



# The Panorama of the Battle of Murten: A Digital Scholarly Edition Project

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EPFL

**EPFL**

**Experimental  
Museology**  
+

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60th CIDOC CRM & 53rd FRBR/LRMoo SIG meeting

Building Mit43, Digital Humanities, Walter Benjamin Kolleg, Universität Bern



**Who**  
Louis Braun  
(1836-1916),  
renowned German  
Panoramist.

**When**  
Created 1894  
Last Exhibition 1924  
Reappearance 1996

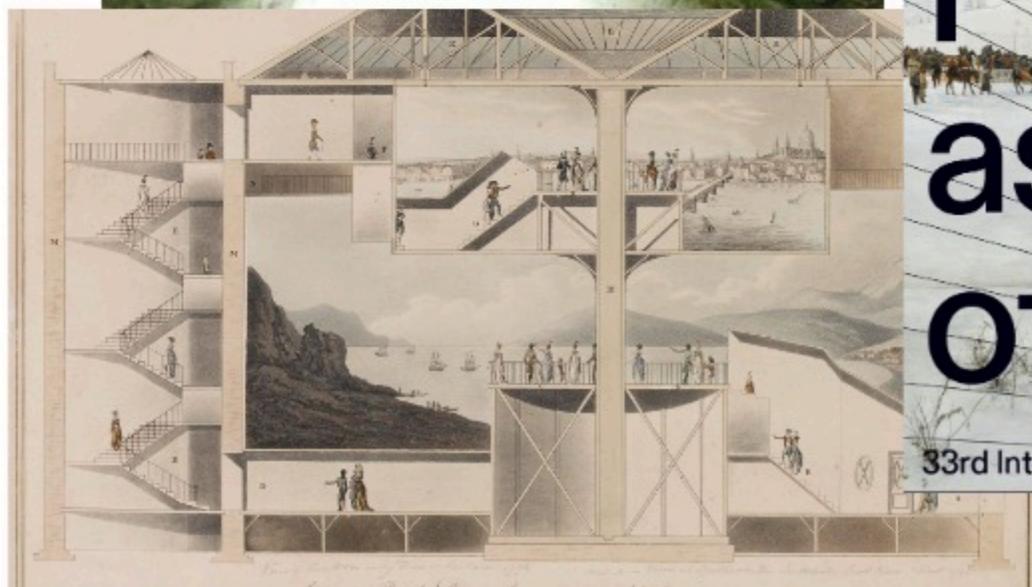
**What**  
Moment of decisive  
Swiss victory at the  
Battle of Murten  
(1476) during the  
Burgundian Wars.





# Digitization of the Murten Panorama

- Nomination to UNESCO to list panorama as a **mass medium** in Memory of the World
- Challenges in **preservation, research,** and **access**
- In 2023, eM+ created the world's first digit twin of panorama (3,805,340 x 425,000 @ 1,000dpi)



Conference hosted by the Laboratory for Experimental Museology

# Panoramas as Memory of the World

33rd International Panorama Conference

# The TERAPIXEL Panorama Project

- Public Engagement:
  - Creation of a new digital experience of the panorama with **augmentation** of museum object, reenactment video, soundscape and scent.
- Scientific Communication (Agora):
  - Setting up a **deep semantic annotation platform** for scholarly interpretation and research.



# The Panorama of the Battle of Murten Digital Scholarly Edition

- Edition/Knowledge Base: to link the panorama with rich **historical sources** and **contextual knowledge** as queryable **knowledge base** for public and scholarly audiences. ("Digital glossing")
- Platform Development: gap in Standard/Workflow/Tool for scholarly editing of visual content, comparing to text editing: TEI/XML, CTS/DTS.

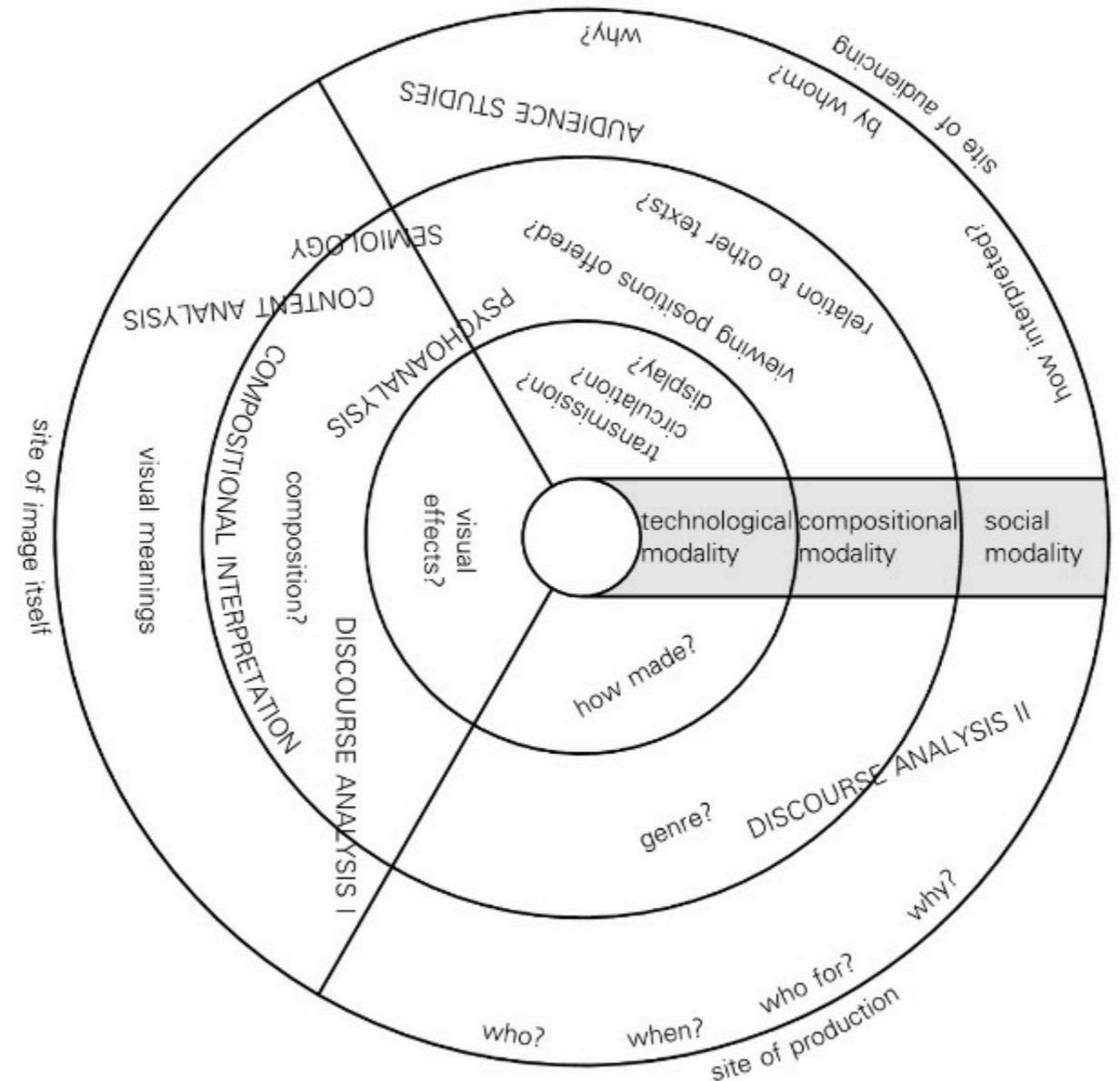


# Criteria for Digital Scholarly Edition

- align with humanities standard: **source** and **evidence**-based inquiry.
  - make observation about the sources
  - make observation with the support of evidences
  - the provenance of sources affect the plausibility of an observation
  - →system to **describe sources** and **localize information**. e.g.  
Geovistory
- align with art-historical **tasks** and **methodologies**
  - visual recognition
  - colligation and collation: tracking visual transmission
  - hierarchal analysis. e.g. iconography, picture criticism
- as a KB of "**opinion**": E13, I1

# Critical Scholarly Edition

- Digital humanities has been criticized for being **depoliticized** and **uncritical**\*
- Critical humanities and cultural studies view art as a discursive system in which **connotation** is fixed by **context**.
- Knowledge Base of **cultural fact** to **cultural reading** with CRM compatible extensions (AAAo).

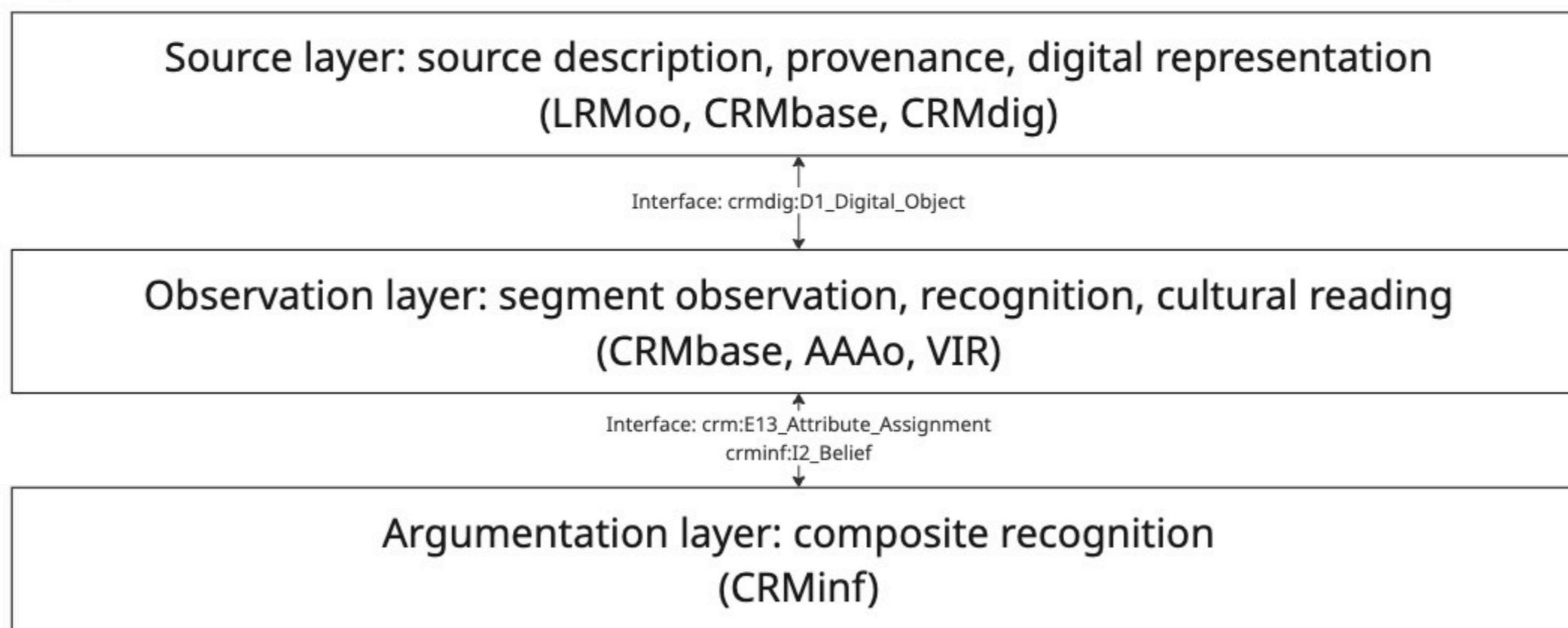


\*Drucker, J., & Bishop, C. (2019). A Conversation on Digital Art History.  
<https://doi.org/10.5749/j.ctvg251hk.30>

Rose, G. (2006). *Visual methodologies: An introduction to the interpretation of visual materials* (Reprinted). Sage.

# A Multi-layered approach

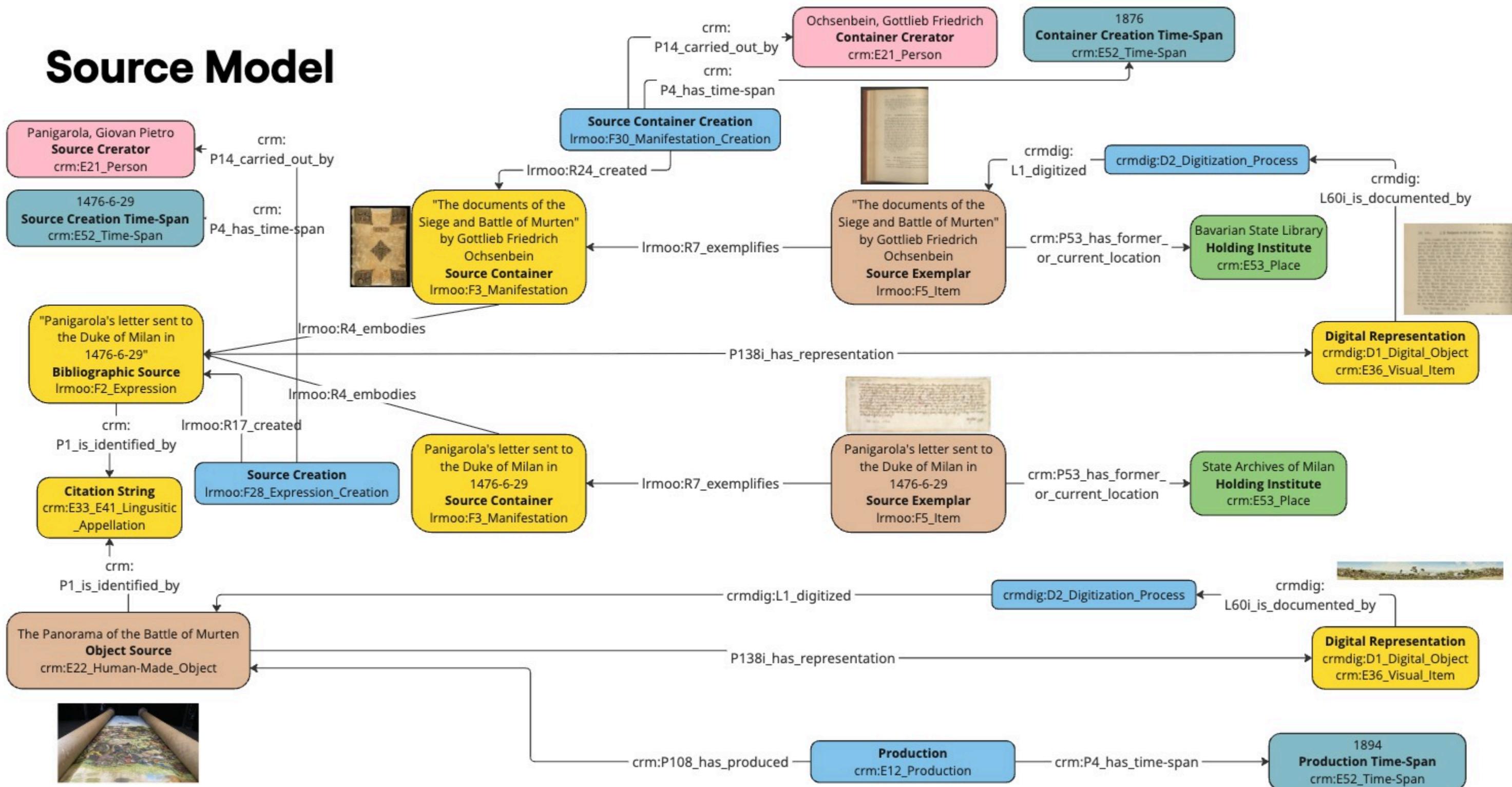
- The platform is conceptualized into layer to divide development into stages:



## Source Model: Main Classes

- Bibliographical Source (Irmoo:F2\_Expression)
  - Source Container (Irmoo:F3\_Manifestation)
  - Source Exemplar (Irmoo:F5\_Item)
- Object Source (crm:E22\_Human-Made\_Object)
- Digital Representation (crmdig:D1\_Digital\_Object)

# Source Model



# Platform Source Module

Homepage Search Bibliographic source Panigarola's letter sent to the Duke of Milan in 1476-6-29 +

panigarola's letter sent to the duke of milan in 1476-6-29 | BIBLIOGRAPHIC SOURCE

Source Content Expression Information Object Visual Observation Components (structural parts) Components (incorporated parts) Type/Dimensions Right Events Things More

### Appellation

Expression name \*

Panigarola's letter sent to the Duke of Milan in 1476-6-29

Title

Title

### Identification

Citation

Citation

Identifier

http://cts.informatik.uni-leipzig.de/pbc/cts/?request=GetPassage&urn=urn:cts:pb: bible.parallel.eng.kingjame: x [edit] [share] [x]

urn:cts:pb: bible.parallel.eng.kingjames:1.3 (crm:E42\_Identifier→urn) [x] [edit] [share] [x]

Identifier

### Related media/resources

Media type

### Images

Main image

Drag main image from  
Image Library or Image Annotation Library  
or [click to upload](#)

### More images

Image  
330 (0360)

Reset Delete Debug Save expression

# Platform Source Module: Interface to IIF manifest

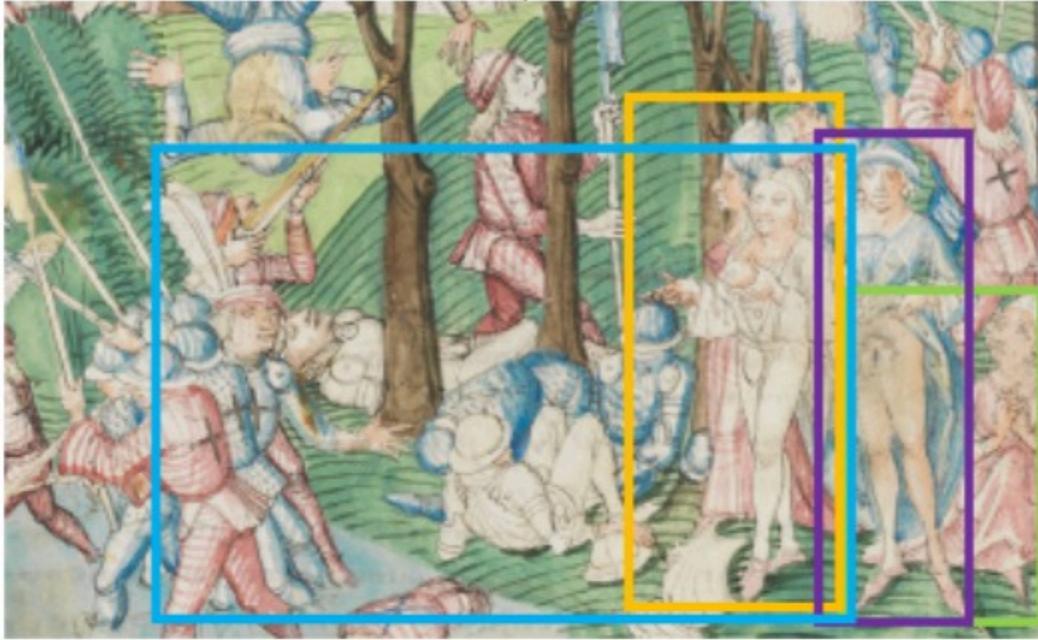
### Import image from iiif manifest

Input IIIF Manifest

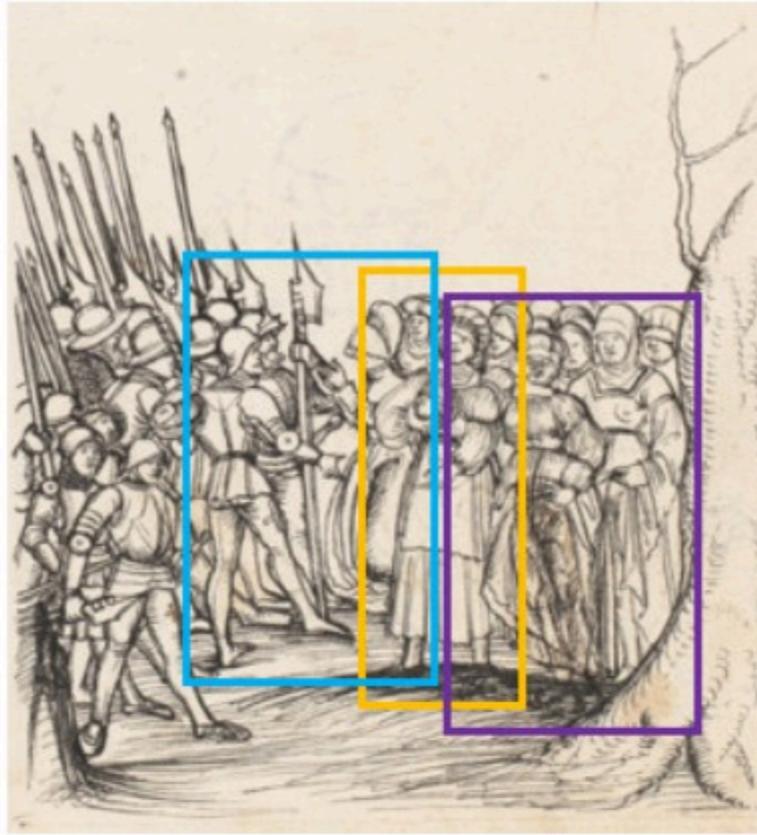
| IIIF CANVAS ID  | IIIF CANVAS LABEL | IMAGE   | ACTIONS                      |
|---|-------------------|---|------------------------------|
| <a href="https://www.e-codices.unifr.ch/metadata/iiif/bbb-Mss-hh-10003/canvas/bbb-Mss-hh-10003_e001.json">https://www.e-codices.unifr.ch/metadata/iiif/bbb-Mss-hh-10003/canvas/bbb-Mss-hh-10003_e001.json</a> | Front cover       |   | <a href="#">Import image</a> |
| <a href="https://www.e-codices.unifr.ch/metadata/iiif/bbb-Mss-hh-10003/canvas/bbb-Mss-hh-10003_e005.json">https://www.e-codices.unifr.ch/metadata/iiif/bbb-Mss-hh-10003/canvas/bbb-Mss-hh-10003_e005.json</a> | Front paste-down  |  | <a href="#">Import image</a> |
| <a href="https://www.e-codices.unifr.ch/metadata/iiif/bbb-Mss-hh-10003/canvas/bbb-Mss-hh-10003_000a.json">https://www.e-codices.unifr.ch/metadata/iiif/bbb-Mss-hh-10003/canvas/bbb-Mss-hh-10003_000a.json</a> | V1                |  | <a href="#">Import image</a> |

## Observation Model: Main Classes

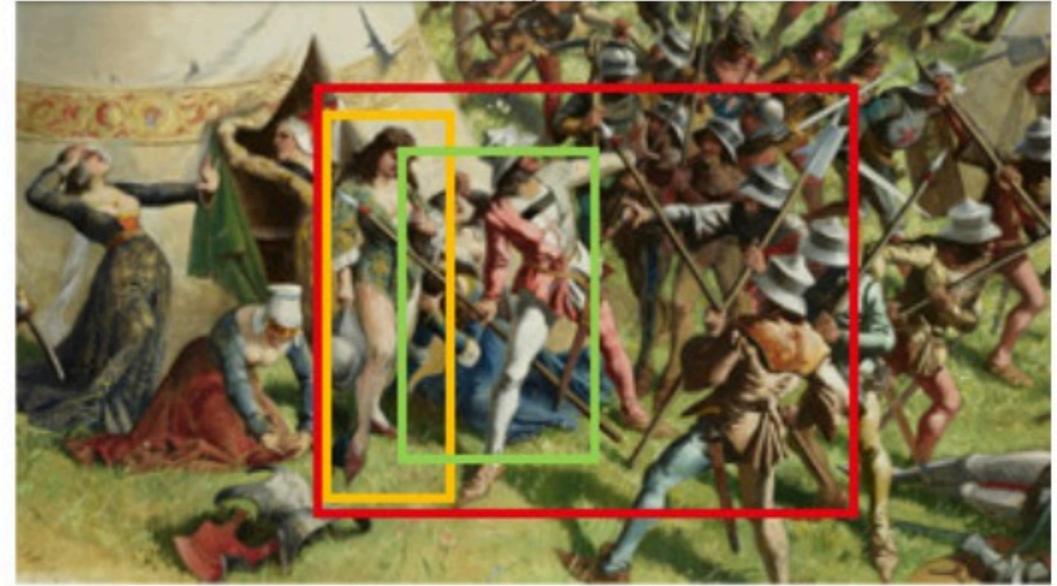
- Digital Representation (crmdig:D1\_Digital\_Object)
- Scholarly Observation (crm:E13\_Attribute\_Assignment)
- Segment (crmdig:D35\_Area)
- Representation (vir:IC9\_Representation subclass of E36)
- Connotation (aaao:ZE12\_Referential\_Status)



Diebold Schilling, *Amtliche Berner Chronik*, vol. 3, 1478-83, p. 763



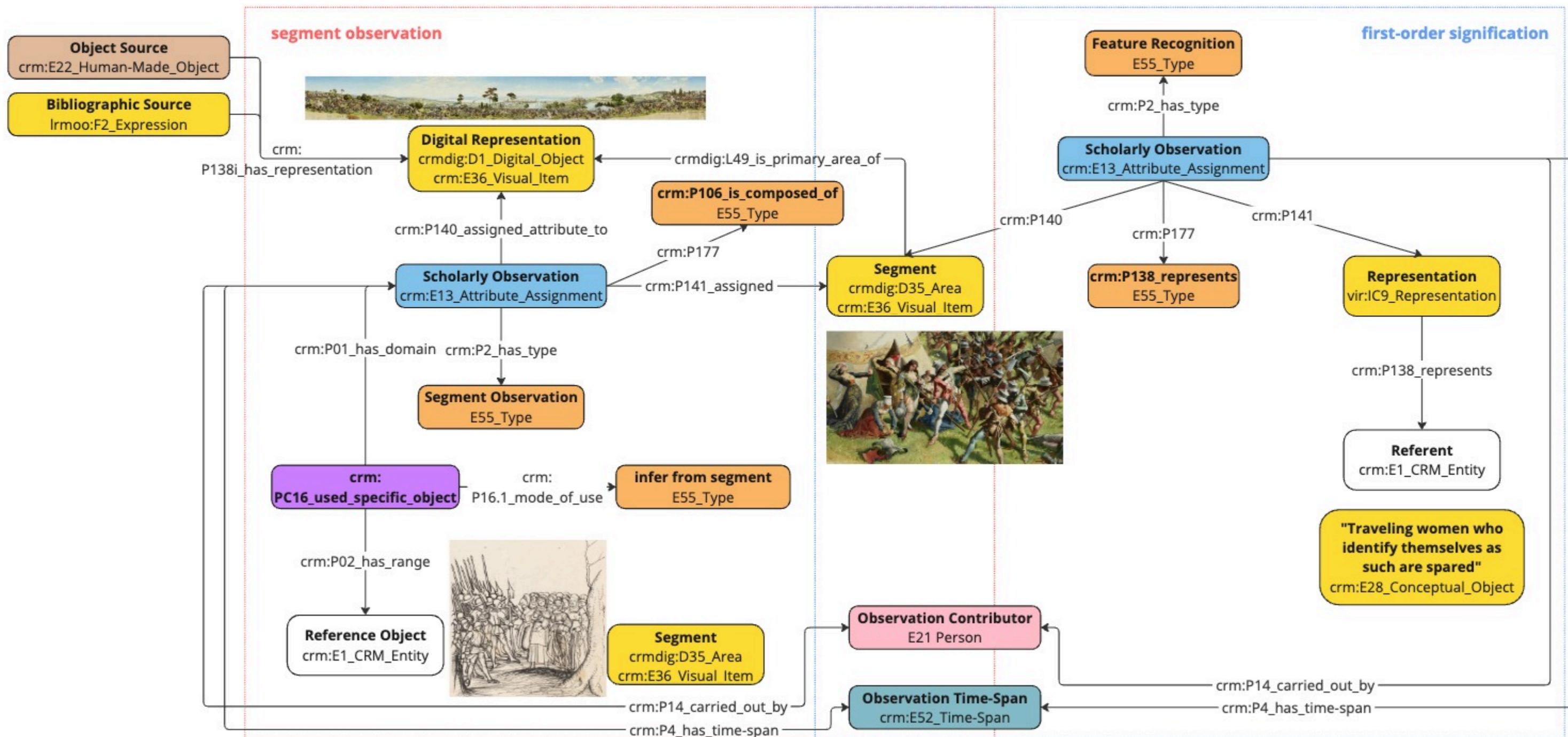
Werner Schodoler, *Eidgenössische Chronik*, Vol. 3, [1514-1532], f. 225



Louis Braun, *The Panorama of the Battle of Murten*, 1893

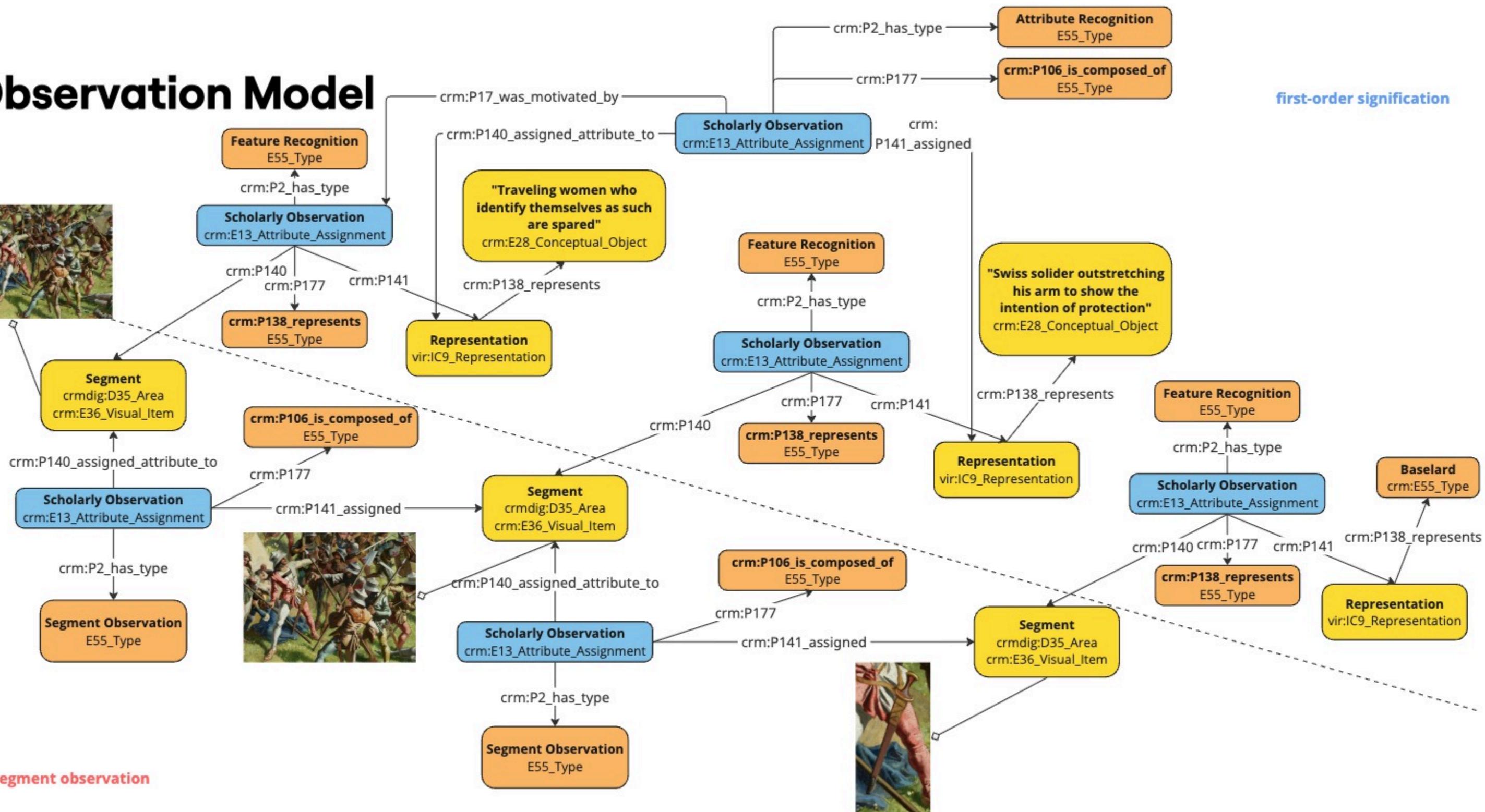
- **Segment Observation:** Observe that the respective *digital representation* (D1) of a source (F2/E22) *P106 is composed of segment (semantic frame)* (D35)
- **Feature recognition:** Recognize that the *segment* (D35) *P138 represents a representation* (VIR IC9) that *P138 represents* a real-world *referent* (E1)
- **Hierarchical observation** of the *subsegments* (D35) and recognize the *attributes* of the representation (IC9)
- **Colligating** visual connection *P130 shows features of* among *segments* (D35)
- **Reading** that a *representation* (IC9) *P67 refers to connotation* (AAAO ZE12)

# Observation Model



# Observation Model

first-order signification



segment observation

# Platform Observation Module

Homepage | Murten Panorama | **Traveling women who identify themselves as such are spared** | +

Refresh | Share | Change Layout | Full Screen

Traveling women who identify themselves as such are spared



Segment Observation

**Traveling women who identify themselves as such are spared**

- Traveling Women Who Identify Them...**  
Image annotation
- Woman Showing Her Upper Body**  
Image annotation
- Swiss Solider Outstretching His Ar...**  
Image annotation
- Swiss Soldier**  
Image annotation
- Baselard**  
Image annotation
- Woman Pleading For Life**  
Image annotation



# Platform Observation Module

traveling women who identify themselves as such are spared | REPRESENTATION

Representation Details Components Components (structural parts) Components (incorporated parts) Type/Dimensions Right Events Things More Metadata

Representation name \*  
Traveling women who identify themselves as such are spared

Visually represents

Select mode of representation + New

Scene  
Traveling women w...

Second-order signification

Referential status  
Referential status

Second-order signification

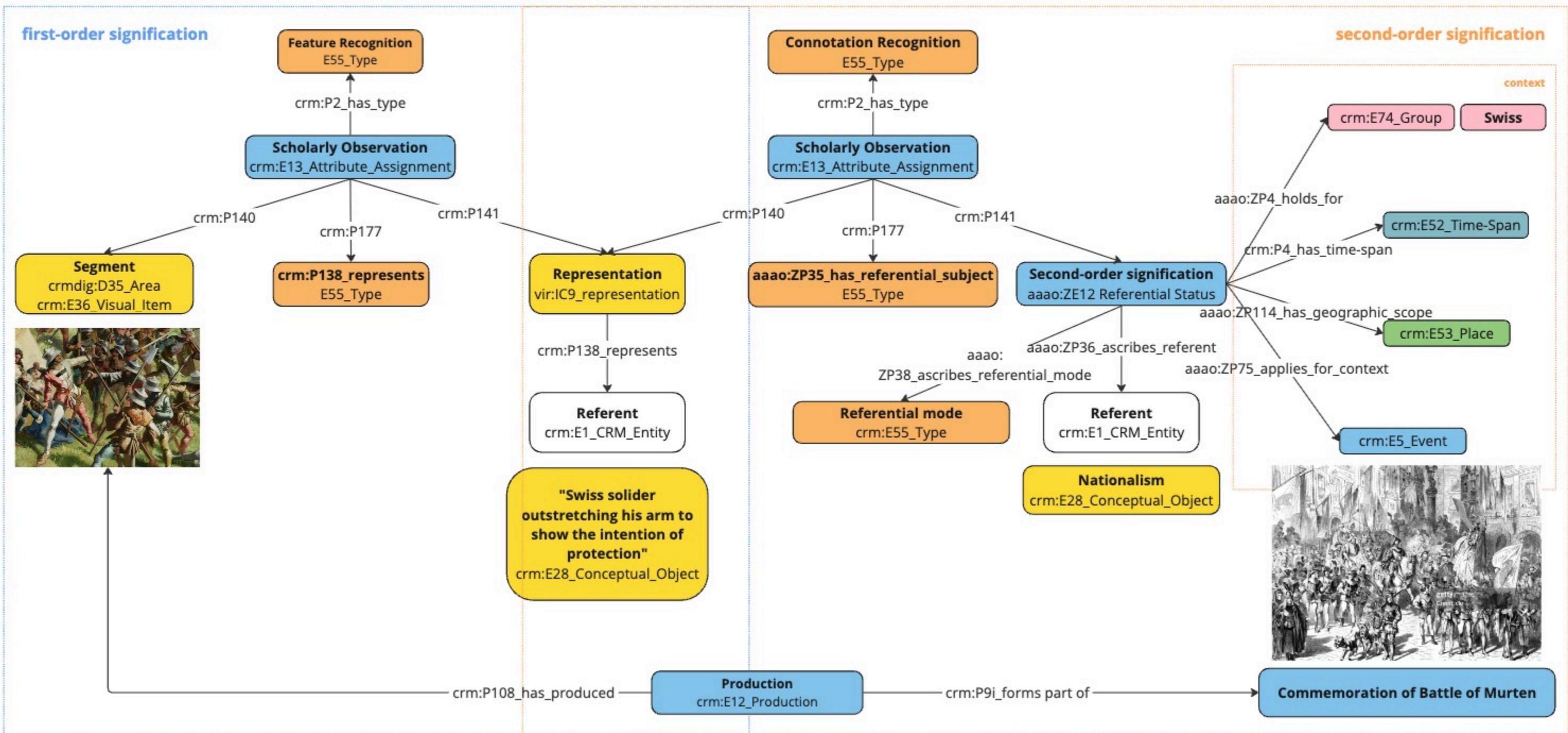
Representation exemplars

Image annotation  
Traveling women w...

Image annotation  
Traveling women w...

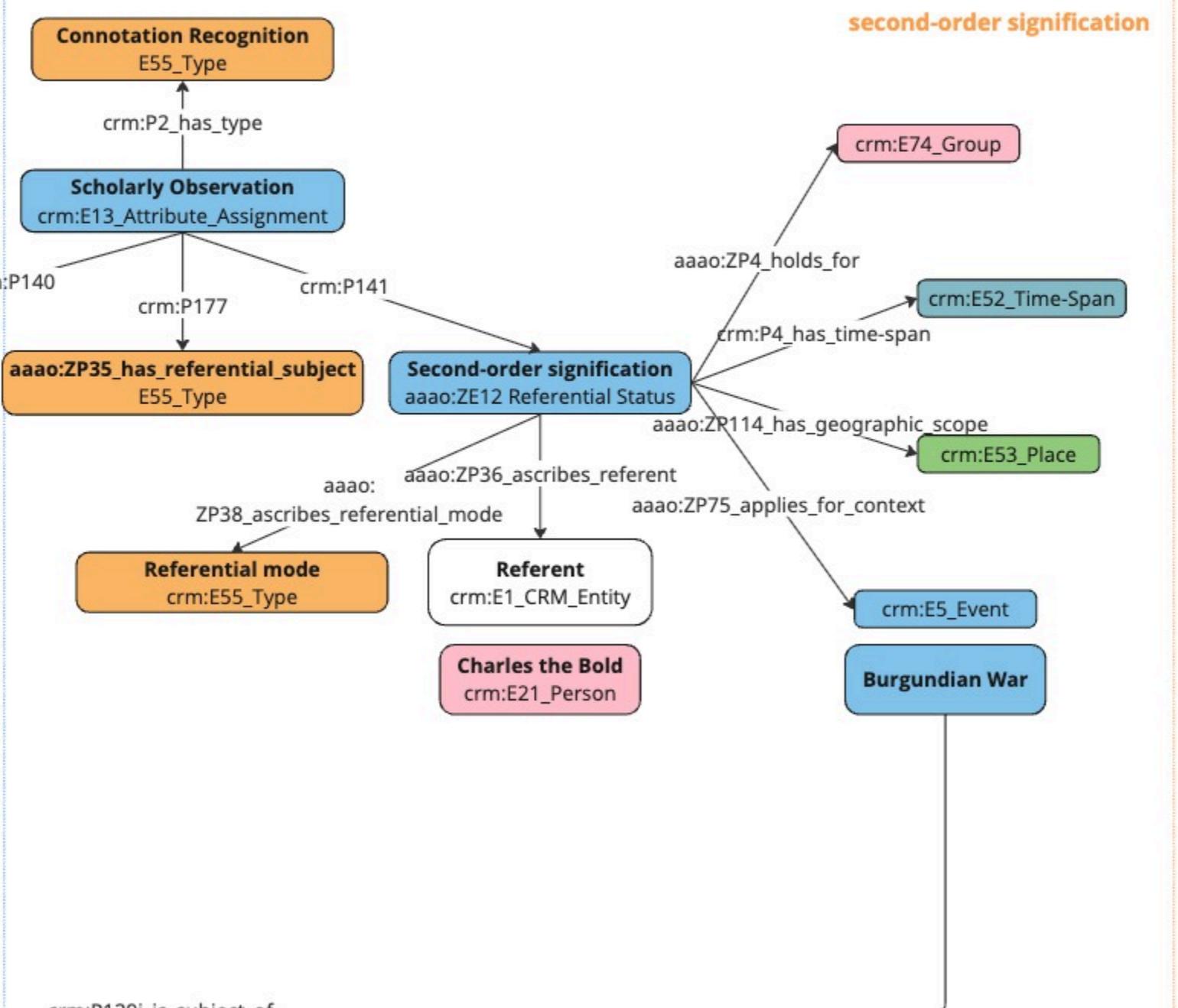
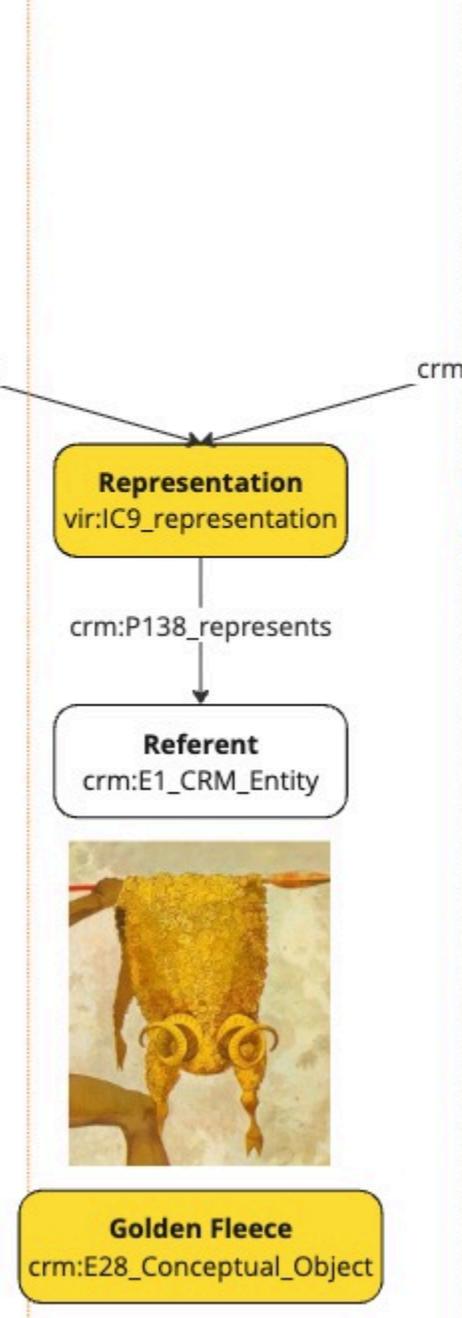
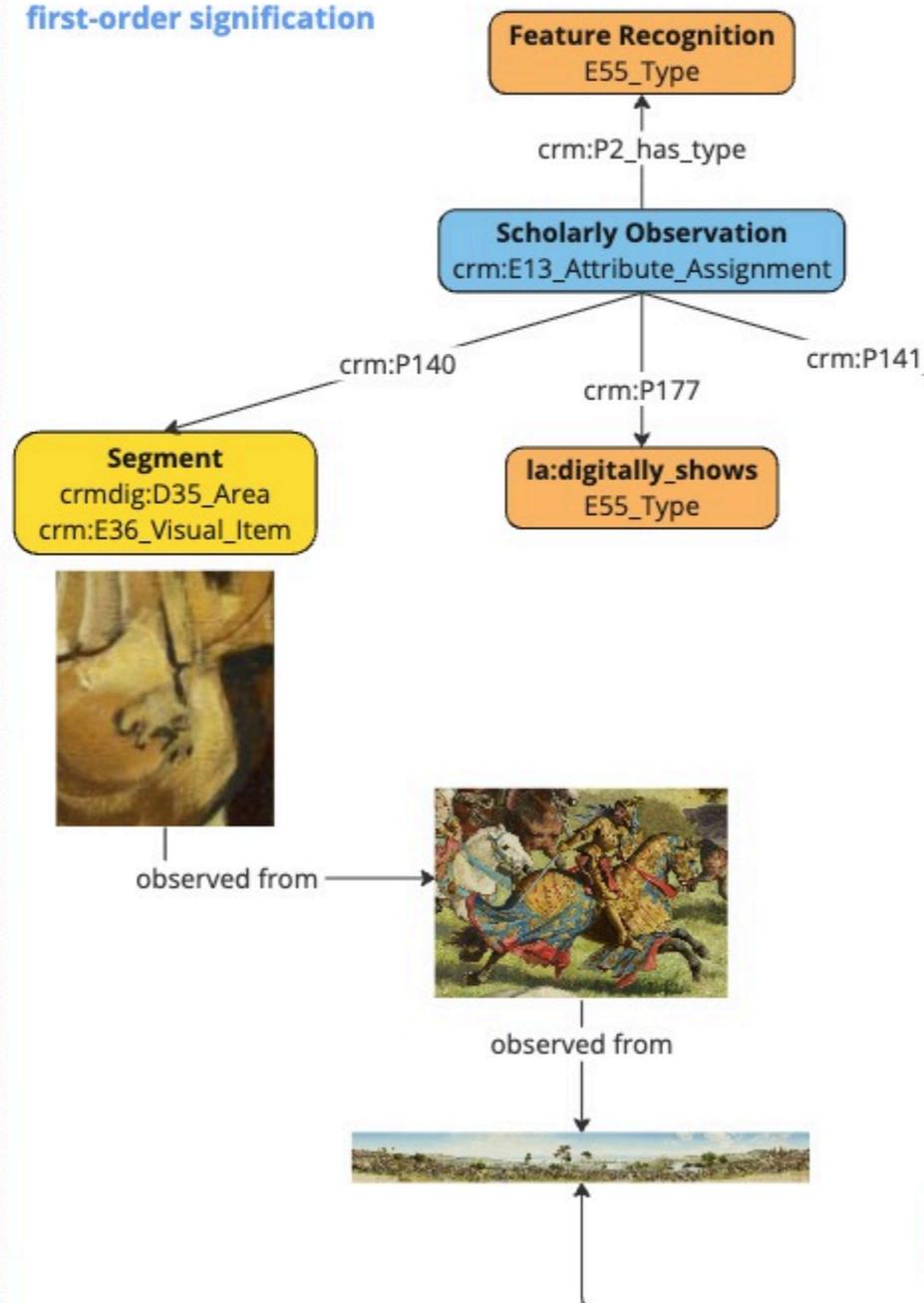
Image annotation  
Traveling women w...

# Observation Model



# Observation Model

## first-order signification



## What's next

- Workshop with expert collaborators and begin editing with current model. First iteration of annotation will be deliver soon
- Development of the argumentation-based composite recognition model that can reuse the statements from E13 Attribute Assignment
- Interface from E13 to CRMinf?
- Computational method for visual segment extraction

# Thank you for you attention!

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