



ONTOLOGICAL PATTERNS FOR MODELLING ART EXHIBITIONS

an initial investigation

NICOLA CARBONI, UNIVERSITY OF GENEVA

Salon to Biennial *Exhibitions that Made Art History*

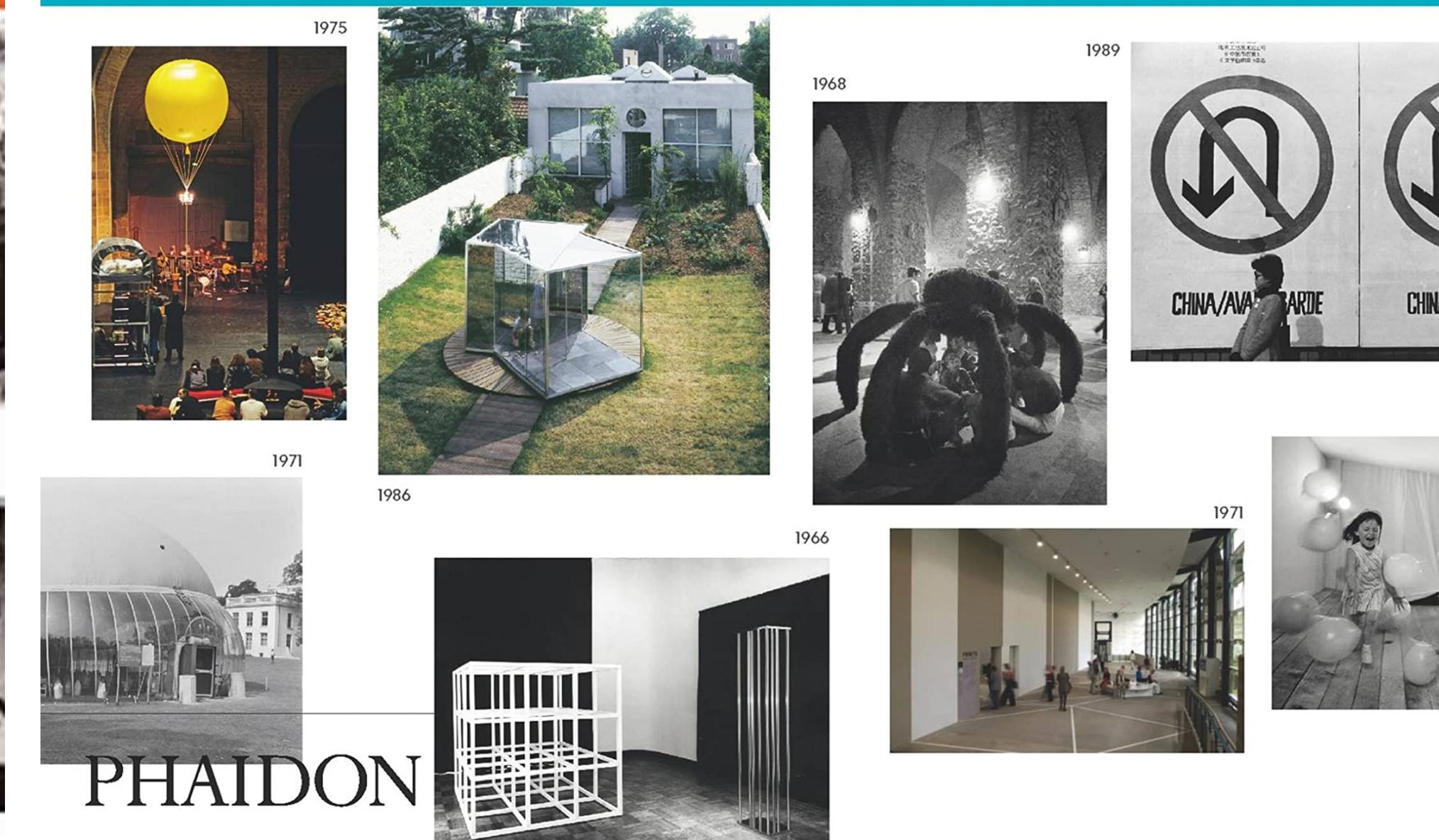
VOLUME I: 1863-1959



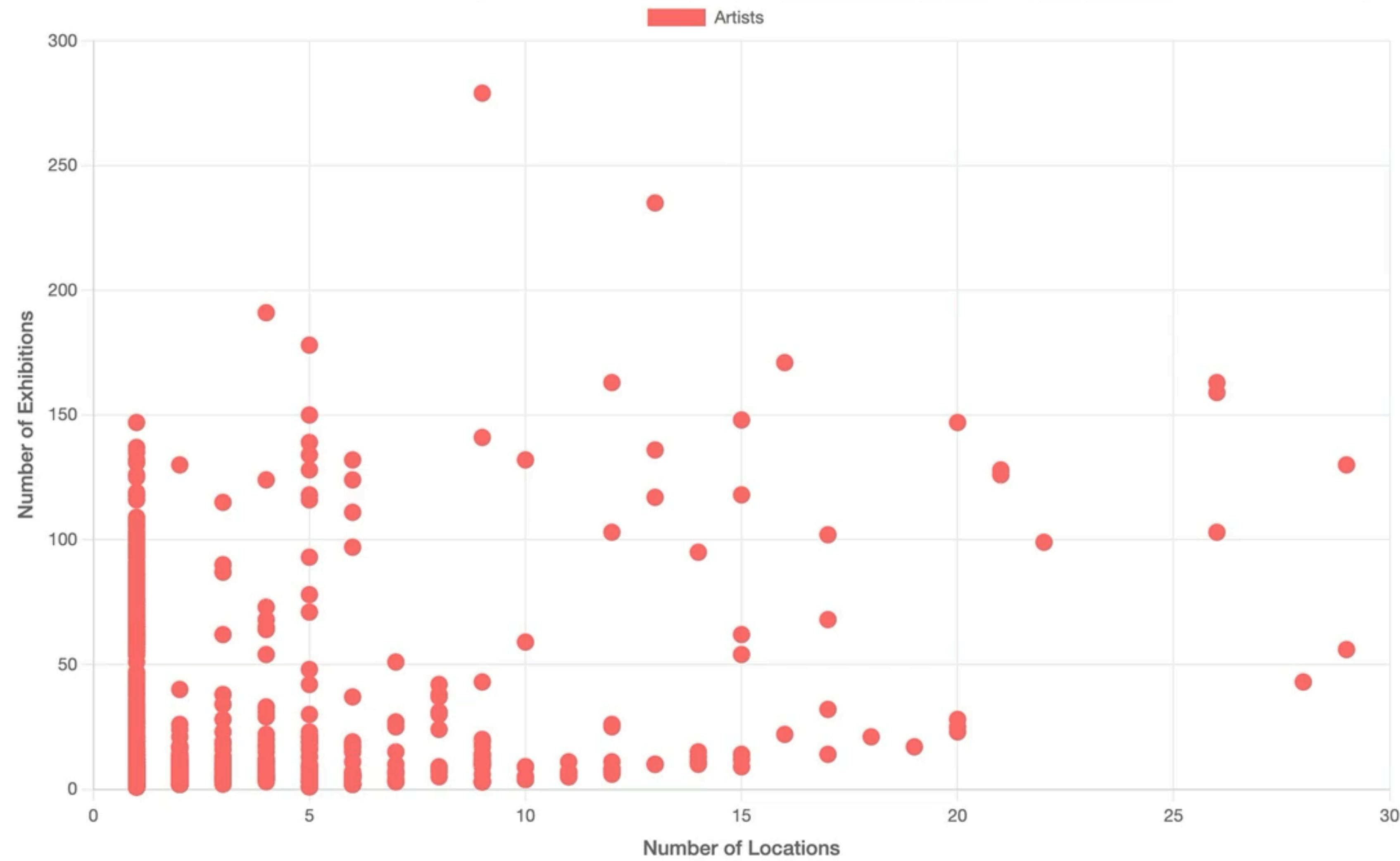
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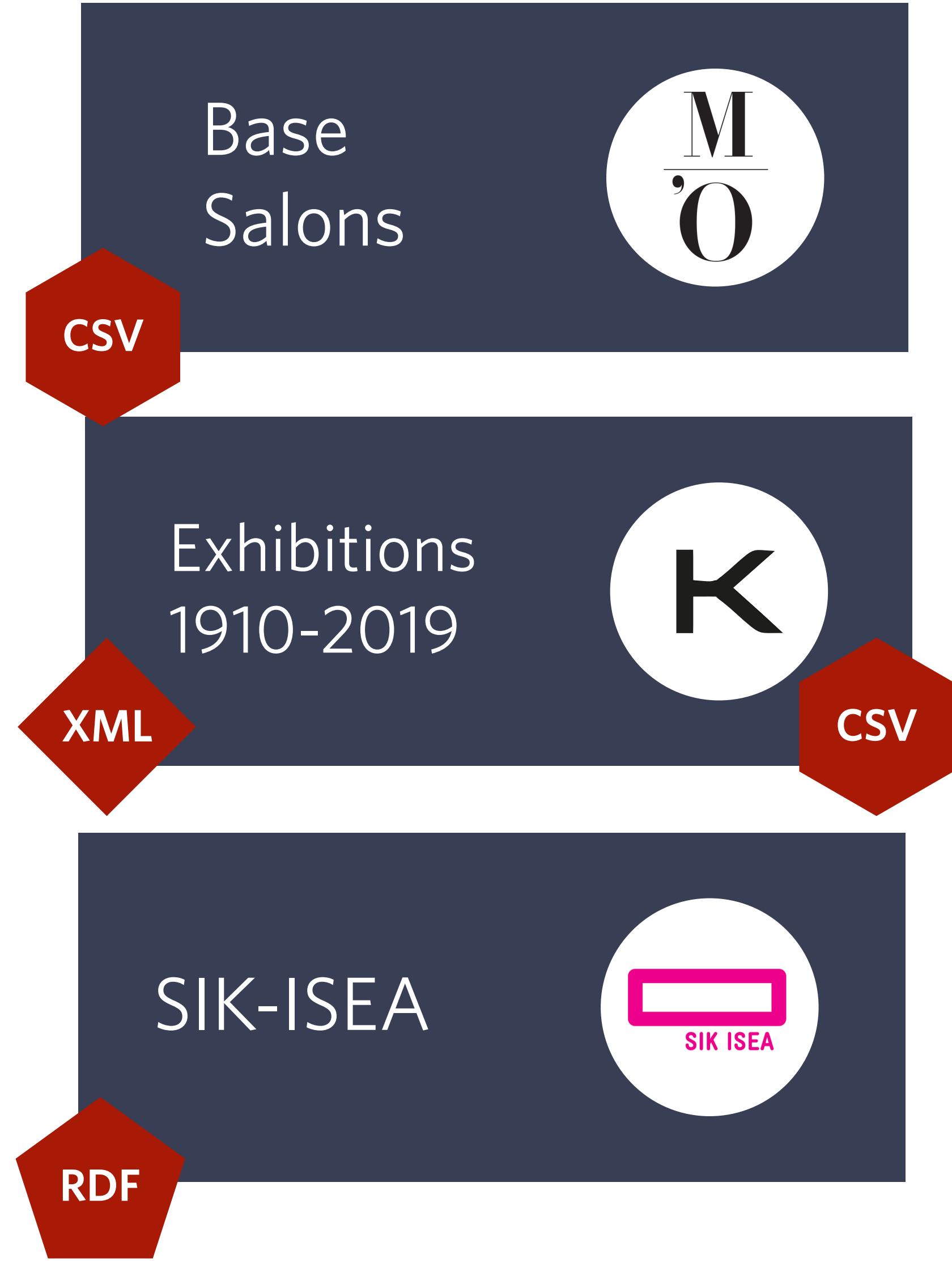
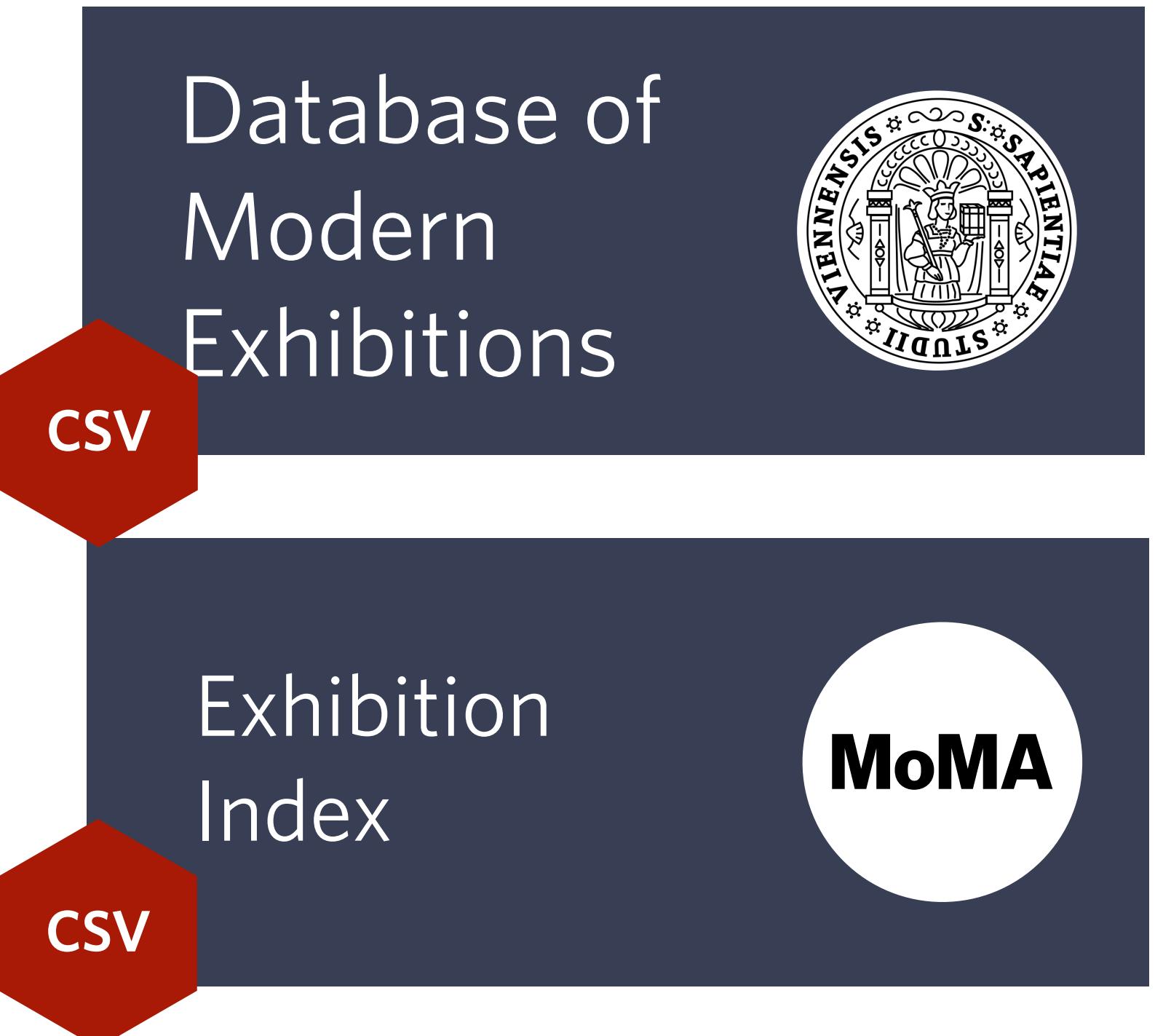
Biennials and Beyond – Exhibitions That Made Art History

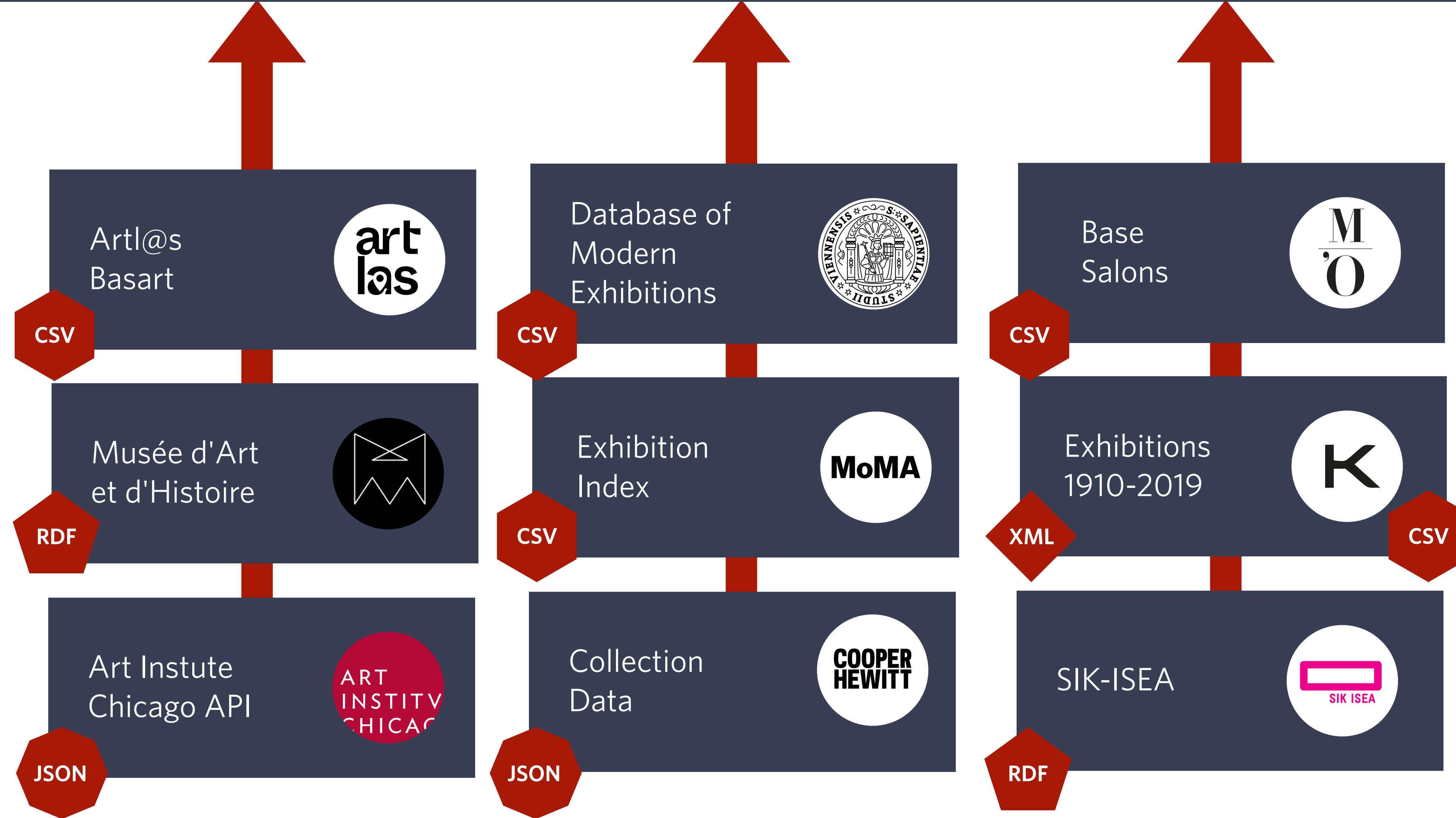
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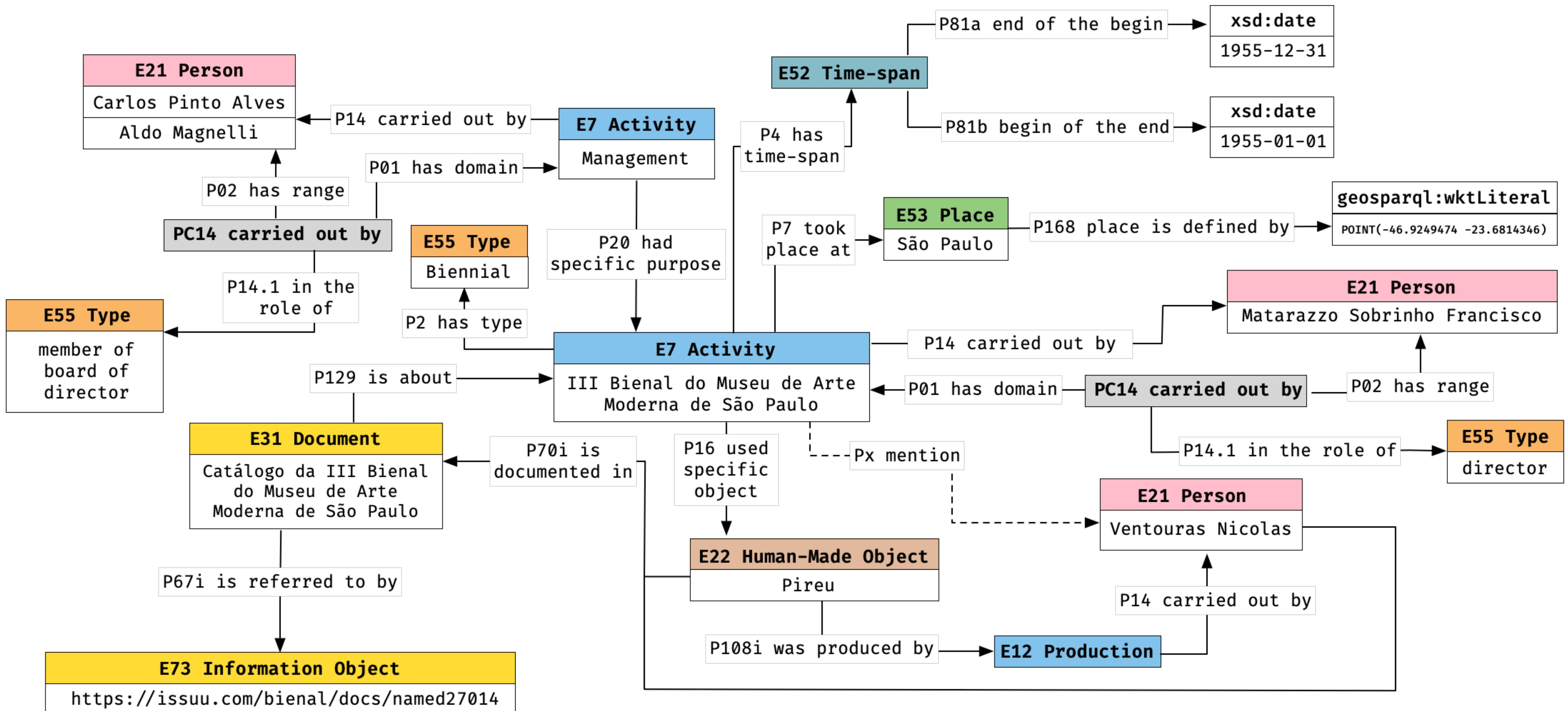


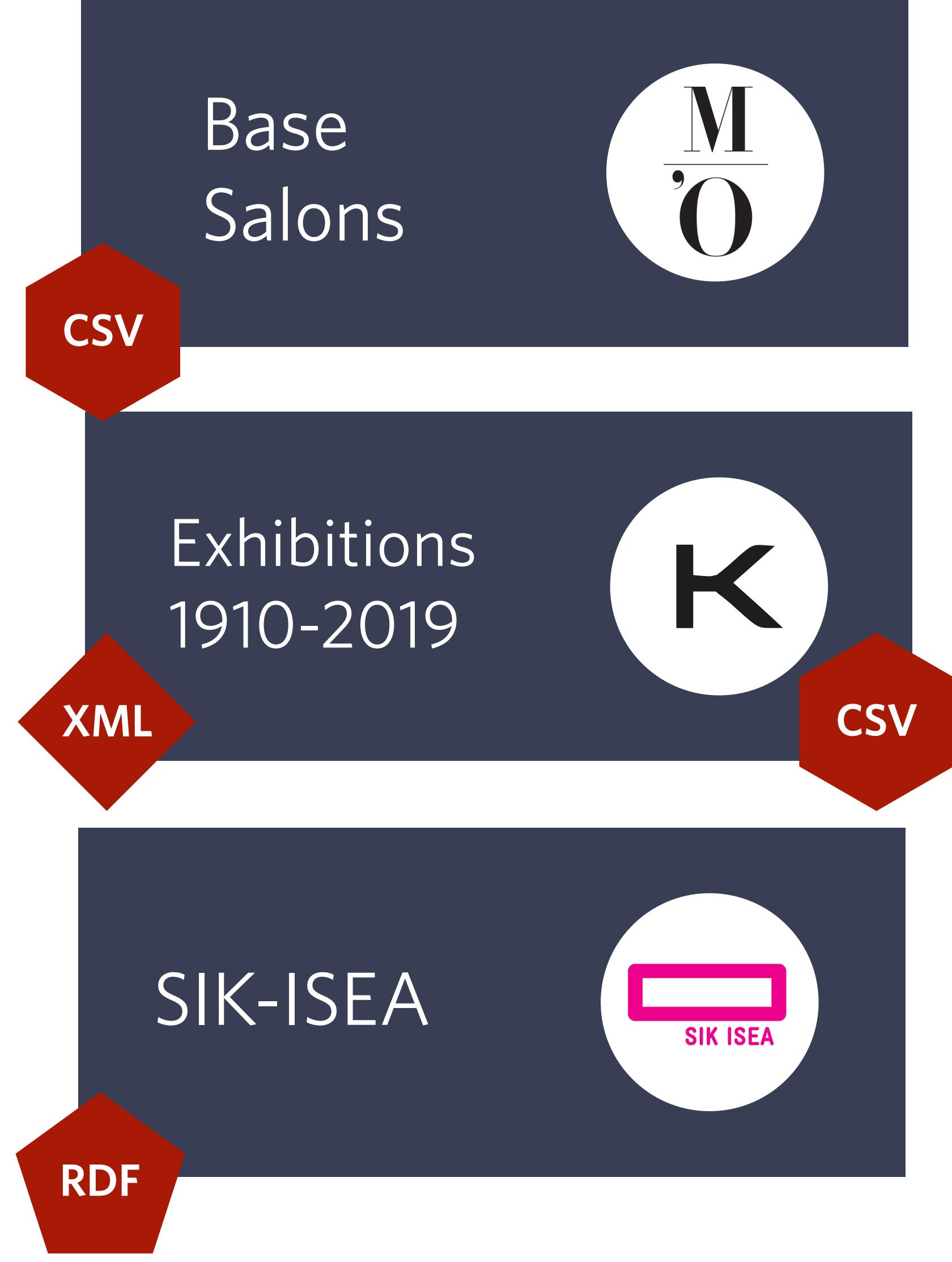
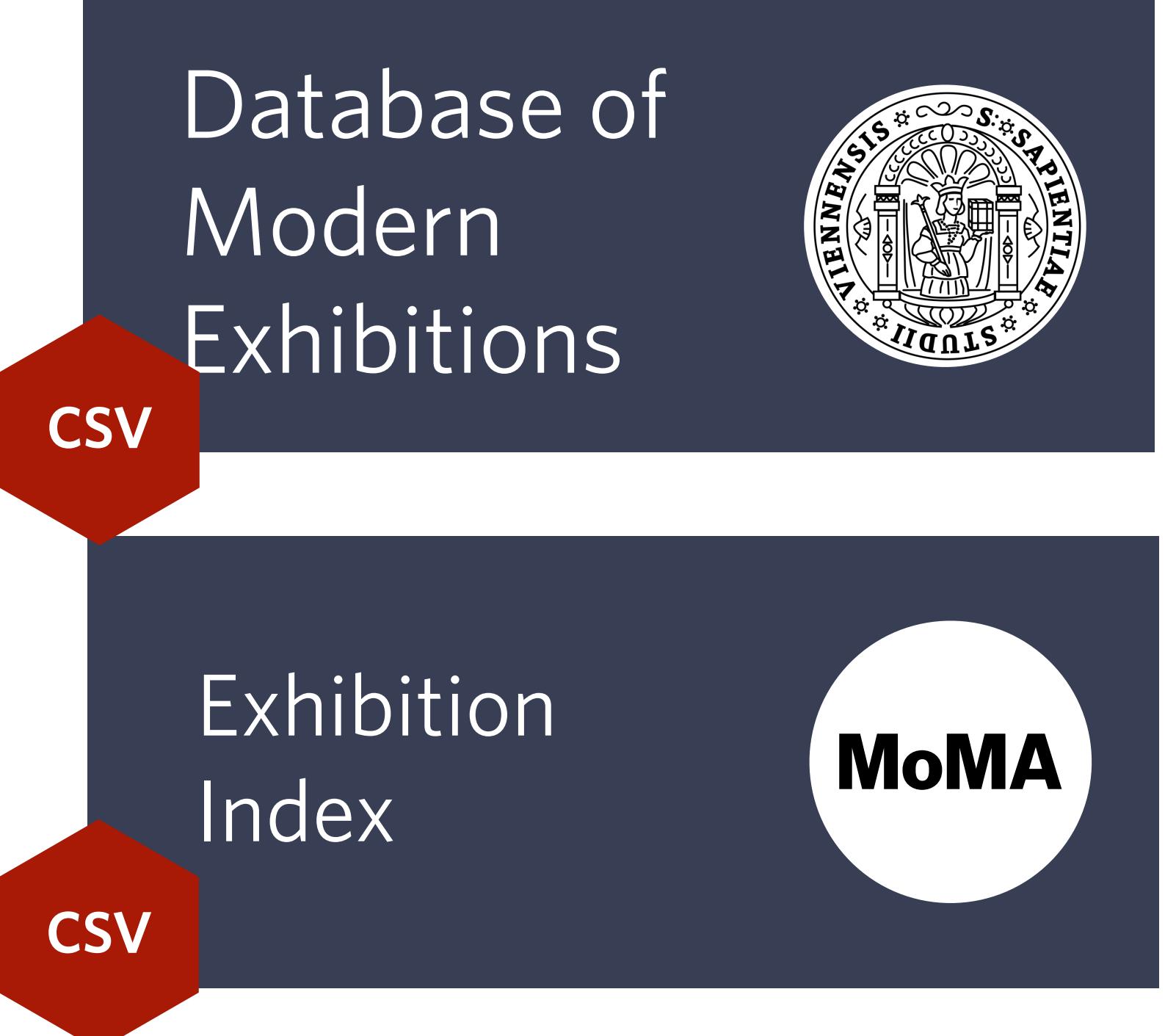
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ExhibitionTitle	ExhibitionBeginDate	ExhibitionEndDate	ExhibitionRole	ConstituentID	ConstituentType
Cézanne, Gauguin, Seurat, Van Gogh	11/7/1929	12/7/1929	Curator	9168	Individual
Cézanne, Gauguin, Seurat, Van Gogh	11/7/1929	12/7/1929	Artist	1053	Individual
Cézanne, Gauguin, Seurat, Van Gogh	11/7/1929	12/7/1929	Artist	2098	Individual
Cézanne, Gauguin, Seurat, Van Gogh	11/7/1929	12/7/1929	Artist	2206	Individual
Cézanne, Gauguin, Seurat, Van Gogh	11/7/1929	12/7/1929	Artist	5358	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	870	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	1490	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	1537	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	1832	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	2519	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	2726	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3001	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3065	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3288	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3296	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	61685	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3770	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3985	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	4360	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	4514	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	5471	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	5559	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	5654	Individual
Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	6275	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	665	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	744	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	1055	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	1106	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	1479	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	1500	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	61686	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	1646	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	1815	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	1935	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	2012	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	2356	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	22445	Individual
Painting in Paris	1/19/1930	3/2/1930	Artist	3408	Individual

*3279 É Société des artistes indépendants. Catalogue de la 23e exposition 1907
*3280 Nature morte.

MARQUET (Albert), né à Bordeaux.— 29, place Dauphine, Paris.

9 3281 Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).

3282 Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).

3283 Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).

MARRE (Henri), né à Montauban (Tarn-et-G.). — 1, rue de la Comédie, Montauban.

*3284 Les arcades de la place du Marché (Montauban).

*3285 Intérieur.

*3286 Vieilles maisons (Lot).

*3287 Marché (Montauban).

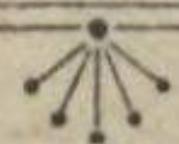
*3288 Maisons sur les bords du Tarn.

*3289 Village au printemps.

MARS-ANTONY (Marius), né à Château-Renard (Bouloire). — 2, rue de la Paix, Paris. Nouveaux

23^E EXPOSITION

Serres du Cours-la-Reine



Du 20 Mars au 30 Avril

De 9 heures à 6 heures

*3280 Nature morte.

MARQUET (Albert), né à Bordeaux.— 29, place Dauphine, Paris.

3281 Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).

3282 Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).

3283 Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).

MARRE (Henri), né à Montauban (Tarn-et-G.). — 1, rue de la Comédie, Montauban.

*3284 Les arcades de la place du Marché (Montauban).

*3285 Intérieur.

*3286 Vieilles maisons (Lot).

*3287 Marché (Montauban).

*3288 Maisons sur les bords du Tarn.

*3289 Village au printemps.

MARS-ANTONY (Marius), né à Château-Renard (Bou

23^e EXPOSITION

Serres du Cours-la-Reine

Du 20 Mars au 30 Avril

De 9 heures à 6 heures

1907

exhibition year

exhibitor address

exhibitor

exhibition title

artwork label

exhibition time

— 214 —

*3278

Étude.

*3279

Étude.

*3280

Nature morte.

MARQUET (Albert), né à Bordeaux.— 29, place Dauphine, Paris.

3281

Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).

3282

Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).

3283

Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).

MARRE (Henri), né à Montauban (Tarn-et-G.). — 1, rue de la Comédie, Montauban

*3284

Les arcades de la place du Marché (Montauban).

*3285

Intérieur.

*3286

Vieilles maisons (Lot).

*3287

Marché (Montauban).

*3288

Maisons sur les bords du Tarn.

*3289

Village au printemps.

MARS-ANTONY (Marius), né à Château-Renard (Bouches-du-Rhône). — 103, avenue du Roule, Neuilly, et Cergy (Seine-et-Oise).

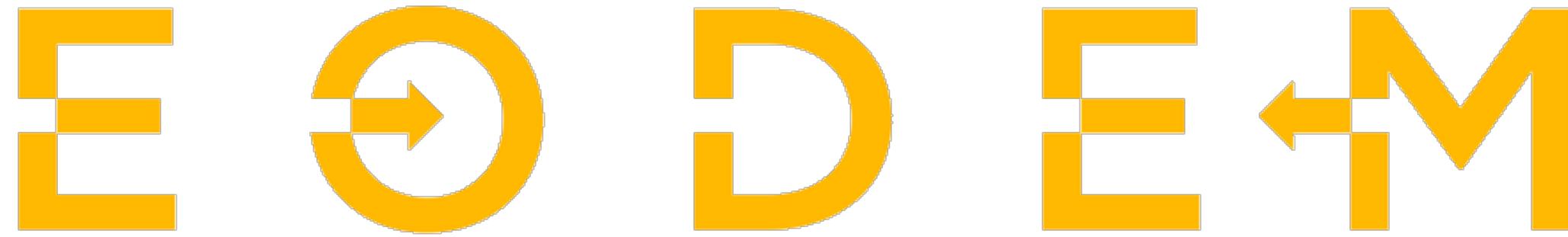
*3290

L'Oise à Cergy, pendant la crue.

*3291

L'Oise à Eragny (soir de septembre).

ID	ExhibitionTitle	ExhibitionBeginDate	ExhibitionEndDate	ExhibitionRole	ConstituentID	ConstituentType	DisplayName	Nationality	ConstituentBeginDate	
									ConstituentBeginDate	
	Cézanne, Gauguin, Seurat, Van Gogh	11/7/1929	12/7/1929	Curator	9168	Individual	Alfred H. Barr, Jr.	American	1902	
	Cézanne, Gauguin, Seurat, Van Gogh	11/7/1929	12/7/1929	Artist	1053	Individual	Paul Cézanne	French	1839	
	Cézanne, Gauguin, Seurat, Van Gogh	11/7/1929	12/7/1929	Artist	2098	Individual	Paul Gauguin	French	1848	
	Cézanne, Gauguin, Seurat, Van Gogh	11/7/1929	12/7/1929	Artist	2206	Individual	Vincent van Gogh	Dutch	1853	
	Cézanne, Gauguin, Seurat, Van Gogh	11/7/1929	12/7/1929	Artist	5358	Individual	Georges-Pierre Seurat	French	1859	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	870	Individual	Charles Burchfield	American	1893	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	1490	Individual	Charles Demuth	American	1883	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	1537	Individual	Preston Dickinson	American	1889	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	1832	Individual	Lyonel Feininger	American	1871	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	2519	Individual	George Overbury ("Pop") Hart	American	1868	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	2726	Individual	Edward Hopper	American	1882	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3001	Individual	Bernard Karfiol	American	1886	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3065	Individual	Rockwell Kent	American	1882	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3288	Individual	Walt Kuhn	American	1877	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3296	Individual	Yasuo Kuniyoshi	American	1889	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	61685	Individual	Ernest Lawson	American	1873	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3770	Individual	John Marin	American	1870	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	3985	Individual	Kenneth Hayes Miller	American	1876	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	4360	Individual	Georgia O'Keeffe	American	1887	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	4514	Individual	Jules Pascin	American	1885	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	5471	Individual	John Sloan	American	1871	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	5559	Individual	Eugene Speicher	American	1883	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	5654	Individual	Maurice Sterne	American	1877	
	Paintings by 19 Living Americans	12/12/1929	1/12/1930	Artist	6275	Individual	Max Weber	American	1881	
	Painting in Paris	1/19/1930	3/2/1930	Artist	665	Individual	Pierre Bonnard	French	1867	
	Painting in Paris	1/19/1930	3/2/1930	Artist	744	Individual	Georges Braque	French	1882	
	Painting in Paris	1/19/1930	3/2/1930	Artist	1055	Individual	Marc Chagall	French	1887	
	Painting in Paris	1/19/1930	3/2/1930	Artist	1106	Individual	Giorgio de Chirico	Italian	1888	
	Painting in Paris	1/19/1930	3/2/1930	Artist	1479	Individual	Robert Delaunay	French	1885	
	Painting in Paris	1/19/1930	3/2/1930	Artist	1500	Individual	André Derain	French	1880	
	Painting in Paris	1/19/1930	3/2/1930	Artist	61686	Individual	Maurice Dufrèsne			
	The Museum of Modern Art (MoMA) exhibitions data, source: GitHub					Artist	1646	Individual	Raoul Dufy	French
						Artist	1815	Individual	Jean Fautrier	French
						Artist	1922	Individual	Albert Gleizes	French
						Artist	2000	Individual	Georges Rouault	French
						Artist	2001	Individual	Henri Matisse	French
						Artist	2002	Individual	Paul Klee	Swiss
						Artist	2003	Individual	Joan Miró	Spanish
						Artist	2004	Individual	Piet Mondrian	Dutch
						Artist	2005	Individual	Chaim Soutine	Polish
						Artist	2006	Individual	Paul Cézanne	French
						Artist	2007	Individual	Edgar Degas	French
						Artist	2008	Individual	Paul Gauguin	French
						Artist	2009	Individual	Vincent van Gogh	Dutch
						Artist	2010	Individual	Henri Rousseau	French
						Artist	2011	Individual	Paul Cézanne	French
						Artist	2012	Individual	Georges Seurat	French
						Artist	2013	Individual	Paul Signac	French
						Artist	2014	Individual	Paul Gauguin	French
						Artist	2015	Individual	Paul Cézanne	French
						Artist	2016	Individual	Paul Signac	French
						Artist	2017	Individual	Paul Cézanne	French
						Artist	2018	Individual	Paul Cézanne	French
						Artist	2019	Individual	Paul Cézanne	French
						Artist	2020	Individual	Paul Cézanne	French
						Artist	2021	Individual	Paul Cézanne	French
						Artist	2022	Individual	Paul Cézanne	French
						Artist	2023	Individual	Paul Cézanne	French
						Artist	2024	Individual	Paul Cézanne	French
						Artist	2025	Individual	Paul Cézanne	French
						Artist	2026	Individual	Paul Cézanne	French
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						Artist	2030	Individual	Paul Cézanne	French
						Artist	2031	Individual	Paul Cézanne	French
						Artist	2032	Individual	Paul Cézanne	French
						Artist	2033	Individual	Paul Cézanne	French
						Artist	2034	Individual	Paul Cézanne	French
						Artist	2035	Individual	Paul Cézanne	French
						Artist	2036	Individual	Paul Cézanne	French
						Artist	2037	Individual	Paul Cézanne	French
						Artist	2038	Individual	Paul Cézanne	French
						Artist	2039	Individual	Paul Cézanne	French
						Artist	2040	Individual	Paul Cézanne	French
						Artist	2041	Individual	Paul Cézanne	French
						Artist	2042	Individual	Paul Cézanne	French



EXHIBITION OBJECT DATA EXCHANGE MODEL

Alphabetical order

units of information

Administrative Metadata

Attribution Qualifier

Brief Description

Condition Checking

Condition Of Object

Credit line

Dimension

Dimension Aspect

Dimension Aspect Group

Dimension Group

Dimension Qualifier

Display Method

Display Production Date
LIDO Application Profile

▼ Object Metadata

► Object Type Group

► Title/Name Group

► Lender Group [1: repository]

Object Identifier

Brief Description

► Measurement Group

► Materials/Techniques Group

► Object Production Group

► Loan Assessment Group

► Object Move Requirements Group

► Object Display Requirements Group

► Administrative Metadata

Identifier Type

Material/Technique Type

Maker Type

Title Type

Record Language

Title Language

Image Type

Insurance/Indemnity

Description

Any insurance or indemnity required. Not any that is in place.

Unit ID

InsuranceIndemnity

Examples

- The Objects shall be at the Borrower's risk at all times during the Risk Period and the Borrower shall at its own cost throughout the Risk Period arrange for the Objects to be covered nail to nail either by: Government Indemnity on terms approved by the Lenders; or an all risks commercial insurance policy (including terrorism in situ and in transit and negligence or other wrongful act of any party except for the Lenders' employees) in the amount of the Agreed Value without excess and naming the Lenders as the assured and sole loss payee under the policy and with an insurer approved by the Lenders. The Borrower shall provide an English language copy of the full insurance policy and/or Government Indemnity wording for approval by the NG Registrar at least three (3) months in advance of the Exhibition opening date. The Borrower shall provide the Lenders with the final insurance and/or Government Indemnity certificate and final policy wording four (4) weeks in advance of the commencement of the Risk Period.
- National agreement
- GIS
- full cover required

How to record

Authority

eventDescriptionSet @type

only one value is permitted:

<http://purl.org/spectrum/units/insurance-or-indemnity-requirements> (PURL for Spectrum candidate unit of information 'insurance or indemnity requirements'.)

Cardinality

eventDescriptionSet

- Temporal duration
- Spatial extension
- Objects and creators
- Knowledge Source
- Mereological structure
- Contingency relationships
- Participation
- Spatiotemporal Information

Linked Open Description of Events - LODE

BFO

Simple Event Model - SEM

DOLCE

Event-Model F

CIDOC-CRM

FARO

Event Ontology - EO

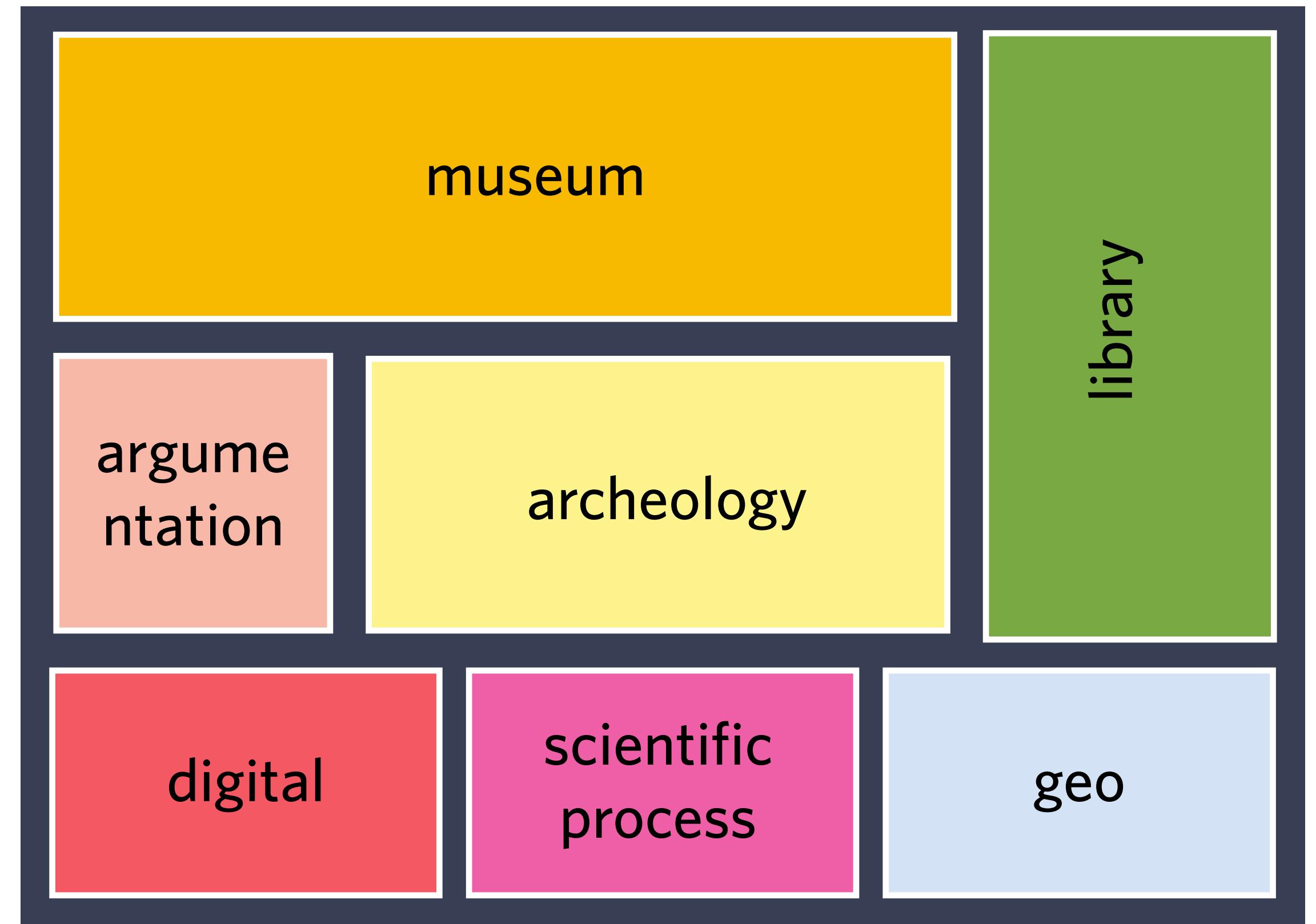
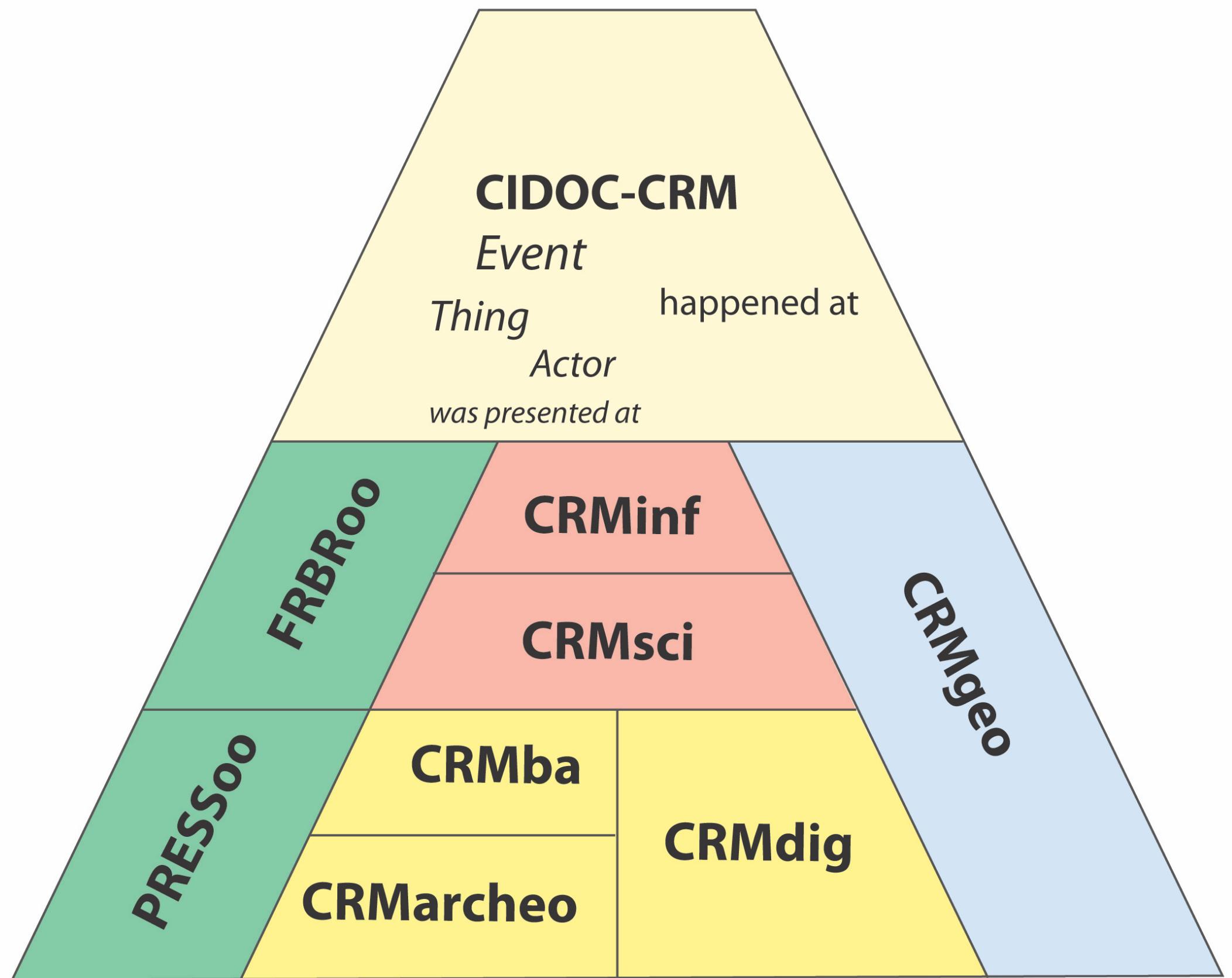
Simple News and Press - SNaP

Ali, S. A. M. Noah, L. Q. Zakaria, Representation of event-based ontology models: A comparative study, IJCSNS 22 (2022)

I. Astrova, A. Koschel, J. Lukowski, J. L. Munoz Martinez, V. Procenko, M. Schaaf, Ontologies for complex event processing, International Journal of Computer, Electrical, Automation, Control and Information Engineering 8 (2014)

CIDOC-CRM

- Ontology for description of cultural processes and artefacts
 - Event-based
 - Widely adopted
 - ISO standard
 - Flexible and extensible



G. Bruseker, N. Carboni, A. Guillem, "Cultural Heritage Data Management: The Role of Formal Ontology and CIDOC CRM", in *Heritage and Archaeology in the Digital Age*, Cham: Springer, 2017, pp. 93-131.

E7 Activity

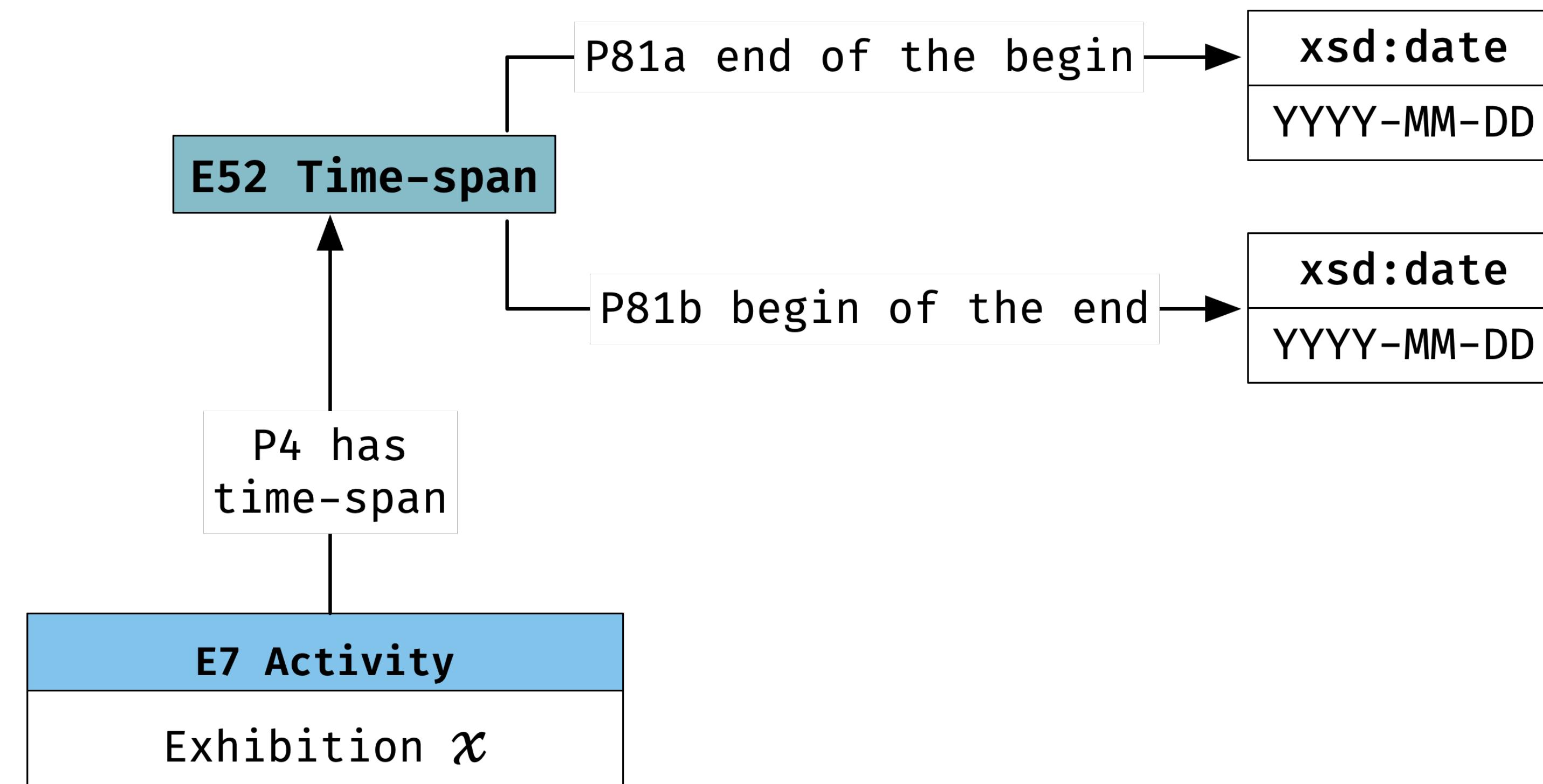
Exhibition

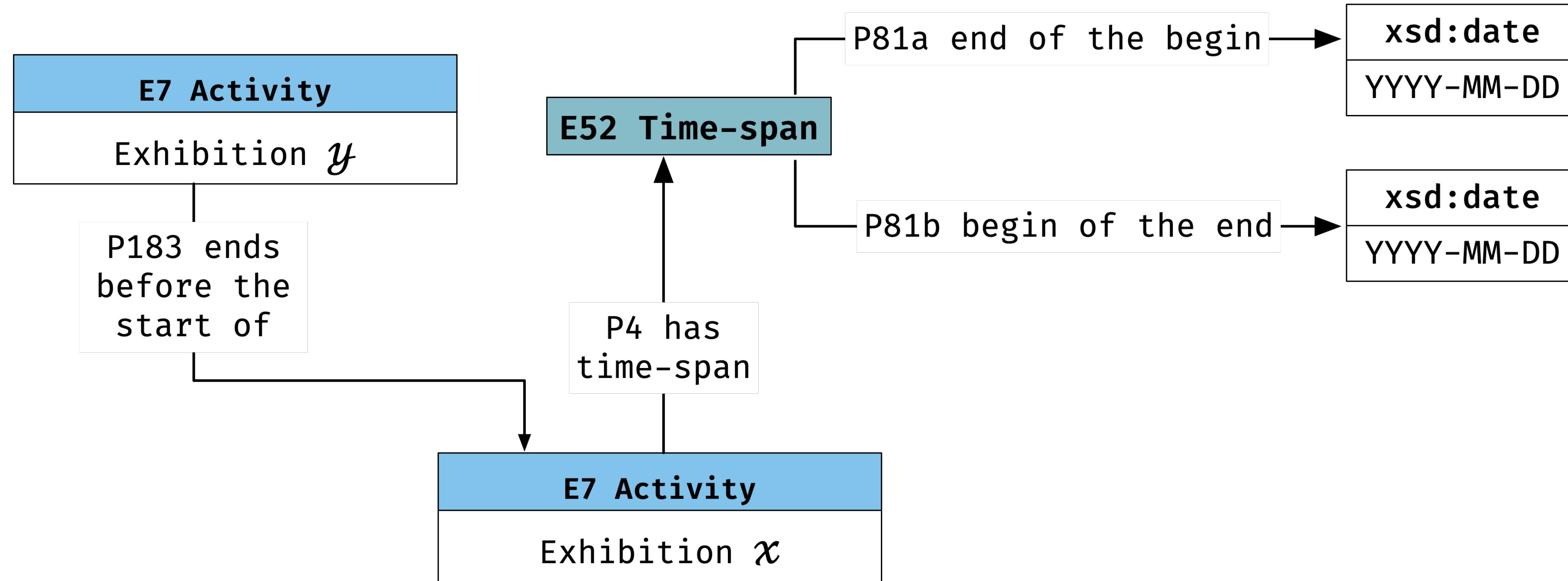
- Temporal duration
- Spatial extension
- Objects and creators
- Knowledge Source
- Mereological structure
- Contingency relationships
- Participation
- Spatiotemporal Information

- Temporal duration

Exhibitions always comprise a temporal component (start/end date) which may be known/unknown or precise/imprecise. Temporal relationships should be able to express our knowledge about the event no matter the granularity of information available (year, day, decade, century). We should be able to order exhibitions based on absolute and relative temporal information (e.g., before, after).

- Contingency relationships
- Participation
- Spatiotemporal Information

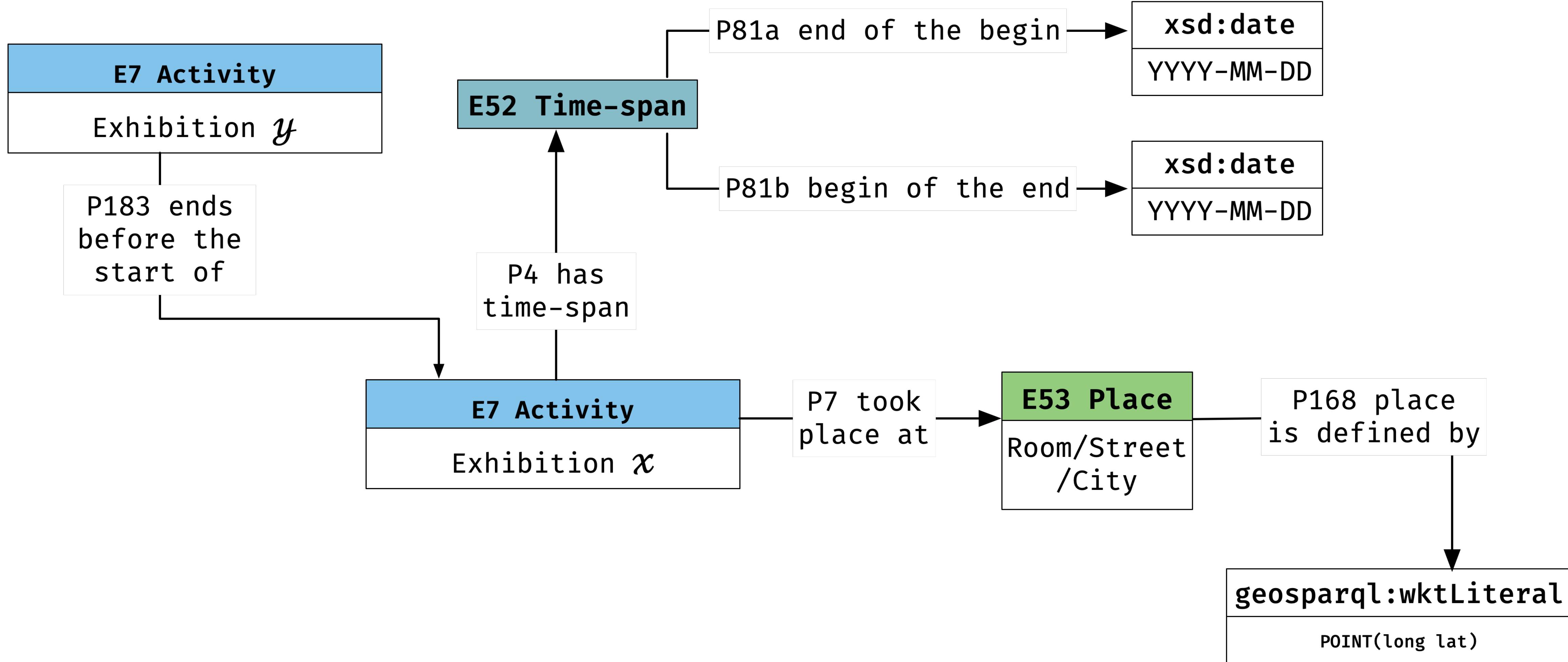


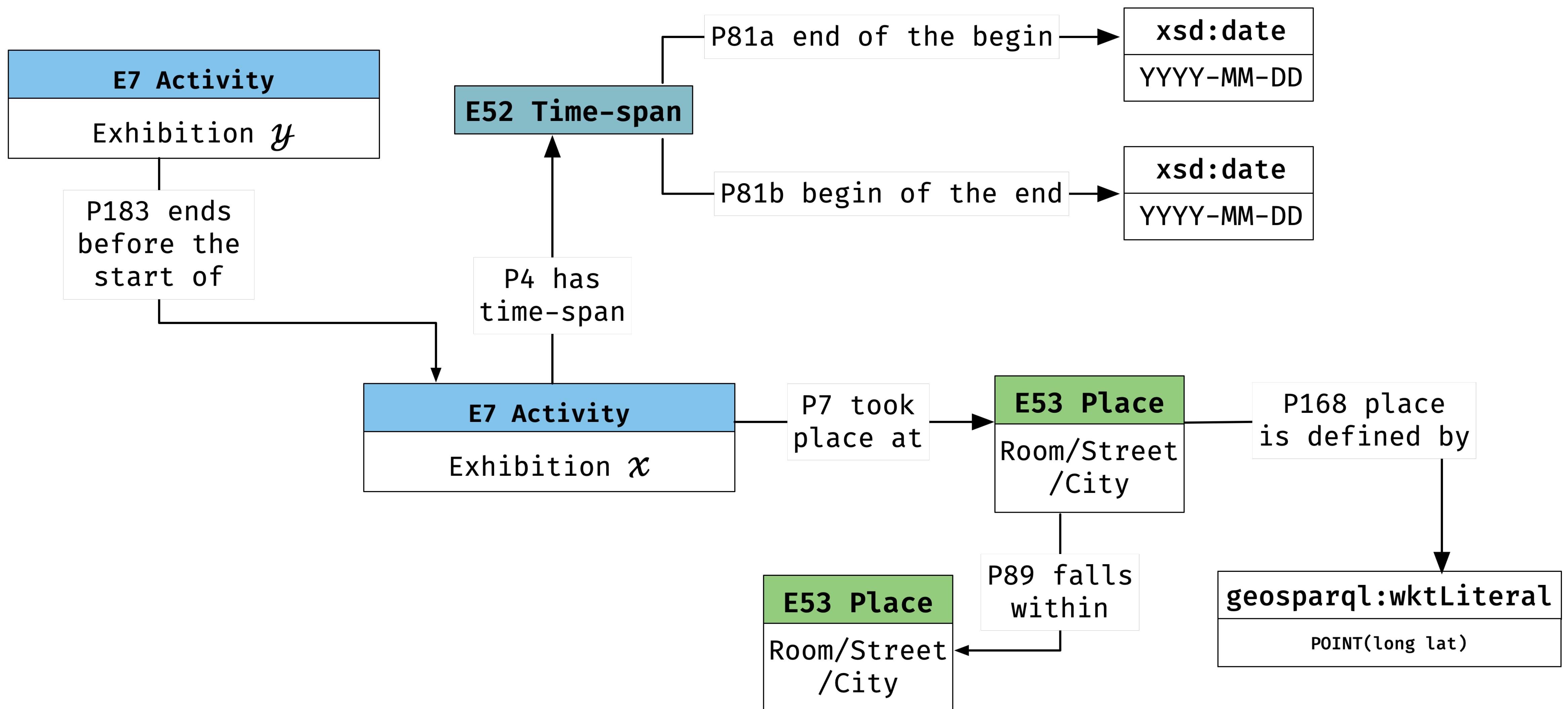


- Temporal duration
- Spatial extension

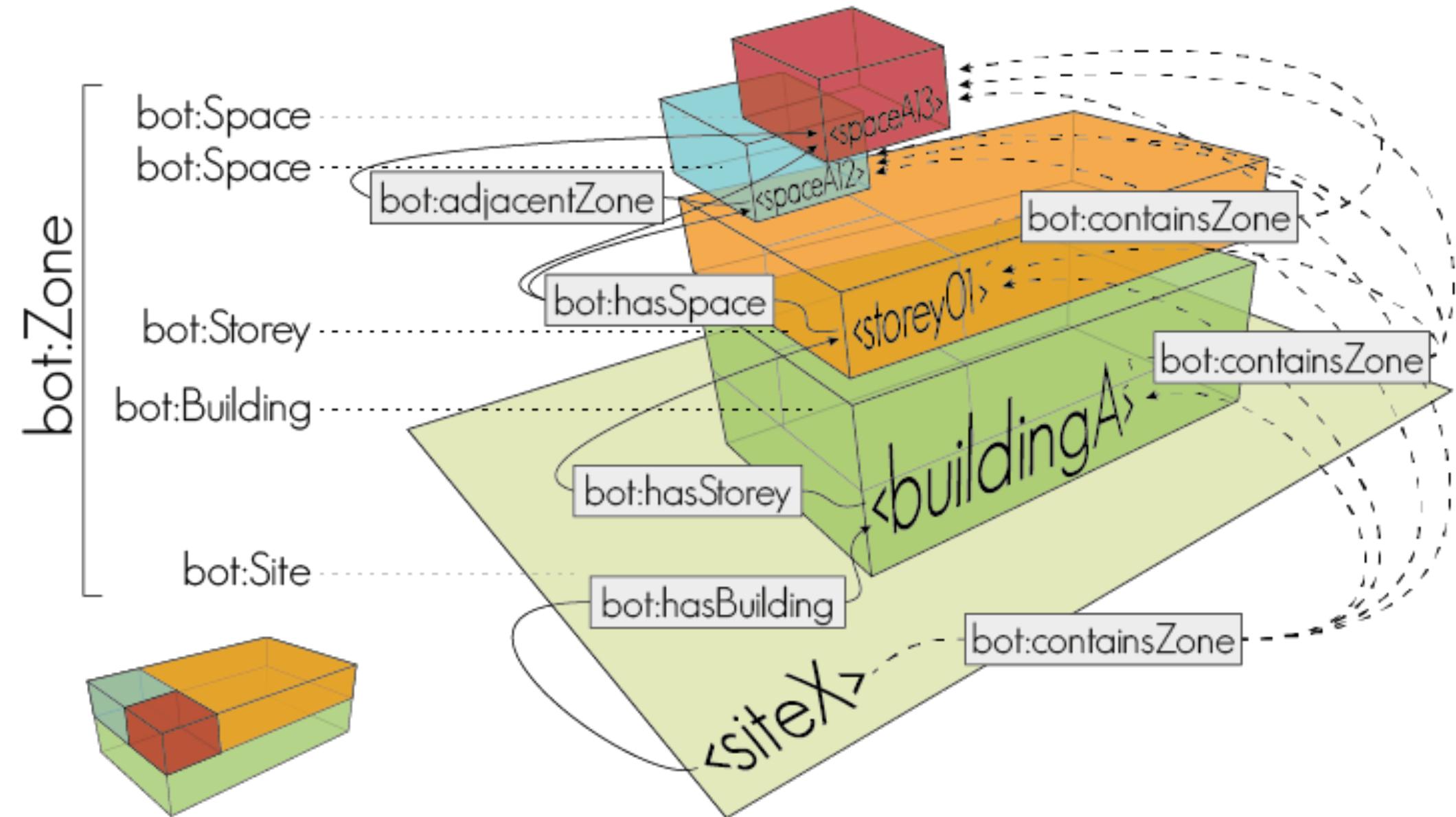
Exhibitions unfold in space, such as in specific museums or galleries. They may take place in a room within an institution or within multiple rooms. The same exhibition can be held at multiple places (different institutions) at the same time (e.g., virtual exhibitions) or at different times (e.g., traveling exhibitions). Multiple exhibitions can occur in the same space, for example in the same room at the same museum/gallery.

- Participation
- Spatiotemporal Information

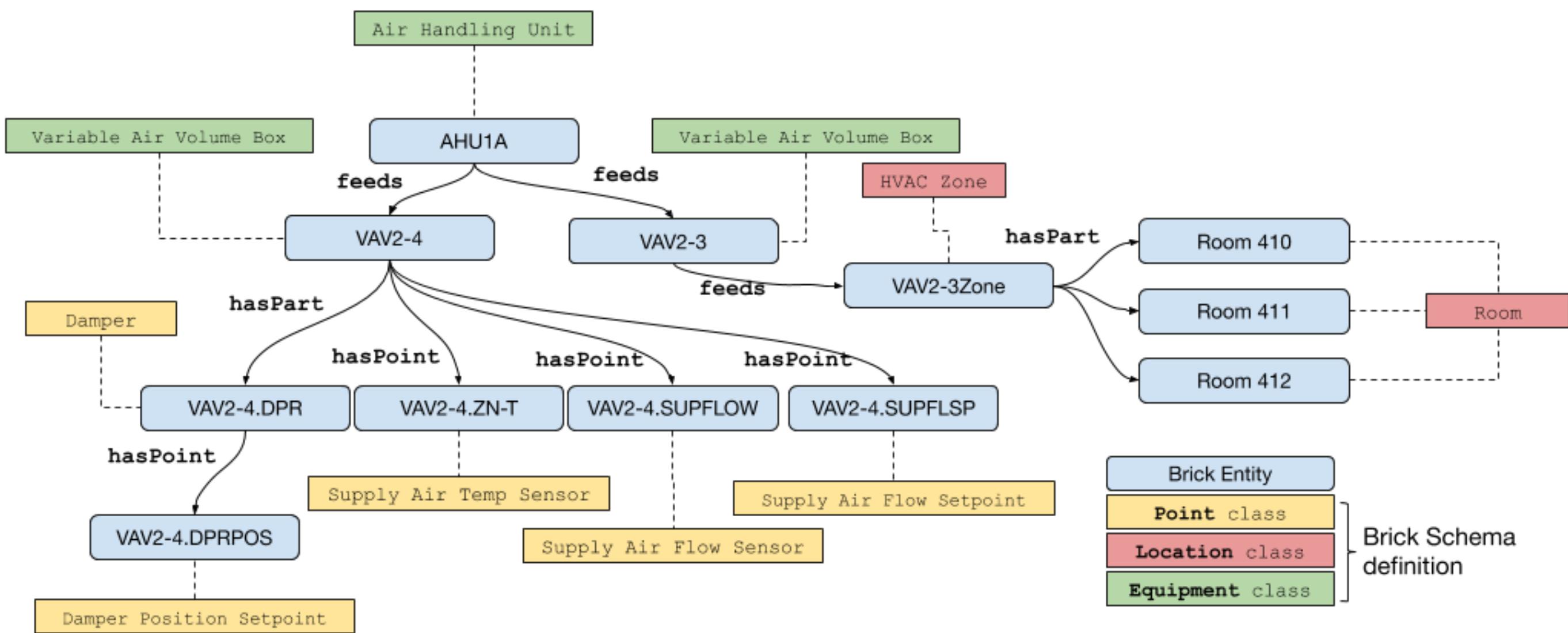




source: <https://w3id.org/bot#>



source: <https://brickschema.org/>



Guillem, Anaïs, et al. "RCC8 for CIDOC CRM: semantic modeling of mereological and topological spatial relations in Notre-Dame de Paris." SWODCH'23: International Workshop on Semantic Web and Ontology Design for Cultural Heritage. 2023.

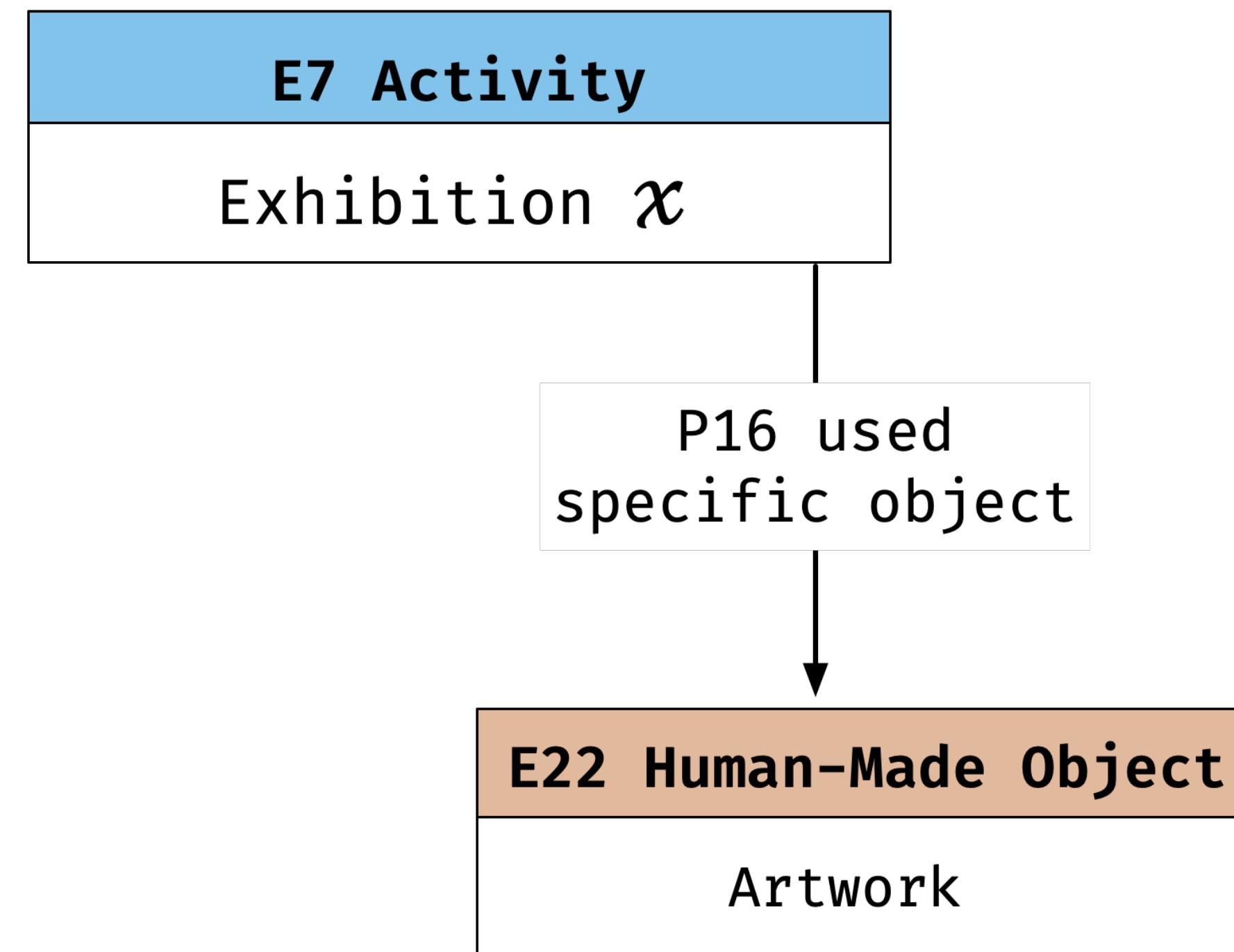


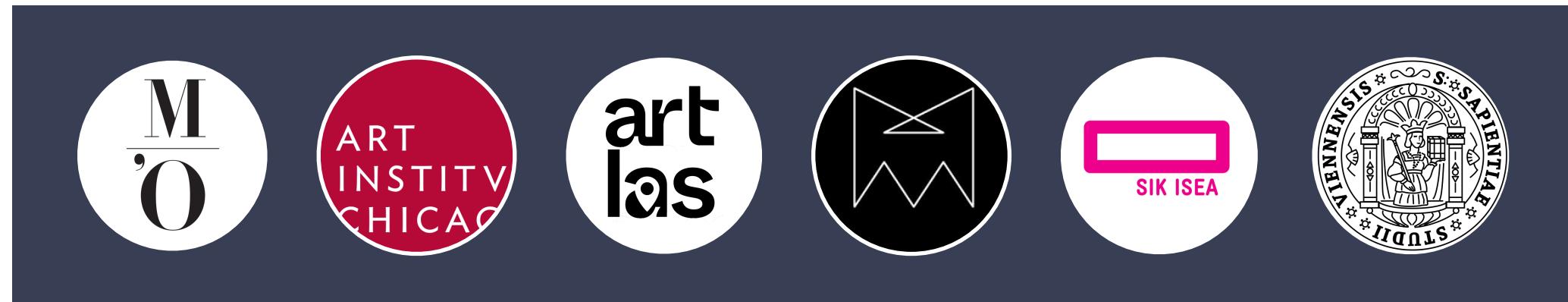
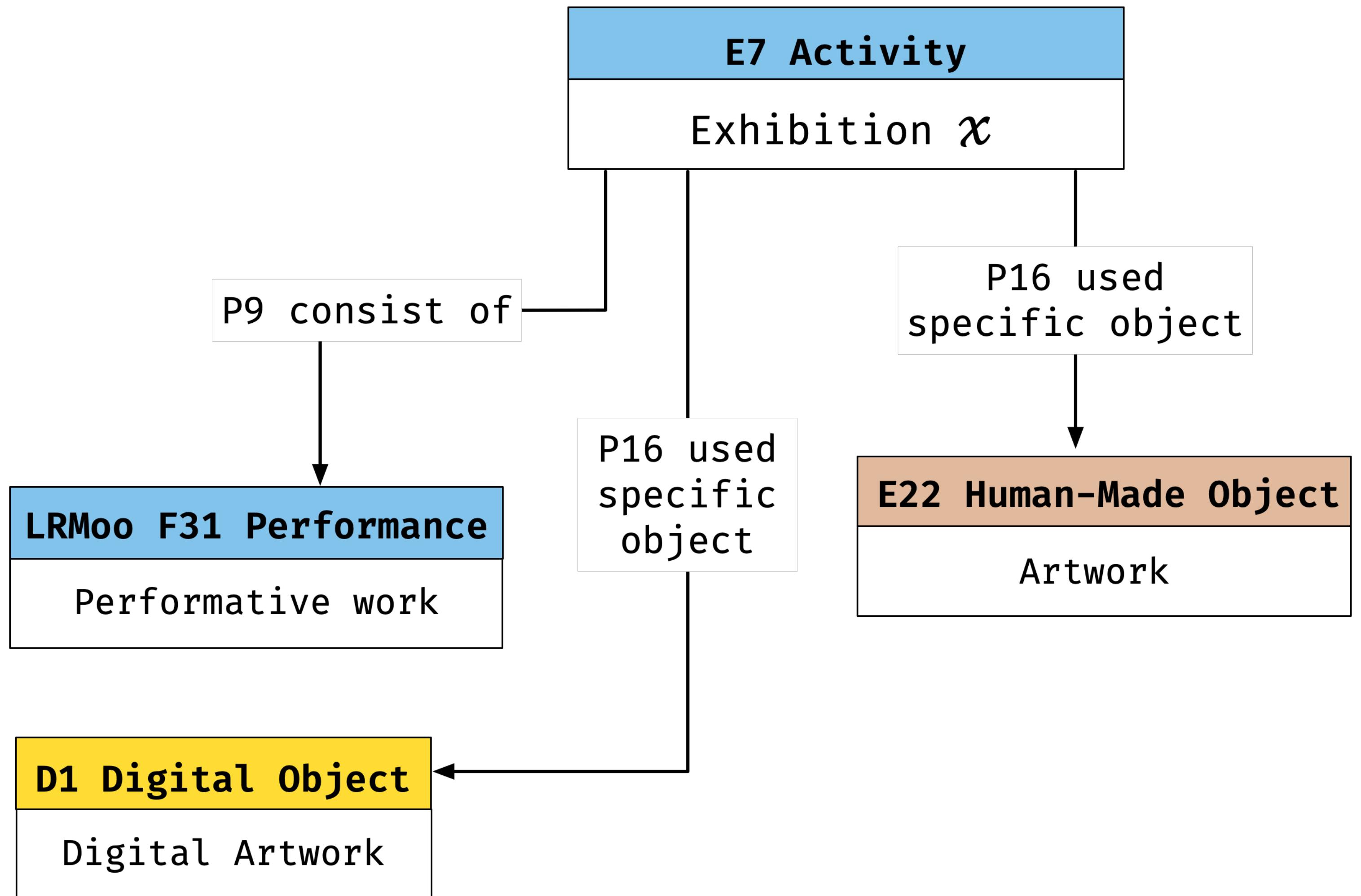
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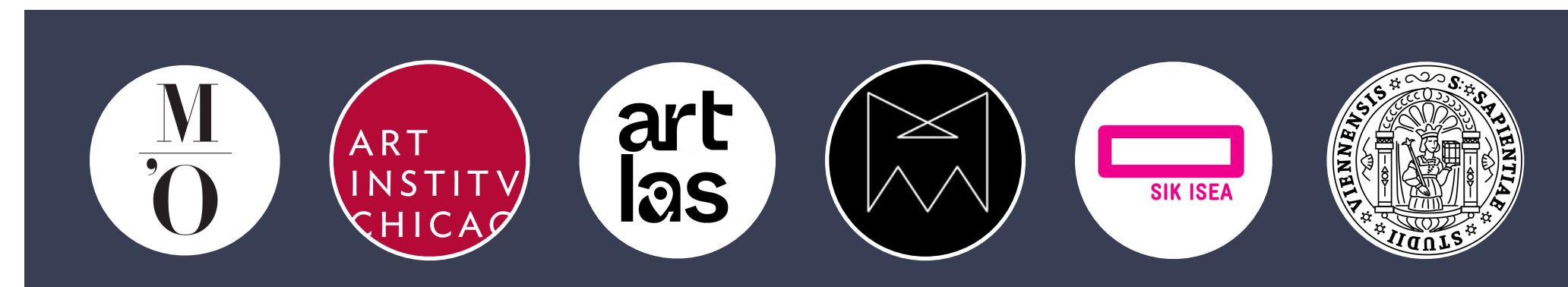
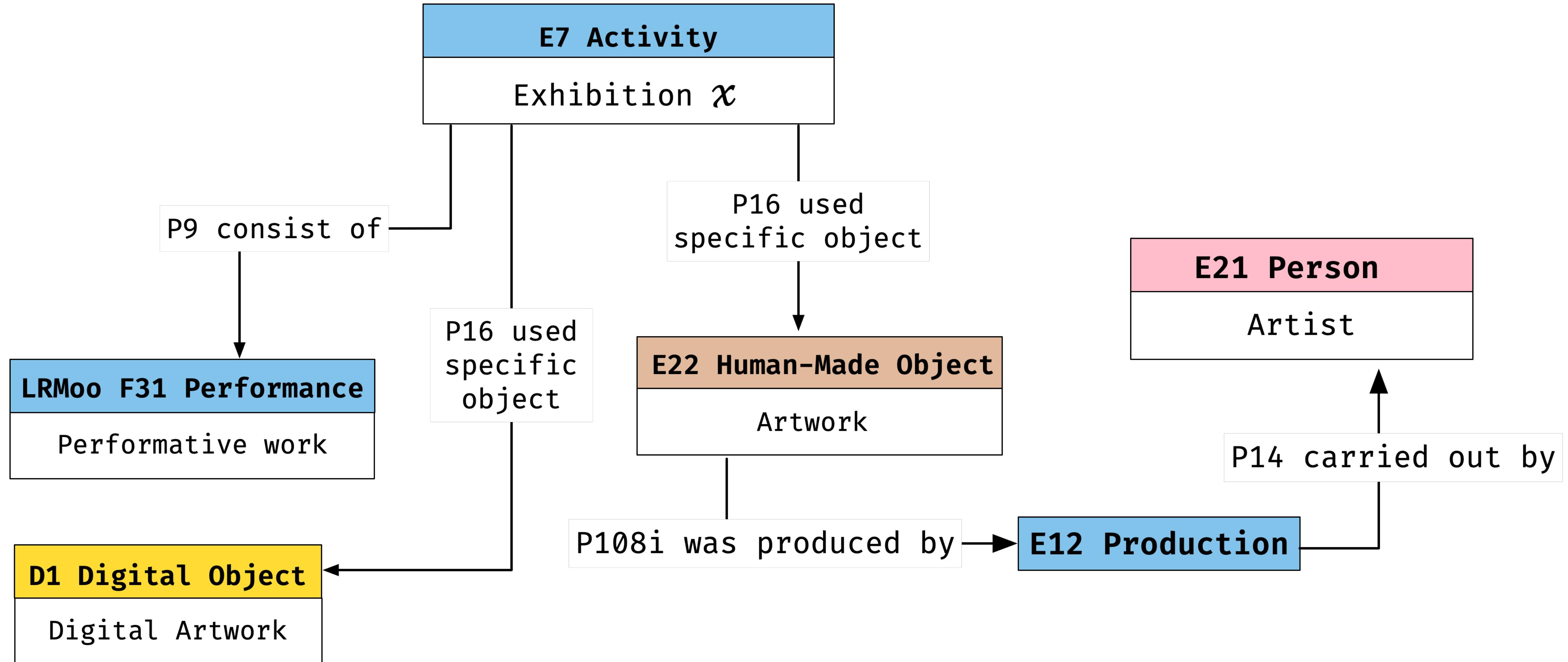
- Temporal duration
- Spatial extension
- Objects and creators

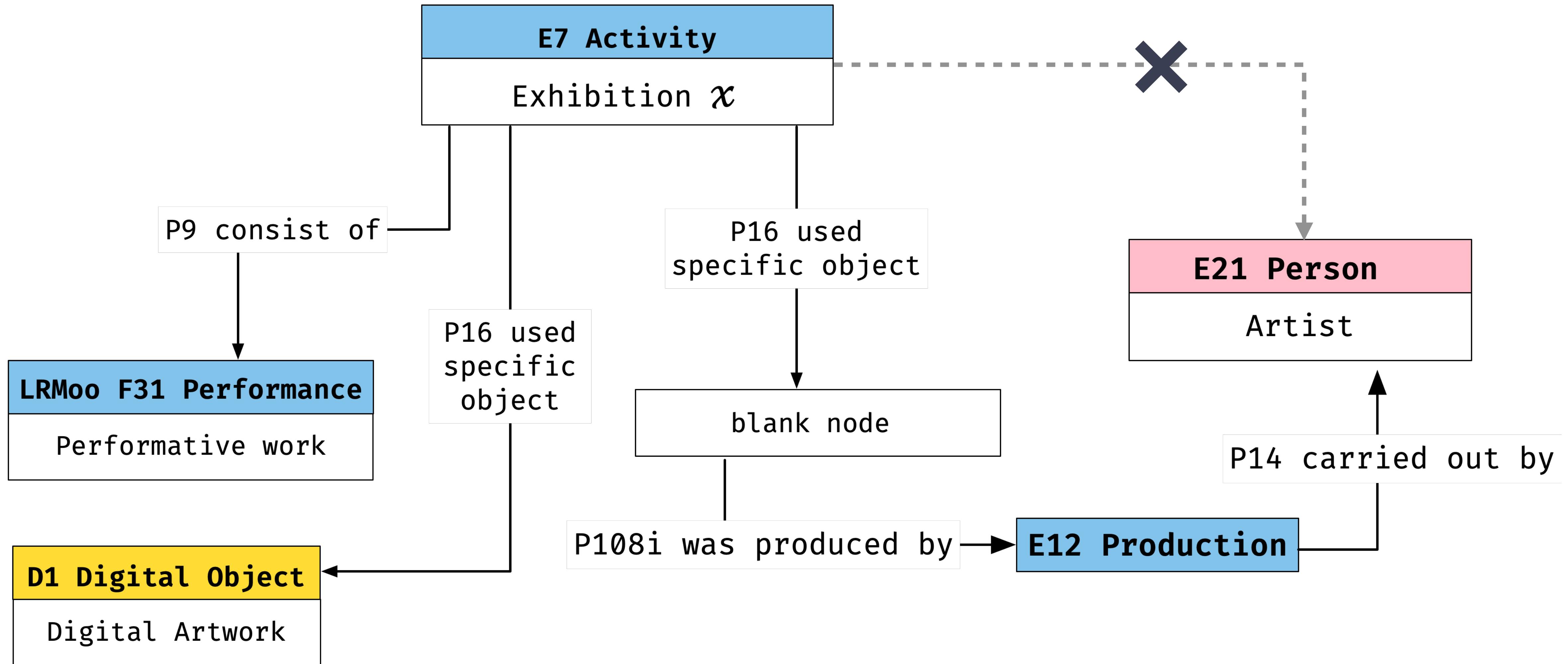
The objects exhibited may be of different nature and can be present for the complete duration of the exhibition, or just for a smaller temporal segment (temporary presence). The role of the object in the exhibition may be generic or specific.

- Contingency relationships
- Participation
- Spatiotemporal Information









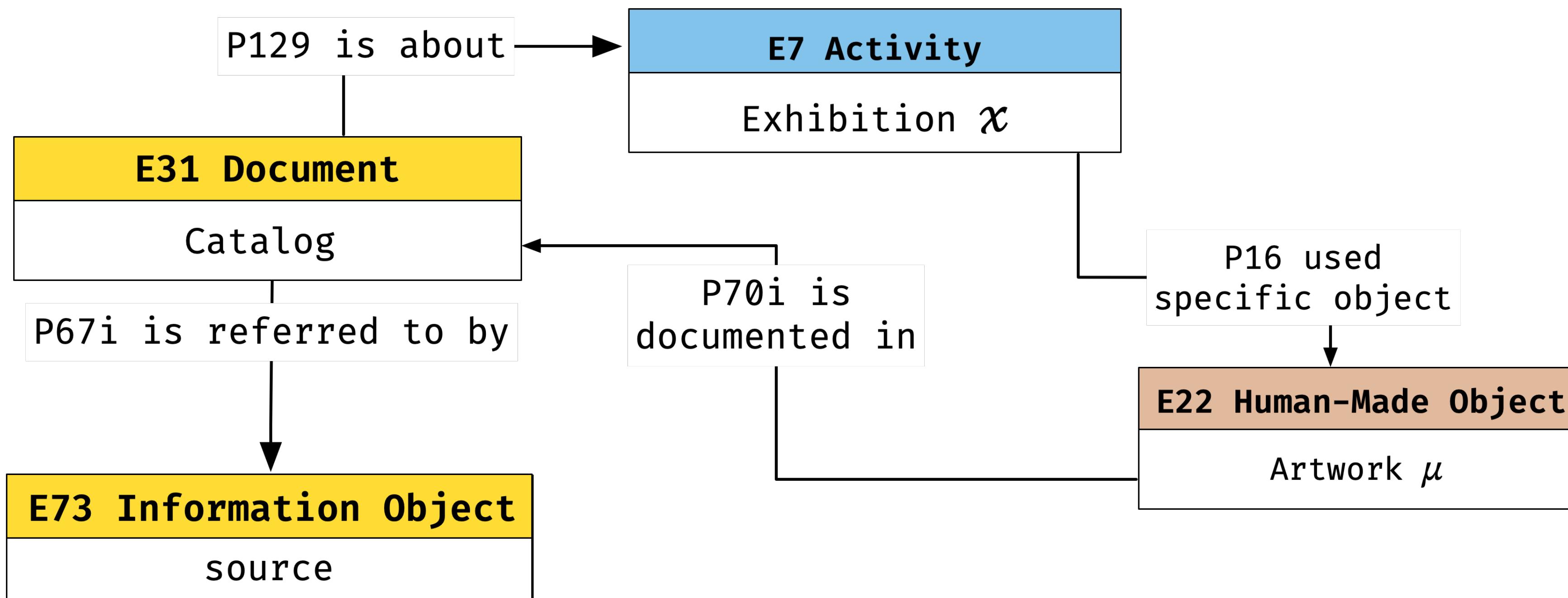


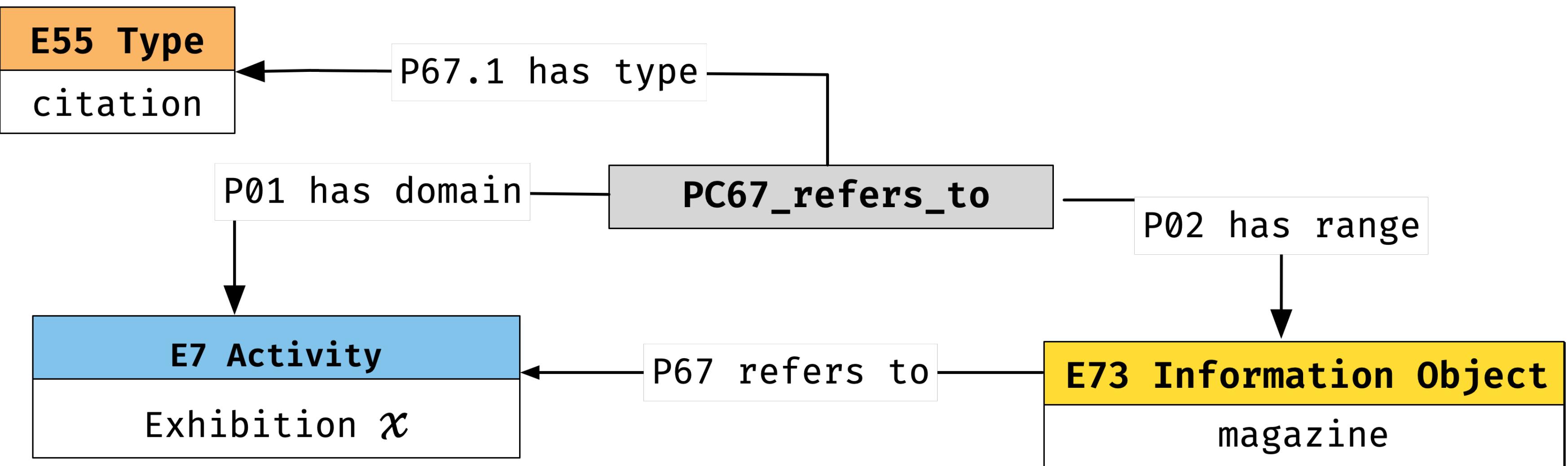
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  "Date_To": "04.03.1914",  
  "Artists": "Franz Elmiger, Rudolf Hellwag, Franz Hoch, Ferdinand Hodler, Ernst Kreidolf,  
Alexander Soldenhoff",  
  "Exhibition_title": "Franz Elmiger, Rudolf Hellwag, Franz Hoch, Ferdinand Hodler (Wandbild  
für Hannover), Ernst Kreidolf, Alexander Soldenhoff, Künstler der Walze",  
  "Exhibition_title_additional_text": "",  
  "Exhibition_room": "Kunsthaus",  
  "Exhibition_catalogue_DE_weblink": "http://opac.kunsthaus.ch/libero/WebopacOpenURL.cls?  
ACTION=DISPLAY&sid=Libero:ZUR&RSN=47791",  
  "Exhibition_catalogue_DE_XML": "http://opac.kunsthaus.ch/libero/0AIPMH.cls?  
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}
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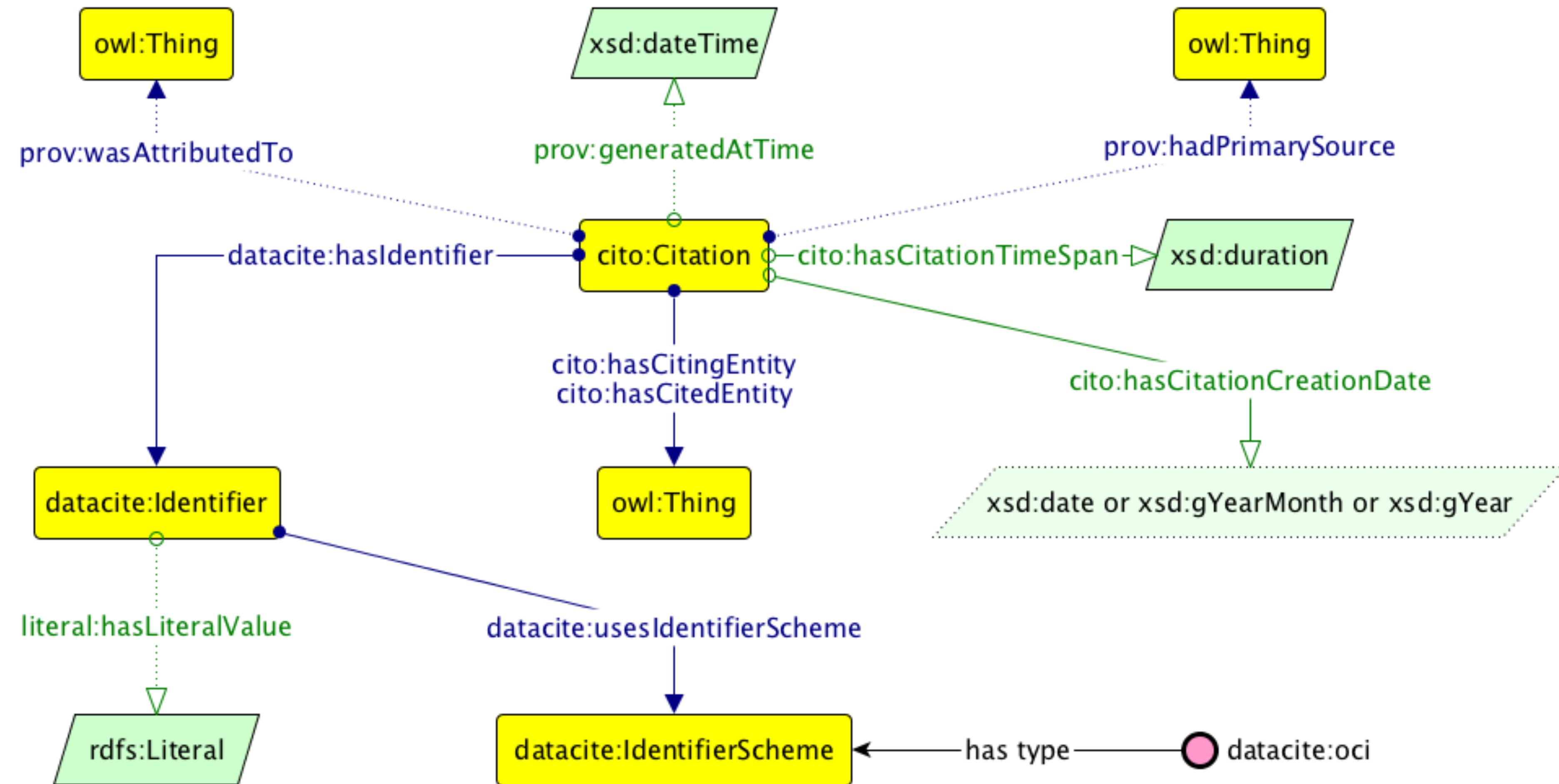
- Temporal duration
- Spatial extension
- Objects and creators
- Knowledge Source**

Exhibitions are documented through internal database/archival records or using one or more media, such as catalogs, videos, images, magazines, advertisements

- Participation
- Spatiotemporal Information







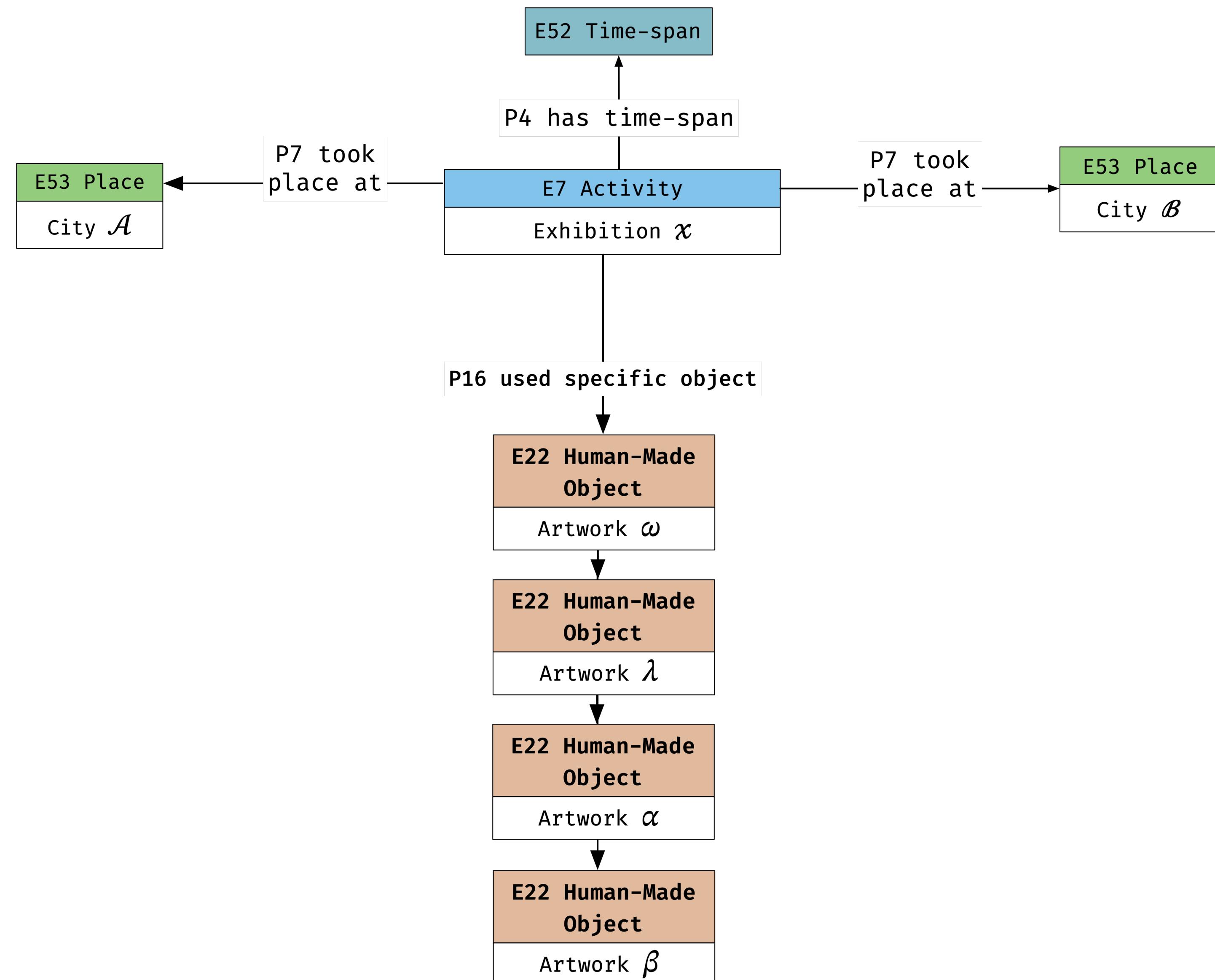
Peroni, S., & Shotton, D. M. (2012). FaBiO and CiTO - Ontologies for describing bibliographic resources and citations. Journal of Web Semantics: Science, Services and Agents on the World Wide Web, 17

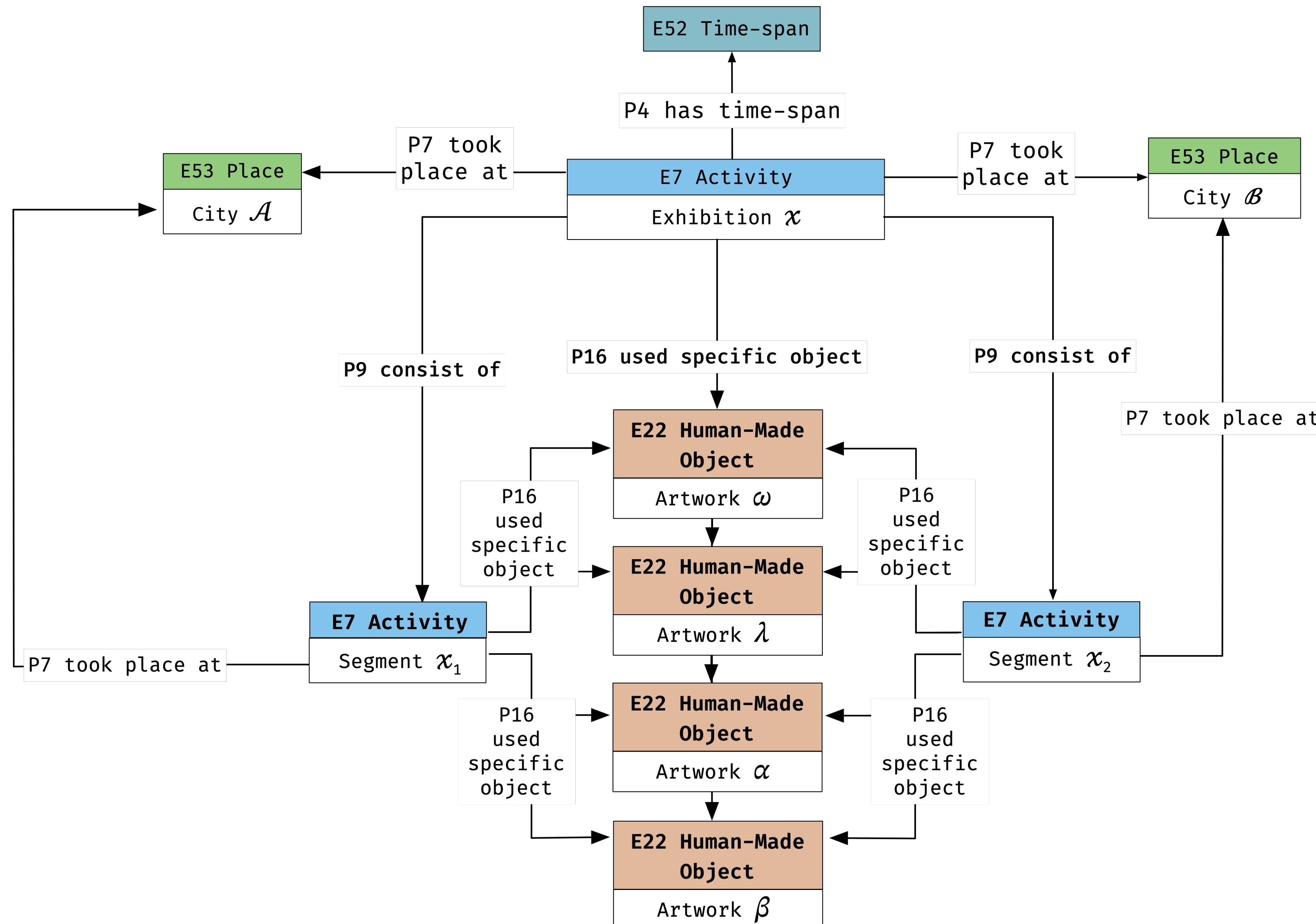
- Temporal duration

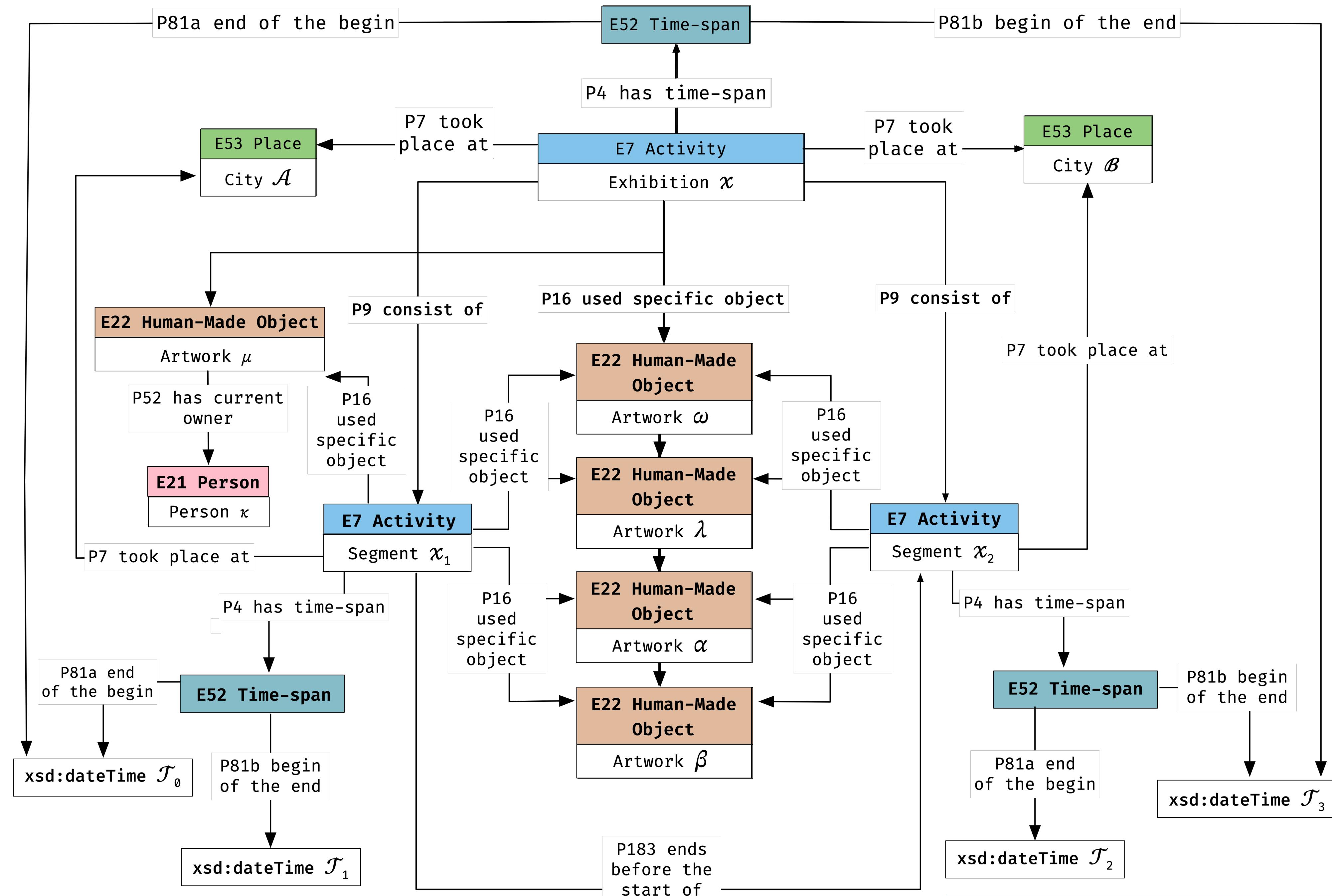
Exhibitions may be documented as having multiple parts/stages. It is the case of traveling exhibitions, which are designed to be moved and displayed at multiple locations at different times or, at the same time. Each identified stage of a traveling exhibition may have its own starting and ending date.

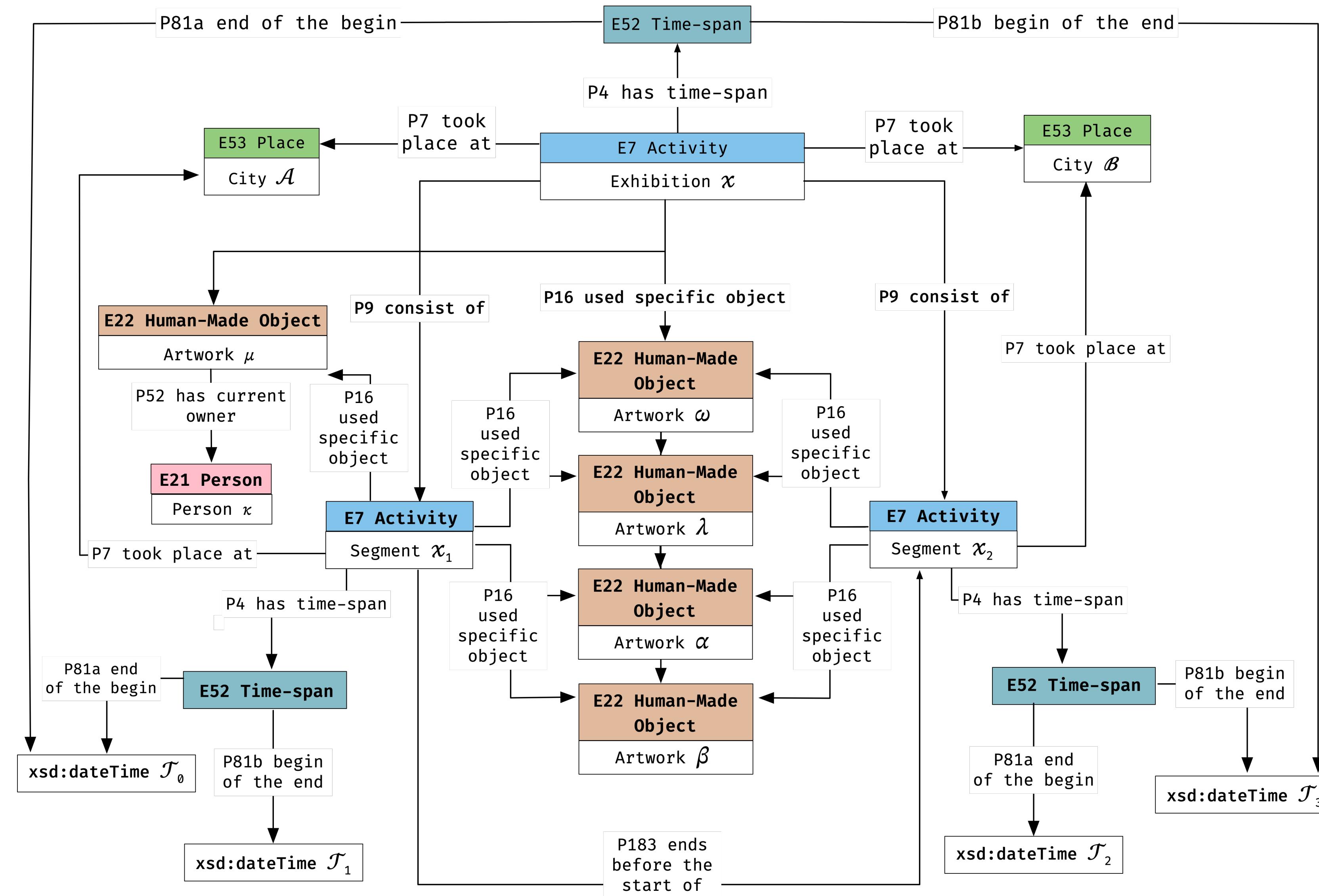
- Mereological structure

- Contingency relationships
- Participation
- Spatiotemporal Information









- Temporal duration
- Spatial extension

The model should differentiate between activities performed prior to the exhibition, which are directly linked (CAUSE) to the creation of the exhibition itself (e.g., curation), and activities that are key to its development, hence they aid (ENABLE) its creation (e.g., loans)

- Contingency relationships
- Participation
- Spatiotemporal Information

Diretoria Executiva

Diretor Presidente:	Francisco Matarazzo Sobrinho
Diretor Vice-Presidente:	Sergio Buarque de Holanda
Diretor 1.º Secretário:	Fernando Millan
Diretor 2.º Secretário:	Maria Penteado Camargo
Diretor 1.º Tesoureiro:	Isai Leirner
Diretor 2.º Tesoureiro:	Francisco Beck

Conselho de Administração

Carlos Pinto Alves, Aldo Magnelli, Oscar Pedroso Horta, Oscar Americano, Ziro Ramenzoni, Francisco Luis Almeida Salles, Adalberto Ferreira do Valle, José Barbosa de Almeida, Maria Penteado Camargo, Francisco Beck, Ruy Bloem, Salvador Candia, Roberto Paivo Meira, Isai Leirner, Herbert V. Levy, João Mattar, Luis Medici, Helio Manganini, Pola Rezende, Luis Coelho, Marcos Gasparian, Hasso Weiszflog, Ema Klabin, Gregori Worchavchik, Kunito Miasoko, Gerda Brentani, Ernesto Wolf, Erich Humberg, José Julio de Carvalho e Só, Fernando Millon, Henrique Olavo Costa, João Adelino Almeida Prado Neto, Lourival Gomes Mochado, Flávio de Carvalho, Lahyr Castro Cotti, Ambrogio Bonomi.

Diretor Artístico:	Sergio Milliet
Diretor Técnico:	Wolfgang Pfeiffer
Conservador da Filmoteca:	Paulo Emílio Solles Gomes
Administrador:	Biagio Motta

Catálogo da III Bienal do Museu de Arte Moderna de São Paulo

E7 Activity

Management χ

E7 Activity

Exhibition χ

Diretoria Executiva

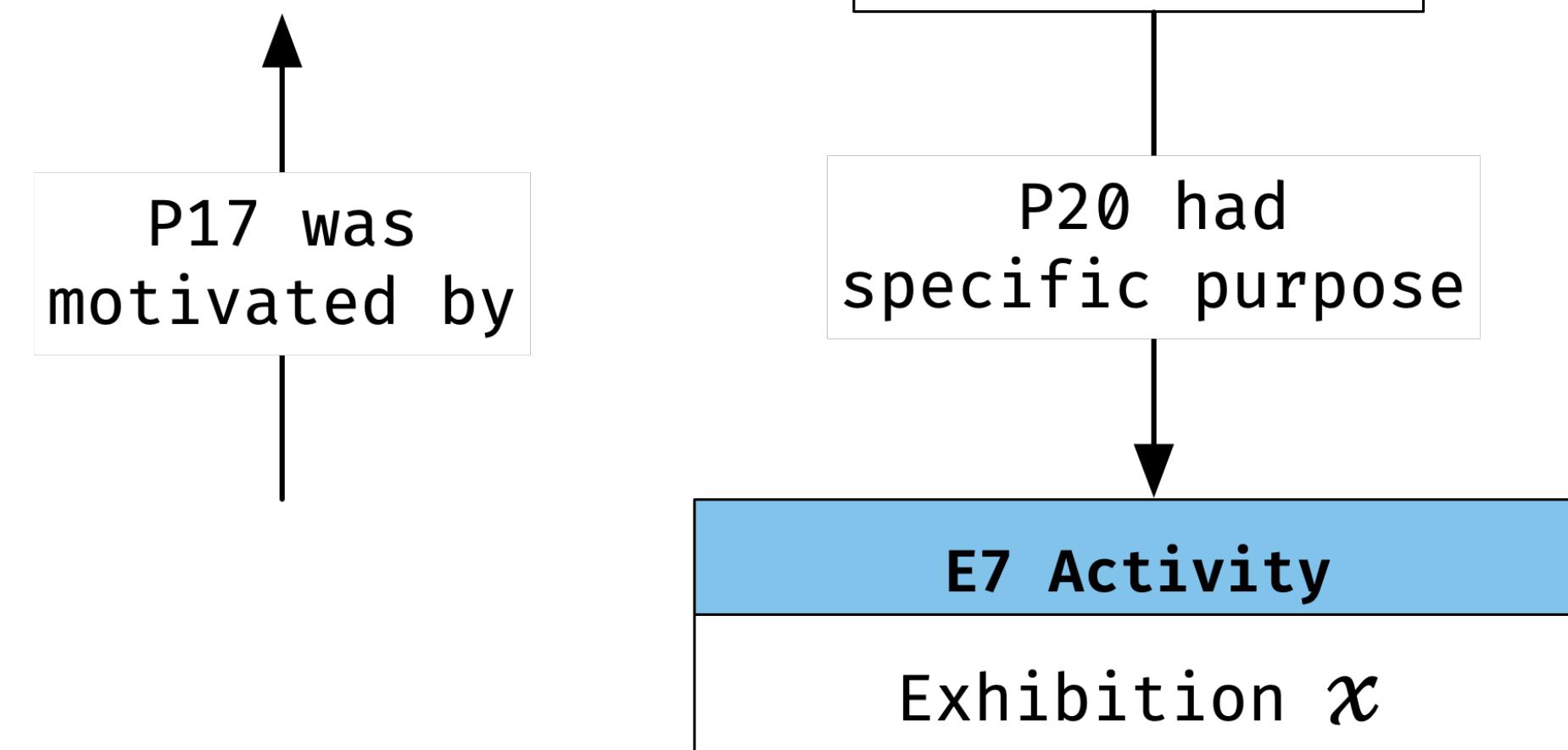
Diretor Presidente:	Francisco Matarazzo Sobrinho
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Conselho de Administração

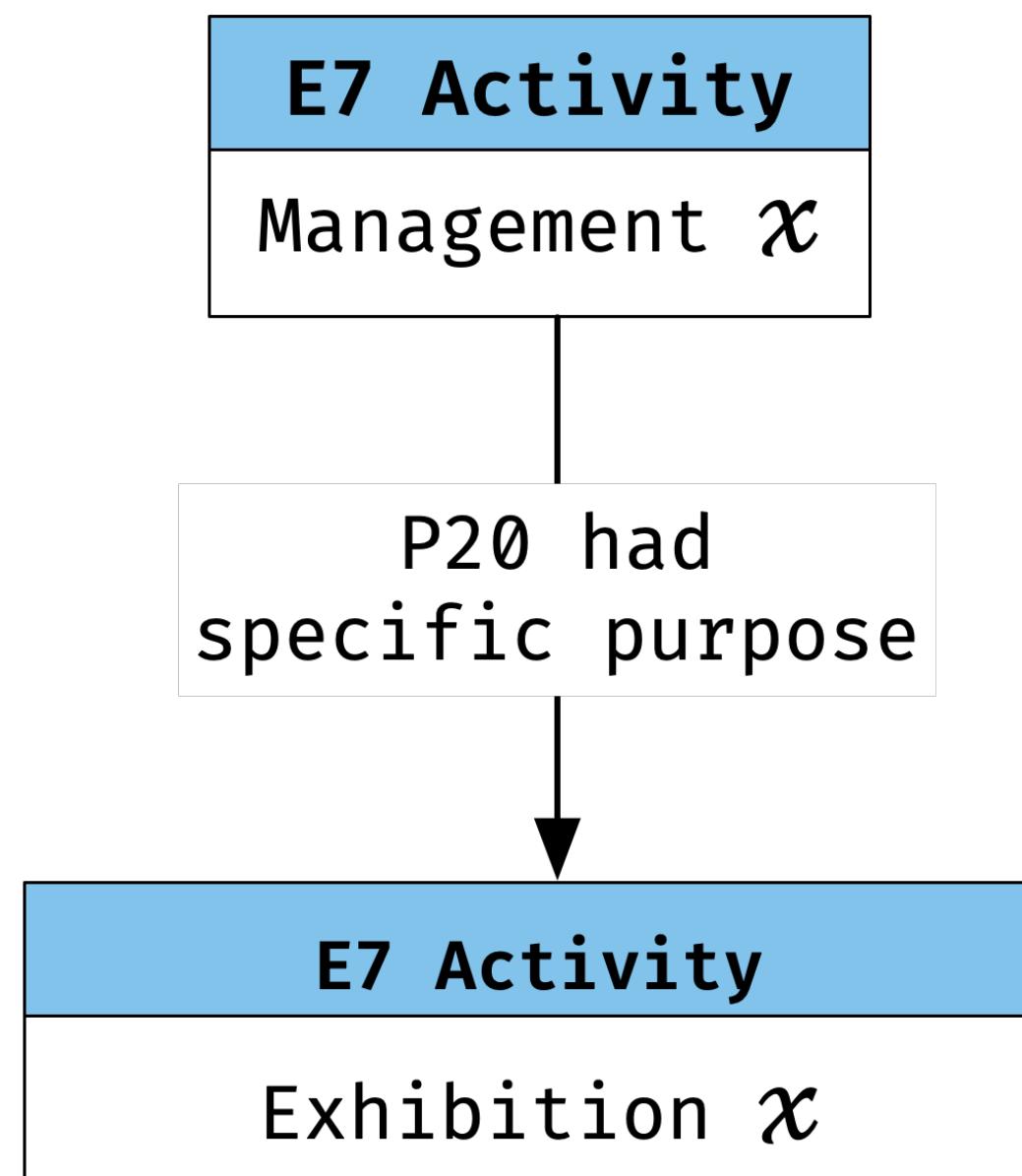
Carlos Pinto Alves, Aldo Magnelli, Oscar Pedroso Horta, Oscar Americano, Ziro Ramenzoni, Francisco Luis Almeida Salles, Adalberto Ferreira do Valle, José Barbosa de Almeida, Maria Penteado Camargo, Francisco Beck, Ruy Bloem, Salvador Candia, Roberto Paivo Meira, Isai Leirner, Herbert V. Levy, João Mattar, Luis Medici, Helio Manganini, Pola Rezende, Luis Coelho, Marcos Gasparian, Hasso Weiszflog, Ema Klabin, Gregori Worchavchik, Kunito Miassoko, Gerda Brentani, Ernesto Wolf, Erich Humberg, José Julio de Carvalho e Só, Fernando Millon, Henrique Olavo Costa, João Adelino Almeida Prado Neto, Lourival Gomes Mochado, Flávio de Carvalho, Lahyr Castro Cotti, Ambrogio Bonomi.

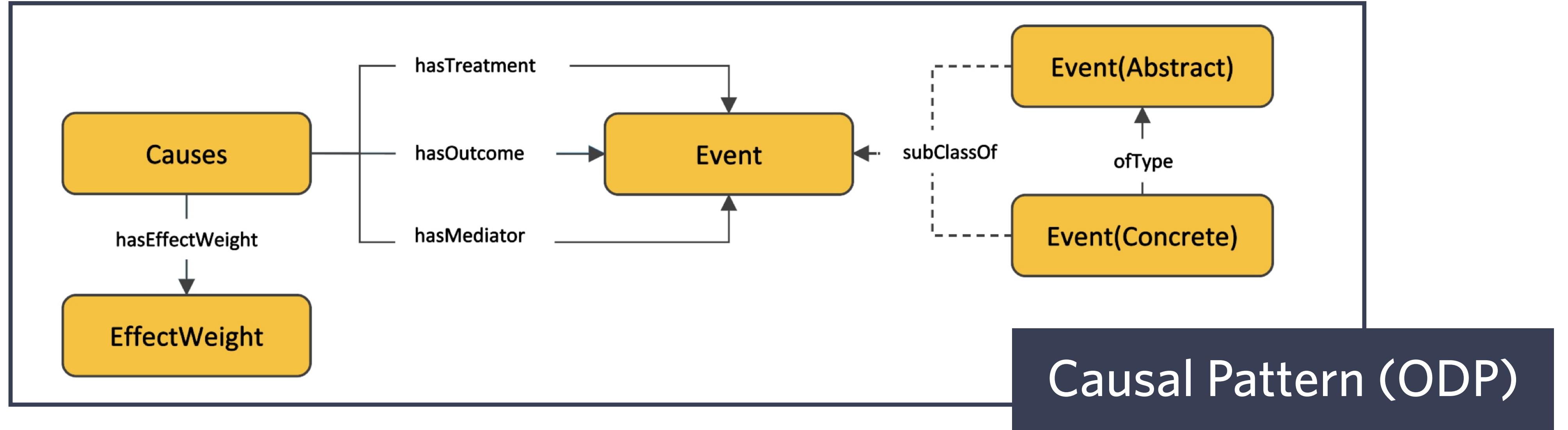
Diretor Artístico:	Sergio Milliet
Diretor Técnico:	Wolfgang Pfeiffer
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Catálogo da III Bienal do Museu de Arte Moderna de São Paulo

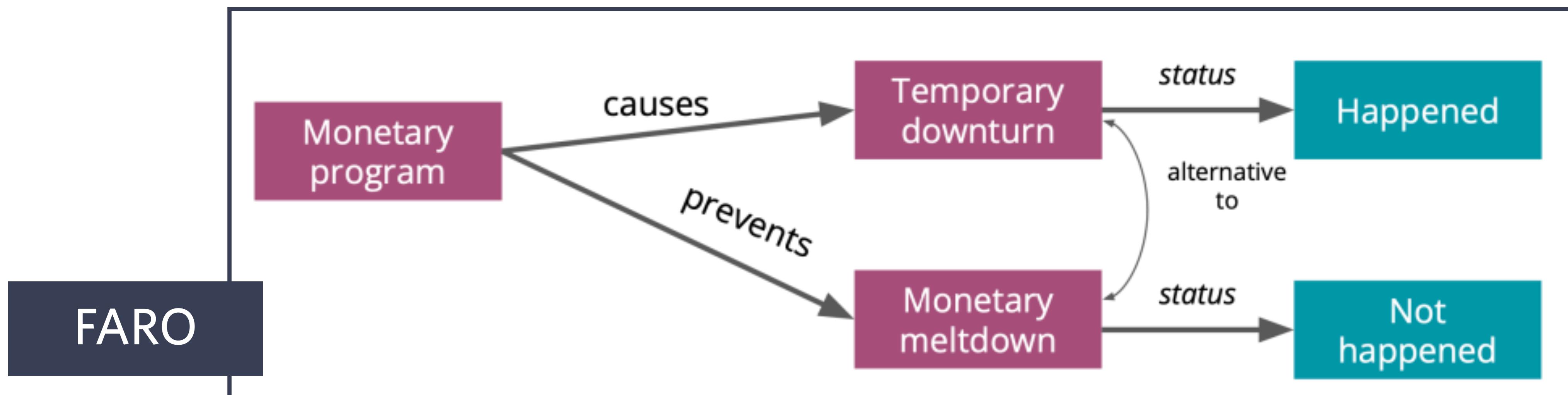


- Cause
- Enable
- Prevent / does not prevent
- Intend to cause





Jaimini, U., Henson, C., & Sheth, A. (2023). An Ontology Design Pattern for Representing Causality. *Proceedings of the 14th Workshop on Ontology Design and Patterns*. Workshop on Ontology Design and Patterns 2023, Athens. <https://ceur-ws.org/Vol-3636/>



Rebboud, Y., Lisena, P., & Troncy, R. (2022). Beyond Causality: Representing Event Relations in Knowledge Graphs. In O. Corcho, L. Hollink, O. Kutz, N. Troquard, & F. J. Ekaputra (Eds.), *Knowledge Engineering and Knowledge Management* (pp. 121–135). Springer International Publishing. https://doi.org/10.1007/978-3-031-17105-5_9

- Temporal duration
- Spatial extension

Exhibitions can be collaboratively developed within an institution. A model should differentiate between the degree of involvement of the various agents (e.g., constant/temporal), as well as be capable of formalizing their role (e.g., artist, curator, arranger) within the exhibition (e.g., direct/mediated)

- Contingency relationships
- Participation
- Spatiotemporal Information

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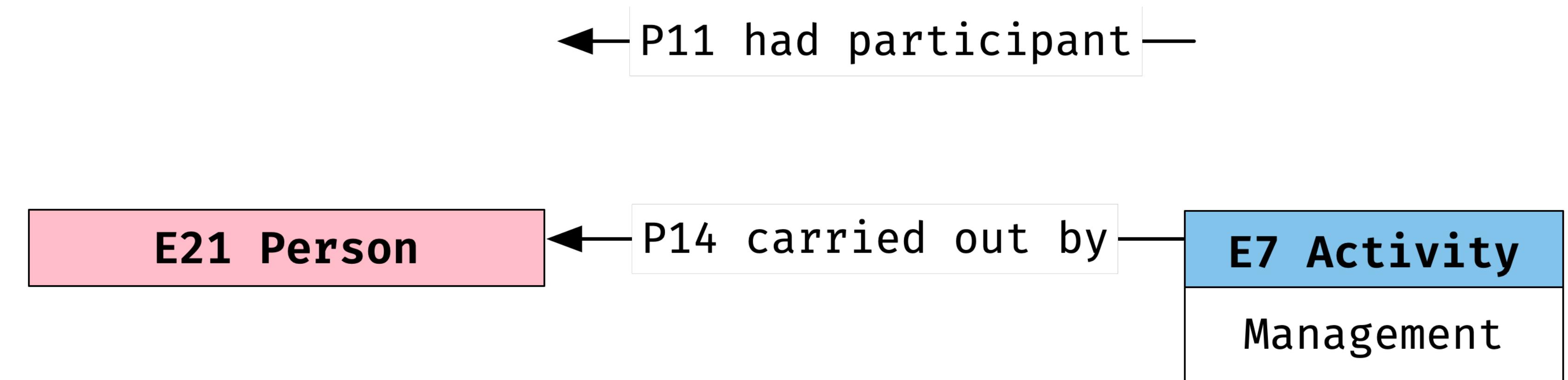
Diretor Artístico:	Sergio Milliet
Diretor Técnico:	Wolfgang Pfeiffer
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Administrador:	Biagio Motta

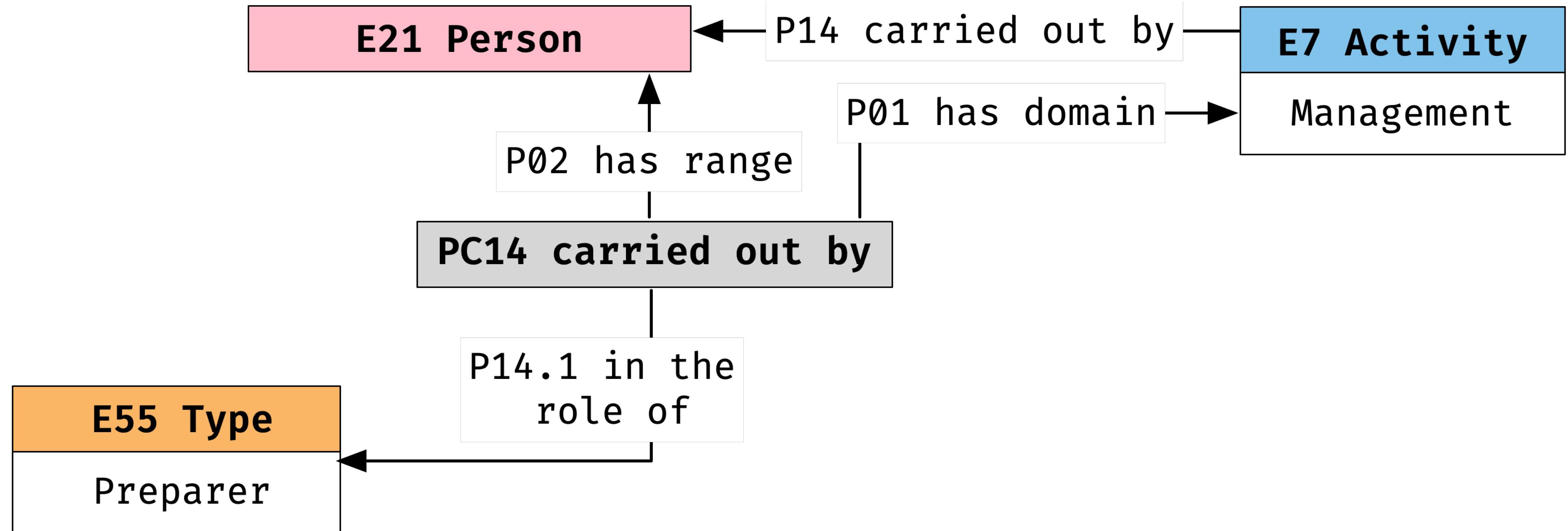
Catálogo da III Bienal do Museu de Arte Moderna de São Paulo

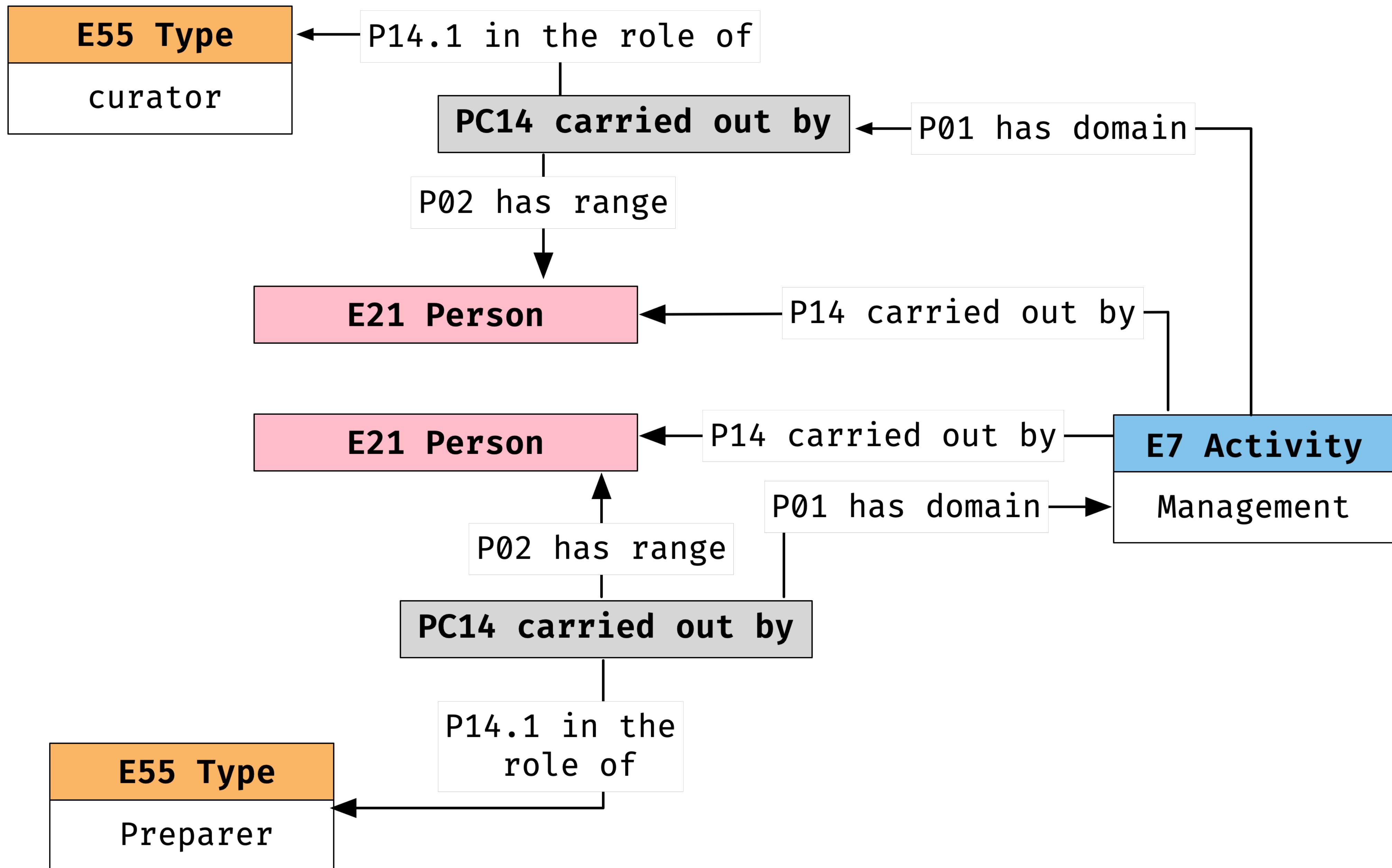
E21 Person

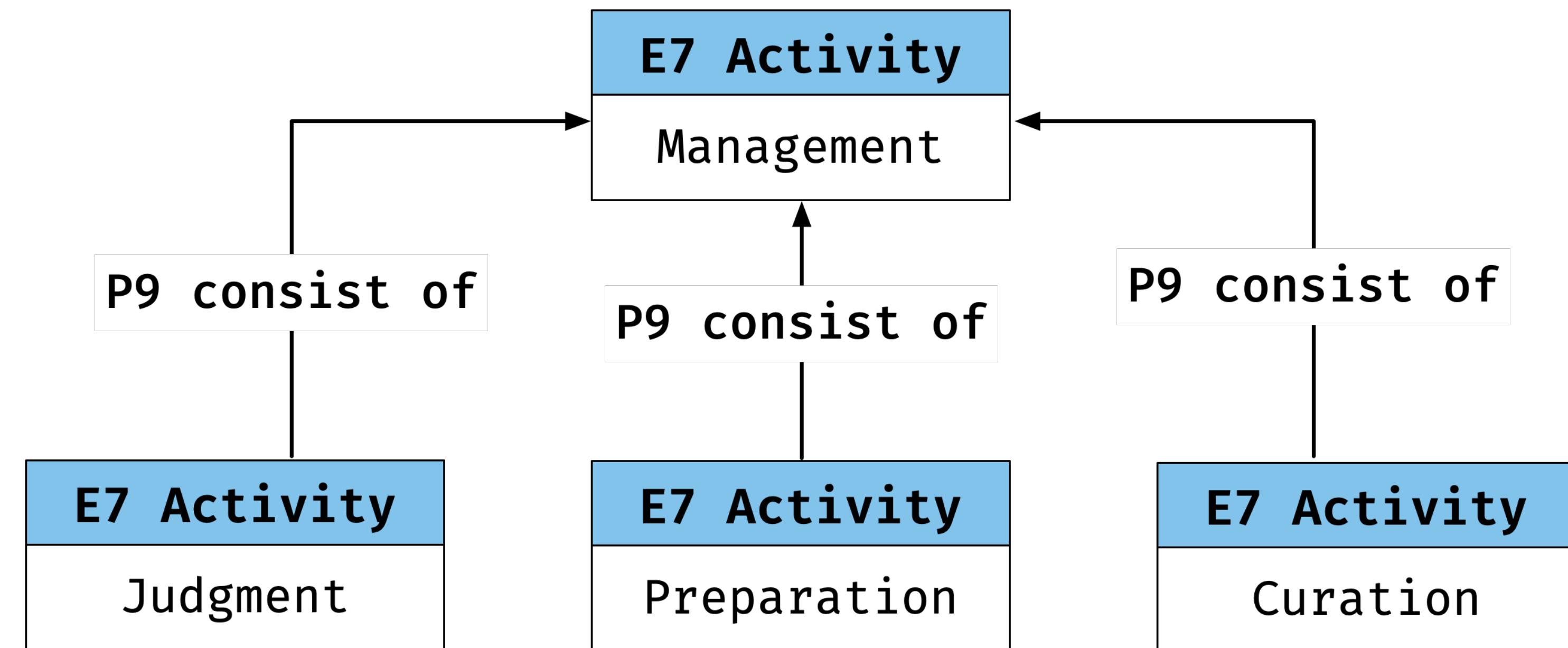
E7 Activity

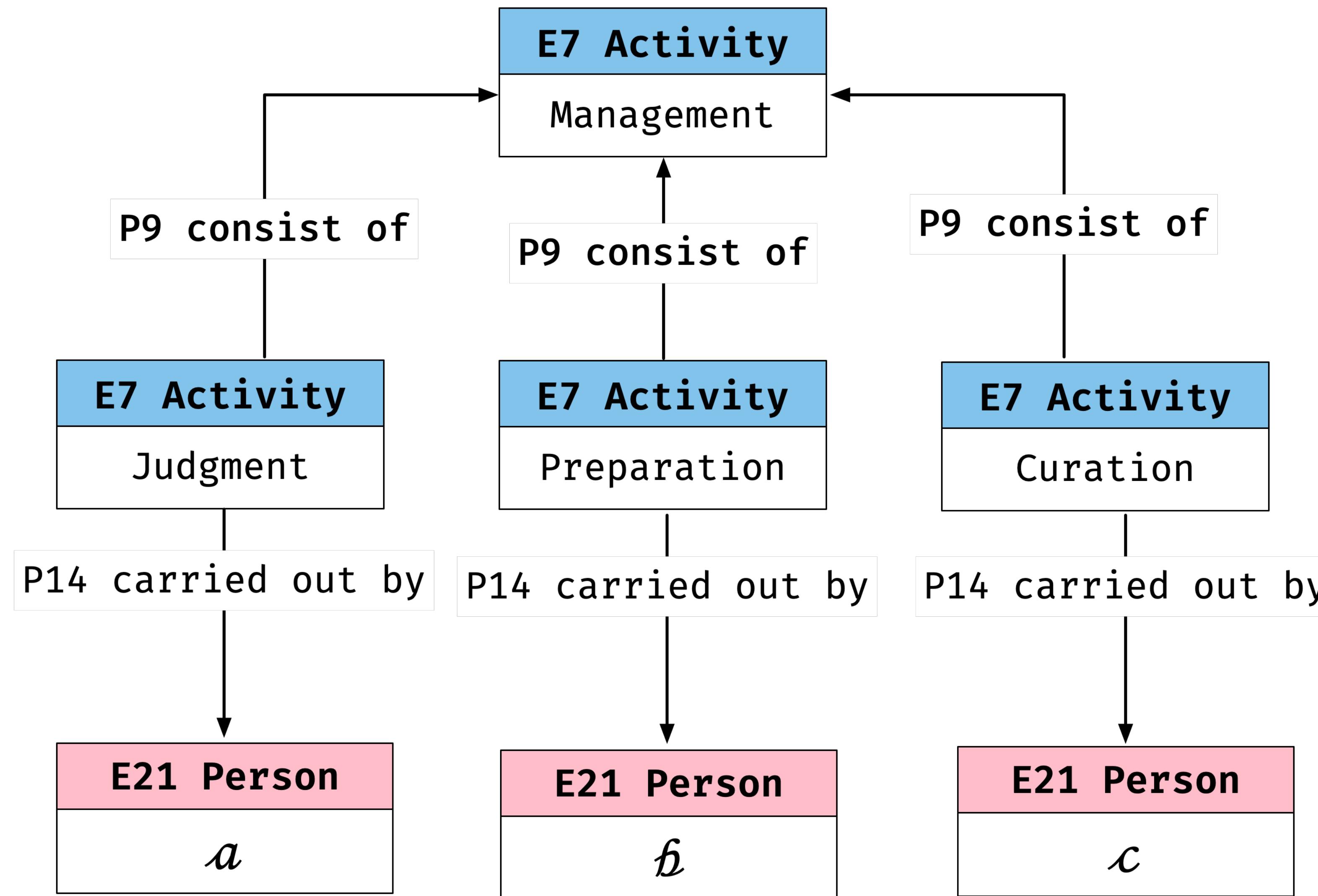
Management











BFO

- **initiation** = initiating an occurrent
- **influence** = having an effect on an occurrent
 - **facilitation** = having a positive effect on an occurrent
 - **hindrance** = having a negative effect on the unfolding of an occurrent
- **mediation** = having an indirect role in the unfolding of an occurrent

DOLCE

- **constant participation** = the continuant participates during the whole temporal extension of the occurrent
- **temporary participation** = the continuant participates during just a part of the temporal interval of the occurrent

- Temporal duration
- Spatial extension
- Objects and creators
- Knowledge Source

More detailed structures

Exhibitions can contain information about participants and objects present in the exhibition which are temporally valid only within the timeframe of the exhibition.

Participation

- Spatiotemporal Information



Albert Marquet

1903
19e Société des
Indépendants

MARQUET (Albert). — 211 bis, avenue de Versailles,
Paris.

- ***1624** Pont de la Tournelle.
- ***1625** Notre-Dame, effet de neige.
- ***1626** Nature morte.
- ***1627** La porte de Saint-Cloud.
- ***1628** Notre-Dame, soleil.
- ***1629** Quai de l'Hôtel-de-Ville (14 Juillet).
- 1630** Portrait.
- ***1631** Jardin des Tuilleries.

48.8382443,2.256526

1907
23e Société des
Indépendants

MARQUET (Albert), né à Bordeaux.— 29, place Dauphine, Paris.

- 3281** Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).
- 3282** Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).
- 3283** Paysage (appartient à M. Druet, 114, Faubourg Saint-Honoré).

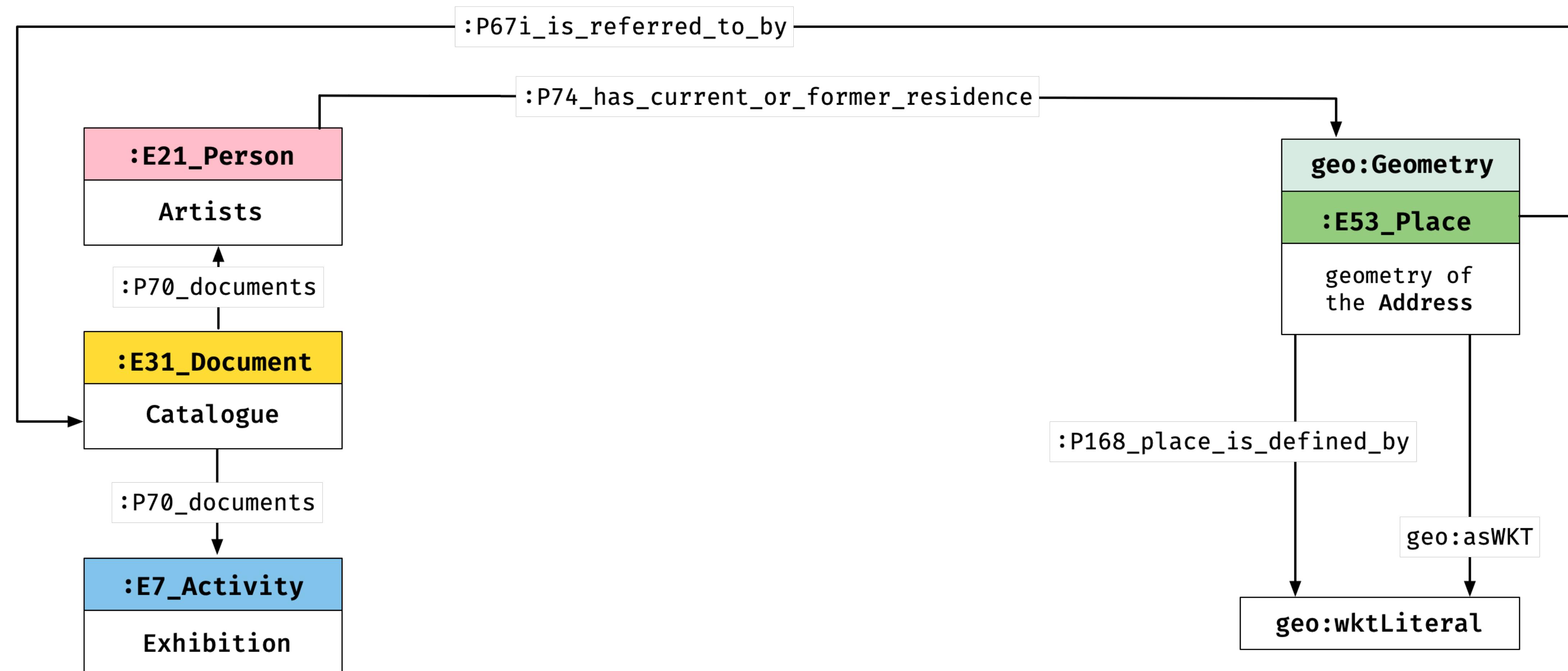
48.8549537,2.3370469

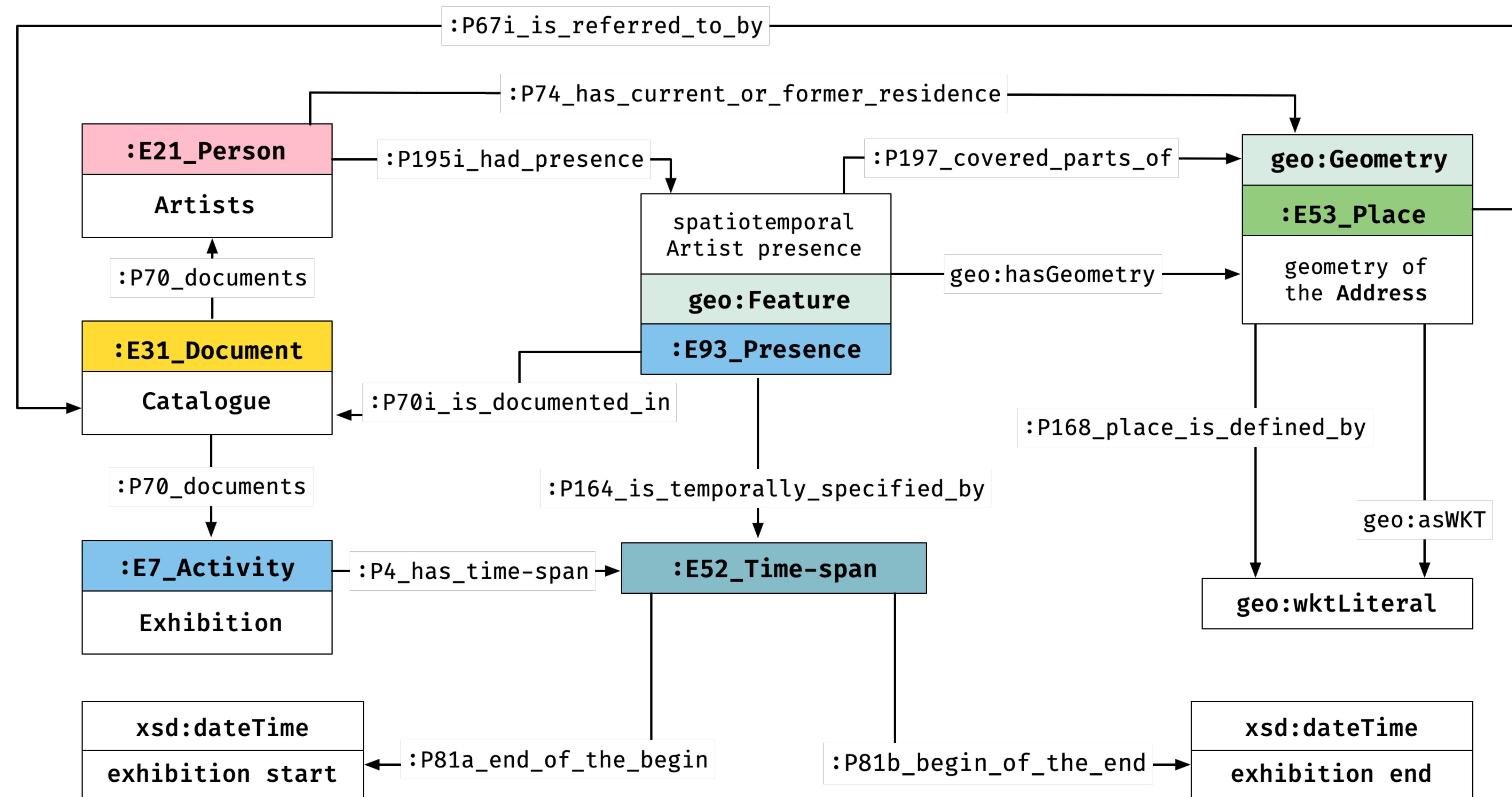
1908
24e Société des
Indépendants

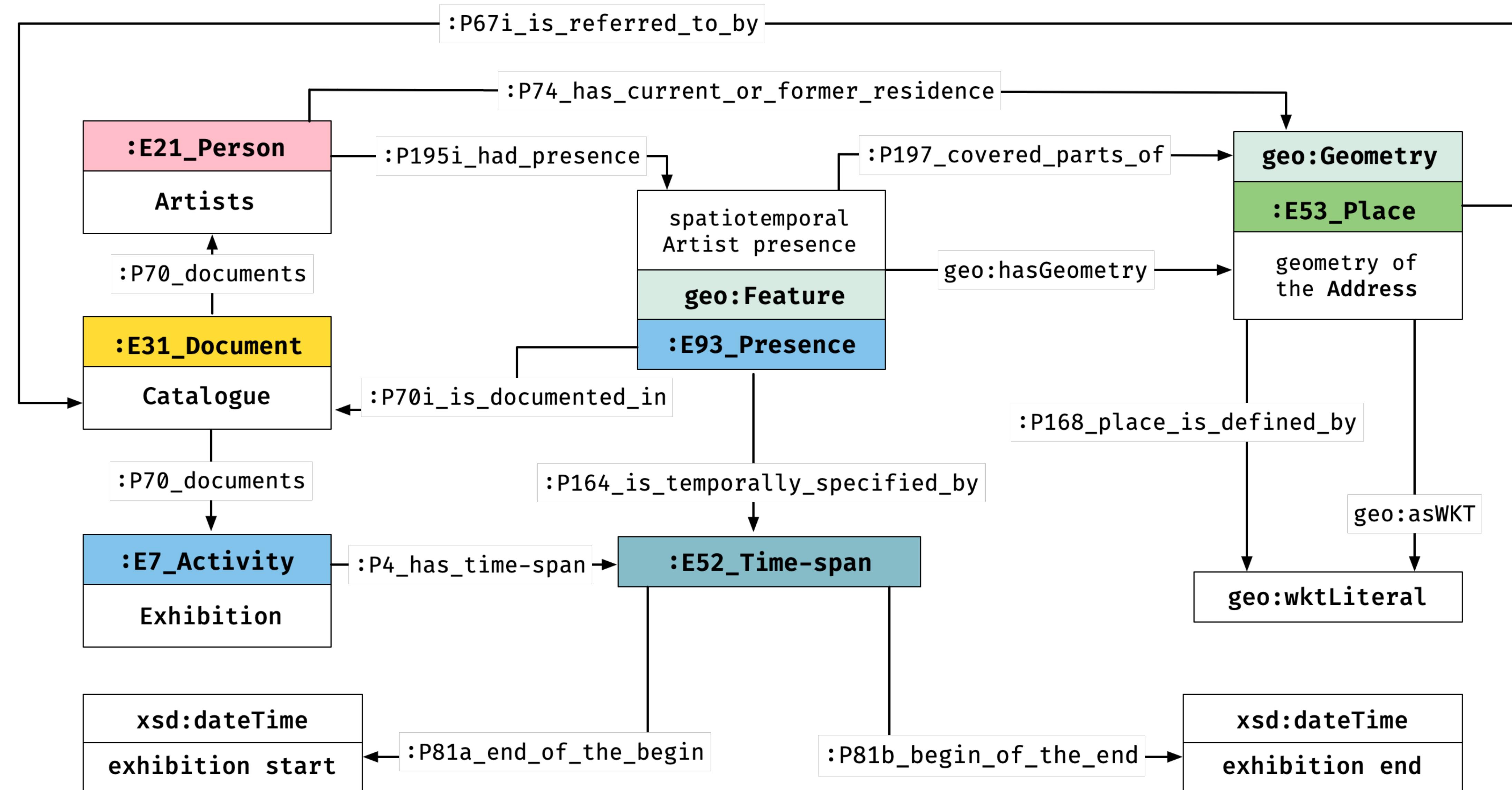
MARQUET (Albert), né à Bordeaux. — 19, quai Saint-Michel, Paris.

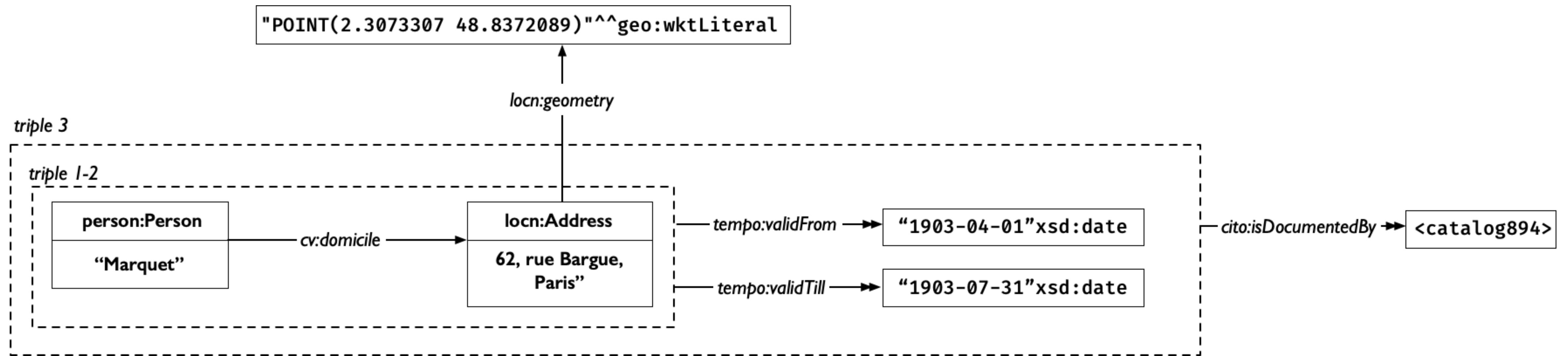
- 4057** Etude.
- 4058** Etude.
- 4059** Etude.
- 4060** Etude.
- 4061** Etude.
- 4062** Etude.

48.8532779,2.3429349









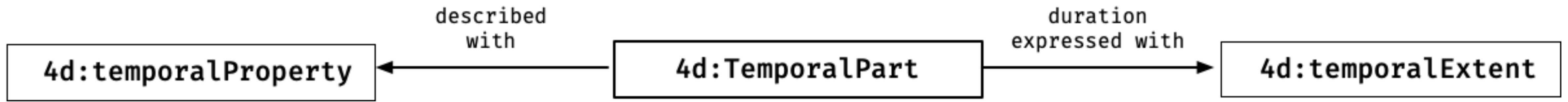
code sample:
<https://bit.ly/4f3wnlz>

ontologies:

<http://purl.org/tempo>

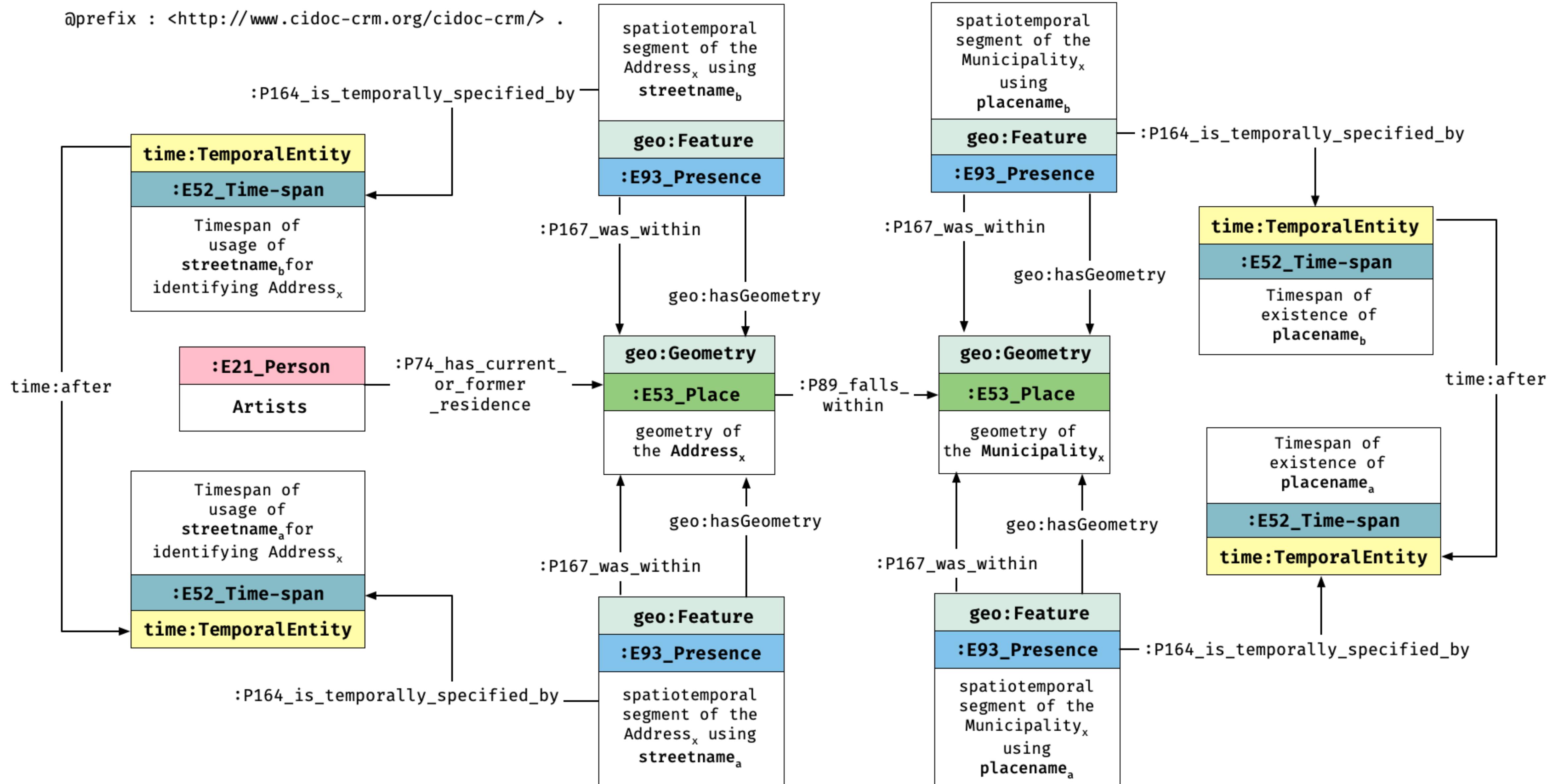
<https://semiceu.github.io/Core-Location-Vocabulary>

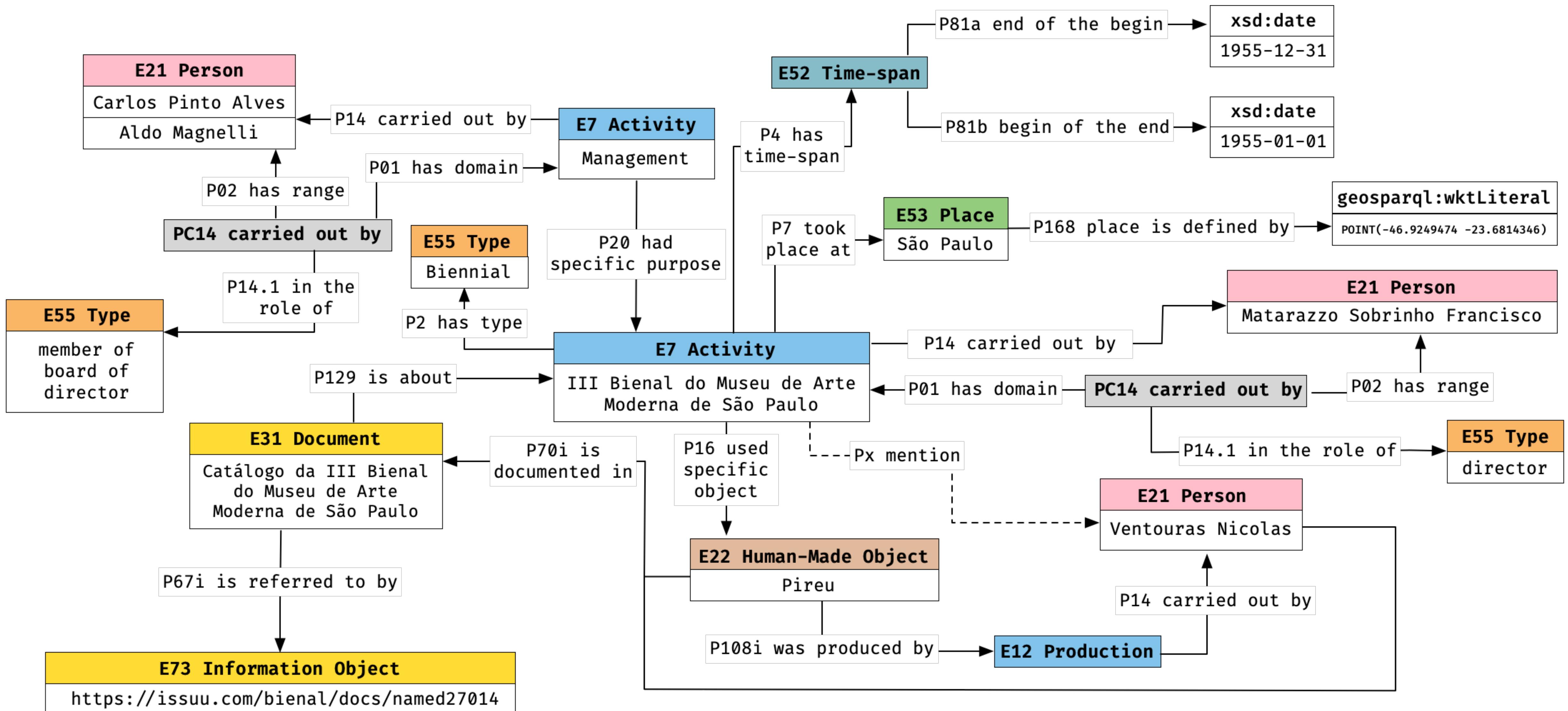
Hartig, O. (2017). Foundations of RDF* and SPARQL*: (An Alternative Approach to Statement-Level Metadata in RDF).



Giménez-García, J. M., Zimmermann, A., & Maret, P. (2017). NdFluents: An Ontology for Annotated Statements with Inference Preservation. In E. Blomqvist, D. Maynard, A. Gangemi, R. Hoekstra, P. Hitzler, & O. Hartig (Eds.), *The Semantic Web* (pp. 638–654). Springer International Publishing. https://doi.org/10.1007/978-3-319-58068-5_39

Welty, C., & Fikes, R. (2006). A Reusable Ontology for Fluents in OWL. In *Formal Ontology in Information Systems* (pp. 226–236). IOS Press. <https://ebooks.iospress.nl/publication/3224>



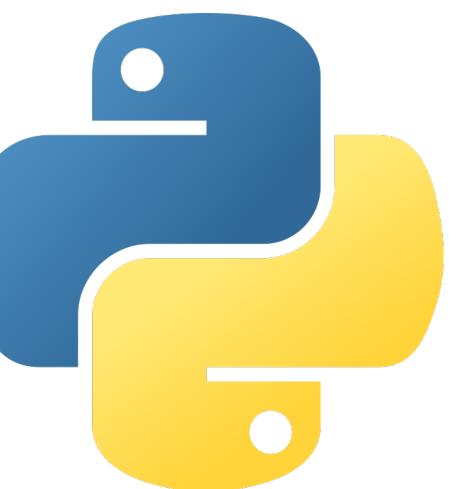
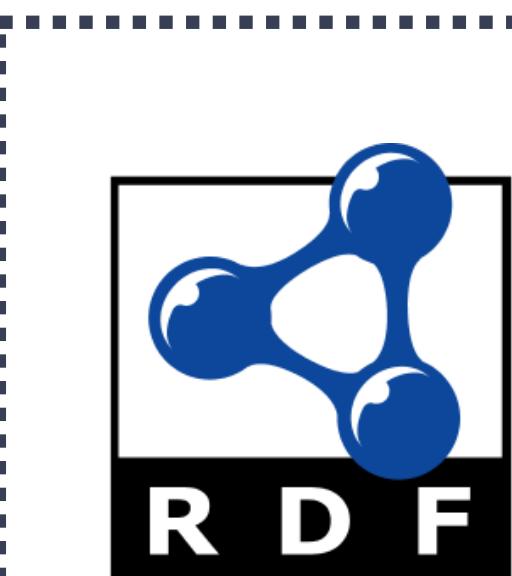
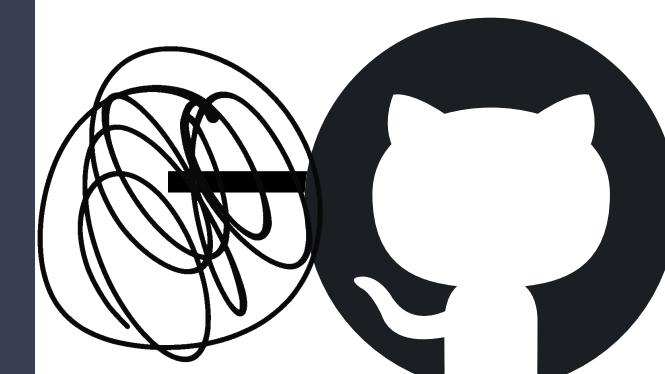
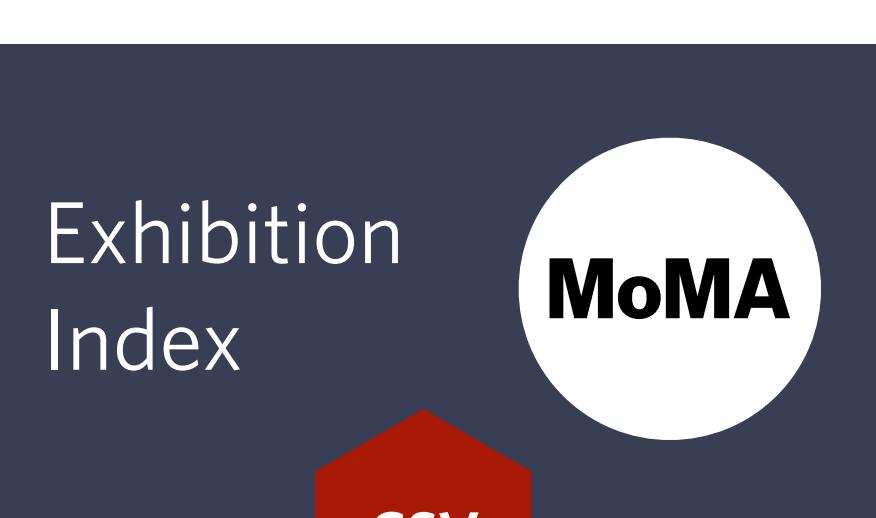
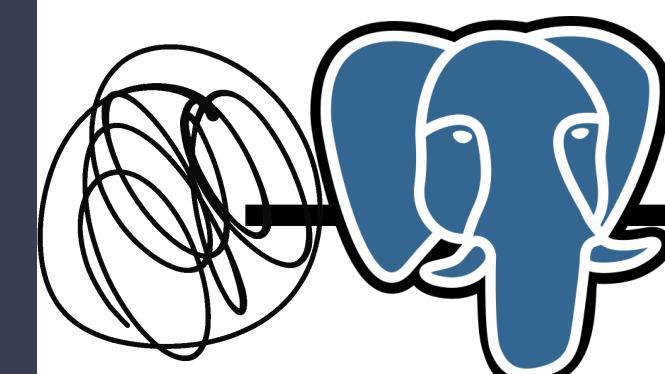
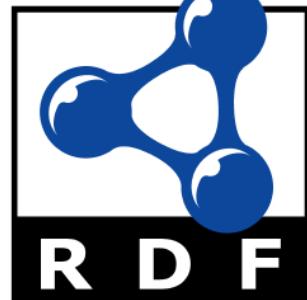


zetcom

API

RDF

Musée d'Art
et d'Histoire



Temporal duration



Spatial extension



Objects



Creators



Knowledge Source



Reference



Mereological structure



Contingency relationships



Participation



Spatiotemporal Information



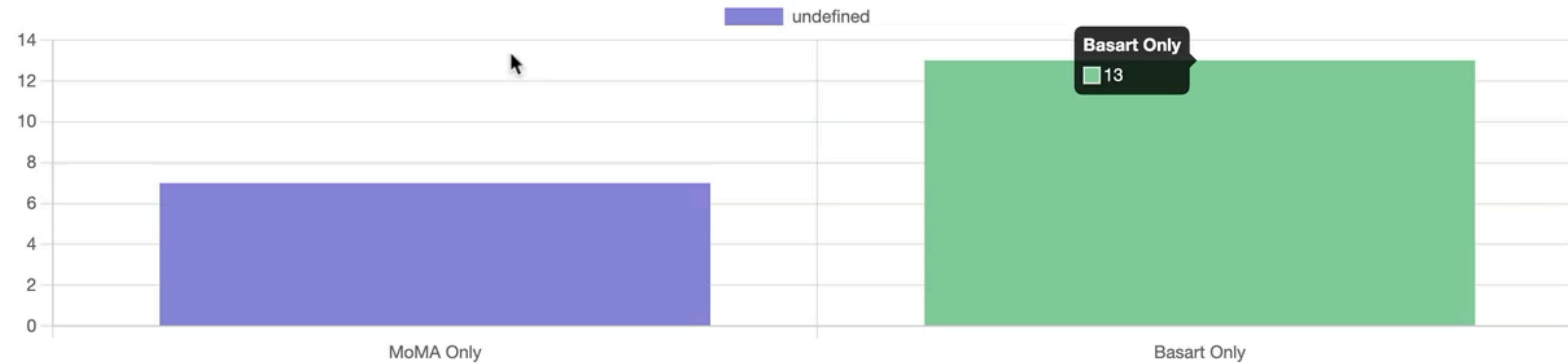
Dataset Overlap Analysis

Artist Selection

Search for an artist...

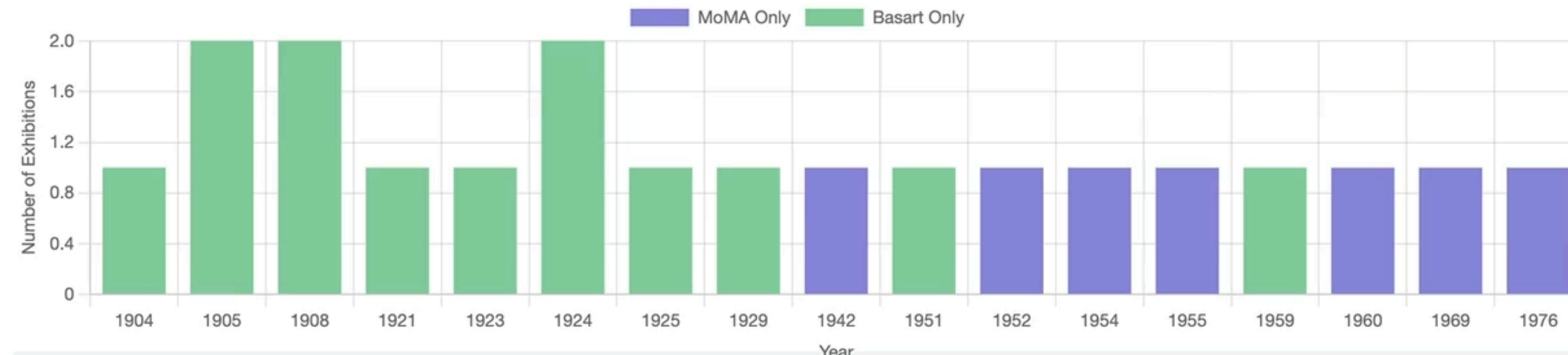
Current: Kees Van Dongen

Exhibition Distribution for Kees Van Dongen



Exhibition Frequency by Year

(Click on a year to see details below)



53.8% coverage increase

Additional exhibition coverage when combining both datasets for Kees Van Dongen

Temporal duration



Spatial extension



Objects



Creators



Knowledge Source



Reference



Mereological structure



Contingency relationships

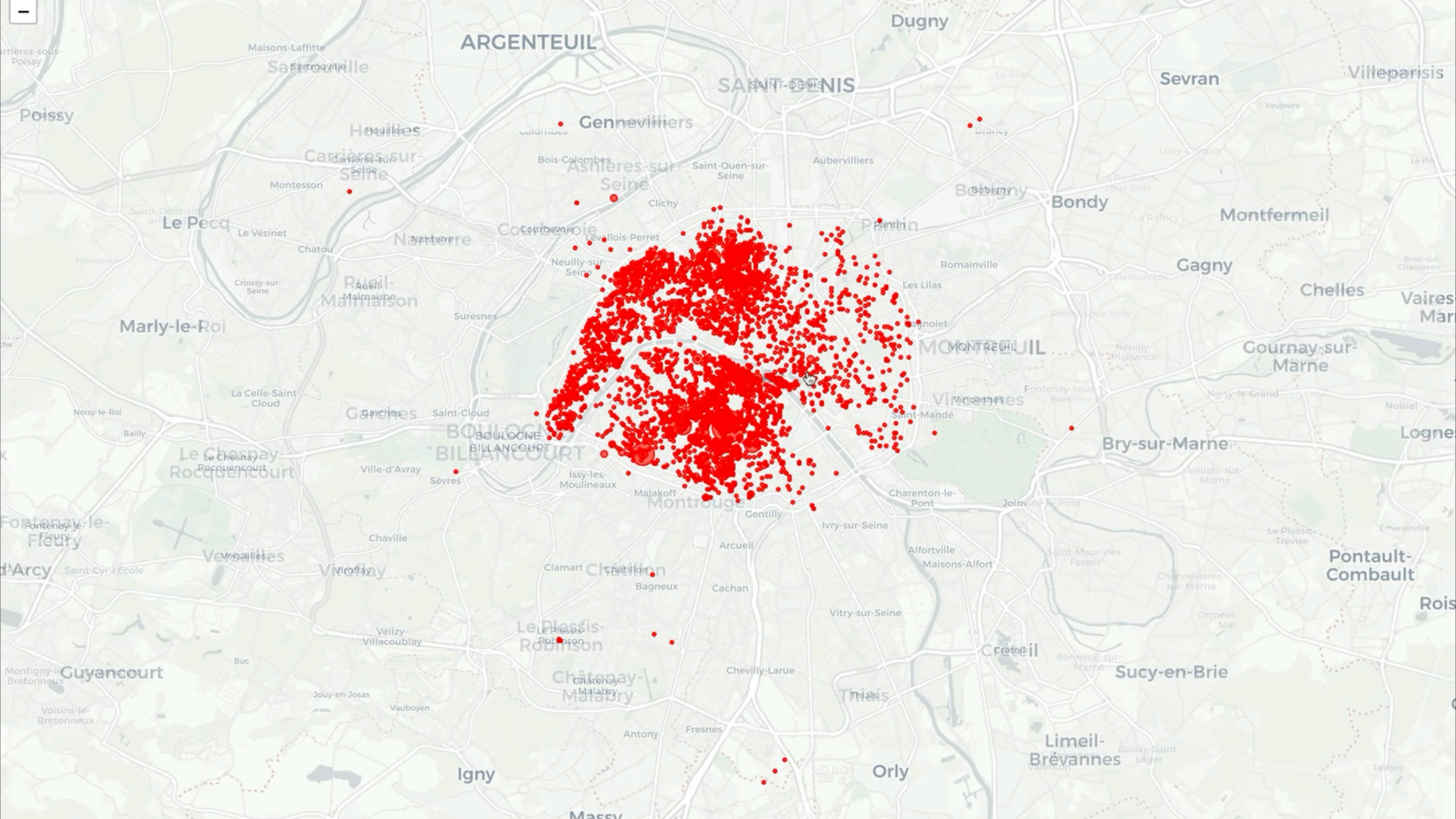


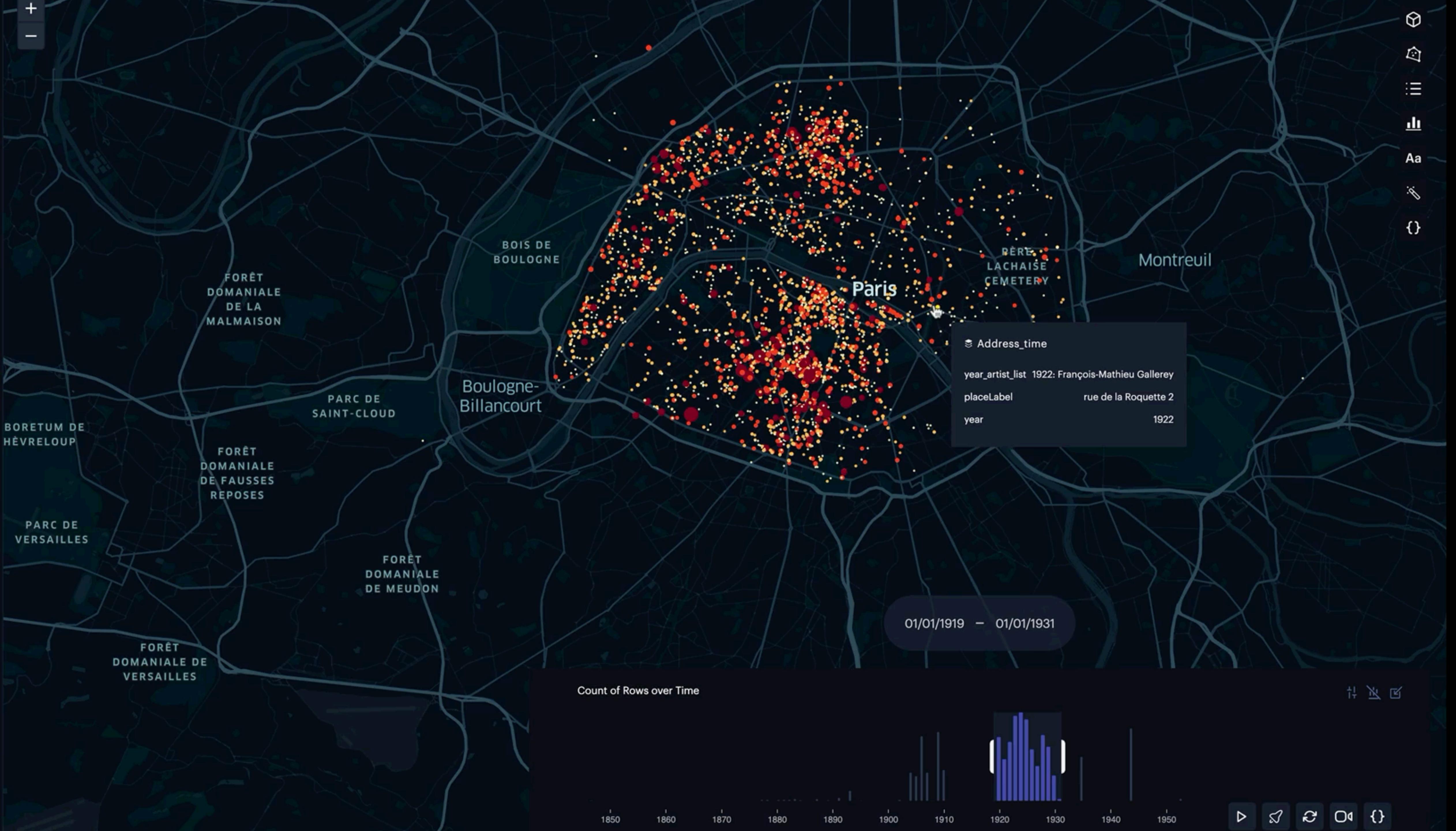
Participation



Spatiotemporal Information







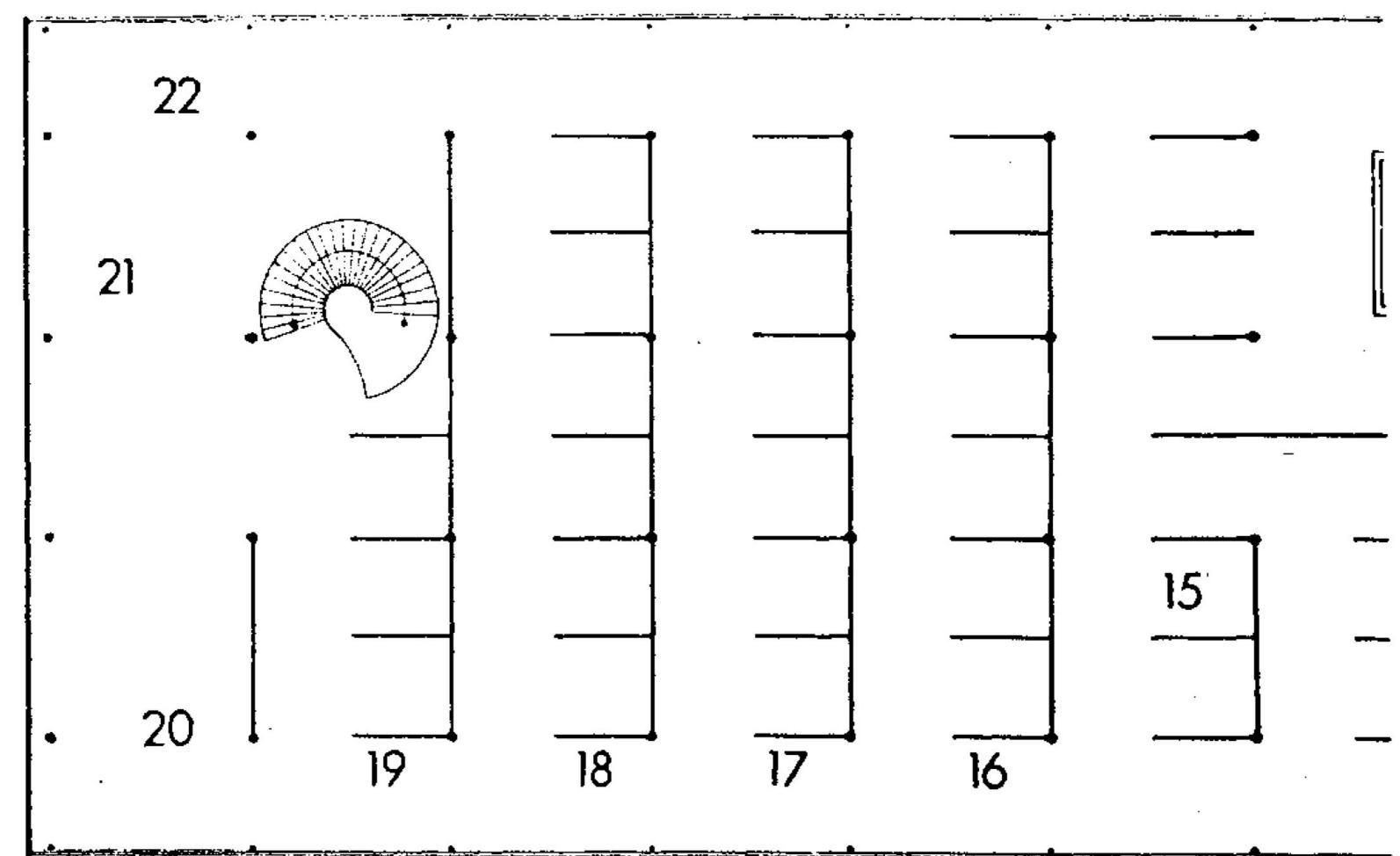
CIDOC-CRM		CIDOC-CRM	
Temporal		Contingency	
Relative	x	Cause	
Precise	x	Enable	
Imprecise	x	Prevent	
Spatial		Participation	
contains	x	initiation	
precise	x	mediation	
Objects		facilitation	
Material	x	partial	
Digital	x	temporary	
Performance	x		
Source		Validity	
Primary	x	spacetime	x
Reference	-		
Mereology			
Sub-events	x		

Ontology level

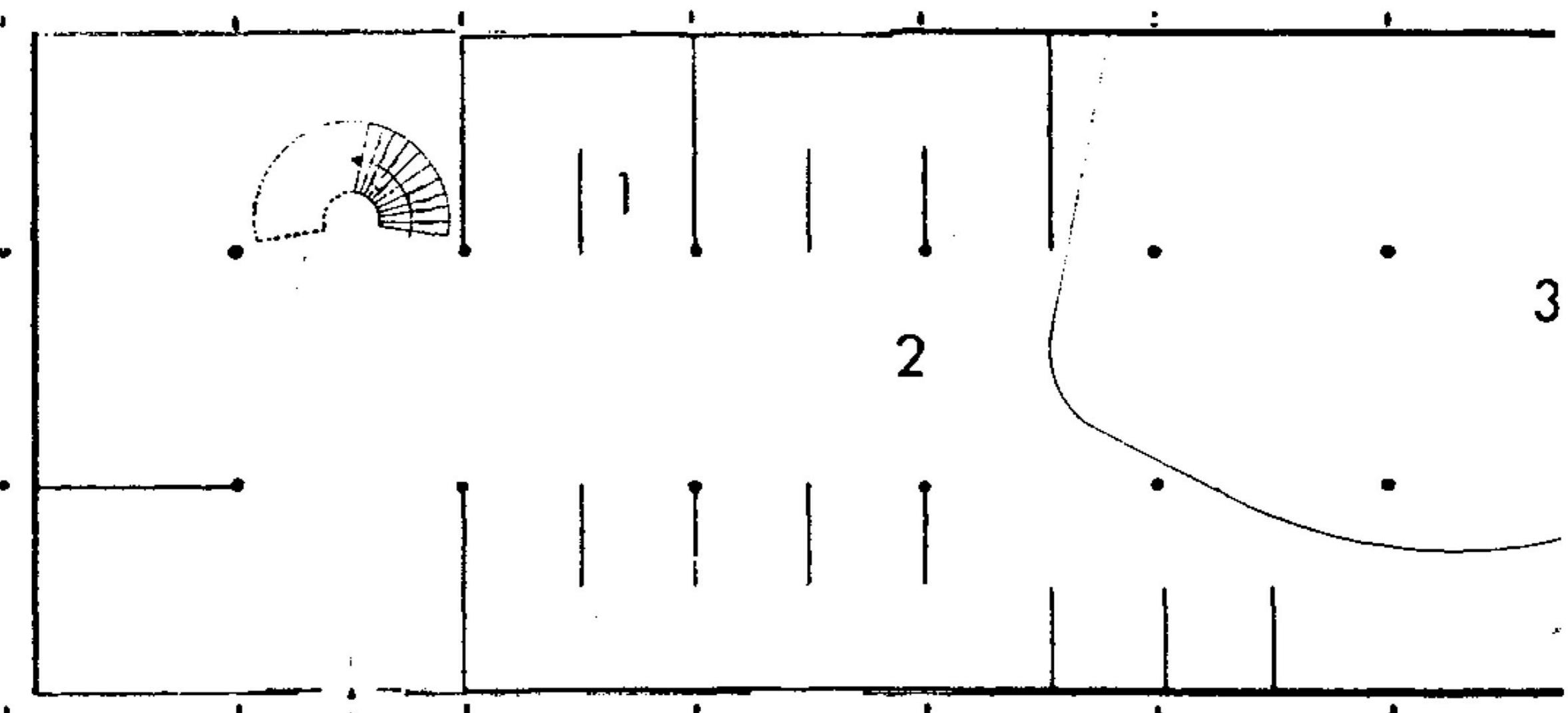
- Mapping exhibition data, at least from a basic perspective, is quite easy.
- CRM should revisit (i)participation patterns, (ii) not-happened events, (iii) contingency. These are key components of historical research
- Pavillion and attempted exhibitions
- Need to represent fuzzy information about probability of living at one's address

Data level

- Integration and curation are a huge challenges
 - No real registry of artist names
 - information can be temporally bound (artwork name, artist, addresses..)

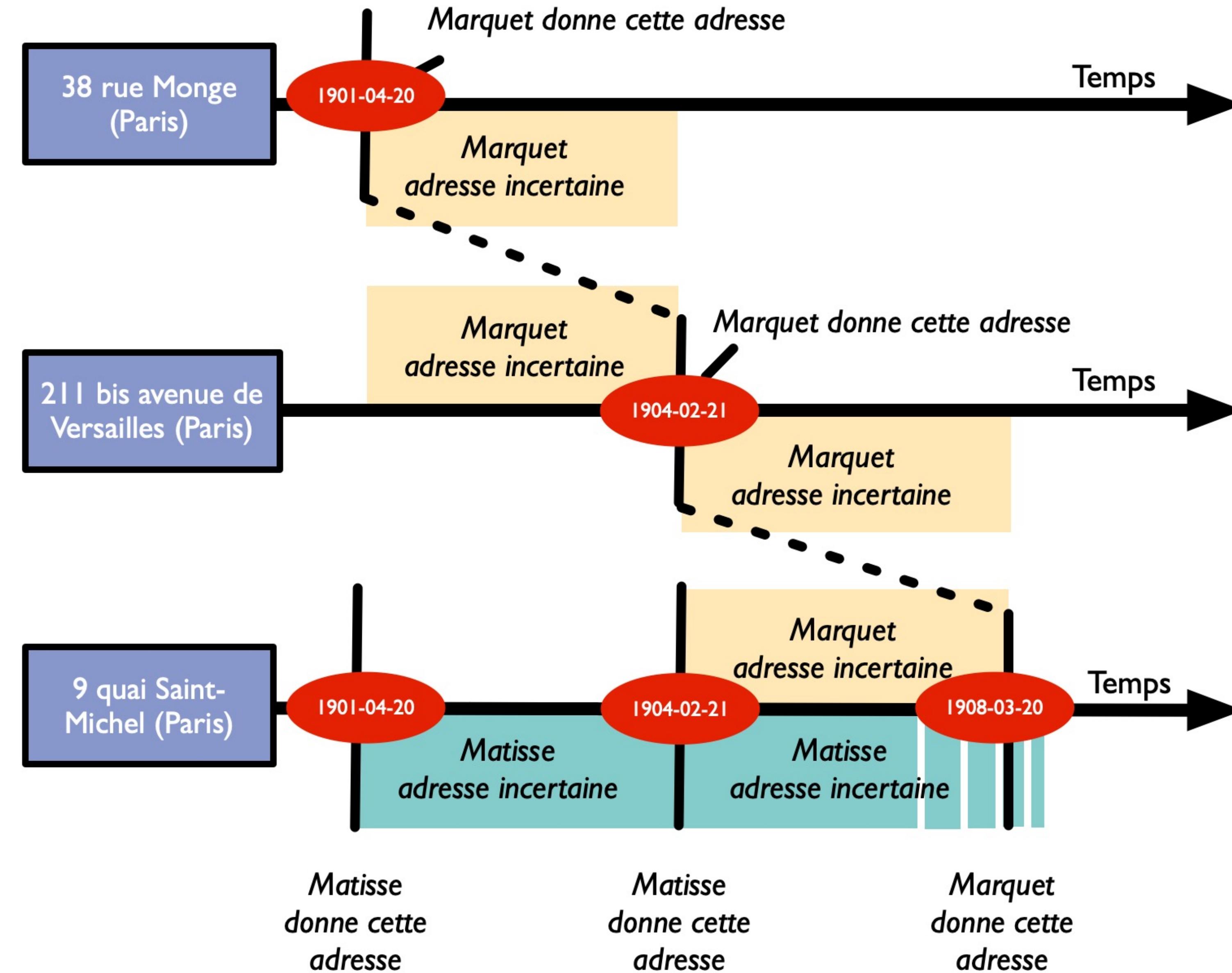


Andar superior: 9, Estados Unidos; 10, França; 11, Itália; 12, Holanda; 13, Grã-Bretanha (Sutherland); 14, sala especial Taeuberarp e sala geral Suíça; 15, Noruega; de 16 a 21: Antilhas Holandêsas, Bolívia, Canadá, Chile, Cuba, Grão-Ducado de Luxemburgo, Grécia, Israel, Iugoslávia, Japão, México, Nicarágua, Paquistão, Paraguai, Portugal, República Dominicana, União Panamericana, Uruguai, Venezuela, Viet-Nam.



1, sala especial Portinari; 2 e 3, sala geral Brasil; 4, sala especial Segall; 5, sala especial Beckmann; 6, sala geral Alemanha; 7, sala geral Áustria e salas especiais Thôny e Kubin; 8, Bélgica.





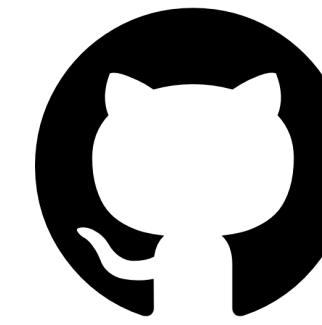
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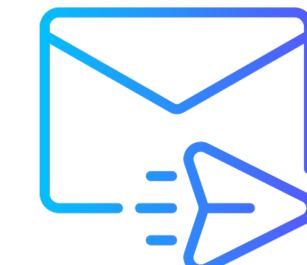
THANK YOU



bit.ly/exhibitionsModel



@ncarboni.bsky.social



nicola.carboni@unige.ch