

Evaluation of Schema.org for Aggregation of Cultural Heritage Metadata - Appendices

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A CLASS USAGE IN THE SCHEMA.ORG SOURCE DATA AND DERIVED EDM METADATA

This appendix contains the class usage profile of the Schema.org metadata from the initially collected sample of 1000 Schema.org records from NCSU Libraries and 905 records from the University of Illinois. The two tables below present all Schema.org classes used by either data provider (table on the left side) and the class usage profile of the EDM derived from the Schema.org metadata using our mapping (table on the right side).

Table 1. Class usage in the Schema.org source data and derived EDM metadata

Usage count in Schema.org			Usage count in EDM generated from Schema.org		
Class URI	NCSU	U. Illinois	Class URI	NCSU	U. Illinois
schema:CreativeWork	1000	1868	edm:ProvidedCHO	1000	3474
schema:Book	0	768			
schema:VisualArtwork	0	847			
			ore:Aggregation	1000	905
schema:AudioObject	7	0	edm:WebResource	7	1481
schema:ImageObject	0	1337			
schema:WebPage	0	160			
schema:VideoObject	25	0			
schema:Organization	388	1810	foaf:Organization	388	1804
schema:Person	324	2193	edm:Agent	324	2187
schema:Place	690	0	edm:Place	690	0
schema:PostalAddress	410	0			
schema:Distance	0	1298			
schema:GeoCoordinates	690	0			
schema:Thing	2733	0	skos:Concept	2733	0
rdfs:Resource	0	906			

B DATA PROFILE OF THE SCHEMA.ORG

This appendix contains the data profile of the Schema.org from the initially collected sample of 1000 Schema.org records from NCSU Libraries and 905 records from the University of Illinois.

The tables below present all Schema.org classes and properties used by either data provider. Each table presents the property usage within one class, indicating the number of times the properties were used having an instance the respective class as its subject and as its object.

Table 2. **Property usage in schema:AudioObject**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:contentUrl	7	0
schema:description	1	0
schema:encodingFormat	7	0
schema:name	7	0
schema:uploadDate	7	0
<i>Usage as object</i>		
schema:audio	7	0

Table 3. **Property usage in schema:Book**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:author	0	812
<i>Usage as object</i>		
schema:example	0	768

Table 4. **Property usage in schema:CreativeWork**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:about	3188	197
schema:additionalType	0	1810
schema:associatedMedia	0	179
schema:audio	7	0
schema:contentLocation	690	0
schema:contributor	32	1485
schema:copyrightHolder	0	58
schema:creator	231	58
schema:dateCreated	746	695
schema:description	206	40
schema:exampleOfWork	0	768
schema:genre	0	41
schema:height	0	22
schema:image	968	0
schema:inLanguage	591	0
schema:isPartOf	1200	116
schema:keywords	2710	0
schema:locationCreated	0	898
schema:mainEntityOfPage	0	160
schema:name	1000	962
schema:provider	0	58
schema:sameAs	0	1052
schema:thumbnailUrl	968	0
schema:url	1000	0
schema:video	25	0
schema:width	0	22
<i>Usage as object</i>		
schema:isPartOf	0	1810
schema:sameAs	0	8
schema:url	1000	0

Table 5. **Property usage in schema:Distance**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:name	0	1298
<i>Usage as object</i>		
schema:height	0	649
schema:width	0	649

Table 6. **Property usage in schema:GeoCoordinates**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:latitude	399	0
schema:longitude	399	0
<i>Usage as object</i>		
schema:geo	690	0

Table 7. **Property usage in schema:ImageObject**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:contentUrl	0	1337
schema:fileFormat	0	1337
schema:height	0	1309
schema:name	0	703
schema:width	0	1309
<i>Usage as object</i>		
schema:associatedMedia	0	1337

Table 8. **Property usage in schema:Organization**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:description	82	0
schema:name	388	1810
schema:sameAs	0	905
<i>Usage as object</i>		
schema:about	341	0
schema:contributor	31	0
schema:copyrightHolder	0	905
schema:creator	16	905
schema:provider	0	905

Table 9. **Property usage in schema:Person**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:birthDate	210	290
schema:deathDate	180	226
schema:description	83	0
schema:familyName	292	0
schema:gender	102	0
schema:givenName	286	0
schema:jobTitle	0	1486
schema:name	324	569
schema:sameAs	0	3234
<i>Usage as object</i>		
schema:about	108	0
schema:author	0	708
schema:contributor	1	1485
schema:creator	215	0
schema:sameAs	0	11

Table 10. **Property usage in schema:Place**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:address	410	0
schema:alternateName	410	0
schema:description	93	0
schema:geo	690	0
schema:name	690	0
<i>Usage as object</i>		
schema:contentLocation	690	0

Table 11. **Property usage in schema:PostalAddress**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:addressLocality	113	0
schema:addressRegion	406	0
schema:postalCode	98	0
<i>Usage as object</i>		
schema:address	410	0

Table 12. **Property usage in schema:Thing**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:name	2733	0
<i>Usage as object</i>		
schema:about	2733	0

Table 13. **Property usage in schema:VideoObject**

<i>Property URI</i>	<i>NCSU</i>	<i>U. Illinois</i>
<i>Usage as subject</i>		
<i>schema:contentUrl</i>	25	0
<i>schema:description</i>	2	0
<i>schema:duration</i>	25	0
<i>schema:encodingFormat</i>	25	0
<i>schema:height</i>	25	0
<i>schema:name</i>	25	0
<i>schema:thumbnailUrl</i>	25	0
<i>schema:uploadDate</i>	25	0
<i>schema:width</i>	25	0
<i>Usage as object</i>		
<i>schema:video</i>	25	0

Table 14. **Property usage in schema:VisualArtwork**

<i>Property URI</i>	<i>NCSU</i>	<i>U. Illinois</i>
<i>Usage as subject</i>		
<i>schema:about</i>	0	4030
<i>schema:artMedium</i>	0	1445
<i>schema:artform</i>	0	840
<i>schema:artworkSurface</i>	0	222
<i>schema:associatedMedia</i>	0	1158
<i>schema:copyrightHolder</i>	0	847
<i>schema:creator</i>	0	847
<i>schema:description</i>	0	96
<i>schema:genre</i>	0	847
<i>schema:height</i>	0	627
<i>schema:isPartOf</i>	0	1694
<i>schema:name</i>	0	847
<i>schema:provider</i>	0	847
<i>schema:sameAs</i>	0	1693
<i>schema:text</i>	0	9
<i>schema:width</i>	0	627
<i>Usage as object</i>		
(never used as object)		

Table 15. **Property usage in schema:WebPage**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
(never used as subject)		
<i>Usage as object</i>		
schema:mainEntityOfPage	0	160

Table 16. **Property usage in rdf:Resource**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
schema:name	6	491
schema:sameAs	0	3336
<i>Usage as object</i>		
schema:about	6	0
schema:author	0	104
schema:locationCreated	0	802
schema:sameAs	0	294

C DATA PROFILE OF THE EDM METADATA DERIVED FROM SCHEMA.ORG

This appendix presents the data profile of the EDM derived from the Schema.org metadata (whose profile was presented in Appendix B) using the Schema.org to EDM mapping implemented for the case studies.

The tables below present all Europeana Data Model (EDM) classes and properties used by either data provider. EDM reuses classes and properties from other namespaces, therefore the listing contains information about data elements of other namespaces as well. Each table presents the property usage within one EDM class, indicating the number of times the properties were used having an instance the respective class as its subject and as its object.

Table 17. **Property usage in edm:Agent**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
rdagr2:birthDate	210	0
rdagr2:deathDate	180	0
rdagr2:professionOrOccupation	0	1482
owl:sameAs	0	3225
skos:prefLabel	610	568
<i>Usage as object</i>		
dc:contributor	1	1481
dc:creator	215	706
dc:subject	108	0
owl:sameAs	0	11

Table 18. **Property usage in edm:Place**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
wgs84pos: lat	399	0
wgs84pos:long	399	0
skos:altLabel	410	0
skos:prefLabel	690	0
<i>Usage as object</i>		
dc:subject	690	0

Table 19. **Property usage in edm:ProvidedCHO**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
dc:contributor	32	1481
dc:creator	231	1608
dc:description	206	2390
dc:language	591	0
dc:subject	6582	4215
dc:title	1000	1803
dc:type	0	1723
dcterms:created	746	692
dcterms:extent	0	1291
dcterms:isPartOf	1200	1804
dcterms:medium	0	221
dcterms:rights	0	902
dcterms:tableOfContents	0	159
edm:hasType	1000	5281
edm:realizes	0	765
owl:sameAs	0	2737
<i>Usage as object</i>		
dcterms:isPartOf	0	1804
edm:aggregatedCHO	1000	905
edm:isShownAt	1000 ¹	0
edm:realizes	0	765
owl:sameAs	0	8

¹ In the Schema.org data from NCSU Libraries, the same URI is used to identify the schema:MediaObject instance (or WebResource, in EDM terms) and the CreativeWork instance (or ProvidedCHO, in EDM terms), as a result after conversion, the edm:isShownAt property refers to both the ProvidedCHO and the WebResource. In the context of Europeana, we follow the recommendation in [6]: ‘This URI (of the ProvidedCHO) should resolve to a description of the resource’.

Table 20. **Property usage in edm:WebResource**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
dc:description	8	692
dc:format	7	1322
dc:type	7	1481
dcterms:extent	0	2588
<i>Usage as object</i>		
dcterms:tableOfContents	0	159
edm:isShownBy	7	1322

Table 21. **Property usage in ore:Aggregation**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
edm:aggregatedCHO	1000	905
edm:dataProvider	1000	905
edm:isShownAt	1000	0
edm:isShownBy	975	1322
edm:object	968	0
edm:provider	1000	905
<i>Usage as object</i> (never used as object)		

Table 22. **Property usage in skos:Concept**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
skos:prefLabel	2733	0
<i>Usage as object</i>		
dc:subject	2733	0

Table 23. **Property usage in foaf:Organization**

Property URI	NCSU	U. Illinois
<i>Usage as subject</i>		
owl:sameAs	0	902
skos:note	82	0
skos:prefLabel	388	1804
<i>Usage as object</i>		
dc:contributor	31	0
dc:creator	16	902
dc:subject	341	0
dcterms:rights	0	902
edm:provider	0	902