eForms

Schemas & Business Rules

eSenders Seminar — October 8th, 2019
Agenda

I. The overall context

II. The Schemas

III. The Business Rules

IV. The validation

V. Next

VI. Q&A
I. The overall eForms context

Stakeholders
- Contracting authorities;
- Publications office;
- eSenders;
- Economic operators;
- Service providers;
- EU and national bodies

Legal (EU & national)
- European:
  - Dir. 23, 24, 25 & 81;
  - Reg. UE 2015/1986;
  - eForms regulation (*);
- National.

Standards, Best Practices & alike
- XML, XSD, UBL …
- Conceptual data models (eg.: ePO ontology)

Systems & processes
- DBs,
- web services,
- online forms,
- ...

(*) eForms reg.:
- Adopted Sept. 30th, 2019,
- Simplification of forms;
- Increase of information accuracy;
- Etc.
II. The Schemas

1. **Purpose**
   A set of schemas to validate the structure and data type of submitted public procurement information

2. **Scope**
   Notices covered by existing forms (F01-F08, F12-F25, Transport, CFEOI)

3. **Objectives**
   a) Stable schemas (i.e. less prone to changes)
   b) Knowledge capitalization (e.g.: via harmonization)
   c) As few schemas as possible
## II. The schemas

### XML general design principles

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flexibility &amp; extensibility</strong></td>
<td>• To cover all requirements, and</td>
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<td></td>
<td>• To deal easily with their evolution.</td>
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<tr>
<td><strong>Reusability</strong></td>
<td>• To improve learning curve &amp; consistency, and</td>
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<td></td>
<td>• To reduce development &amp; maintenance costs.</td>
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<tr>
<td><strong>Clarity &amp; simplicity</strong></td>
<td>• Naming &amp; documentation;</td>
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<tr>
<td></td>
<td>• Clarity of structure;</td>
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<tr>
<td></td>
<td>• Simplicity.</td>
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<tr>
<td><strong>Support for graceful versioning</strong></td>
<td>• To differentiate Major from Minor releases, and</td>
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<tr>
<td></td>
<td>• To easily detect the compatibility between them.</td>
</tr>
<tr>
<td><strong>Interoperability &amp; tool compatibility</strong></td>
<td>• Consider other implementations ...</td>
</tr>
</tbody>
</table>
II. The schemas

- Based on Universal Business Language (UBL)


  - Collection of:
    - basic information elements (BBIE),
    - Aggregated components (ABIE) (*), and
    - Document types.

  - World widely used (in the EU: ESPD, eInvoicing, BRIS, ...)

  - Version 2.3 currently under Public Review

  - Version 2.2
    - 81 document types,

(*) BBIE & ABIE highly reusable & reused
II. The Schemas

- Addressing the XML design principles
  - Flexibility & extensibility
    - Customizable (conform / compatible)
    - Use of code-lists

II. The Schemas

Addressing the XML design principles

- **Reusability** (within UBL artefacts)
  - Ready for reuse *Named complex types*:
    - 250+ groups
    - 1000 simpleContent
  - Use of XML *include* & *import* features
    ⇒ high reusability between the 80+ types of documents
  - Use of UN/CEFACT:
    - CCTS Core Component Types,
    - CCTS Unqualified Datatypes, &
    - CCTS Code Lists
II. The Schemas

- Addressing the XML design principles
- **Clarity & simplicity**
  
  - **Naming & documentation:**
    - Common set of terms,
    - Kind of component specified in its name (e.g. `AddressType`, `NoticeTypeCode`)
    - namespaces consistently defined and meaningfully named
  
  - **Clarity of structure:**
    - Grouping elements
  
  - **Simplicity:**
    - Few ways to mark information
II. The Schemas

- Addressing the XML design principles
- Support for graceful versioning

  - UBL versioning based on a X.Y scheme
    - Easy detection of:
      - release type (major, minor), and
      - backward compatibility.
II. The Schemas

- Addressing the XML design principles
- **Interoperability & tool compatibility**

- some
  - No mixed content (text & elements with same parent)
  - No use of *Choice* or *All* model groups
  - No Complex content models with nested model groups
  - No Substitution groups
  - No default and fixed values for elements or attributes
II. The Schemas

UBL schema design strategy [1, 2]

It addresses:

- Naming standards [1]
- Namespaces (§ 5.2)
- Schema structure strategy (§ 5.3)
- Documentation (§ 5.4)
- Versioning (§ 5.4)
- Reuse (§ 5)
- Extension (§ 5.6)

Ref.:


<cac:ContractingParty>
  <cbc:BuyerProfileURI>https://www.achatpublic.com/sdm/ent/gen/index.jsp</cbc:BuyerProfileURI>
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    <cbc:PartyType>Société concessionnaire d’autoroutes</cbc:PartyType>
  </cac:ContractingPartyType>
  <cac:ContractingActivity>
    <cbc:ActivityTypeCode>OTHER</cbc:ActivityTypeCode>
    <cbc:ActivityType>Société concessionnaire d’autoroutes</cbc:ActivityType>
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  <cac:Party>
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      <cbc:ID>016 250 029 00606</cbc:ID>
    </cac:PartyIdentification>
    <cac:PartyName>
      <cbc:Name>Société APRR</cbc:Name>
    </cac:PartyName>
    <cac:PostalAddress>
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      <cbc:PostalZone>21850</cbc:PostalZone>
      <cac:AddressLine>
        <cbc:Line>36 rue du docteur Schmitt</cbc:Line>
      </cac:AddressLine>
      <cac:Country>
        <cbc:Name>France</cbc:Name>
      </cac:Country>
    </cac:PostalAddress>
    <cac:Contact>
      <cbc:Name>Direction achats et organisation – Cellule contractuelle</cbc:Name>
      <cbc:Telephone>+33 380776700</cbc:Telephone>
      <cbc:ElectronicMail>valerie.gueroult@aprr.fr</cbc:ElectronicMail>
    </cac:Contact>
  </cac:Party>
</cac:ContractingParty>
II. The Schemas

A set of 3 UBL compatible schemas

- Prior Information Notice (PIN; Planning)

- Contract Notice (CN; competition)

- Contract Award Notice (CAN; Direct Award Pre-notification, Results, Contract Modification)

Derived from UBL with the required extensions
III. The Business Rules

1. Business rules vs. validation rules

2. Business rules categories

3. Validation rules generation
   1. GC files
   2. CVA files
   3. Implementation
III. The Business Rules

- **Business vs. Validation Rules**

  - **Business rules:**
    - Primary requirements (i.e. part of business and technical implementation)
    - Separate from processes (although input)
    - Declarative, not procedural (use of natural language, independent from the enforcement implementation)

  - **Validation rules:**
    - Technical transcription of business rules (highly linked to technical implementation)
III. Business rules

- **Fundamental**
  - *BR*: “Every public procurement notice shall have a Procedure Legal Basis.”
  - *VR*: Check for element existence (i.e. presence & not empty)

- **Advanced business rules** *(Co-occurrence constraints within the notice)*
  - *BR*: “For an open procedure, the deadline for receipt of tenders shall be specified.”

- **Complex business rules** *(Require information from other notices)*
  - *BR*: “For a given procedure, all instances of a same lot must have a same main nature.”

- **Two phases:**
  1. Existing production rules
  2. New rules
III. Business rules

- Genericode files
III. Business rules

■ CVA files
  ▪ Annotation & Title:
    ▪ File information

■ Value tests:
  ▪ Tests and identifiers

■ Value lists:
  ▪ Reference to Code lists

■ Contexts:
  ▪ Node, Test ID, Message
III. Business rules

- The implementation

- Preparatory work

  One time only - use of Crane Softwrights Ltd. stylesheets:
  1. Crane-cva2schXSLT.xsl
  2. iso_schematronAssembly.xsl
  3. Message_schematron_terminator.xsl

- Notice values validation

  Every time a structurally valid notice is received - Use of generated stylesheet,

From “Crane's Schematron implementation of OASIS context/value association files for validation”, Crane Softwrights Ltd., Copyright © 2013 Crane Softwrights Ltd.
IV. The validation

A two steps process:

1. Structural & lexical validation
2. Values validation
3. Further processing
V. Next

**What**
- Set of schemas,
- Schema documentation,
- Sample instances,
- Validation rules (schematron?, XSLT)

**When**
- Beta version: 2019 (Q4)
- Finalized version: 2020 (Q3)
VI. Questions & Answers