

Connecting the Smithsonian American Art Museum to the Linked Data Cloud

Pedro Szekely, Craig A. Knoblock, Fengyu Yang, Xuming Zhu,
Eleanor E. Fink, Rachel Allen, and Georgina Goodlander

University of Southern California, Los Angeles, California, USA

Nanchang Hangkong University, Nanchang, China

Smithsonian American Art Museum, Washington, DC, USA



Donate Now

Looking for art?
▶ Search Collections

Visit ▾

Calendar ▾

Exhibitions ▾

Collections ▾

Conservation ▾

Research ▾

Education ▾

Support ▾

Search the site

Highlights



You've got mail
Sign up to hear from us



Follow *Palto*
for updates on *Nam June Paik*
Global Vision



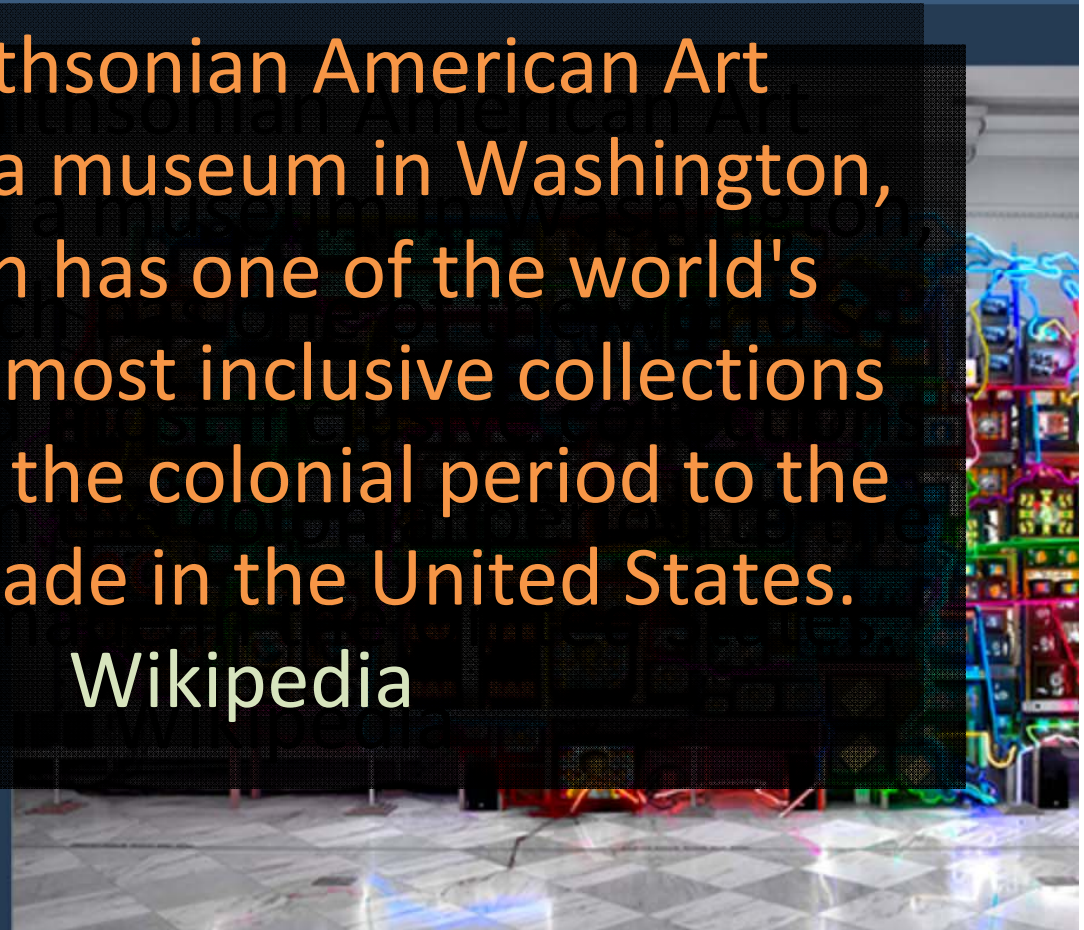
Nam June Paik
Global Vision
Through August



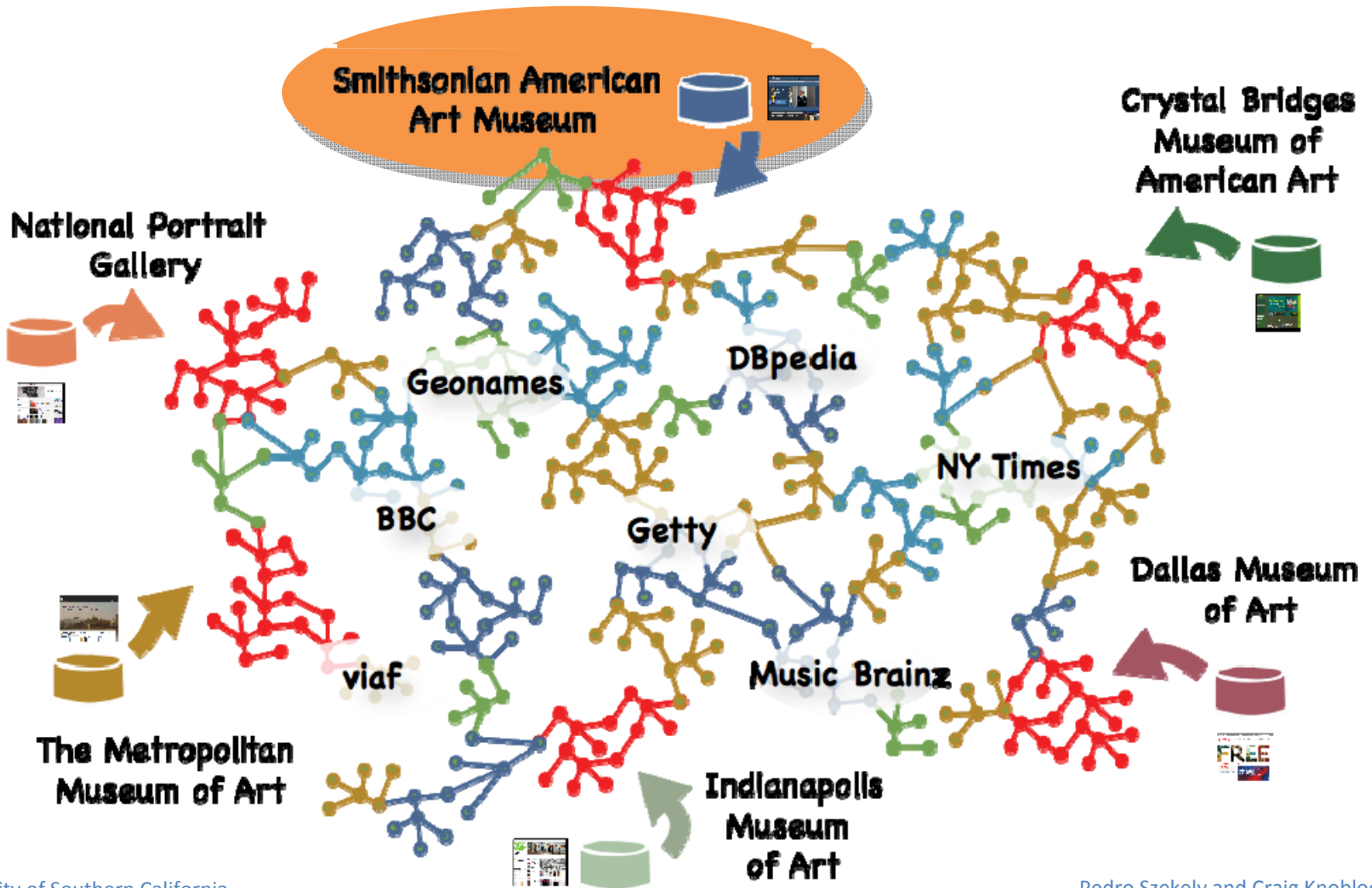
Luce Unplugged Community
Showcase
presented with the City Paper
May 31, 6pm

The Smithsonian American Art Museum is a museum in Washington, D.C. which has one of the world's largest and most inclusive collections of art, from the colonial period to the present, made in the United States.

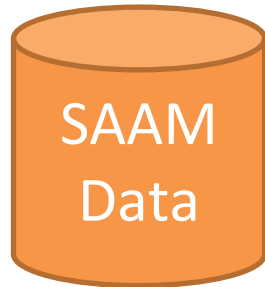
Wikipedia



Big Picture



Problem



What ontology to use?

Data consistency

Structure mismatches

What to link to?

100% precision

How to enable museums to do this themselves?

Steps to Create Linked Data

- Map data to RDF
 - ... select ontologies
 - ... define mappings
- Link to external resources
 - ... identify the links
- Curate the Linked Data
 - ... museums demand 100% correctness

select ontologies



138 pages

Definition of the
CIDOC
Conceptual Reference Model

Produced by the ICOM/CIDOC
Documentation Standards Group,
Continued by the
CIDOC CRM Special Interest Group

Version 5.0.4
November 2011



37 pages

Europeana Data Model
Mapping Guidelines v1.0.1



35 pages

Europeana Data Model Primer

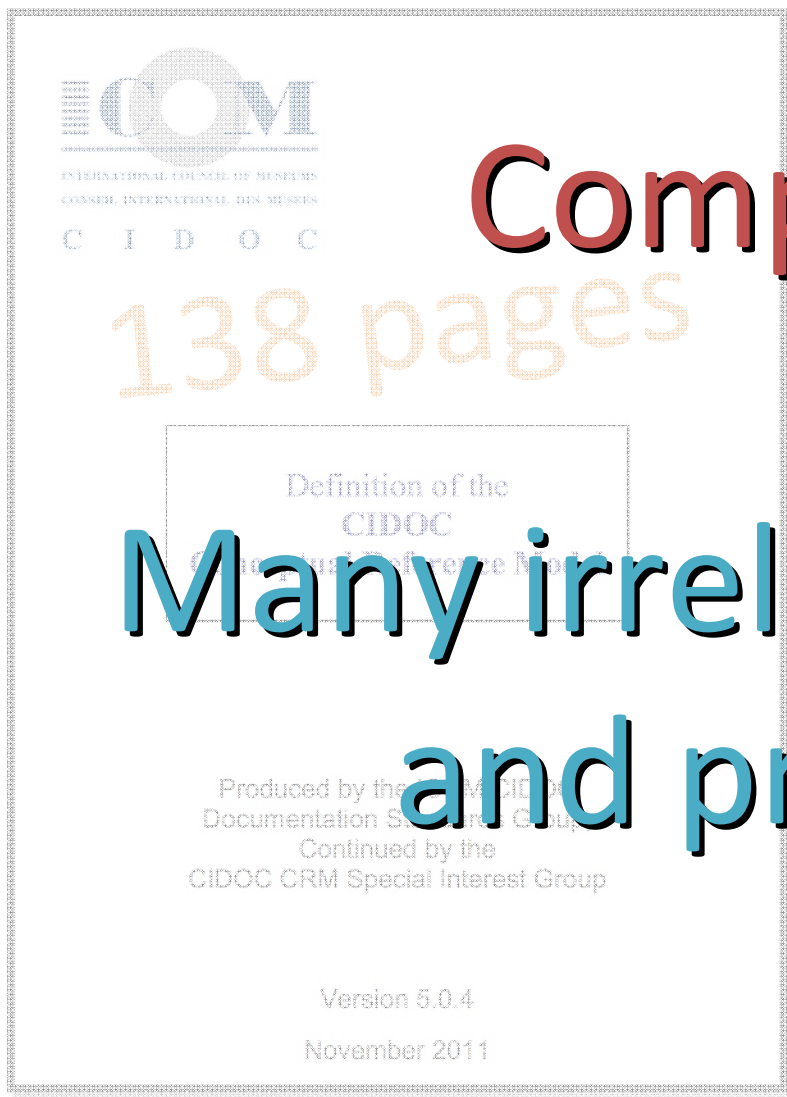


61 pages

Definition of the Europeana Data
Model elements

Version 5.2.3, 24/02/2012

Europeana v1.0



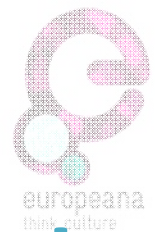
138 pages

Many irrelevant classes and properties



37 pages

Europeana Data Model
Mapping Guidelines v1.0.1



35 pages

European Data Model Primer

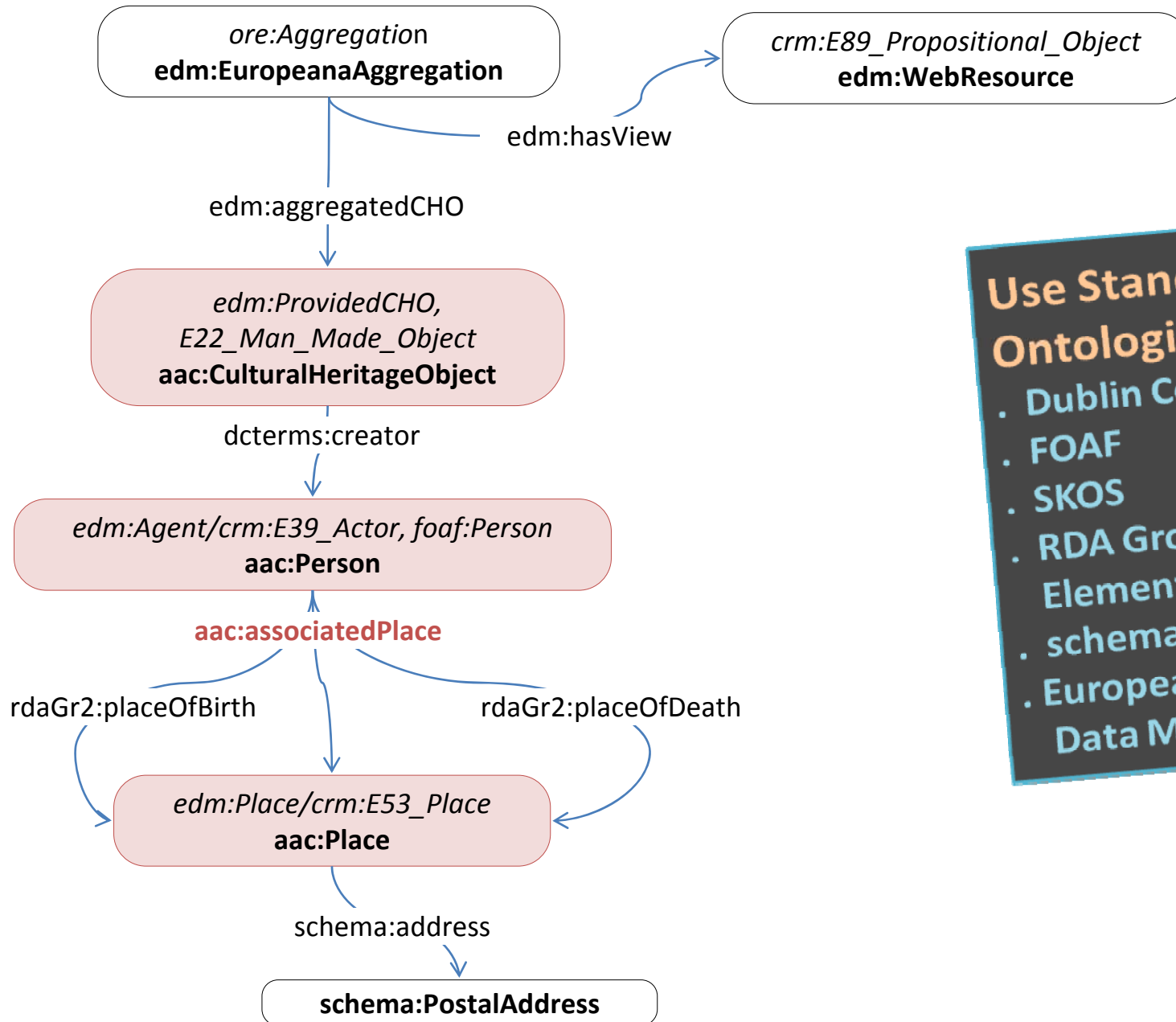


61 pages

Definition of the Europeana Data Model elements

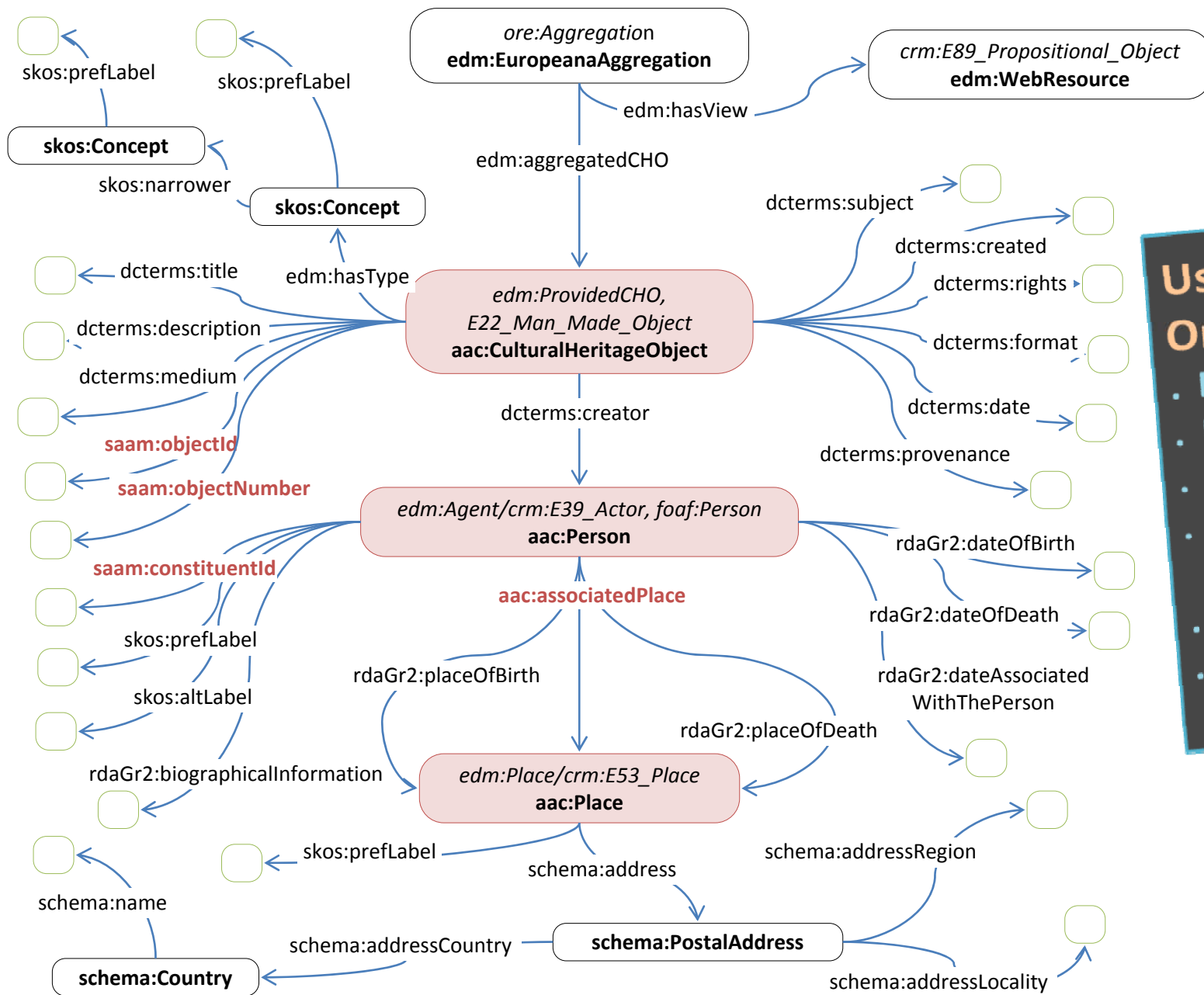
Version 5.2.3, 24/02/2012

Europeana v1.0



Use Standard Ontologies

- Dublin Core
- FOAF
- SKOS
- RDA Group Elements
- schema.org
- Europeana Data Model



Use Standard Ontologies

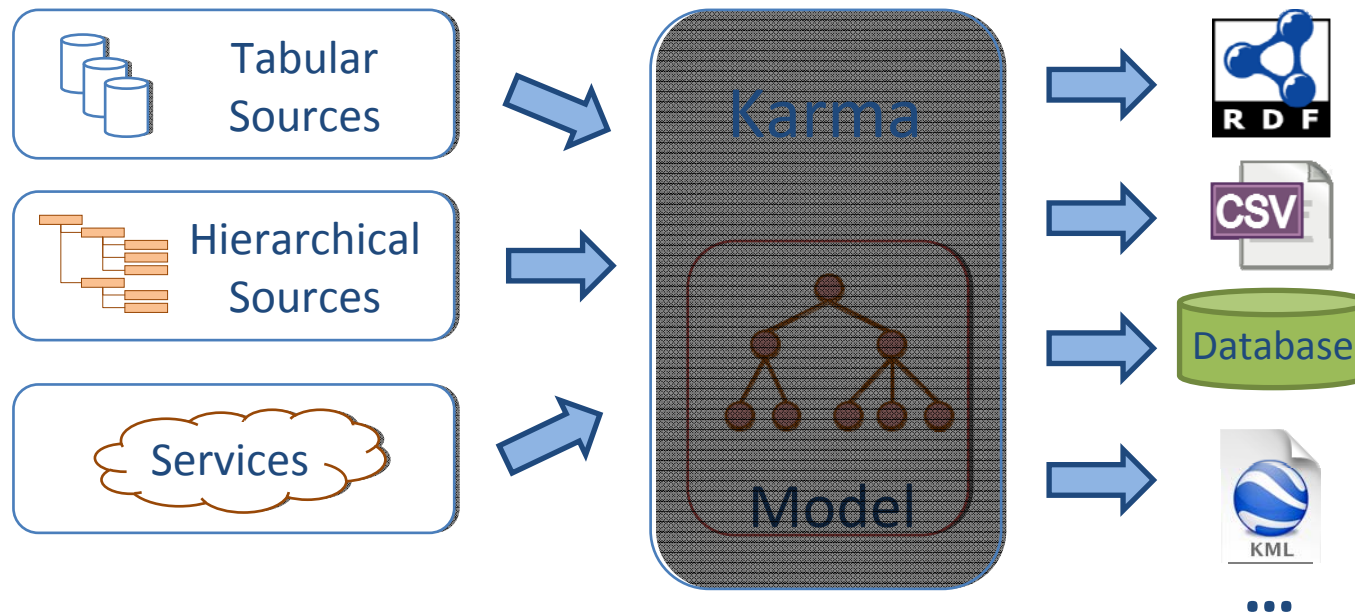
- Dublin Core
- FOAF
- SKOS
- RDA Group Elements
- schema.org
- Europeana Data Model

mapping the data to the ontologies

how to enable museums to do this themselves?

Karma

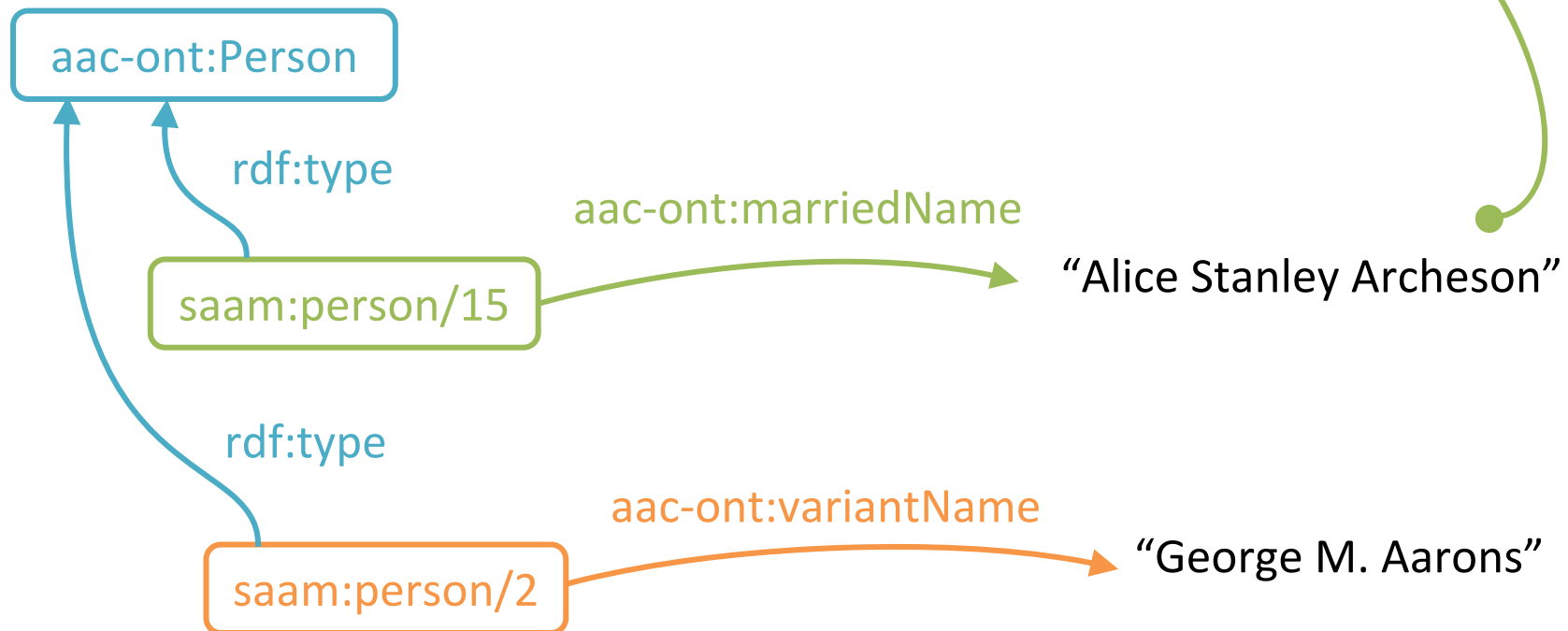
Interactive tool for rapidly extracting, cleaning, transforming, integrating, and publishing data



[Knoblock, Szekely, et al. Semi-automatically mapping structured sources into the semantic web. ISWC 2012]

specifying transformations and mapping to properties with Karma

ConstituentId	DisplayName	NameType
2	George M. Aarons	Variant Name
3	E. A. Abbey	Variant Name
6	Mary Lee Abbott	Variant Name
7	Sigmund M. Abeles	Variant Name
13	Maurice Victor Achener	Variant Name
15	Alice Stanley Acheson	Married Name
15	Dean Acheson	Married Name
15	Alice S. Acheson	Married Name
17	William B. Adair	Variant Name



Karma v1.93

Import Database Table

Import from Service

+ Import File...

Reset

Command History

Import CSV File: WebConAltNames

ConstituentId	DisplayName	NameType
2	George M. Aarons	Variant Name
3	E. A. Abbey	Variant Name
6	Mary Lee Abbott	Variant Name
7	Sigmund M. Abeles	Variant Name
13	Maurice Victor Achener	Variant Name
15	Alice Stanley Acheson	Married Name
15	Dean Acheson	Married Name
15	Alice S. Acheson	Married Name
17	William B. Adair	Variant Name
18	Adal Maldonado	Variant Name
18	Adal Alberto Maldonado	Variant Name
19	Julius Adam, the Younger	Variant Name
20	Ansel Easton Adams	Variant Name

<http://isi.edu/integration/karma>

mapping to object properties using Karma

Karma v1.93

om Service

+ Import File...

Reset

WebObjCaption_WebMakers.csv

Objectid	Constituentid	ObjectNumber	Title	Dated	CreditLine	Dimensions	CreditLineRepro	Medium	Classification	SubClassification	descri
1	2692	1984.124.1	Iran, from the United Nations Series	1944	Gift of Container Corporation of America	sheet: 11 x 9 in. (28.0 x 22.7 cm)		gouache and metallic gouache on paper	Painting		
2	3	1973.28.2	Harvest Home	1887	Gift of Sen. Stuart Symington and Rep. James W. Symington	sheet: 21 x 14 1/4 in. (53.3 x 36.2 cm)		pen and ink on paperboard	Drawing		
7	5	1975.83.10	Brooklyn Bridge, Water and Dock Streets, Brooklyn, from the series Changing New ...	1936	Transfer from the Evander Childs High School, Bronx, New York through the Genera ...	sheet: 18 x 14 3/8 in. (45.7 x 36.6 cm.)		gelatin silver print mounted on paperboard	Photography	Photoprint	
8	5	1975.83.18	Central Park Plaza, from Fifth Avenue at 58th Street, from the series Changing N ...	1937	Transfer from the Evander Childs High School, Bronx, New York through the Genera ...	sheet: 17 3/4 x 14 1/4 in. (45.2 x 36.0 cm.)		gelatin silver print mounted on paperboard	Photography	Photoprint	
			Downtown Skyport, Foot of		Transfer from the Evander	sheet: 18 x					

<http://isi.edu/integration/karma>

Evaluation of Data Mapping Using Karma

SAAM database

8 tables

29 columns

Ontologies

407 classes

105 data properties

229 object properties

	# of times Karma's top 4 suggestions contain the correct semantic type	# of times Karma correctly assigns object properties	Time (minutes)
Run 1: no training data	7 out of 29 (24%)	30 out of 35 (85%)	18
Run 2: using Run 1 as training	27 out of 29 (93%)	32 out of 35 (91%)	8

identifying and curating links

Multiple “John Singer Sargent”

cb:Person_John_Singer_Sargent

a aac-ont:Person ;
ont0:dateOfBirth "1879", "1885" ;
ont0:dateOfDeath "1925" ;
foaf:name "John Singer Sargent" .

ima:Person_John_Singer_Sargent

a aac-ont:Person ;
dct:date "1856-1925" ;
foaf:name "John Singer Sargent" .

dallas:Person_John_Singer_Sargent

a aac-ont:Person ;
ont0:dateOfBirth "1856" ;
ont0:dateOfDeath "1925" ;
foaf:name "John Singer Sargent" .

saam:Person_4253

a aac-ont:Person ;
aac-ont:associatedPlace
 saam:SaamPlace_1357324439768t1r13950_0,
 saam:SaamPlace_1357324439768t1r13951_0 ;
saam:constituentId "4253" ;
rdaGr2:biographicalInformation
 "Painter. Sargent traveled ..." ;
rdaGr2:dateAssociatedWithThePerson "1990-10-1", "1995-5-8" ;
rdaGr2:dateOfBirth "1856-1-12" ;
rdaGr2:dateOfDeath "1925-4-15" ;
rdaGr2:placeOfBirth saam:SaamPlace_1357324439768t1r13952_0 ;
rdaGr2:placeOfDeath saam:SaamPlace_1357324439768t1r13953_0 ;
foaf:name "John S. Sargent" ;
skos:altLabel "John S. Sargent" ;
skos:prefLabel "John Singer Sargent" .

met:Person_John_Singer_Sargent

a aac-ont:Person ;
ont0:placeOfResidence
 "North and Central America",
 "United States" ;
foaf:name "John Singer Sargent" .

John Singer Sargent

John Singer Sargent (1858–1925) was an American artist, portrait painter, and muralist. He was born in the United States but spent most of his life in Europe, where he became a naturalized citizen of France. Sargent is known for his masterful technique and his ability to capture the essence of his subjects. He was a member of the Académie des Beaux-Arts in Paris and the Royal Academy in London. His works include numerous portraits of the aristocracy and the wealthy, as well as murals in public buildings. Sargent's style is characterized by its clarity, precision, and use of light and shadow. He was a leading figure in the Impressionist movement and is considered one of the greatest portrait painters of the 19th and 20th centuries.

A collection of various photographs of John Singer Sargent's works, including portraits, murals, and smaller paintings, arranged in a grid format.

http://dbpedia.org/resource/John_Singer_Sargent

Person_John_Singer_Sargent
SaamPerson ;
"1856-1925" ;
"John Singer Sargent"

dallas:Saam
w4.wiwiw.fu-berlin.de/flickrwrappr/photos/John_Singer_Sargent

saam:Sa
a saam
saam:as
saam:
saam:
saam:cd
rdaGr2:
"Painte
rdaGr2:
rdaGr2:
rdaGr2:
rdaGr2:
rdaGr2:
skos:alt
skos:pre

39768t1r13950_0,
39768t1r13951_0
ePerson "1990-10
5" ;
amPlace_1357324
amPlace_135732
" ;
Sargent" .

Linked Open Data profile for John Singer Sargent. It lists various identifiers such as VIAF, ISNI, and Wikidata, along with links to external resources like the New York Times and the Getty Union List of Artist Names.

ata.nytimes.com/N49129220686803623

Linking “John Singer Sargent”

saam:Person_4253

owl:sameAs **cb:Person_John_Singer_Sargent** ;

owl:sameAs **dallas:Person_John_Singer_Sargent** ;

owl:sameAs **ima:Person_John_Singer_Sargent** ;

owl:sameAs **met:Person_John_Singer_Sargent** ;

owl:sameAs **dbpedia:John_Singer_Sargent** ;

owl:sameAs **nytimes:N49129220686803623753** ;

owl:sameAs **w-flick:John_Singer_Sargent** ;

...

.

Intuition

Estimate discrimination power of properties,
e.g., of name, birth and death dates

every combination of dates

birth date	death date	# of people
...
1800	1820	147
1800	1821	284
1800	1822	213
...

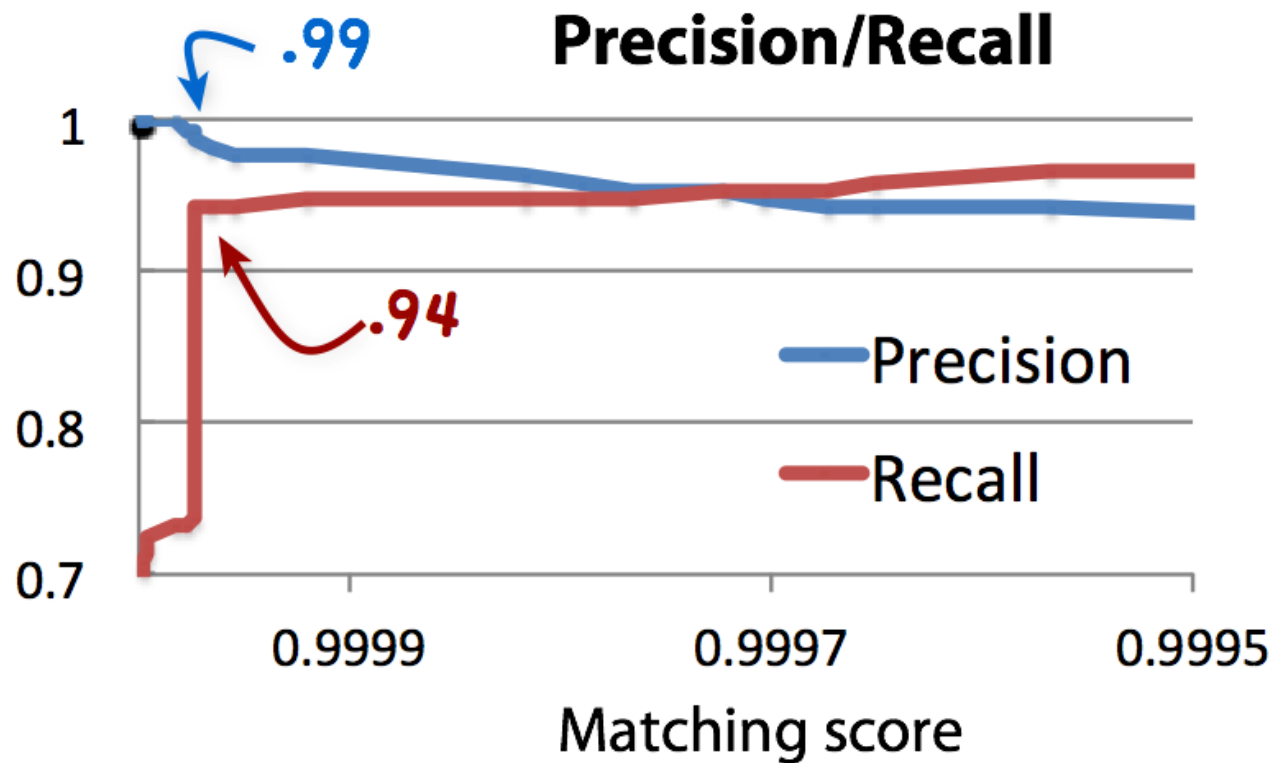
similar idea to

Song, D., Heflin, J.: Domain-independent entity coreference for linking ontology instances. ACM Journal of Data and Information Quality (ACM JDIQ) (2012)

Evaluation of Automatic Linking

SAAM names starting with "A" matched by hand

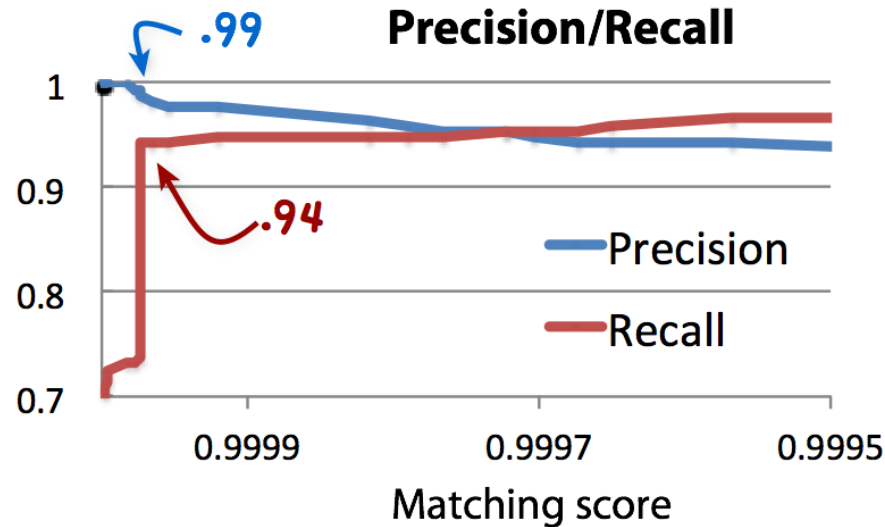
- 535 people
- 176 matches



Most links users verify are correct

Very few links are missing

Results of Automatic Linking



SAAM verified

DBpedia 2,194
New York Times 70

Getty ULAN® 2,110
Rijksmuseum 551
Geonames 3,068

estimate \approx 30 missing
links to DBpedia

Curating Links with Karma

Karma proposes links

 Person_7024	1923	2004	Anthony Hecht	Verified by Human	<input type="button" value="Match"/> <input type="button" value="Not Match"/> <input type="button" value="Unsure"/>
	1923	2004	Anthony Hecht	[2012-11-08 12:24:10] History	
 Person_1483	1607	1656	Aniello Falcone	Exact match (0.99999704)	<input type="button" value="Match"/> <input type="button" value="Not Match"/> <input type="button" value="Unsure"/>
	1600	1665	Aniello Falcone	[2012-11-21 15:54:22] History	
 Person_3946	1895	1978	Abraham Rattner	Verified by Human	<input type="button" value="Match"/> <input type="button" value="Not Match"/> <input type="button" value="Unsure"/>
	1893	1978	Abraham Rattner	[2012-11-08 12:24:07] History	
 Person_70	1905	1978	Arturo Pacheco A	Verified by Human	<input type="button" value="Match"/> <input type="button" value="Not Match"/> <input type="button" value="Unsure"/> <input type="text" value="comment here"/> <input type="button" value="✓"/> <input type="button" value="✕"/>
	1903	1978	Arturo Pacheco A	[2012-11-08 12:24:10] History	
 Person_18387	1948	----	Abelardo Morell	Verified by Human	<input type="button" value="Match"/> <input type="button" value="Not Match"/> <input type="button" value="Unsure"/>
	1948	----	Abelardo Morell	[2012-11-08 12:24:06] History	
 Person_1724	1914	----	Abram Games	Verified by Human	<input type="button" value="Match"/> <input type="button" value="Not Match"/> <input type="button" value="Unsure"/>
	1914	----	Abram Games	[2012-11-08 12:24:05] History	
 Person_6274	1933	----	Adela Akers	Verified by Human	<input type="button" value="Match"/> <input type="button" value="Not Match"/> <input type="button" value="Unsure"/>
	1933	----	Adela Akers	[2012-11-08 12:24:09] History	
 Person_27474	1605	1638	Adriaen Brouwer	Verified by Human	<input type="button" value="Match"/> <input type="button" value="Not Match"/> <input type="button" value="Unsure"/>
	1605	----	Adriaen Brouwer	[2012-11-08 12:24:06] History	

Human verifies them

Linking with Karma

The image illustrates the process of linking data from a database to external sources like Wikipedia and The New York Times using Karma. It shows a list of person records on the left, a museum website in the middle, and a detailed Wikipedia article on the right, with a table of linked open data below it.

The New York Times		Linked Open Data ^{BETA}
Wyeth, Andrew		
http://data.nytimes.com/65521524276539244133		About This Item
nyt:associated_article_count	6	
nyt:first_use	2006-04-18	
nyt:latest_use	2009-06-07	
nyt:number_of_variants	1	
nyt:search_api_query	<a +nytd_per_facet%3a%5bwyeth%2c+andrew%5d&rank='ne&fields=abstract,author,body,byline,classifiers_facet,column_facet,date,day_of_week_facet,des_facet,desk_facet,geo_facet,lead_paragraph,material_type_facet,multimedia,nytd_byline,nytd_des_facet,nytd_geo_facet,nytd_lead_paragraph,nytd_org_facet,nytd_per_facet,nytd_section_facet,nytd_title,nytd_works_mentioned_facet,org_facet,page_facet,per_facet,publishing_day,publishing_month,publishing_year,section_page_facet,small_image_height,small_image_url,small_image_width,source_facet,title,url,word_count,works_mentioned_facet"' href="http://api.nytimes.com/svc/search/v1/article?query=">http://api.nytimes.com/svc/search/v1/article?query="+nytd_per_facet%3A%5BWyeth%2C+Andrew%5D&rank=ne&fields=abstract,author,body,byline,classifiers_facet,column_facet,date,day_of_week_facet,des_facet,desk_facet,geo_facet,lead_paragraph,material_type_facet,multimedia,nytd_byline,nytd_des_facet,nytd_geo_facet,nytd_lead_paragraph,nytd_org_facet,nytd_per_facet,nytd_section_facet,nytd_title,nytd_works_mentioned_facet,org_facet,page_facet,per_facet,publishing_day,publishing_month,publishing_year,section_page_facet,small_image_height,small_image_url,small_image_width,source_facet,title,url,word_count,works_mentioned_facet	
nyt:topicPage	http://topics.nytimes.com/top/reference/timestopics/people/w/andrew_wyeth/index.html	
owl:sameAs	http://data.nytimes.com/wyeth_andrew_per	
owl:sameAs	http://dbpedia.org/resource/Andrew_Wyeth	
owl:sameAs	http://rdf.freebase.com/ns/en.andrew_wyeth	
rdf:type	http://www.w3.org/2004/02/skos/core#Concept	
skos:definition - en	Andrew Wyeth, one of the most popular and also most lambasted artists in the history of American art, died Jan. 2009, at his home in Chadds Ford, Pa. He was 91. He was a reclusive linchpin in a colorful family dynasty of artists whose precise realist views of hardscrabble rural	

results of automated linking and
interactive curation recorded
using PROV

owl:sameAs statements constructed
using SPARQL CONSTRUCT queries
over PROV records

deployment

John Singer Sargent at Smithsonian American Art Museum
<http://lod.isi.edu/resource/person/4253>



public SPARQL
 endpoint

Property	Value
aac-ont:associatedPlace	<ul style="list-style-type: none"> aac:place/01e03f4e75bd99edafbbf4c4d121646e aac:place/3acced0cccdd4b82ff3dce2e12899609 aac:place/3c2f5fc3870423287905df8210a6c708 aac:place/db4d6d43295c0cbd5be61cd2730f3a3e
ElementsGr2:biographicalInformation	<ul style="list-style-type: none"> Painter. Sargent traveled in a circle of socially prominent people and is known for his loosely painted portraits done in a style reminiscent of Edgar Degas and James Abbott McNeill Whistler. <i>Madame X</i> caused a minor scandal at the Salon of 1884 and was rejected by Sargent's client because Sargent depicted her as vain. He devoted his later career to impressionistic watercolor scenes. Joan Stahl <i>American Artists in Photographic Portraits from the Peter A. Juley & Son Collection</i> (Washington, D.C. and Mineola, New York: National Museum of American Art and Dover Publications, Inc., 1995) Sargent, born in Italy to American parents and educated in Germany and France, possessed a keen eye for regional social conventions. As the premier society portrait painter of his day, Sargent instinctively knew what pose, attire, and mood to suggest in London, New York, or Boston. His English subjects have an air of pomp and splendor. <i>New</i>

William H. Truettner and Roger B. Stein, editors, with contributions by Edna Stein, Thomas Haden Church, Judith K. Maxwell, Stephen Nissenbaum, Bruce Robertson, Roger B. Stein, and William H. Truettner *Picturing Old New England: Image and Memory* (Washington, D.C.; New Haven, Conn; and London: National Museum of American Art with Yale University Press, 1999)

saam-ont:constituentId	▪ 4253
is dcterms:creator of	▪ aac:object/21033 ▪ aac:object/21621 ▪ aac:object/21622 ▪ aac:object/21623 ▪ aac:object/21624 ▪ aac:object/28009 ▪ aac:object/5151
aac-ont:creatorOf	▪ aac:object/21033 ▪ aac:object/21621 ▪ aac:object/21622 ▪ aac:object/21623 ▪ aac:object/21624 ▪ aac:object/28009 ▪ aac:object/5151
ElementsGr2:dateAssociatedWithThePerson	▪ 1990-01 ▪ 1995-05-08
ElementsGr2:dateOfBirth	▪ 1856-01-12
ElementsGr2:dateOfDeath	▪ 1925-04-15
foaf:depiction	▪ <http://upload.wikimedia.org/wikipedia/commons/6/6b/John_Singer_Sargent_-_autoportrait_1906.jpg>
dc:identifier	▪ 4253
rdfs:label	▪ John Singer Sargent
foaf:name	▪ John Singer Sargent
ElementsGr2:placeOfBirth	▪ aac:place/3acced0cccdd4b82ff3dce2e12899609
ElementsGr2:placeOfDeath	▪ aac:place/3c2f5fc3870423287905df8210a6c708
skos:prefLabel	▪ John Singer Sargent
owl:sameAs	▪ <http://data.nytimes.com/N49129220686803623753> ▪ <http://dbpedia.org/resource/John_Singer_Sargent> ▪ :person/4253 ▪ <http://rdf.freebase.com/ns/en.john_singer_sargent>
rdfs:seeAlso	▪ <http://data.nytimes.com/N49129220686803623753> ▪ <http://en.wikipedia.org/wiki/John_Singer_Sargent>
saam-ont:seeAlsoNytimes	▪ <http://data.nytimes.com/N49129220686803623753>
saam-ont:seeAlsoWikipedia	▪ <http://en.wikipedia.org/wiki/John_Singer_Sargent>
rdf:type	▪ frbr:Person ▪ aac-ont:Person ▪ edm:Agent ▪ owl:Thing ▪ skos:Concept ▪ foaf:Person
aac-ont:variantName	▪ John S. Sargent

This page shows information obtained from the SPARQL endpoint at <http://localhost/openrdf-sesame/repositories/saam-lod>.
[As Turtle](#) | [As RDF/XML](#) | [Browse in Disco](#) | [Browse in Tabulator](#) | [Browse in OpenLink Browser](#)

Search Collections

- Search Collections
- New Acquisitions
- Collection Highlights
- Luce Center
- Renwick Gallery
- Multimedia
- Film and Media Arts
- Rights and Reproductions



Social Media @ American Art

Share This Page



John Singer Sargent

Also Known as: John S. Sargent

Born: Florence, Italy 1856

Died: London, England 1925

Active in: Boston, Massachusetts
Paris, France

Photo Caption:

John Singer Sargent, Peter A. Juley & Son Collection, Smithsonian American Art Museum J0002143.

SPARQL queries to our endpoint

Biography

Painter. Sargent traveled in a circle of socially prominent people and is known for his loosely painted portraits done in a style reminiscent of Edgar Degas and James Abbott McNeill Whistler. *Madame X* caused a minor scandal at the Salon of 1884 and was rejected by Sargent's client because

Works in the Collection

[More in Wikipedia](#)

[More in the New York Times](#)

Online Exhibitions

americanart.si.edu/collections/search/artist/?id=4253

myUSC Blogger Karma lod.isi fusion.isi Fusion Aps

About : Blog : Multim

American Art Museum

Donate Now

Conservation Research Education Support

ollections

John Singer Sargent

Also Known As

Born: Florence

Active: London

Photo: John Singer Sargent Collection Museum

SPARQL queries to our endpoint

traveled in a circle of socially
 e and is known for his loosely
 done in a style reminiscent of
 James Abbott McNeill Whistler
 and a minor scandal at the Salon of
 ected by Sargent's client because
 University of Southern California

- [Works in the Collection](#)
- [More in Wikipedia](#)
- [More in the New York Times](#)
- [Online Exhibitions](#)

John Singer Sargent - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/John_Singer_Sargent

WIKIPEDIA The Free Encyclopedia

Article Talk

John Singer Sargent

From Wikipedia, the free encyclopedia

John Singer Sargent (January 12, 1856 – April 14, 1925) was an American artist, considered the "leading portrait painter of his generation" for his evocations of Edwardian era luxury.^{[1][2]} During his career, he created roughly 900 oil paintings and

Main page
 Contents
 Featured content
 Current events
 Random article
 Donate to Wikipedia

Interaction
 Help
 About Wikipedia
 Community portal
 Recent changes
 Contact Wikipedia

Toolbox
 Print/export
 Languages
 العربية
 Aragonés
 Беларуская
 Català
 Český
 Dansk
 Deutsch
 Español
 Esperanto
 Français
 한국어
 Hawai'i
 Italiano

John Singer Sargent News - The New York Times

topics.nytimes.com/top/reference/timestopics/people/s/john

HOME PAGE TODAY'S PAPER VIDEO MOST POPULAR TIMES TOPICS

The New York Times


Sunday, May 26, 2013

Times Topics

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION ARTS STYLE

MEMORIAL DAY SALE
SAVE 50% FOR 16 WEEKS
 ** ON A TIMES SUBSCRIPTION **

John Singer Sargent



"A Street in Venice" by Sargent. Read Saxon/Associated Press

From the 1880's nearly until the start of World War I, by which point he had pretty much given up portraiture, John Singer Sargent was the most skillful society painter on either side of the Atlantic.

Although Americans claim him as part of the national heritage, Sargent was hardly an American, having been born and reared in Europe. His father was a doctor who gave up his comfortable Philadelphia practice to accommodate his wife's wanderlust. They moved around Europe, from one hotel or rented villa to another. Sargent lived everywhere and nowhere until settling in Paris and then, ultimately, in London. He didn't even visit America until he was 21.

Partly this may explain why the artist has always seemed to be observing a world he neither occupied nor chose to judge. His pictures are, in a sense,

John Singer Sargent Navigator
 A list of resources from around the Web about John Singer Sargent as selected by researchers and editors of The New York Times.

- National Gallery of Art
- The Metropolitan Museum of Art
- Worcester Art Museum
- Boston Public Library
- Corcoran Gallery of Art
- Museum of Fine Arts, Boston
- The Tate Collection
- The Boston Athenaeum
- The Brooklyn Museum
- The Louvre Museum

Log in to see what sharing on nytimes: What's This?

WHAT'S POPULAR
 Breeding the Nutrition Out of Our Food

Related Work

- Europeana
 - 17 million items, 1,500 institutions
 - Require exports in “Europeana” format
- Amsterdam Museum, Museum Finland
 - Rich ontology, RDF to RDF mapping rules
- LODAC museums in Japan
 - 114 museums, simple ontology
- Research Space, British Museum
 - CIDOC CRM ontologies, complex mappings

We focused significantly on Linking identification and curation

Next Steps

- Applications leveraging linked data
 - Virtual museum
 - Tools to create multimedia stories about art
 - Tools to find inconsistencies
 - Feed data to wikidata
- American Art Collective: a linked data consortium of museums



Merci