



Is Semantic Web part of the (broadcasting) future?

EMWRT-V

Amsterdam, 10 September 2010

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European Broadcasting Union

The EBU - beyond the Eurovision song contest



EUROVISION and EURORADIO networks (news, sports, music production and transmission)

TV and Radio co-productions

TECHNICAL advice (EBU **Technical**)

LEGAL advice



EBU **Technical** - *Media Technology and Innovation*

The EBU Technical Department is a group of
15 Engineers covering a wide domain of expertise in Television and Radio

- ❖ **Production**
- ❖ **Contribution**
- ❖ **Distribution**
 - ✓ Broadcast, broadband and mobile
 - ✓ Transmission and middleware
- ❖ **Spectrum management**



“tech.ebu.ch”

What is the main purpose of EBU Technical:

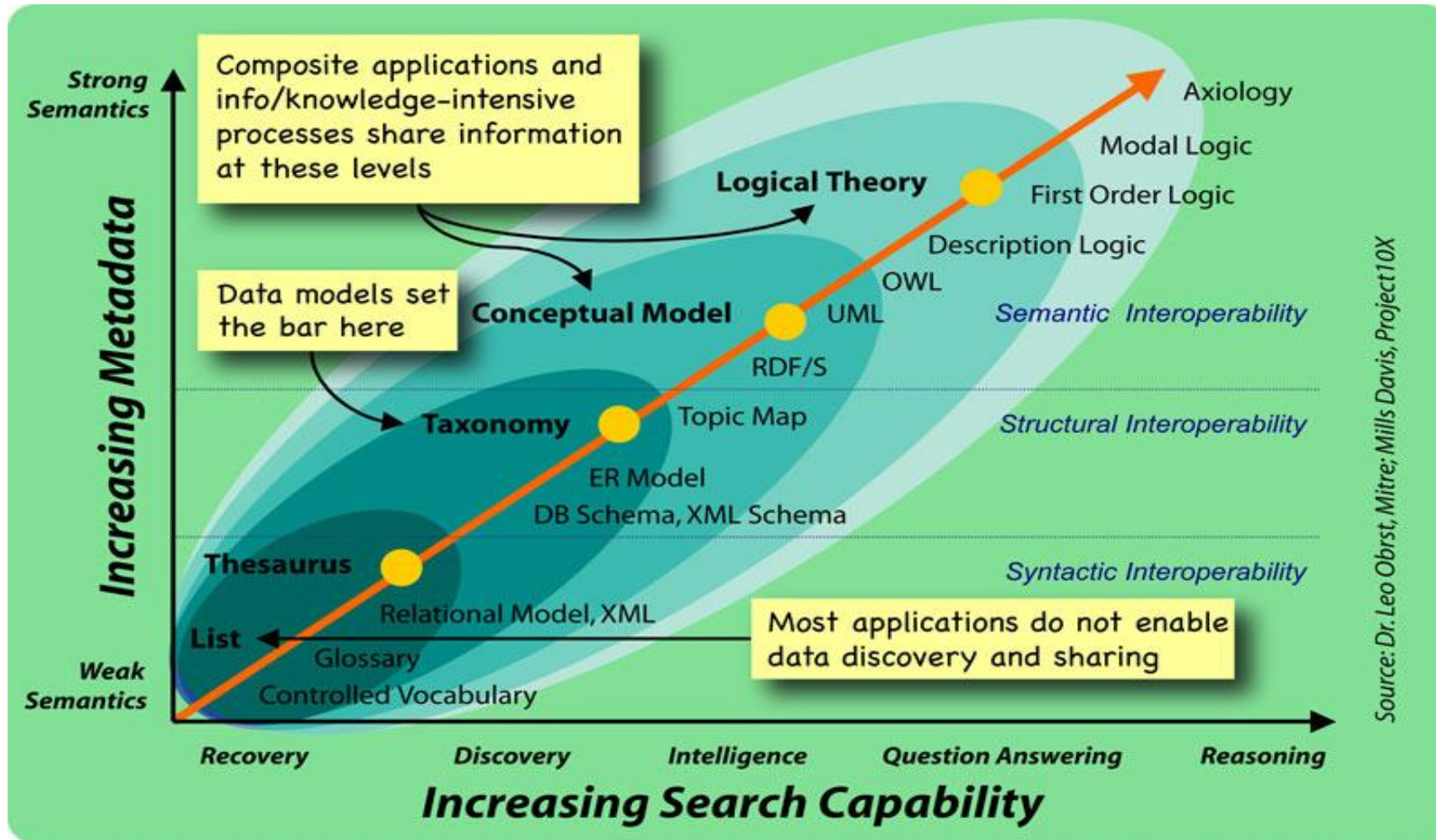
- ❖ **Connect** experts, users and **share** knowledge
- ❖ **Promote** and **represent** EBU members needs and requirements
- ❖ **Drive** R&D and **harmonise** approaches and positions
- ❖ **Develop** solutions / standards and **guide** for implementation



EBU AND THE SEMANTIC WEB



Ontologies: what do they bring?



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Courtesy Dr. L. Obrst (Mitre), M. Davis (Project10X)



EBU Technical & metadata: Web technologies

W3C Media Annotation

1. TV-Anytime mapping
2. EBUCore mapping
3. NewsML-G2 mapping
4. Finally RDF/OWL !

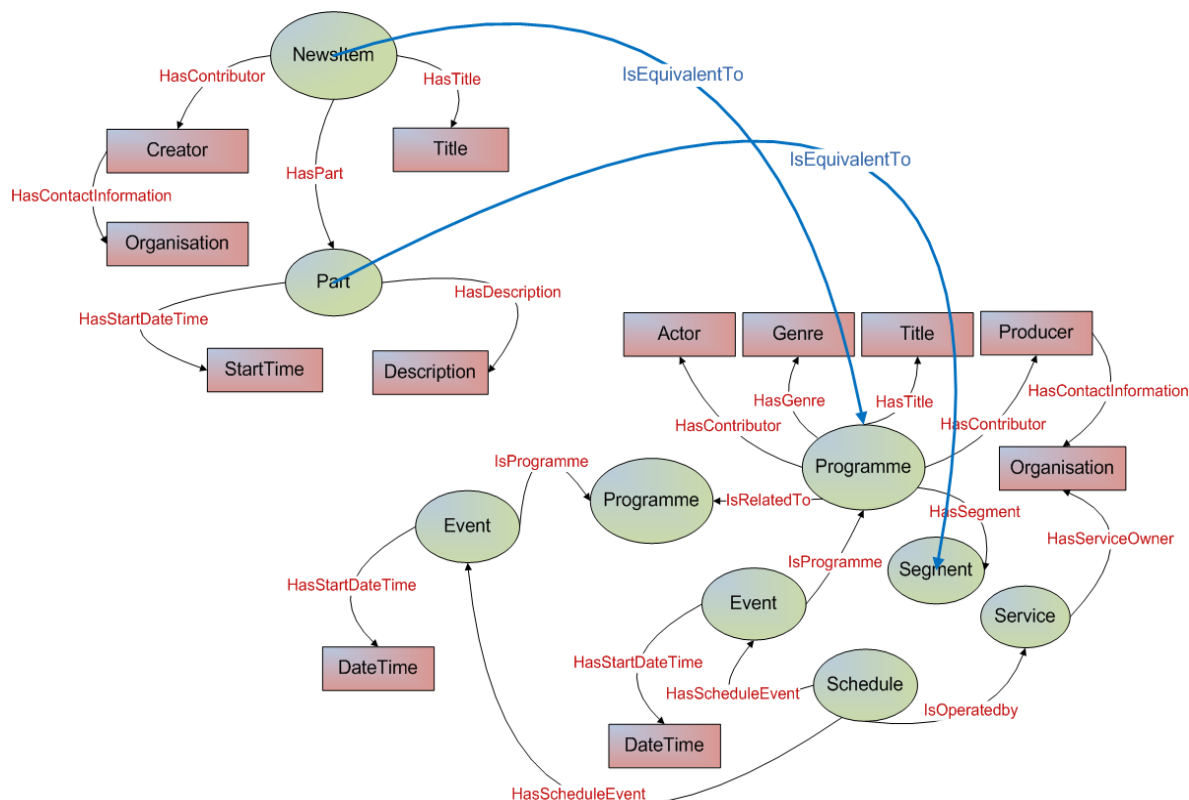
Semantic Web @ EBU

1. TVA in RDF/OWL
2. NewsML-G2 in RDF/OWL
3. TVA and EBU classification schemes in SKOS
4. Triple stores and Sparql applied to Eurovision

RDF and HTML-5

1. RDFa, Microformats
2. Microdata?

```
<skos:Concept rdf:about="EditorialFormatCodeCS.xml#2.1.2">  
<rdf:type rdf:resource="&owl;Thing"/>  
<skos:prefLabel xml:lang="en">Magazine</skos:prefLabel>  
<skos:broader rdf:resource="EditorialFormatCodeCS.xml#2.1"/>  
<skos:narrower rdf:resource="EditorialFormatCodeCS.xml#2.1.2.1"/>  
<skos:narrower rdf:resource="EditorialFormatCodeCS.xml#2.1.2.2"/>  
</skos:Concept>
```



SKOS is just the top of the semantic iceberg

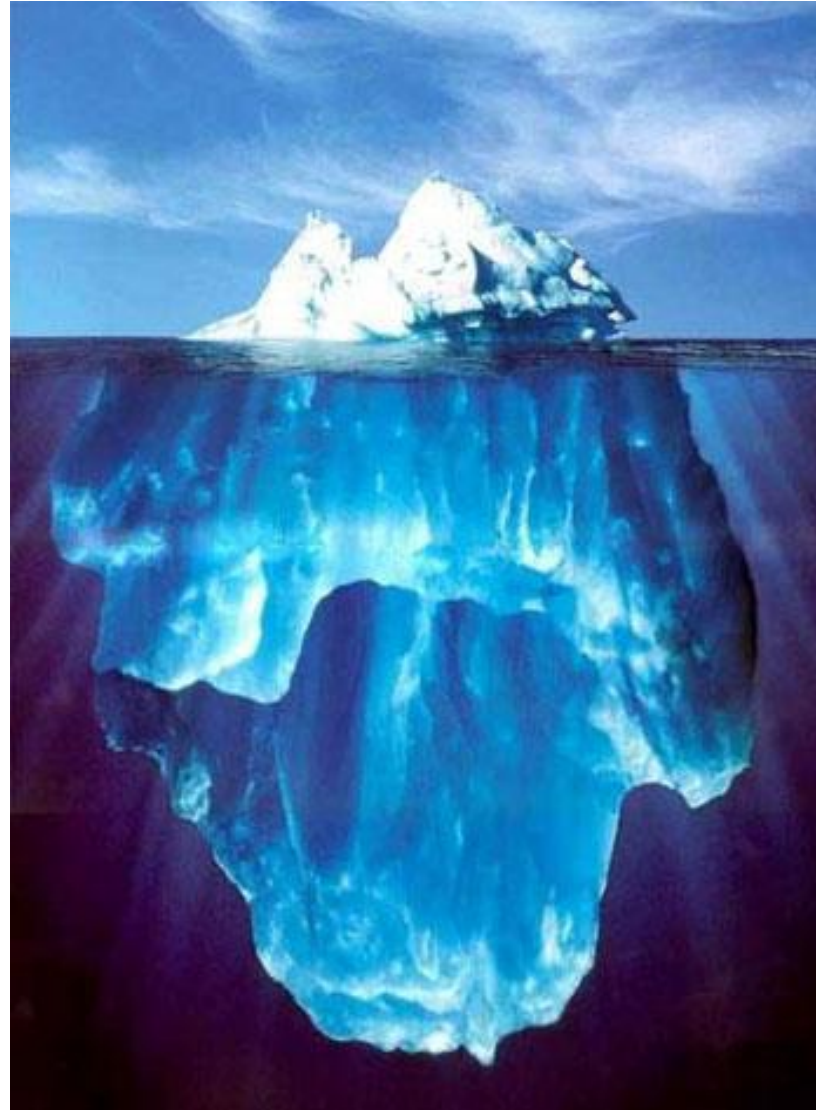
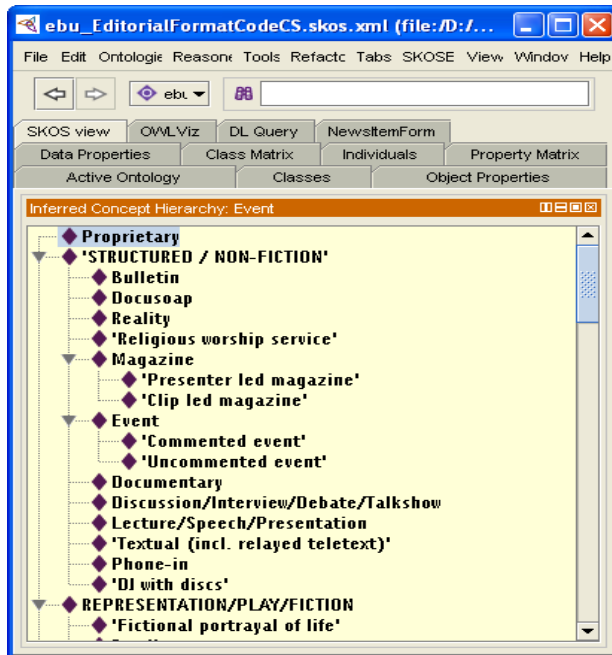
Easier to start.

Easier to grasp.

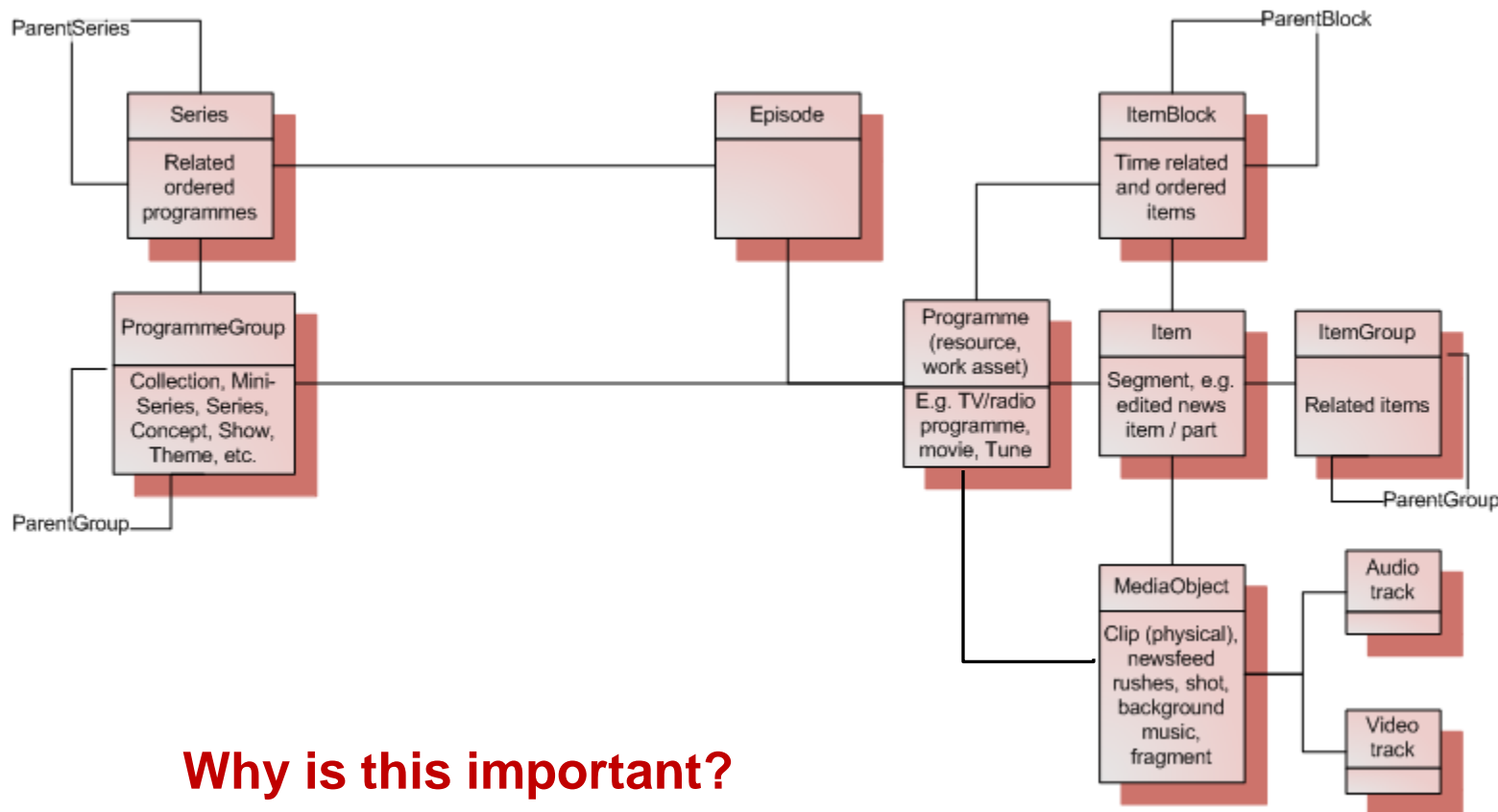
Effective.

The semantic answer to classification.

But a small part of the problem !



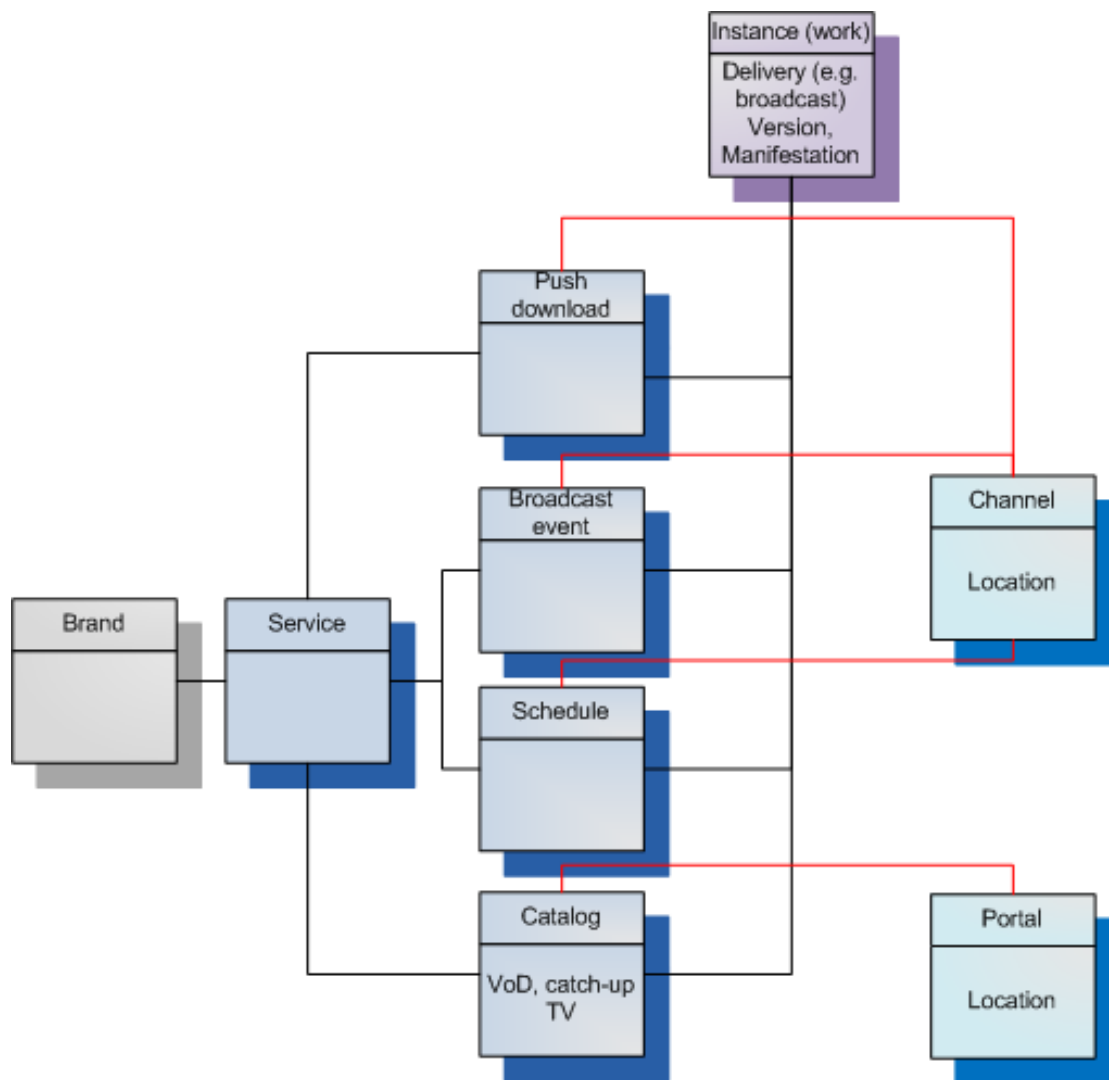
EBU Technical & metadata: The EBU class model: Media



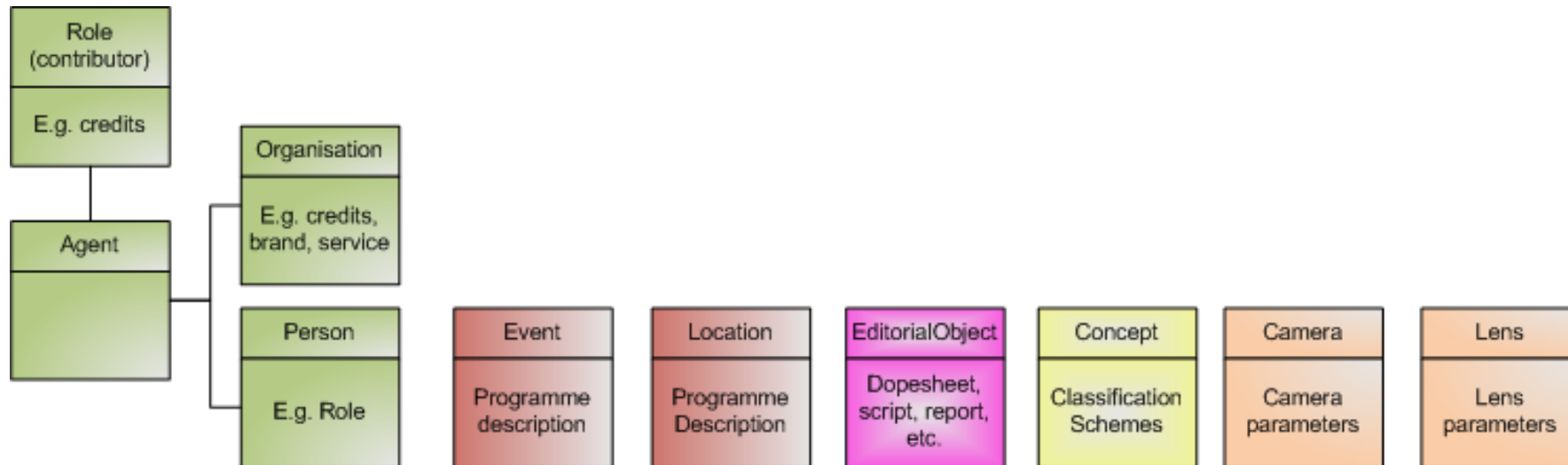
Why is this important?

1. It is one step into more advanced modelling and metadata representation
2. High level of interoperability with EBU members solutions & IPTC, W3C, MPEG, etc.
3. This is 'semantic web' ready -> add data & object properties

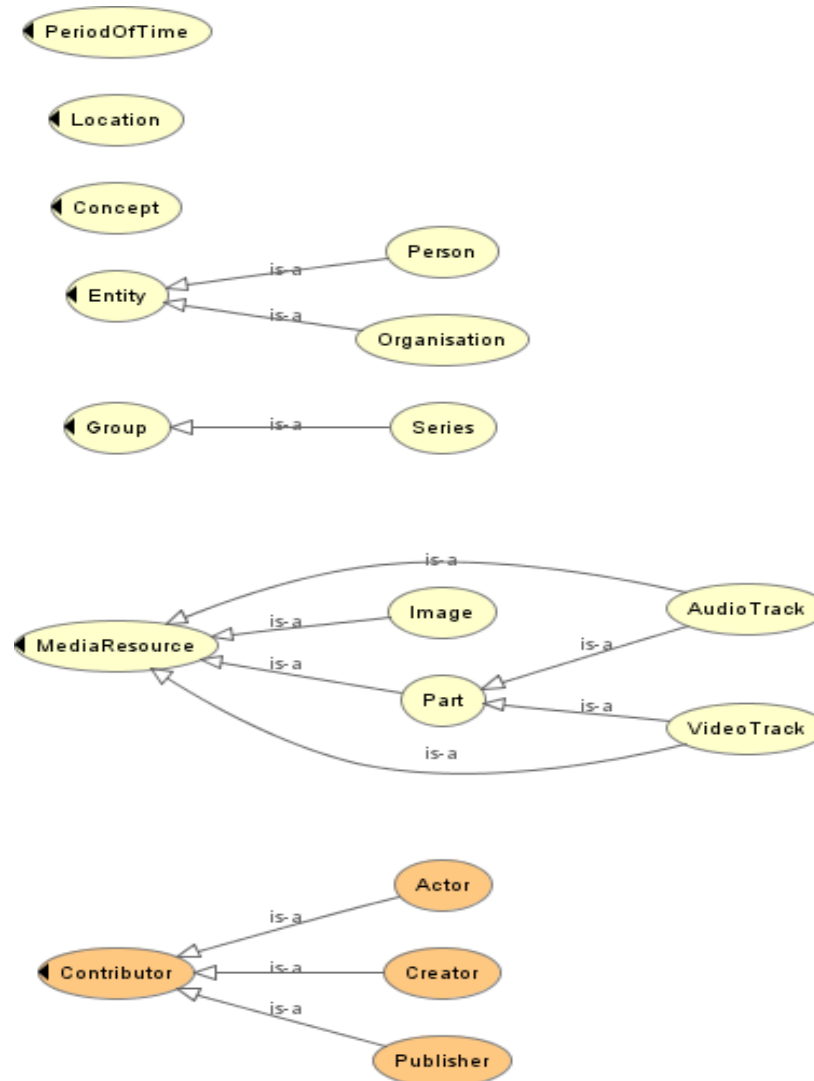
EBU Technical & metadata: The EBU class model: Delivery



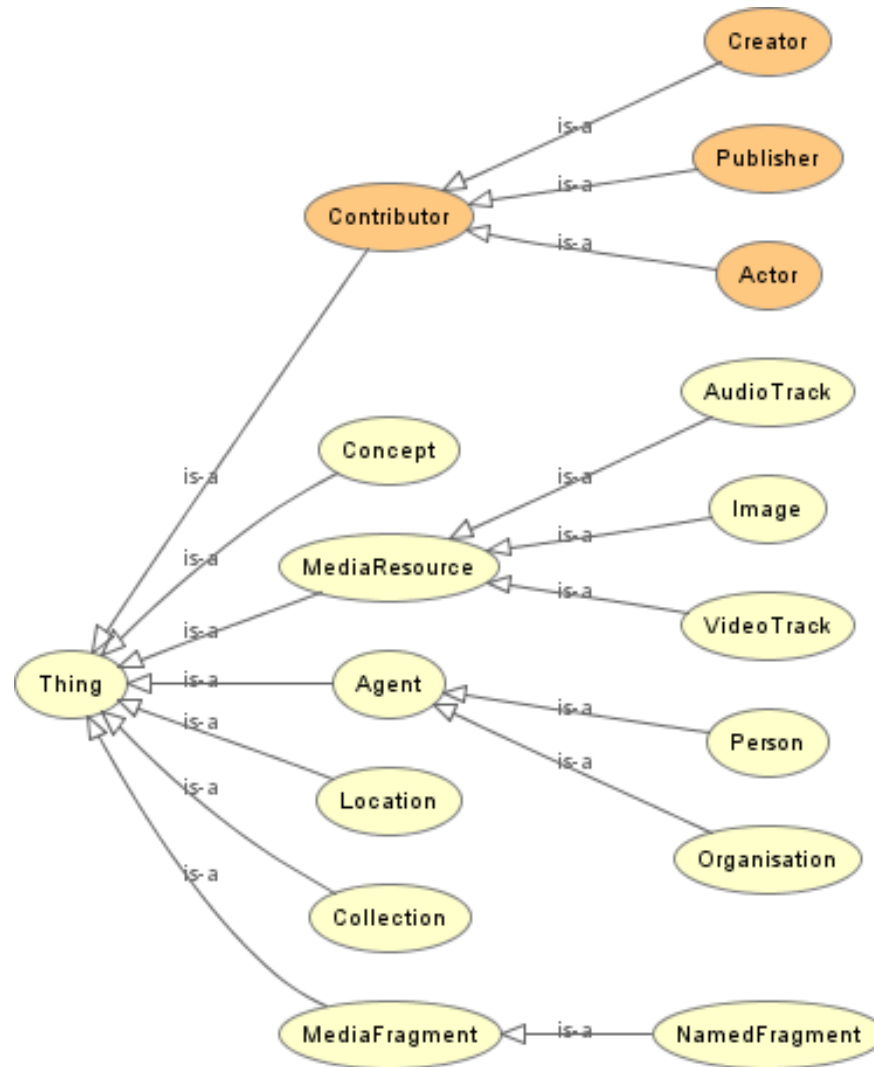
EBU Technical & metadata: The EBU class model: Non-media



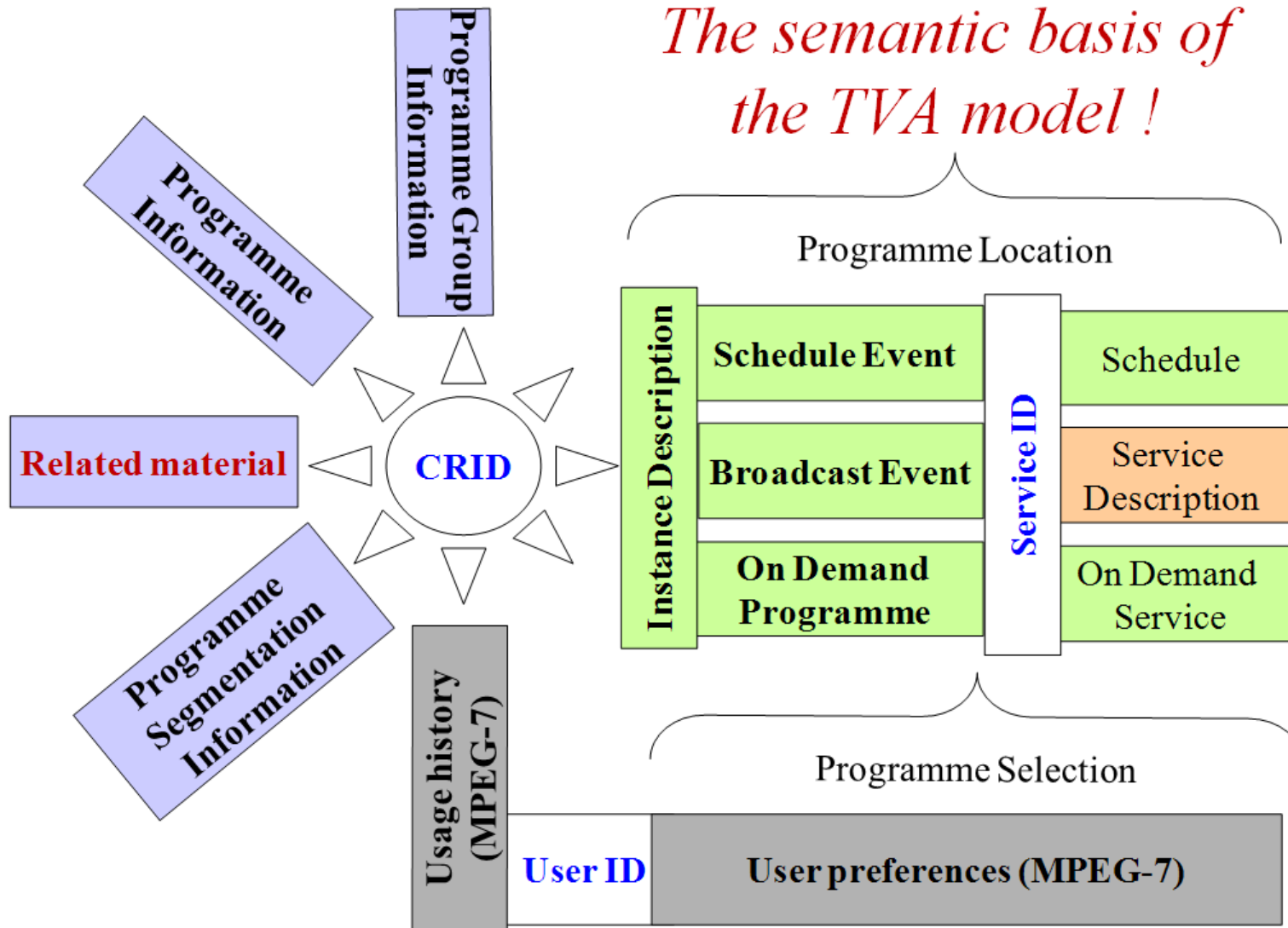
EBU Technical & metadata: EBUCore class model



EBU Technical & metadata: W3C MAWG class model

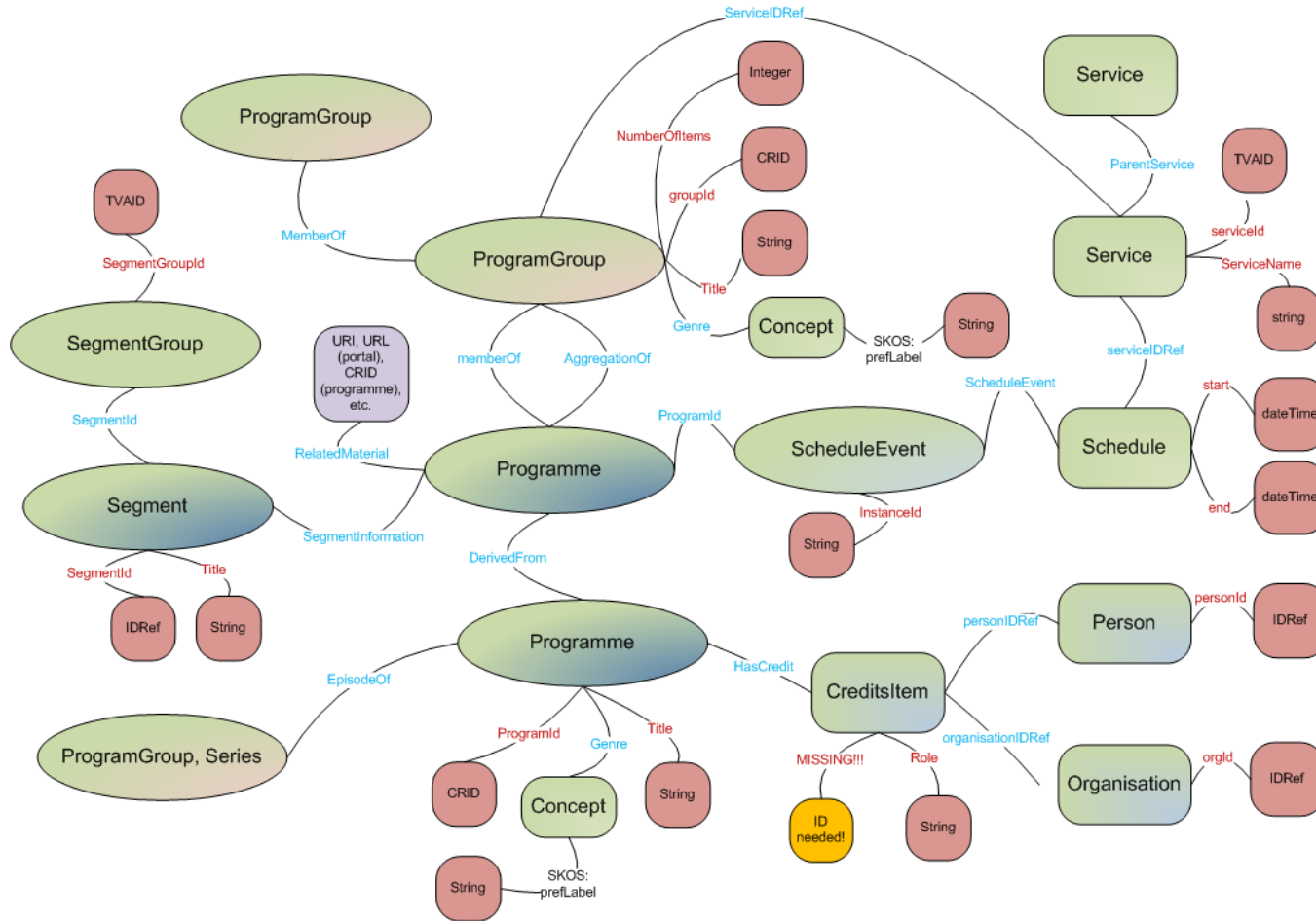


EBU Technical & metadata: A TVA class model, from...



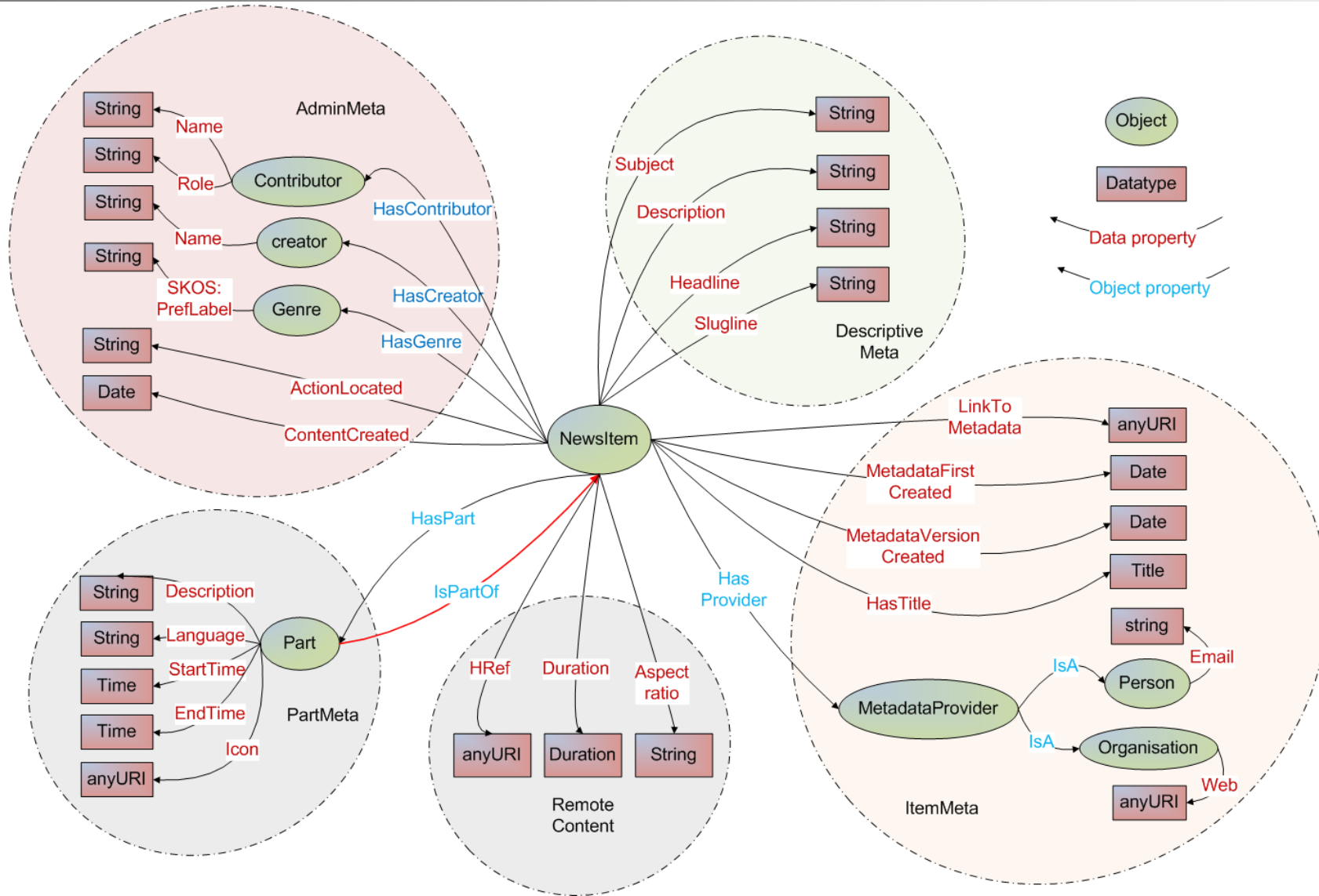
EBU Technical & metadata: A TVA class model, to...

Direct XML translation is a mistake !



The data model may be right (classes) but properties must be expressed differently: identify the answers to the queries !

EBU Technical & metadata: A NewsML-G2 class model



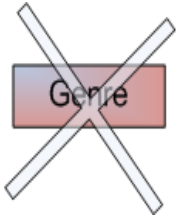
Good properties plus reasoning means generation of richer information and knowledge

The screenshot shows the SKOS Ed interface for the ontology EBU_EPG.owl. The main window displays a tree of classes and individuals. The 'Individuals by class: GroupeReservoir' panel shows a list of individuals, including 'BMC-GroupNV', 'BertSmetsProductions', 'CartoonSaloonLtd', 'FranceAnimation', 'FranceTelevisionDistribution', 'FremantleMediaLimited', 'Froggies', 'GroupeReservoir', and 'Laboiteproductions'. The 'Description: GroupeReservoir' panel shows the class hierarchy, including 'Organisation' and 'Thing'. The 'Property assertions: GroupeReservoir' panel shows three object property assertions for 'OrganisationRelatedCreditsItem' with values 'CI_O8-TCQAD648-153-PR-O', 'CI_O8-TCQAD648-003-PR-O', and 'CI_O8-TCQAD648-152-PR-O'. A red circle highlights these assertions.

Yes, using inverse properties isn't a LITE attitude.
But was the ambition of Semantic Web to be LITE?



Triple stores and SPARQL end points – a buying proposal (e.g. for archives)?



Change “genre” to an object property and easily connect to a classification scheme as a new linked resource using URIs

Query

```
PREFIX :<http://www.ebu.ch/metadata/ontologies/EPG/EBU_EPG.owl#>
SELECT DISTINCT ?pst ?pg ?pt
WHERE {
  ?se :ScheduleEventRelatedProgramme ?p.
  ?p :ProgrammeTitle ?pt.
  ?p :ProgrammeGenre ?pg.
  ?p :ProgrammeRelatedCreditsItem ?pci.
  ?pci :CreditsPerson ?cp.
  ?cp :PersonFamilyName ?pfn.
  ?se :ScheduleEventPublishedStartTime ?pst
}
FILTER (?pst > "10:00:00")
FILTER (?pst < "23:00:00")
ORDER BY ?pst
```

Results

pst	pg	pt
10:05:00.00	Magazine	Hep Taxi ! - Brigitte Lahaie
10:05:00.00	Magazine	Hep Taxi ! Brigitte Lahaie - (En boucle)
10:35:00.00	Magazine	Zoom arriere - Les incroyants
11:37:00.00	Micro-programme	Questions d'argent - Carte de credit reserve
11:40:00.00	Serie	Plus belle la vie (Saison V)
12:05:00.00	Magazine	Toute une histoire
13:45:00.00	Documentaire	Superscience - Les hommes de l'espace
14:35:00.00	Magazine	Toute une histoire - Comment se pardonner une erreur de jeunesse ?
16:02:00.00	Jeunesse	Ici Bla Bla - Le kiosque extra-terrestre
16:02:00.00	http://www.ebu.ch/metadata/cs/ebu_ContentGenreCS.skos.owl#3.5	Ici Bla Bla - Le kiosque extra-terrestre
16:35:00.00	Jeunesse	Il etait une fois...Notre Terre - l'eau ne tombe pas du ciel
16:51:00.00	Jeunesse	La chouette - Course poursuite
17:16:00.00	Jeunesse	La chouette - La cigogne
17:17:00.00	Jeunesse	Ben 10 - Ambiance glaciale
17:40:00.00	Information	Les Niouzz
17:55:00.00	Magazine	Toute une histoire
19:00:00.00	Serie	Plus belle la vie (Saison V)
19:25:00.00	Serie	30 Rock (Saison I) - l'insulte

Schedule XML data used for RDF/OWL transform: courtesy RTBF



Harmonising and mapping ontologies...

Class and properties

- BBC 'Programme Model': brand, series, episode, programme, programme item, version (of the programme), segment, broadcast (event), service, channel, broadcaster (role), person
- CableLabs: asset, chapter, distributor, provider, person, actor, director, producer, studio
- EBUCore, EBU P-META & W3C MAWG: resource, creator, contributor, publisher, location, collection/group, fragment/part/segment, concept (classification), person organisation
- ETSI TV-Anytime: programme group (inc. brand, series, etc.), programme, segment group, segment, service, schedule, location (broadcast event, schedule event, on demand programme, push download programme), person, organisation, concept (classification)
- FRBR, work, expression, manifestation, item, person, corporate body, event, place, concept, object
- IPTC newsML-G2: news item, part, person, organisation, creator, contributor, person, organisation, concept
- ISO/IEC MPEG-7: audiovisual segment, video segment, audio segment, text segment, segment group, audiovisual region, fragment, collection, agent, person, organisation, place, event, object
- PBCore: resource, creator, contributor, publisher, concept (classification)
- Mediamap: term / concept, agent, moral person, physical person, resource, moment, place, opus, clip, container / instance, role / contributor

The same shall apply to properties !!



Semantic Web: so what ?

Some key features:

- Steep learning curve but otherwise very intuitive, flexible and modular
- Easy multi-source collaborative metadata creation
- A good solution to link data and connect concepts
 - Bridging ontologies e.g. NewsML with the EPG
 - An elegant solution for classification schemes
 - Of course tailored for linked data
- Increasing search capabilities from built knowledge

Still a lot of work needed:

- Harmonise class model
- Conversion from schemas doesn't replace the need to adapt the models
 - ✓ Some XML schema features are not transposable
- Linked data is attractive but expensive
- Versioning & updating need more attention
- Not enough easy to use tools (edition, validation, triple stores, SPARQL)
- No clear guidelines on publication and not enough standardisation, etc.

Changing the name to linked data won't solve all the problems

- ✓ More resources to link to (e.g. DBpedia) than linked resources: cost?
- ✓ What is a resource with 'permanent' URI? What is the editorial value of a resource?



EBU **TECHNICAL**



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