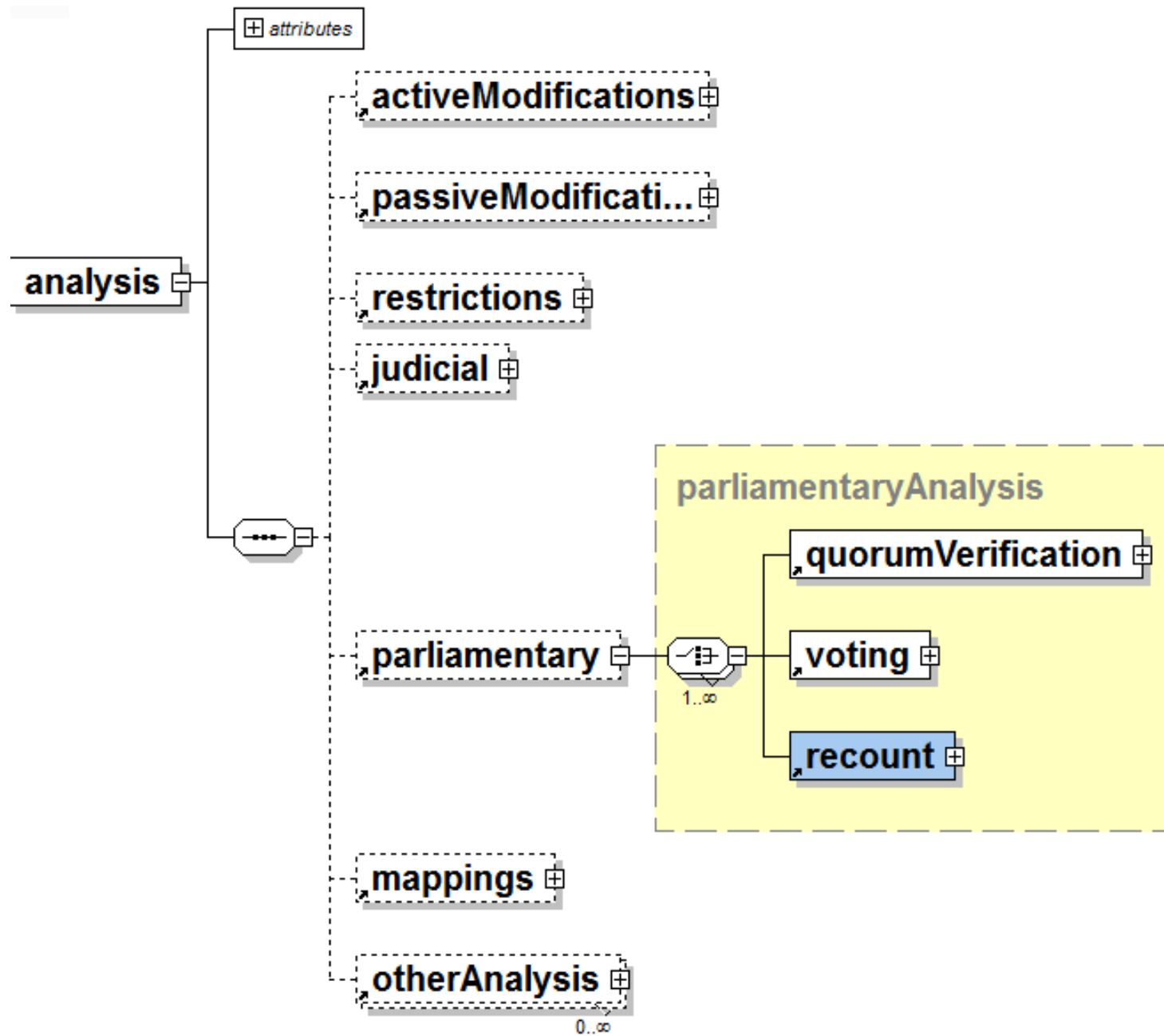
The House rose at 6.30 p.m.

recordedTime

8:28:16 P.M.

The House adjourned pursuant to a previous special order. The next meeting is scheduled for 1:00 p.m. on July 31, 2015.

```
<adjournment id="adjournment_1">
  <heading>ADJOURNMENT</heading>
  <speech by="#epsilon" as="#sec">
    <from>Mr. Epsilon</from>
      <p>The Temporary Deputy Speaker (Mr. Chachu):
Hon. Kaino, you will have 18 minutes next time. Hon. Members, it
is time for the interruption of business. The House stands
adjourned until tomorrow, Wednesday, 8th December, at 9.00
a.m.<recordedTime time="2010-12-08T09:00:00+02:00"
type="startEvent"/>9.00 a.m.</p>
    </speech>
    <p>The House rose at <recordedTime time="2010-12-
07T06:30:00+02:00" type="endEvent"/>6.30 p.m. </p>
  </adjournment>
```



Some examples of debates

- https://github.com/SpringtideCollectiveOrg/open_housens.ca/blob/master/akoma_ntoso/2011-11-02_11-37.xml
- <http://sinatra.cirsfid.unibo.it/XMLViewer/>
- <http://docs.oasis-open.org/legaldocml/akn-core/v1.0/os/part2-specs/examples/>
- Note: not all the documents are valid with the last schema released because they used also previous version of Akoma Ntoso. However the differences are minors and the main principles respected.
- SCHEMA: <http://docs.oasis-open.org/legaldocml/akn-core/v1.0/os/part2-specs/schemas/>

Editor with parsers

The screenshot displays the LIME (Language Independent Markup Editor) interface. The browser address bar shows the URL `bach.cirsfid.unibo.it/lime-fao/`. The document being edited is titled `/akn/un/statement/fao/2019-05-23/eng@/main.xml`. The interface is divided into several sections:

- Document editor:** The main workspace showing the document structure and content. The document is structured as follows:
 - Preface:** Resolution 13/83
PAYMENT OF CONTRIBUTIONS - COMOROS
 - Preamble:** THE CONFERENCE,
Noting that the Government of Comoros had made a proposal that it liquidate its arrears of contributions over a period of ten years commencing in 1988, in addition to paying each current contribution in the calendar year of assessment,
 - Main Body:** Decides that:
 - Paragraph:** 1.
Notwithstanding Financial Regulation 5.5, the arrears of contributions of Comoros totalling \$70 078.00 shall be settled through the payment of ten equal annual instalments of \$7 007.80.
- Outline:** A sidebar on the left showing the document's structure with nodes for `preface`, `preamble`, `main body`, and `paragraph 1`, `paragraph 2`, `paragraph 3`.
- Tools:** A sidebar on the right with a "Document structure" section containing buttons for `Set cover page`, `Set preface`, `Set preamble`, `Set main body` (highlighted in yellow), `Set book`, `Set part`, `Set title`, `Set section`, `Set division`, and `Set chapter`.

Comparative visualization

Inicio



Parlamento
del Uruguay

Buscar en el Parlamento

PROYECTO DE LEY

Artículo 1º.

- Declárase, por vía interpretativa, a los efectos dispuestos por la Ley Nº 12.091, de 5 de enero de 1954 ~~y por la Ley Nº 16.387, de 27 de abril de 1993~~, que las embarcaciones deportivas o de recreo, de bandera extranjera, con sus accesorios, que arriben al país navegando por sus propios medios, podrán entrar, permanecer y salir de aguas jurisdiccionales o de puertos o lugares de la República amparadas por su bandera ~~y sin otro requisito que presentar~~ el rol respectivo de la tripulación y la matrícula ~~y sin cumplir con las exigencias aplicables a los buques mercantes~~, pudiendo ser sus propietarios y/o usuarios, personas físicas o jurídicas, nacionales o extranjeras, radicadas o no en el país.

Artículo 2º.

PROYECTO DE LEY

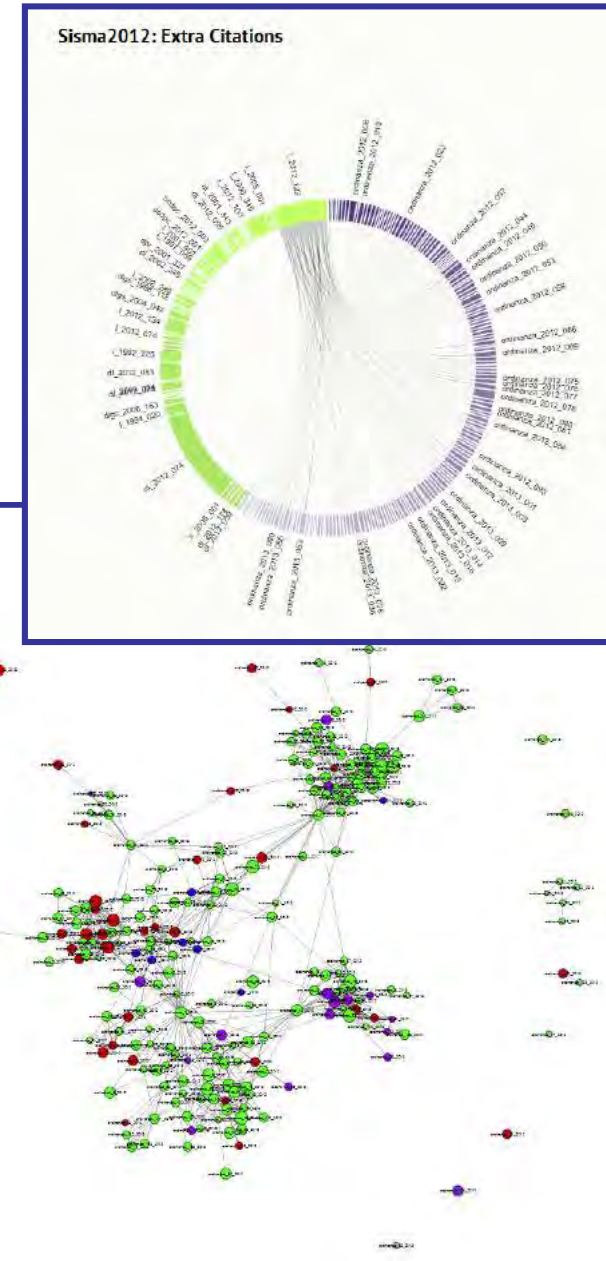
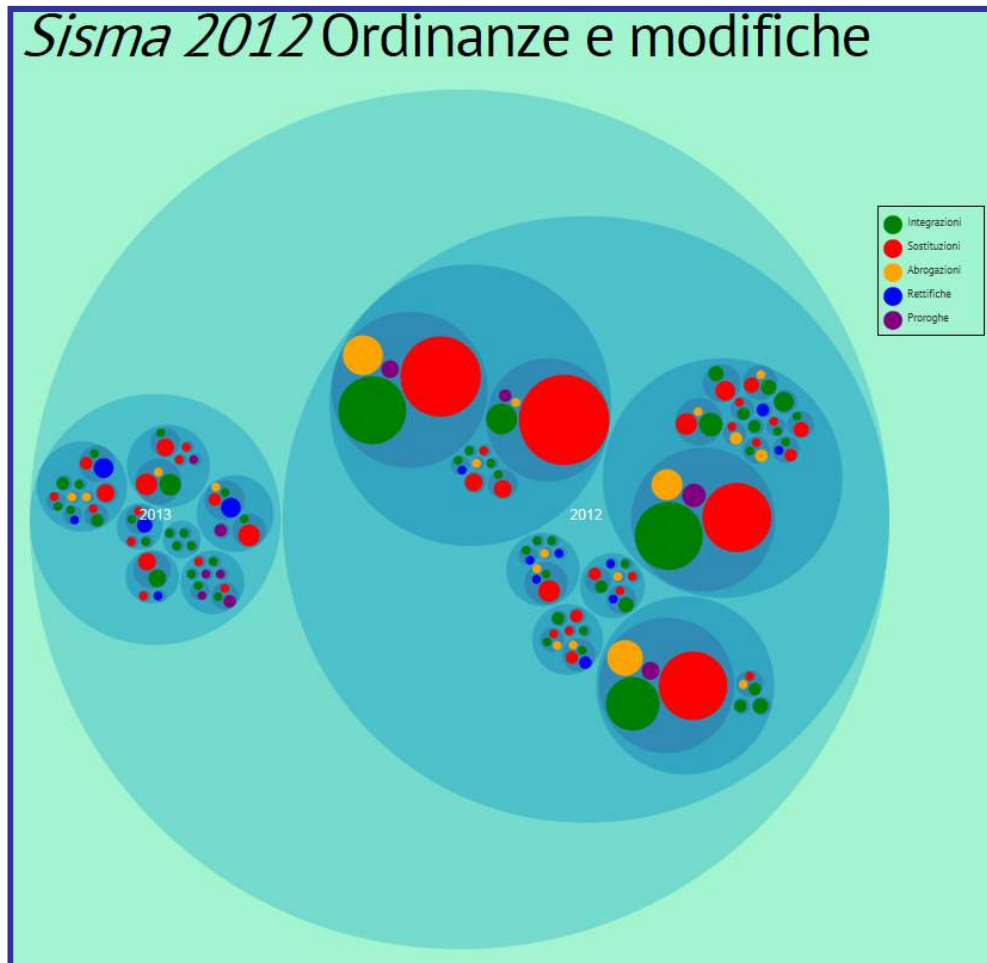
Artículo 1º.

- Declárase, por vía interpretativa, a los efectos dispuestos por la Ley Nº 12.091, de 5 de enero de 1954, que las embarcaciones deportivas o de recreo, de bandera extranjera, con sus accesorios, que arriben al país navegando por sus propios medios, podrán entrar, permanecer **sin límites de tiempo** y salir de aguas jurisdiccionales o de puertos o lugares de la República, amparadas por su bandera, **registrando** el rol respectivo de la tripulación y la matrícula **ante la Prefectura Nacional Naval**, pudiendo ser sus propietarios y/o usuarios, personas físicas o jurídicas nacionales o extranjeras radicadas o no en el país.

Artículo 2º.



Network analysis of the semantic connections



Summary: annotation in the debate

- Structure: preface, preamble, body
- role, person, organization, quantity, vote
- **Functional part** of the speech (e.g., oralStatement, rollCall, question, etc.)
- Accessory part of the speech: narrative, summary, scene
- Time information
- Normative references

Conclusions

- **Akoma Ntoso** is a robust Legal XML standard for legal open document representation, especially for Parliamentary documents.
- **Other standards** could be integrated using patterns and design principles in favour of Semantic Web and Internet of Things. Reusability and interoperability are guaranteed **LegalRuleML**.
- **Future**: empowering machine-readable legal knowledge as “source of law”, guaranteeing integrity, **authoritativeness**, **authenticity**, persistence over time, codifying *interpretation*.



9-14 September
16-17 September for Developers



OASIS 

- Curiosity Shakespeare in Akoma Ntoso

<https://shakespeare.sayit.mysociety.org/hamlet/act-i/scene-i-elsinore-a-platform-before-the-castle.an>

monica.palmirani@unibo.it