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Graph-based modeling of the bibliographic items and linked open data for the citation records

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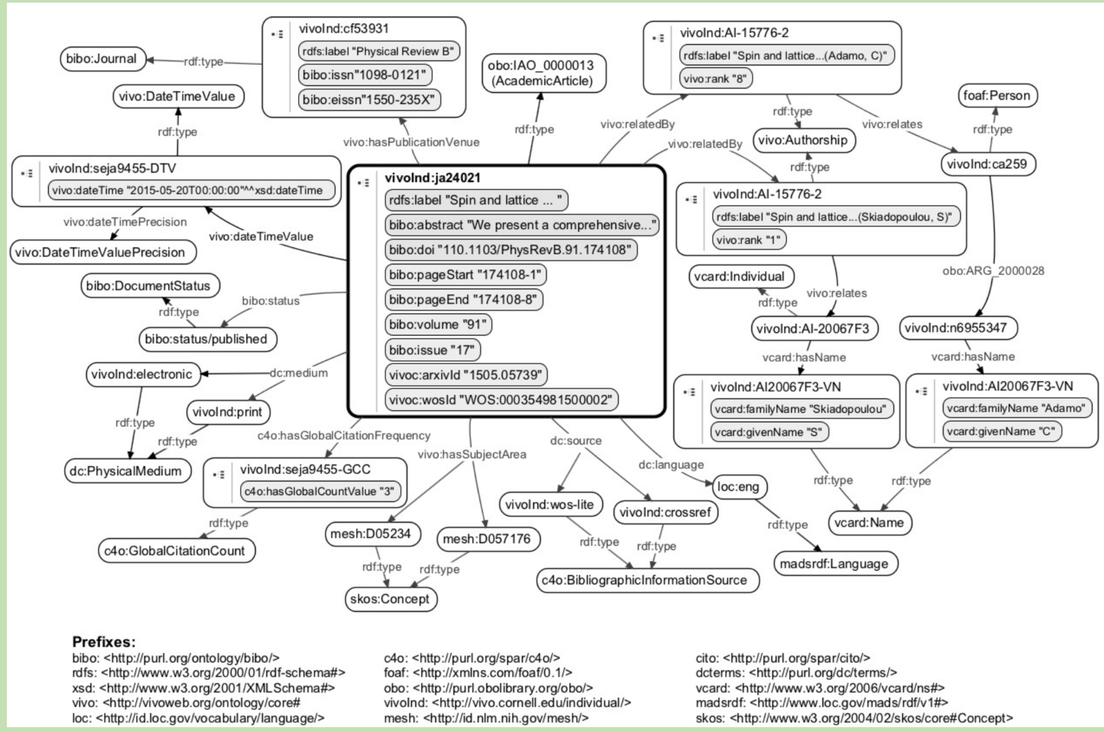
We present VIVO-ISF ontology-driven modeling of the scholarly works, originally recorded in Symplectic Elements. Initially, we concentrated on the "**academic article**" category only. For the academic articles, Elements captures the title of the article, list of the persons and their contribution roles (such as authors, editors, translators), journal title, volume number, issue, ISSN, DOI, publication status, pagination etc. - named as "**Citation Items**". The data for these citation items may or may not be available in every internal/external data source and may also vary among available data sources. This leads to recording multiple versions of the same academic article - named as "**Version Entries**". The version entries of an article are formalized using a graph-based approach. We used attributed graphs. Graphs with node and edge attribution are typed over an attribute type graph (ATG). **Attributed graphs (AG)** ensure that all edges and nodes of a graph are typed over ATG and each node is either a source or target (or both). We present our graph-based model, outcomes of the analysis of the version entries graph and the process of the merge of the different version entries graph into a single record - known an **Uber Record**.

VIVO-ISF ontology driven-model for Uber Record (Category: Academic Article)



Prefixes:

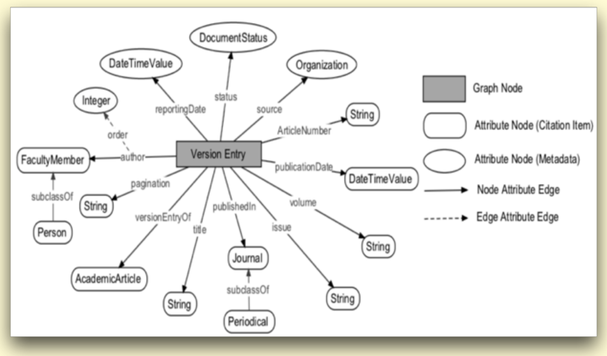
bibo: <http://purl.org/ontology/bibo/>
rdfs: <http://www.w3.org/2000/01/rdf-schema#>
xsd: <http://www.w3.org/2001/XMLSchema#>
vivo: <http://vivoweb.org/ontology/core#
loc: <http://id.loc.gov/vocabulary/language/>

c4o: <http://purl.org/spar/c4o/>
foaf: <http://xmlns.com/foaf/0.1/>
obo: <http://purl.obolibrary.org/obo/>
vivoInd: <http://vivo.cornell.edu/individual/>
mesh: <http://id.nlm.nih.gov/mesh/>

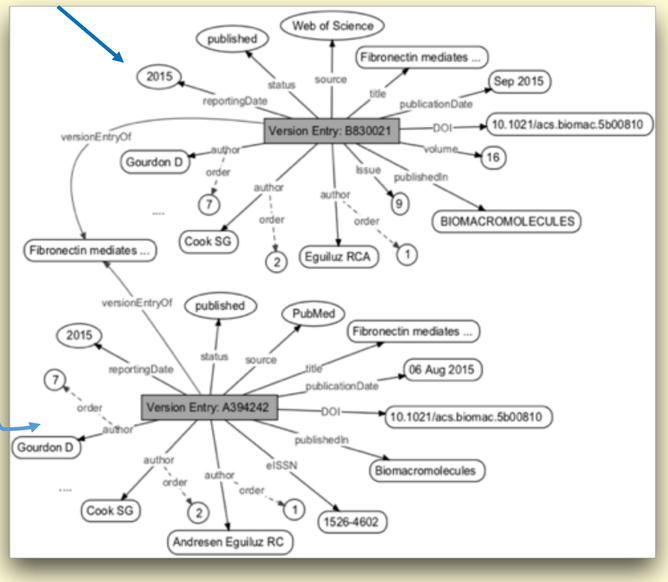
cito: <http://purl.org/spar/cito/>
dcterms: <http://purl.org/dc/terms/>
vcard: <http://www.w3.org/2006/vcard/ns#>
madsrdf: <http://www.loc.gov/mads/rdf/v1#>
skos: <http://www.w3.org/2004/02/skos/core#Concept>

Citation items

Version Entries



Attribute Type Graph (ATG)



Attributed Graph Typed over ATG

Uber Record

The merge process seeks to form a more complete citation record by considering each source's citation in turn and if possible

1. filling in any blank fields e.g. completing a date.
2. replacing a candidate value with a better one (e.g. title case is better than upper case).
3. accumulating multiple values for fields such as keywords.

```
<http://scholars.cornell.edu/individual/UR-433665>
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        <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://purl.org/ontology/bibo/AcademicArticle> .
        <http://purl.org/ontology/bibo/doi> "10.1021/acs.biomac.5b00810" .
        <http://vivoweb.org/ontology/core#dateTimeValue> <http://scholars.cornell.edu/individual/UR-433665-DTV> .
        <http://purl.org/ontology/bibo/issue> "9" .
        <http://purl.org/ontology/bibo/pageStart> "2884" .
        <http://purl.org/ontology/bibo/volume> "16" .
        <http://purl.org/ontology/bibo/pageEnd> "2894"
        <http://vivoweb.org/ontology/core#hasPublicationVenue> <http://scholars.cornell.edu/individual/jrnl-0000015> .
        ....
    ]
```

- http://symplectic.co.uk/products/elements/
- https://wiki.duraspace.org/display/VIVO/VIVO-ISF+Ontology
- https://wiki.duraspace.org/display/VIVO/VIVO-ISF+1.6+relationship+diagrams%3A+Authorship