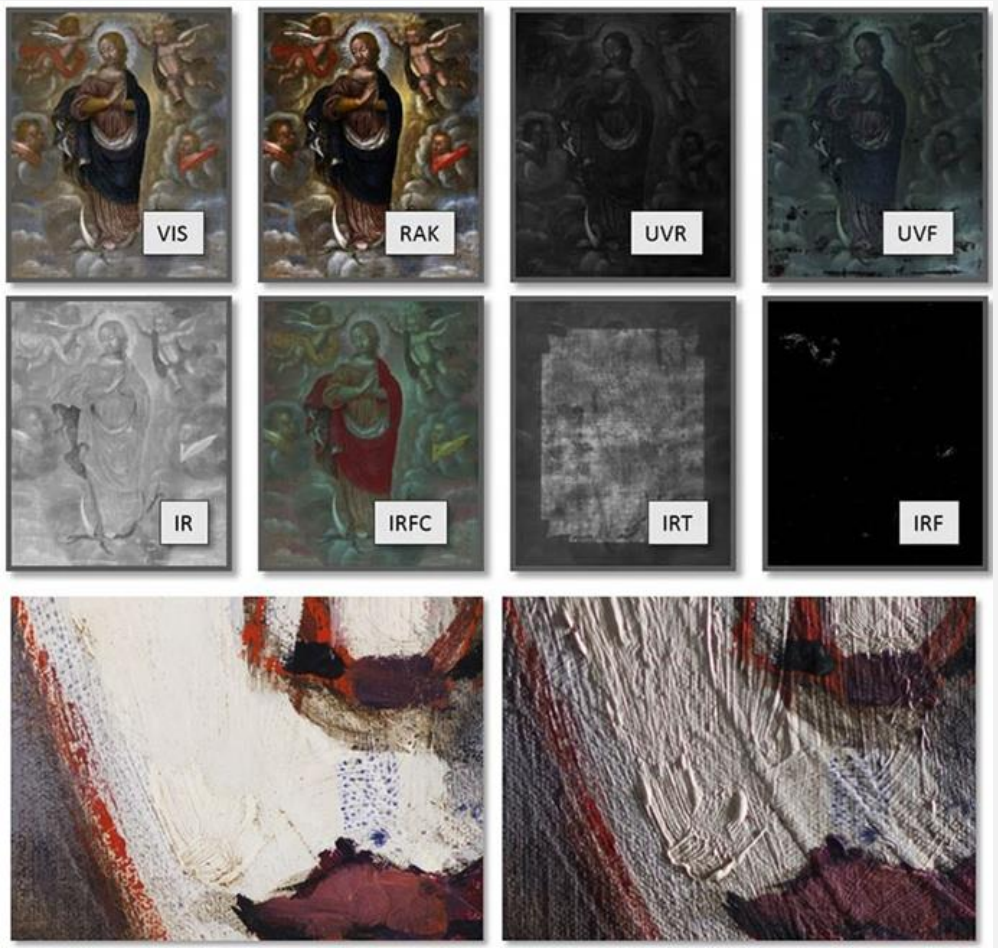
Digitization and preservation of traditional crafts

Xenophon Zabulis
Institute of Computer Science
15 - 16 July 2022, FORTH, Heraklion, Crete

3D reconstruction of Knossos

Visual Arts

Photographic documentation



3D documentation

Performing Arts

Voice, Music

Dance, Theatre

Is there a difference between art and craft?

Laura Morelli https://youtu.be/tVdw60eCnJI

Mingei

“Τέχνη” (techne)

- Arts: **visual** arts, **literary** arts, **performing** arts and **culinary** arts.
- *Fine Arts: painting, sculpture, architecture, music, and poetry, theatre, dance.*

«Τέχνη» ανθρώπινη **δραστηριότητα (activity)** που στηρίζεται σε ορισμένες γνώσεις και εμπειρίες και που έχει ως σκοπό τη **δημιουργία (creation)** ενός **πνευματικού (spiritual)** ή **τεχνικού (technical)** έργου.

UNESCO – 2003 ICH Convention

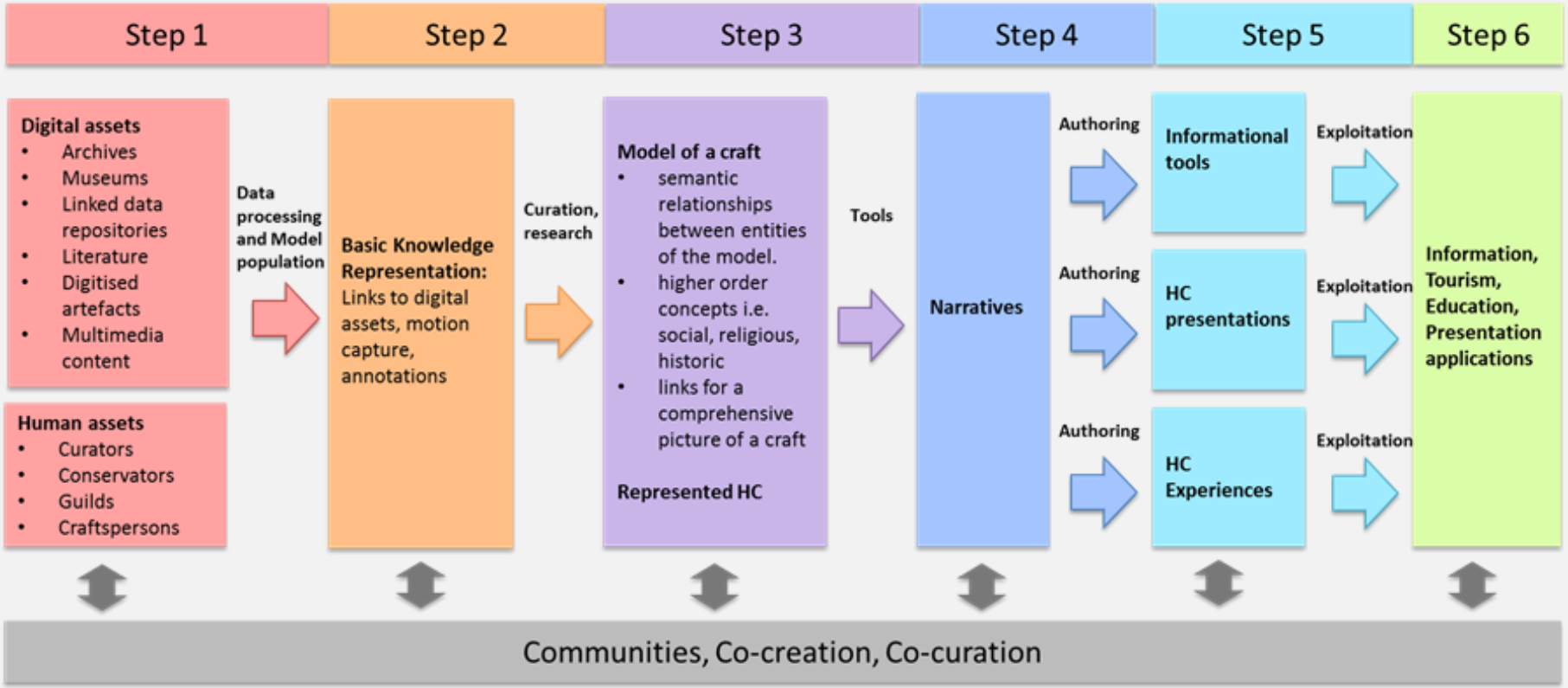
Oral traditions and expressions, Performing arts, Social practices, rituals and festive events, Knowledge and practices concerning nature and the universe, **Traditional craftsmanship**

Mingei. Representation and preservation

	Matter - Tangible	Make - Perform	Mind(s) - Intangible
Scope	Objects & spaces Documents Recordings	Physical events, Embodiment, Senses, Qualia, Perception & Action, Gestures, Dexterity, Skill	Process, Method, Know-how History, Tradition, Identity, Values, Significance, Aesthetics
Physical Content	Craft articles, Tools, Materials Workshop & Environment Content carriers	Craft practice, tool usage, techniques, machine operation	Literature, Testimony, Description, Instructions Verbal & Visual & Semiotic content
Recordings	Objects & Environments Material scan Photographs, 3D digitisation, material scans	Actions & Events Dynamic scan Audiovisual & 3D recording of performances	Semantics and Semiotics Thick Representation Cause and Context, Words & Icons, Narratives & Symbols, Traditional Motifs
Transmission	Preservation Conservation Restoration	Ethnography, Choreography Apprenticeship, Training Technical education Re-enactment	Safeguarding & preservation Documentation, conservation, and investigative knowledge discovery

Mingei

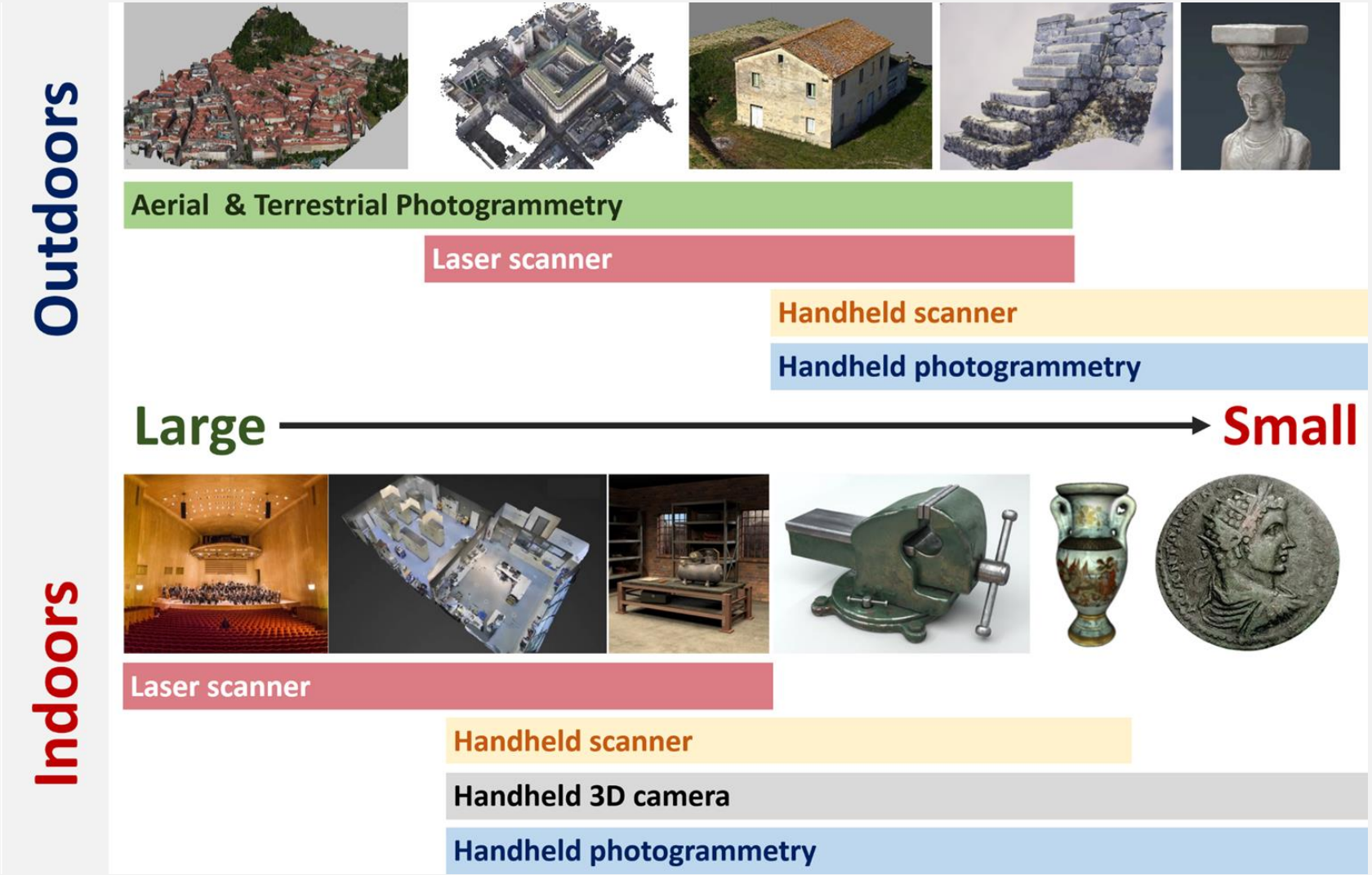
A protocol for craft representation



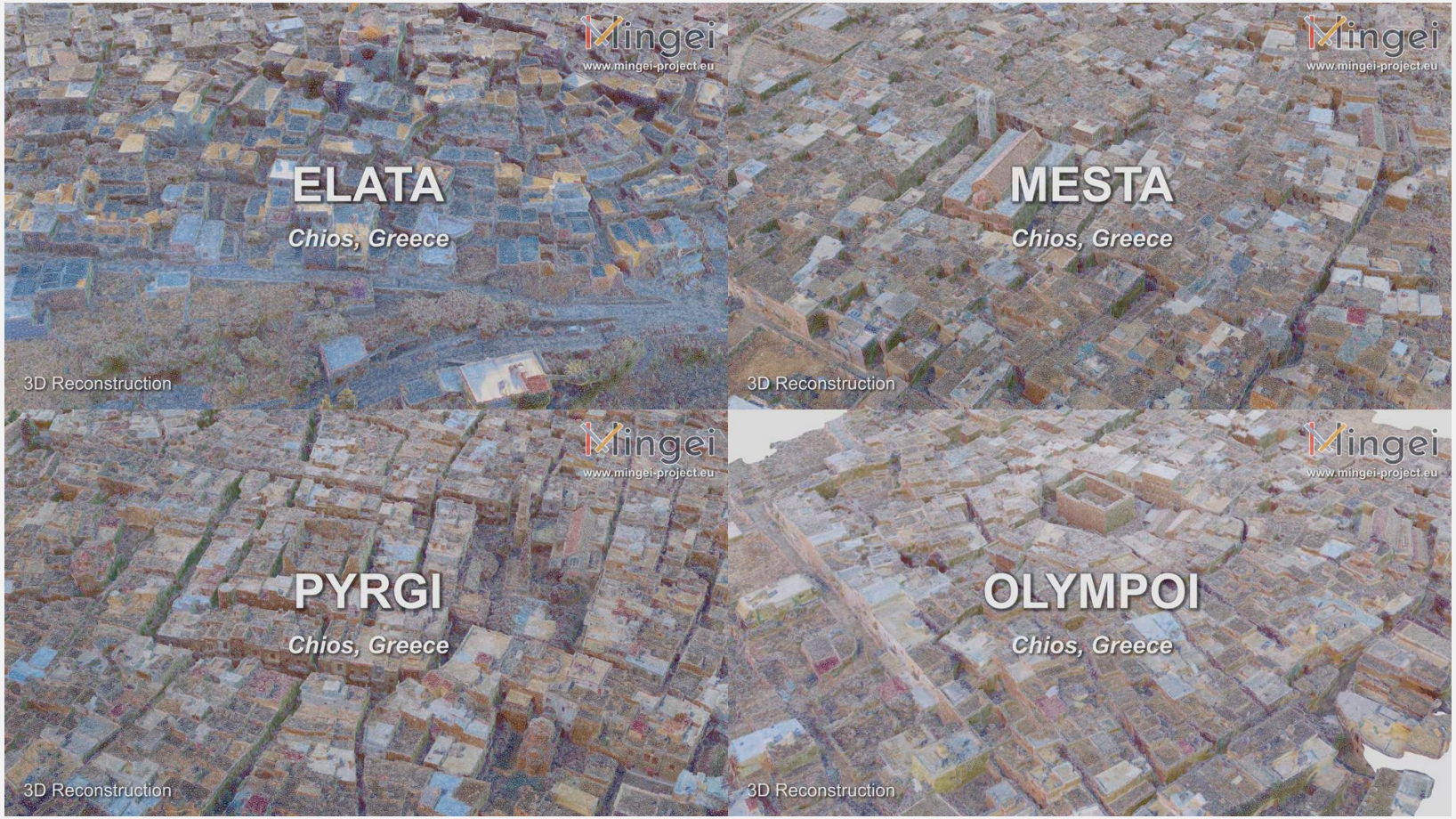
- A Representation Protocol for Traditional Crafts. (2022), ***Heritage***.
- Transferring Traditional Crafts from the Physical to the Virtual World: An Authoring and Visualization Method and Platform, (2021) ***ACM Journal on Computing and Cultural Heritage***.
- A Web-Based Platform for Traditional Craft Documentation. ***Multimodal Technologies and Interaction***. (2022).
- Digitisation of traditional craft processes ***ACM Journal on Computing and Cultural Heritage***.
- Representation of socio-historical context to support the authoring and presentation of multimodal narratives: The Mingei Online Platform, (2021), ***ACM Journal on Computing and Cultural Heritage***.

Mingei

Tangible Heritage (objects)

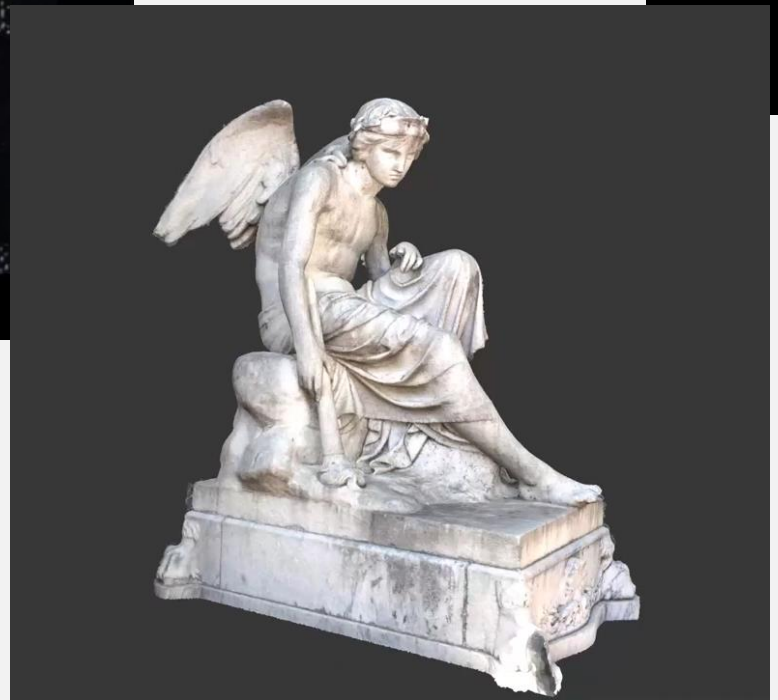


Tangible Heritage (objects)



Mingei

Tangible Heritage



Mingei

New modalities

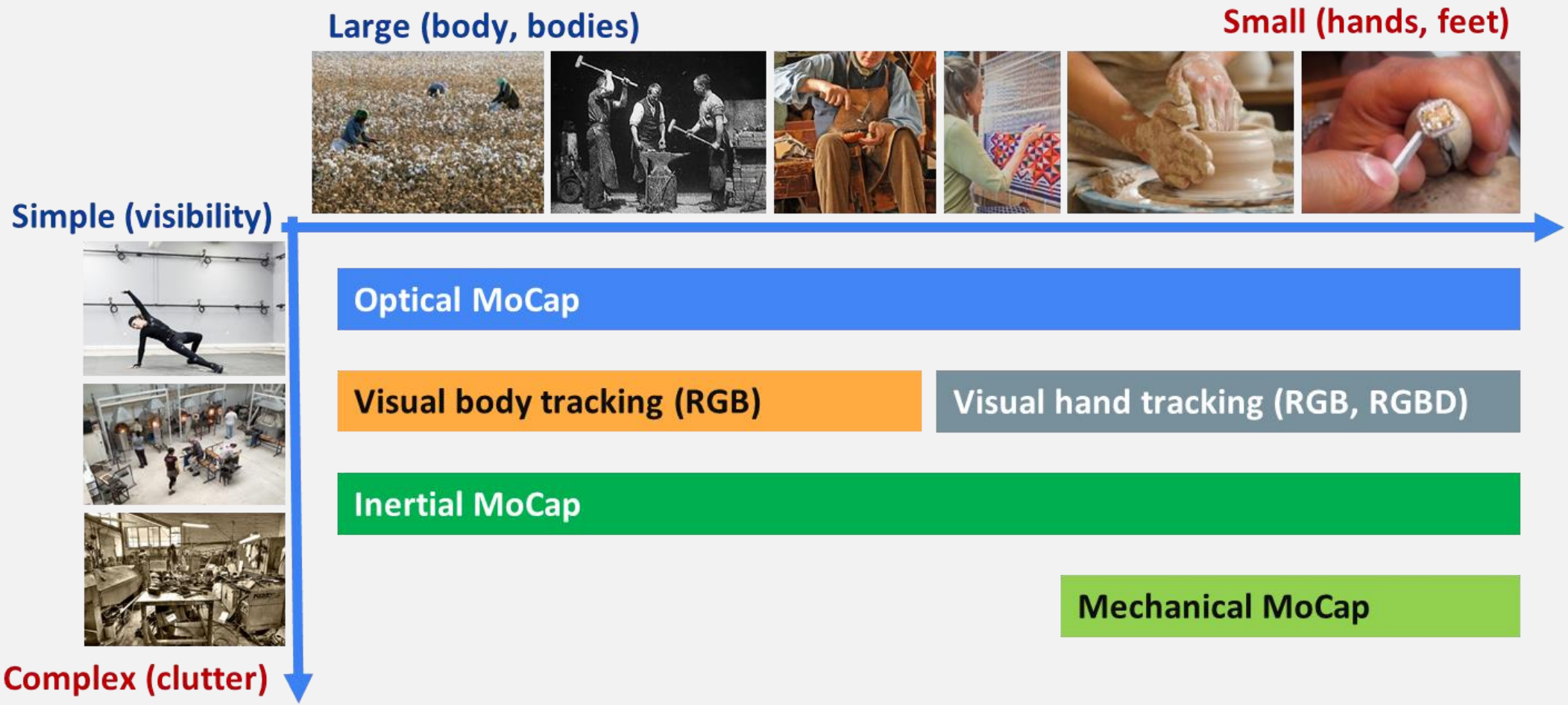
Synergy with Transparent3D Marie Curie

[A Low-Cost Contactless Overhead Micrometer Surface Scanner](), (2021), **Applied Sciences,** doi:10.3390/app11146274.

[1] Optical tomography: A rapid, cost-effective 3D reconstruction technique for glass cultural heritage objects, **EuroMed 2022. [2]** Comparison of non-destructive optical 3D reconstruction methods on multiphase and partially painted glass artworks, **EuroMed 2021**

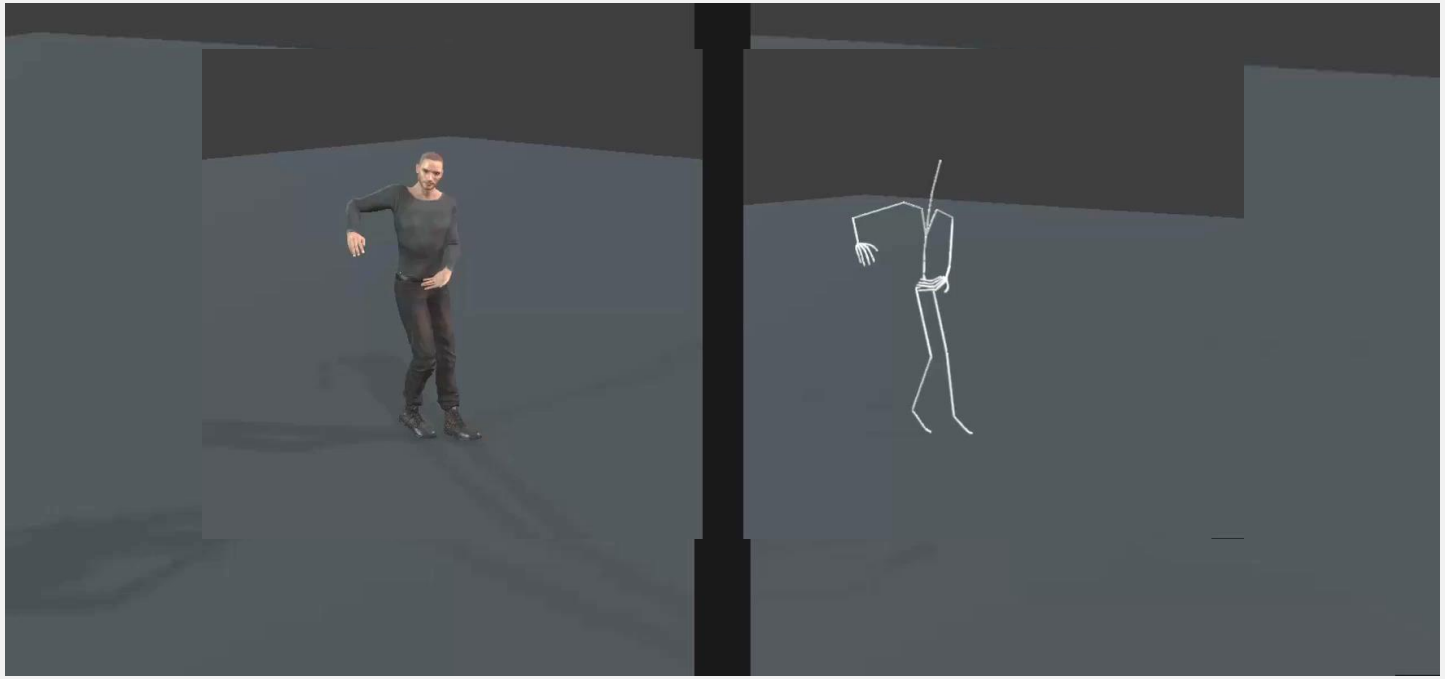
Mingei

Intangible Heritage

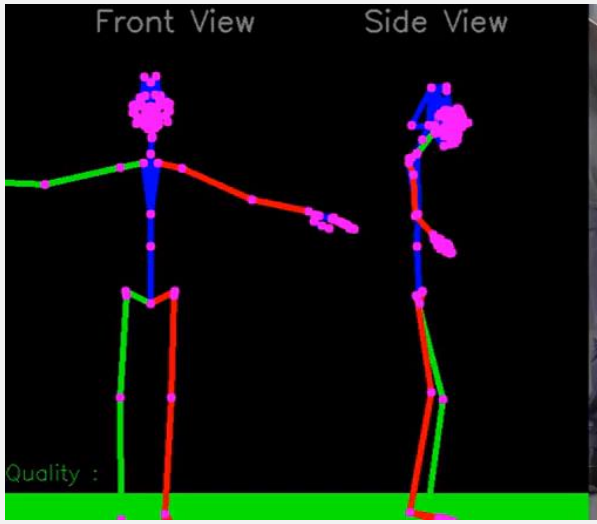


MoCap


DUSTING
MasticDustingPIOP20190911P1G1R01
ORIGINAL BVH FILE



Video analysis



Mingei

Digital Assets

ID #715

File information:
Item: seq_4123.bvh

Sensor information:
Sampling rate, rig geometry

#8792

Media object

Content information
Items: *ang.{obj,mtl}*
Faces: *1M,* ***Vertices:*** *2.8M*

World information
Dimensions: *1.5 x .8 x 8 m^3*
Location: *44°40'N 26°09'E*
Time of acquisition *22/07/19*

#2133

Media object

Content information
Item: *img393xds.png*
1200 x 960, RGB, 48 bit

World information
Dimensions: *1.5 x .8 x 8 m^3*
Location: *44°40'N 26°09'E*
Time of acquisition *22/07/19*

Knowledge elements

id #2729 (object)

Attributes
Name: Textile
Type: Silk

Related media assets
Images:
Sketch: #729
Hi resolution scan:

id #26 (image)

File information:
image_4123.png,
1200 x 960 RGB, 48 bits
Sensor information:
Focal length, Lens distortion,
Aperture, Shutter, Gamma

World information
Photograph,
Haus de Seidenkultur, Paradise pattern design

id #636 (scan)

File information:
image_4123.png
1200 x 960 pixels
RGB, 48 bits per pixel

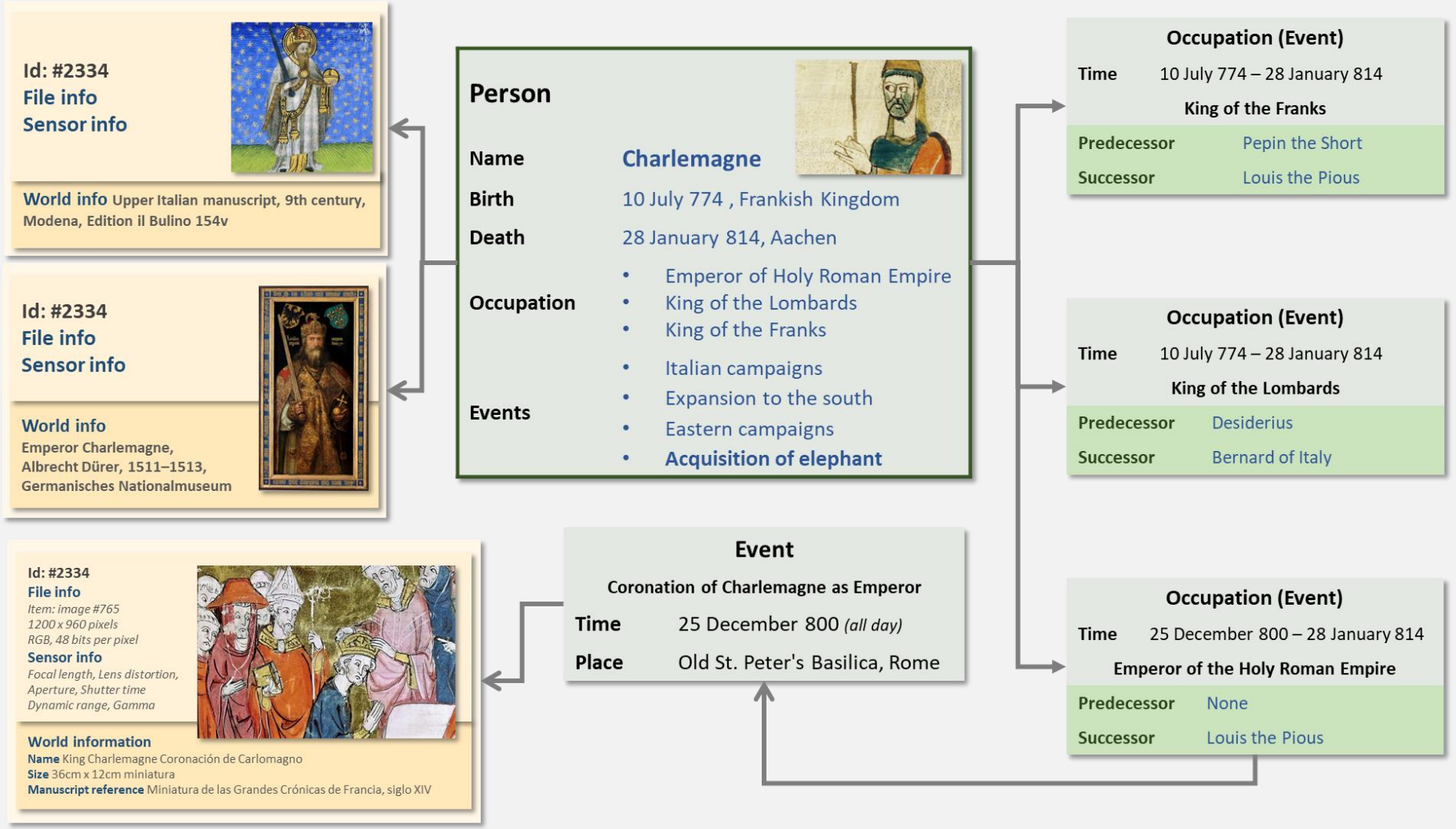
World information
Scanned image,
Haus de Seidenkultur, Paradise pattern textile

id #216 (image)

File information:
image_4123.png, 1200x960
Sensor information:
Focal length, Lens distortion

World information
Scanned image,
Haus de Seidenkultur, Paradise pat

Knowledge elements

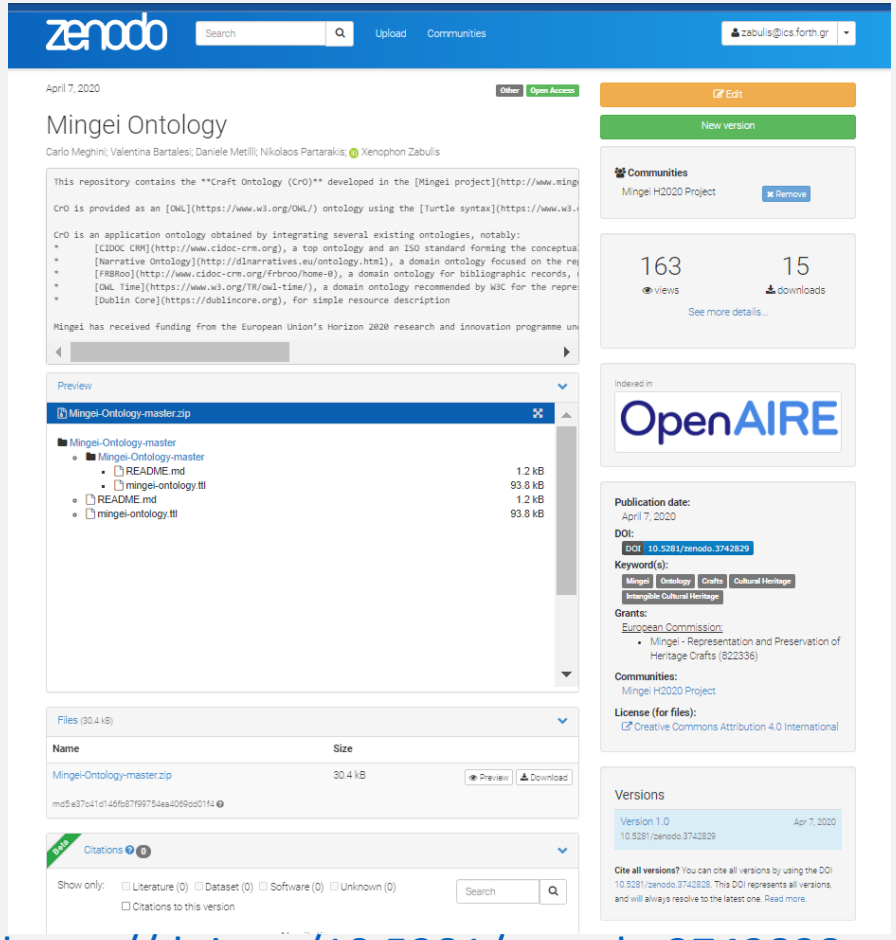


A semantic meta-model for crafts

The Mingei Ontology
Basic knowledge elements

- **Event** oriented representation
- **Place**
- **Person / Social group**
- **Object**
- **Material**

EDM and CRM compliant.



https://doi.org/10.5281/zenodo.3742828

Crafting events

Event

#2411 (Object)
Tool: Blowpipe
Name *Jean's blowpipe*
Image *(3827)*

#3827
Media object: Blowpipe
3D file

#2211 (Person)
Actor: Glass-blower
Name *Jean*

#4356 (Event, *Material transformation*)
Process step: ***Bubbling***
Operator *Jean (2211)*
Tool *Jean's Blowpipe (2411)*
Human motion 3D (est. #1) & (est. #2)
posture angles, for hands & head
Influences *Material transformation (4356)*
Media objects: *(3273), (3827)*

#732 (Object)
Product: Glass bubble
Name *First bubble*

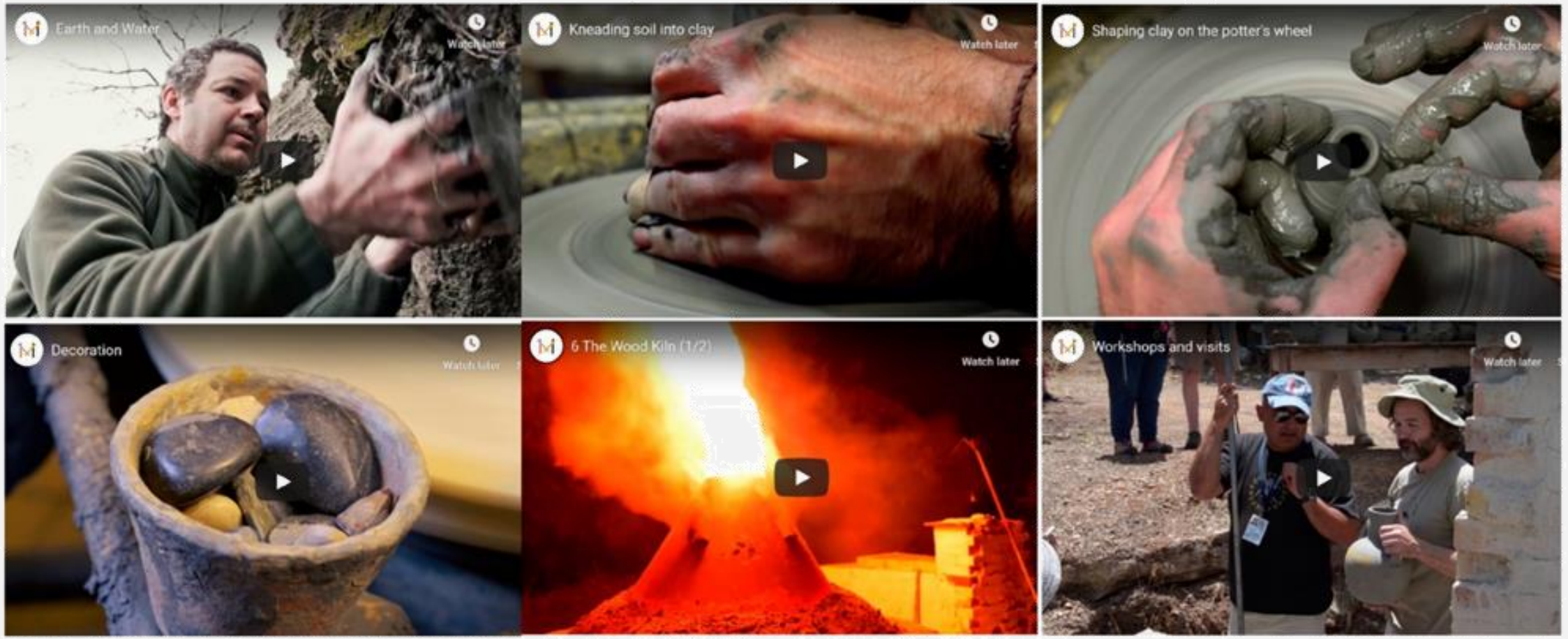
#716
Material: Glass
State *liquid*

#3827
Media object
Motion capture
File info
Sensor info

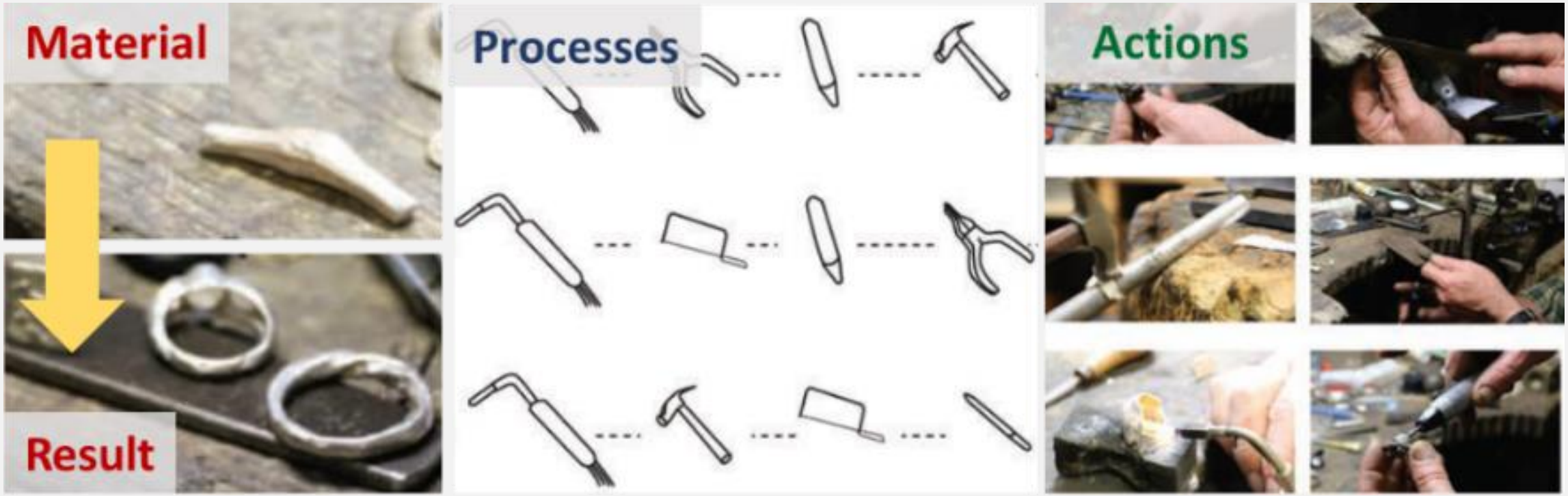
#3273
Media object
Visual tracking
File info
Sensor info

Mingei

Process


Earth and Water
Kneading soil into clay
Shaping clay on the potter's wheel
Decoration
6 The Wood Kiln (1/2)
Workshops and visits

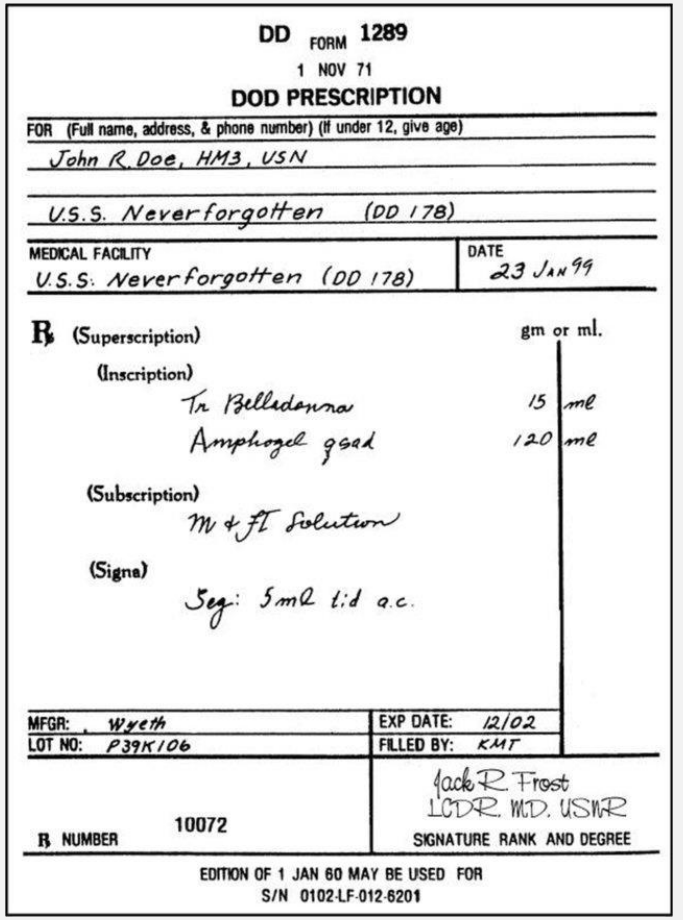
Crafting schemas and processes



Actions are events

Mingei

Schemas *Prescriptions, Recipes, and Instructions*



DD FORM 1289
1 NOV 71

DOD PRESCRIPTION

FOR (Full name, address, & phone number) (If under 12, give age)
John R. Doe, HM3, USN
U.S.S. Neverforgotten (DD 178)

MEDICAL FACILITY: U.S.S. Neverforgotten (DD 178)
DATE: 23 JAN 99

℞ (Superscription) gm or ml.

(Inscription)
Tr Belladonna 15 ml
Amphogel qsad 120 ml

(Subscription)
M & ft Solution

(Signa)
Sig: 5ml t.i.d a.c.

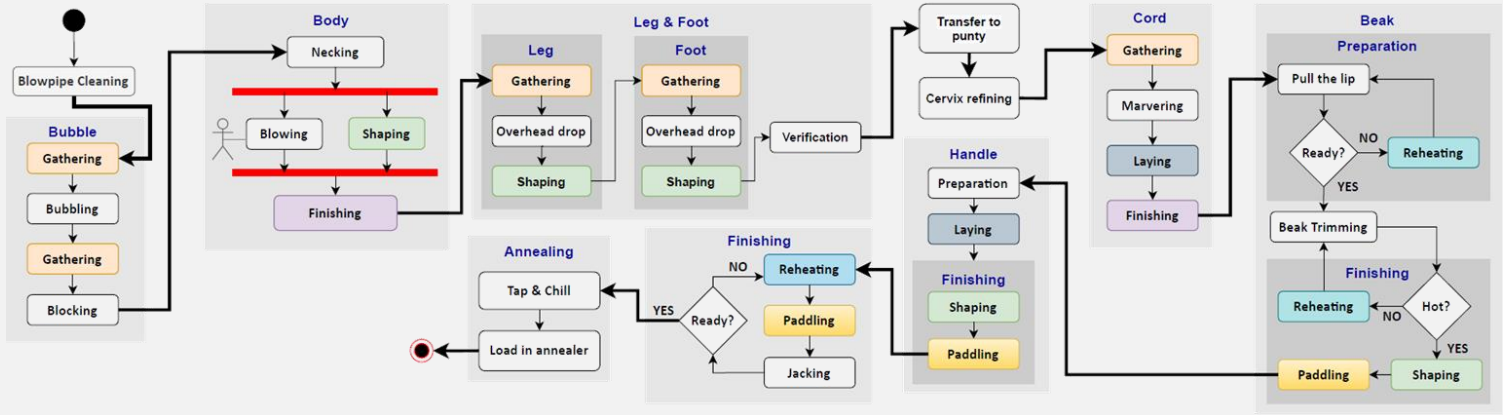
MFGR: Wyeth
LOT NO: P39K106
EXP DATE: 12/02
FILLED BY: KMT

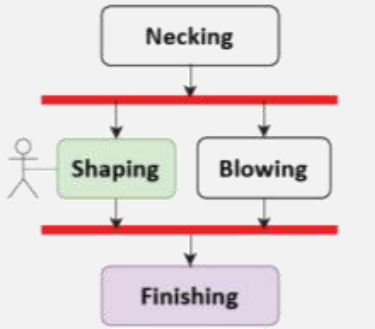
℞ NUMBER 10072

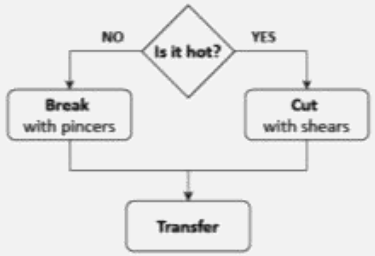
Jack R. Frost
LCDR MD USNR
SIGNATURE RANK AND DEGREE

EDITION OF 1 JAN 60 MAY BE USED FOR
S/N 0102-LF-012-6201

Schema







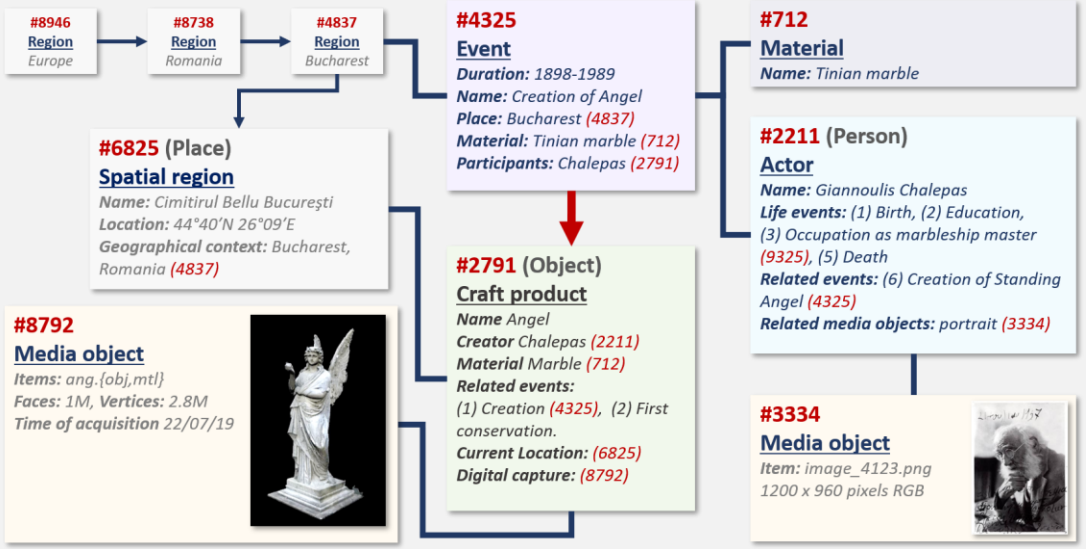
Work of risk

The Nature and Art of Workmanship - David Pye (1968)

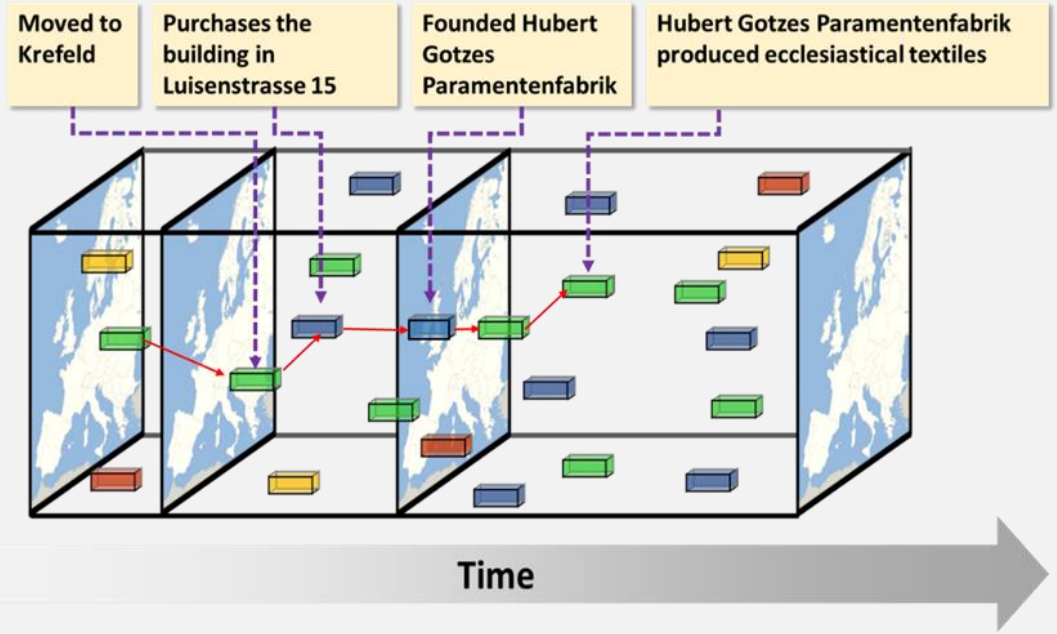
Mingei

Historical events and the fabula

Event



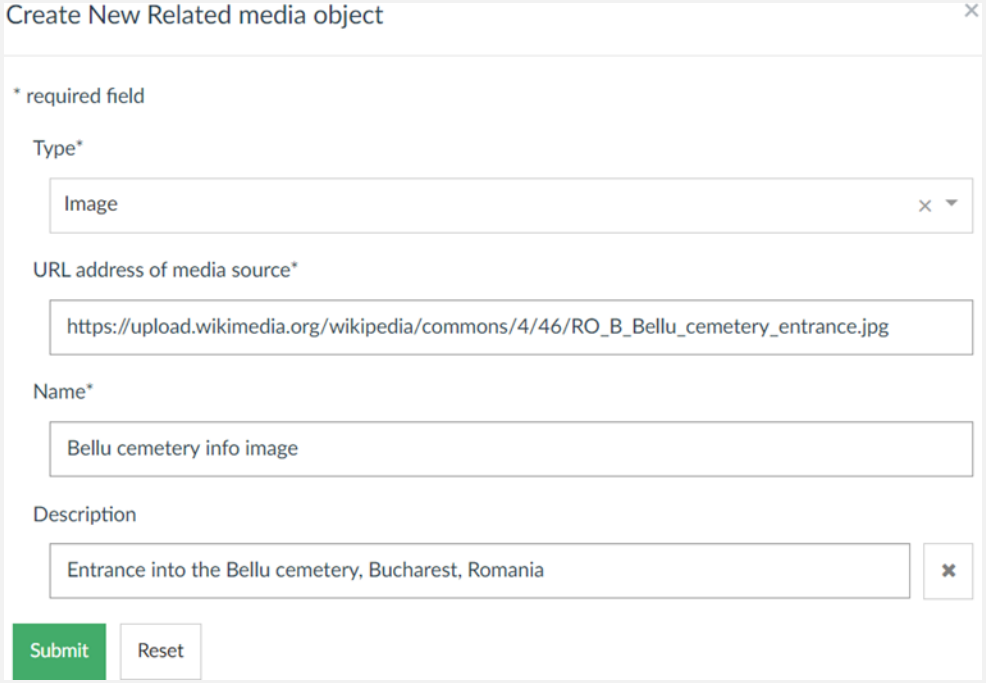
Fabula



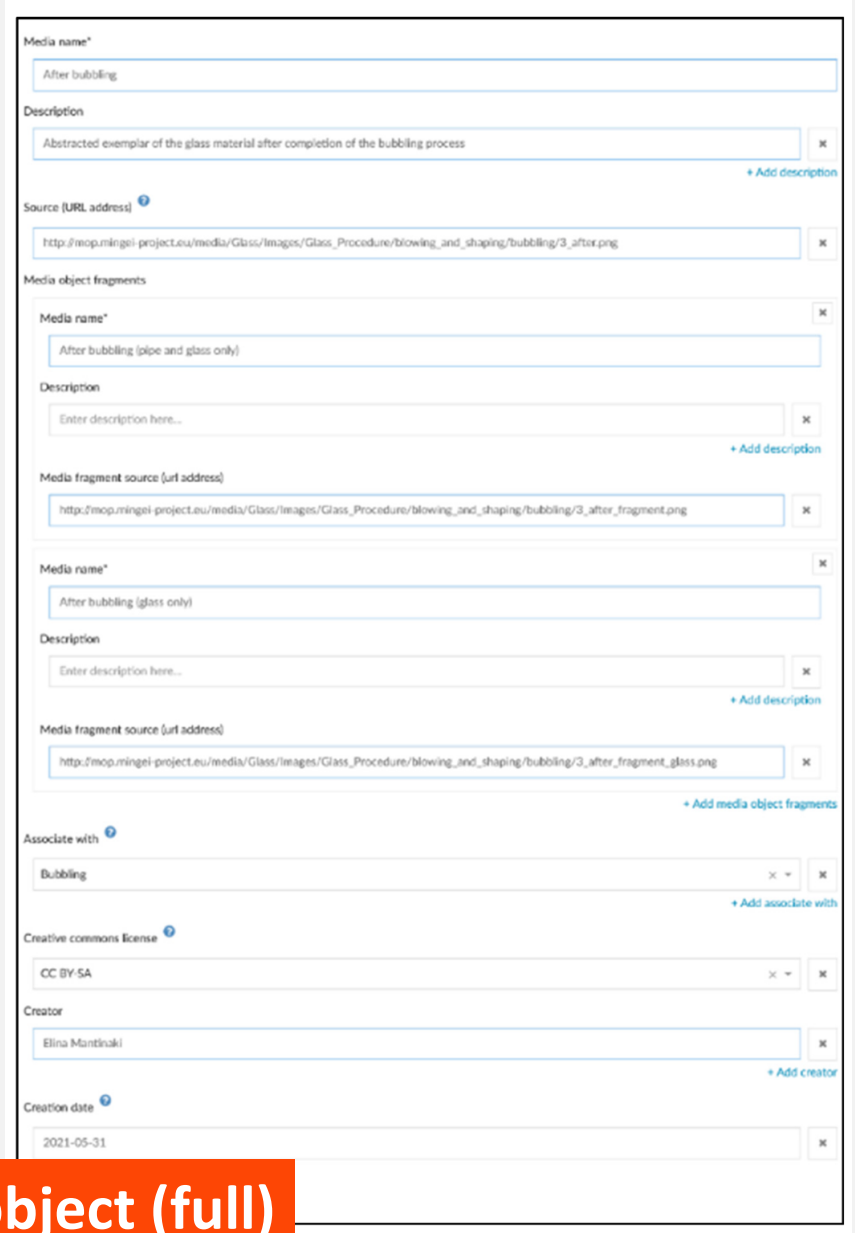
Representing narratives in digital libraries: The narrative ontology, (2021), ***Semantic Web***, doi:10.3233/sw-200421

Mingei

MOP Digital assets

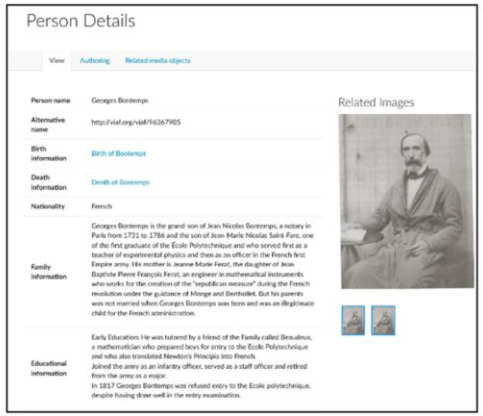


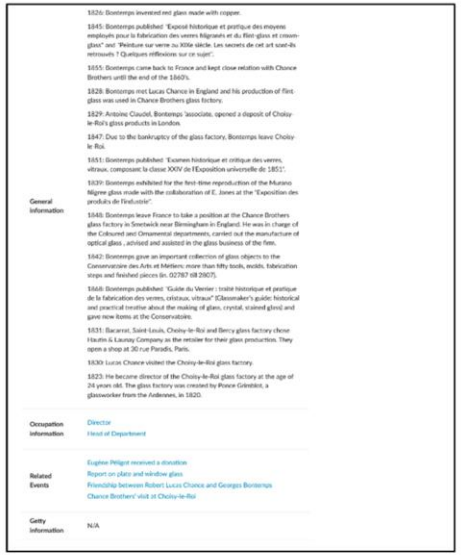
Media object (short)

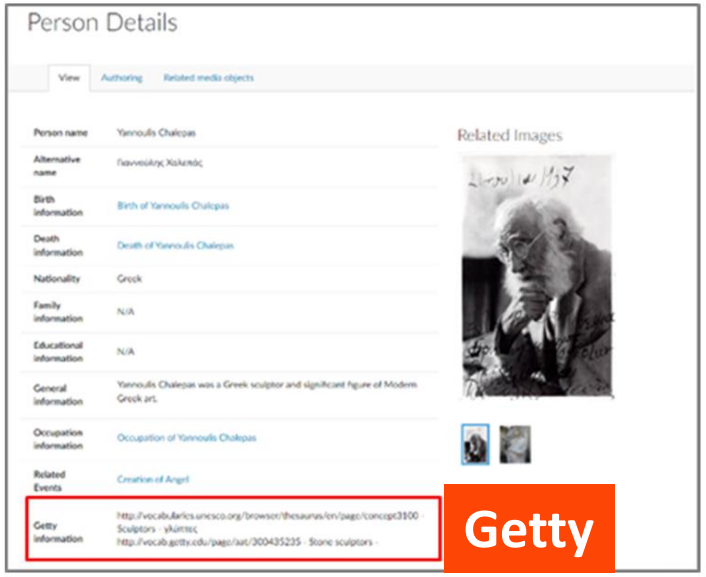


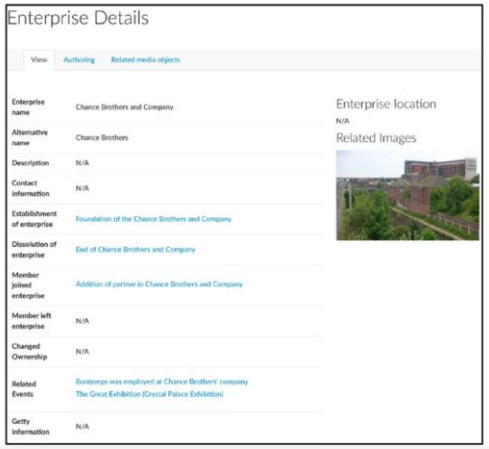
Media object (full)

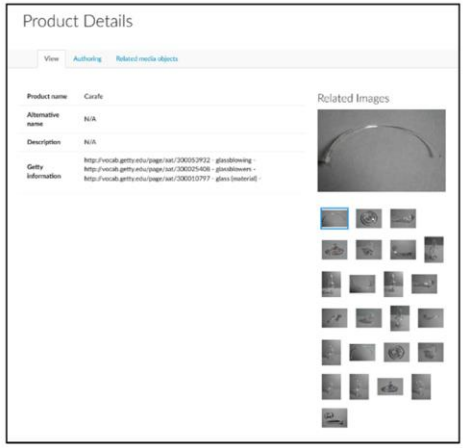
Persons, objects, places, materials

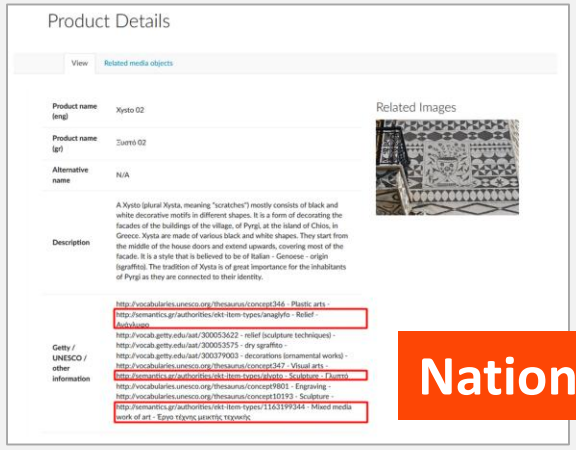








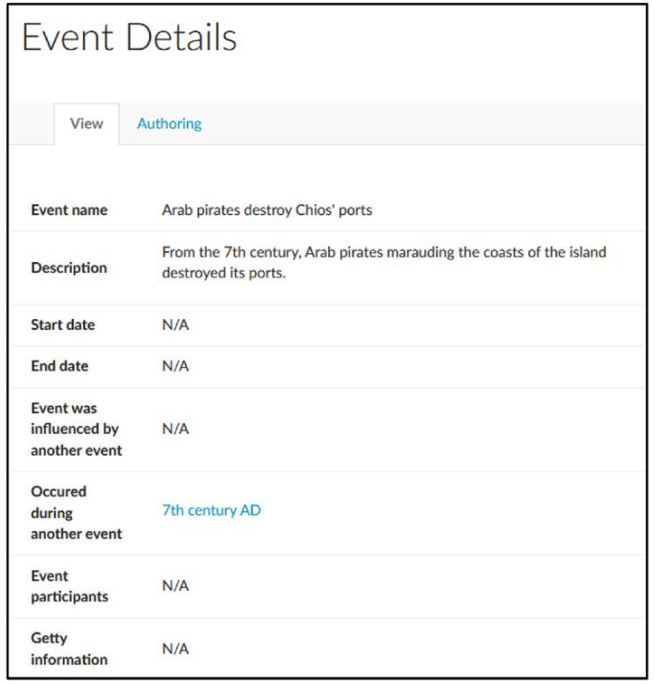


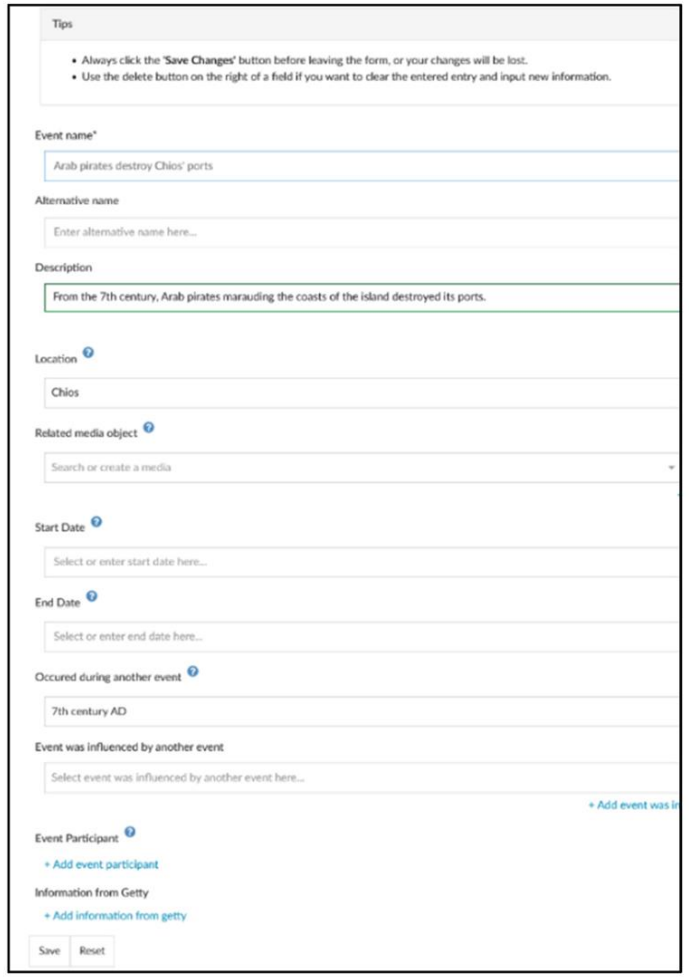


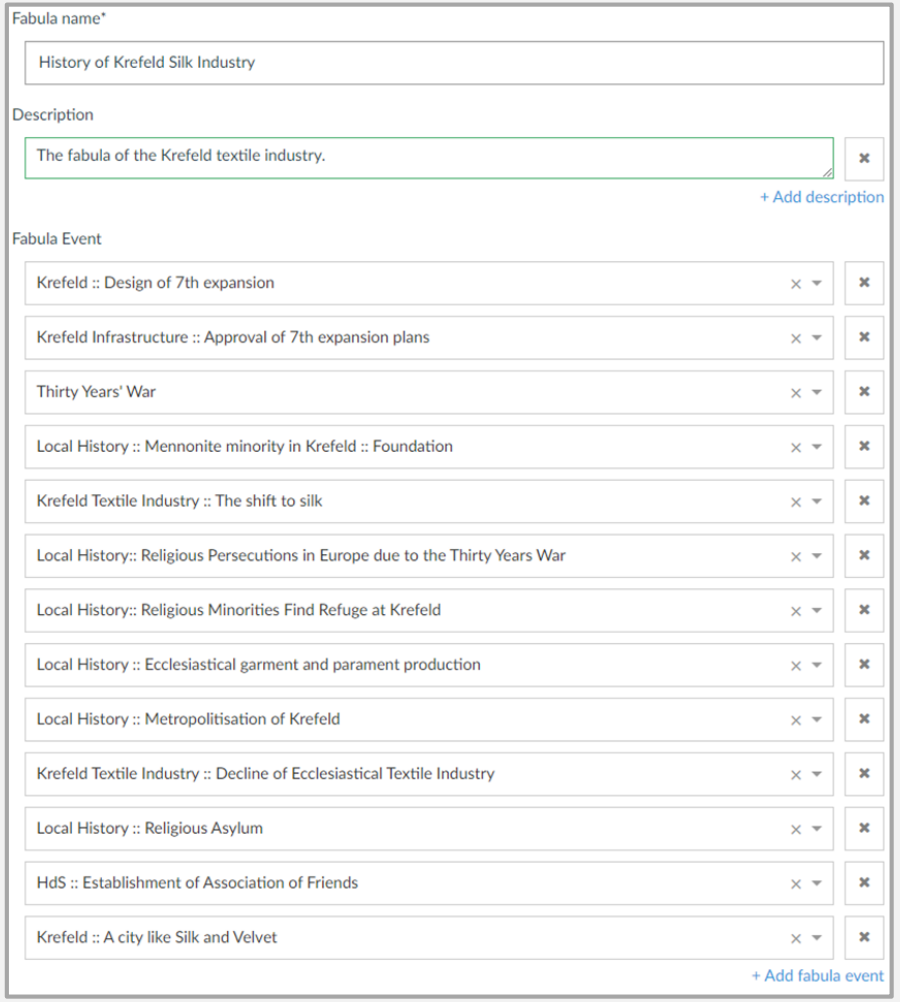
Semantic annotations

Mingei

Event and fabula







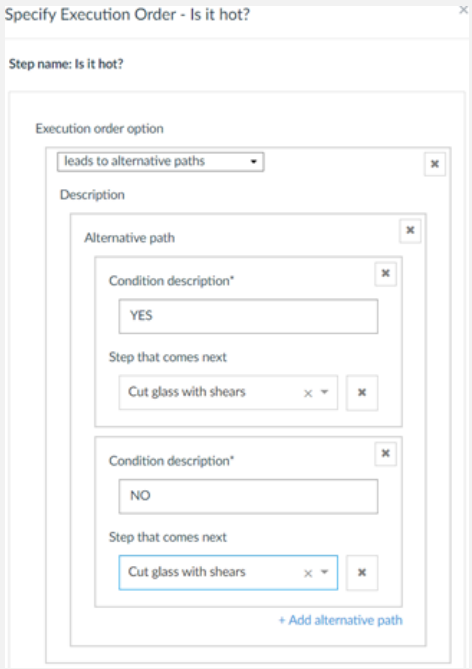
Event and schema

Glass schema

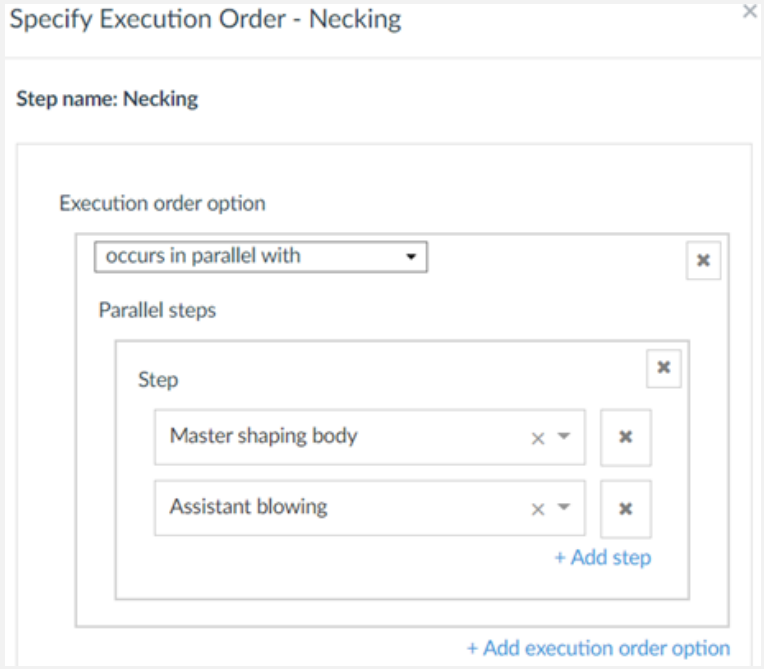
Schema preview

Process schema description
Investigative glass process that was possibly used by George Bontemps to create a glass carafe.

Step	Step description	Execution order	Substeps
0. Blowpipe cleaning	The blowpipe is cleaned from any residuals from past use.	leads to step 1. Blowing and Shaping	0
1. Blowing and Shaping	A bubbling action is performed by the glass blower using a blowpipe and which results in the creation of a bubble of air within a liquid quantity of glass that has been just fathered from the workshop furnace.	leads to step 2. Leg and foot laying	5
2. Leg and foot laying	The leg and the foot of the carafe are constructed.	leads to step 3. Transfer to punty	3
3. Transfer to punty	The glass body is transferred from the blowpipe to the punty.	leads to step 4. Cervix refining	3
4. Cervix refining	Cervix is refined.	leads to step 5. Cord laying	0



Decision point



Synchronous actions

Mingei

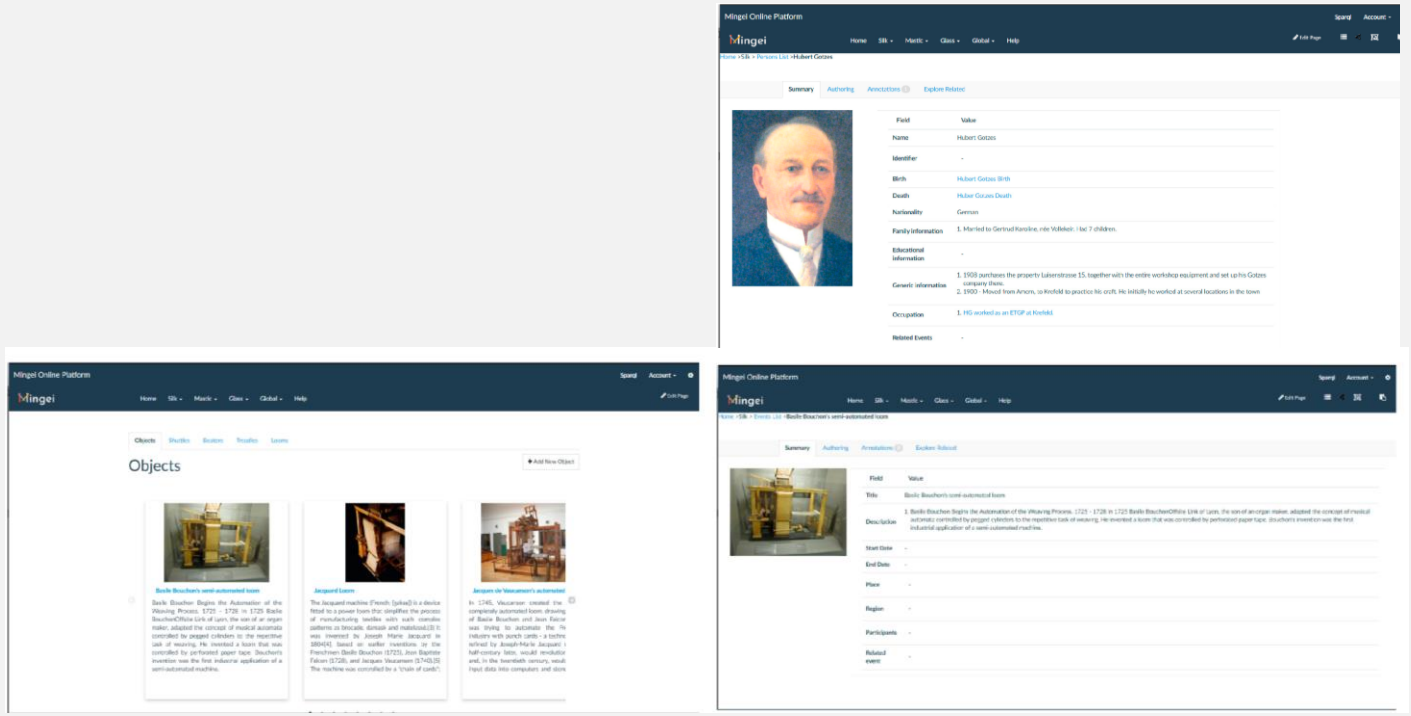
Access and management of CH digital assets

Machine-interpretable
established standards in Semantic Web.

- **CIDOC—CRM**
- **EDM**
- **Zenodo storage**

Human-comprehensible

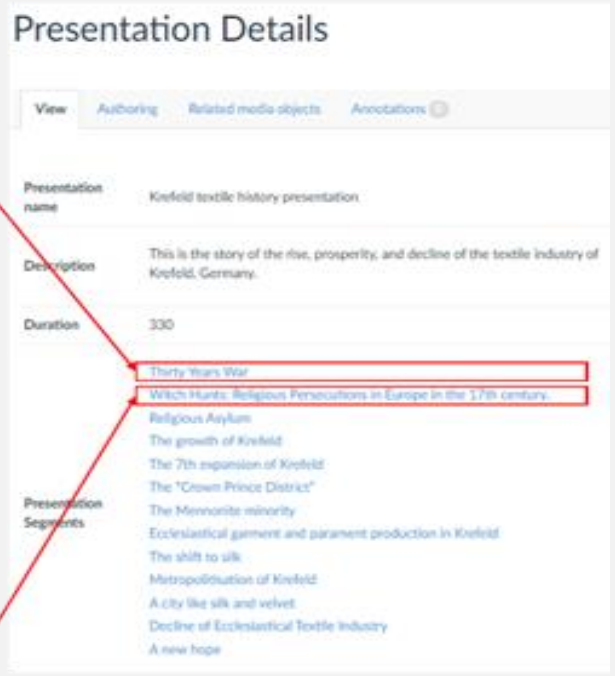
Web-based

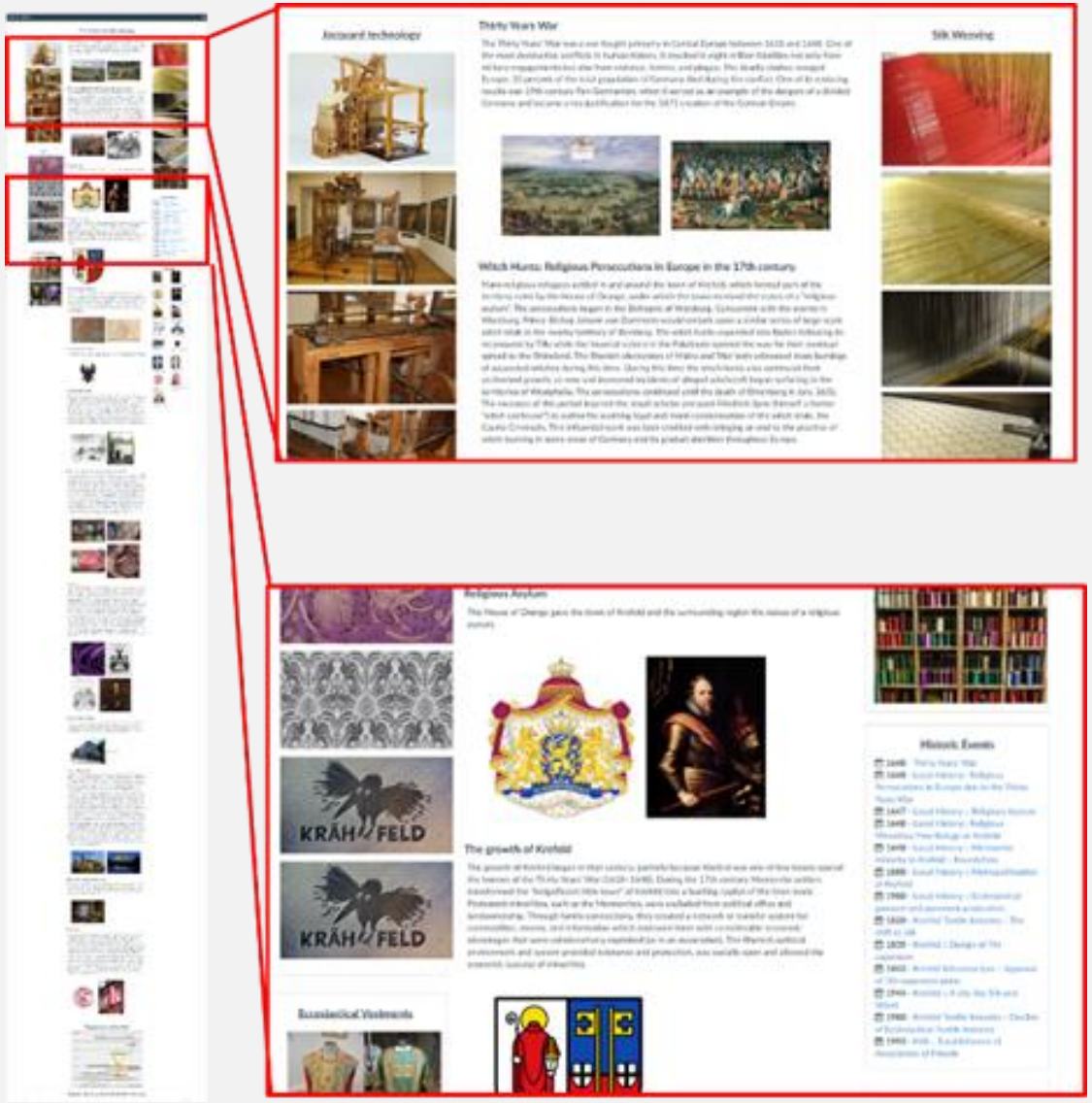


Digital Conservation

Mingei

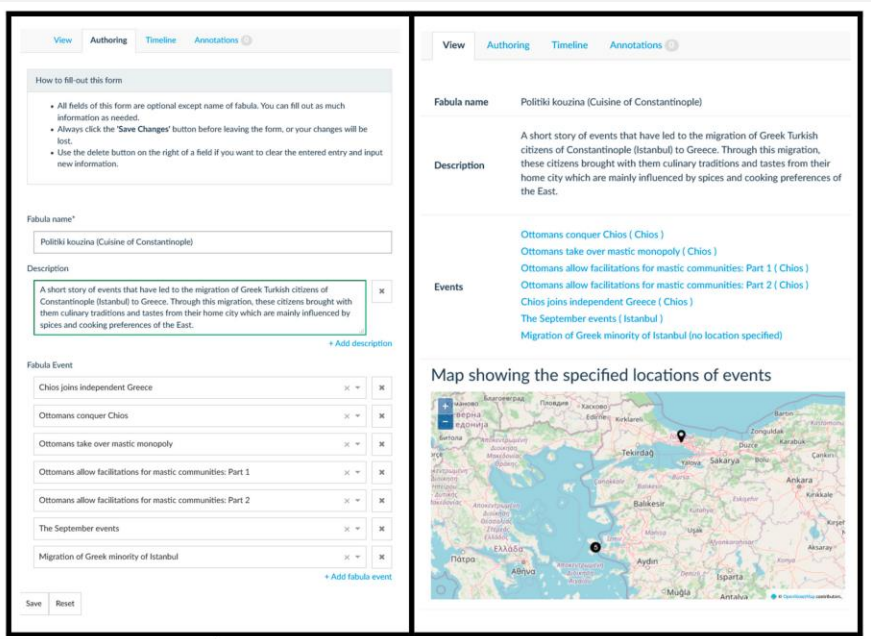
Narration

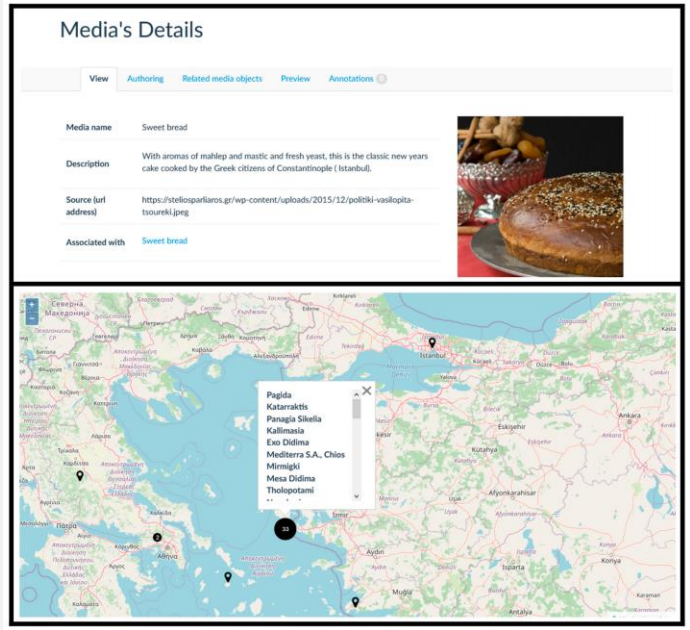

Presentation Details
View
Authoring
Related media objects
Annotations
Presentation name
Krefeld textile history presentation
Description
This is the story of the rise, prosperity, and decline of the textile industry of Krefeld, Germany.
Duration
330
Presentation Segments
Thirty Years War
Witch Hunts: Religious Persecutions in Europe in the 17th century
Religious Asylum
The growth of Krefeld
The 7th expansion of Krefeld
The "Crown Prince District"
The Mennonite minority
Ecclesiastical garment and paranent production in Krefeld
The shift to silk
Metropolitisation of Krefeld
A city like silk and velvet
Decline of Ecclesiastical Textile Industry
A new hope

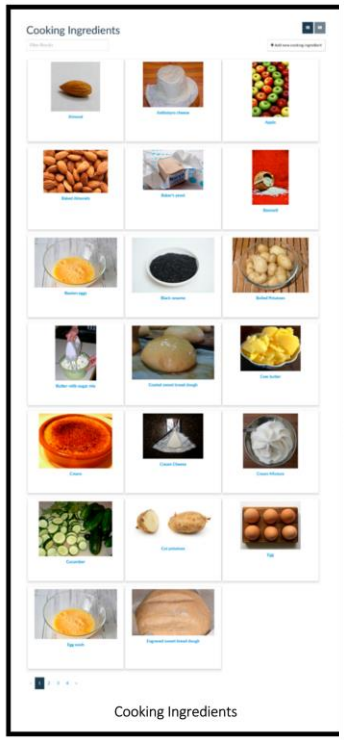

Thirty Years War
Silk Weaving
Witch Hunts: Religious Persecutions in Europe in the 17th century
KRÄHFELD
KRÄHFELD
The growth of Krefeld
Historic Events

O4 Recipes

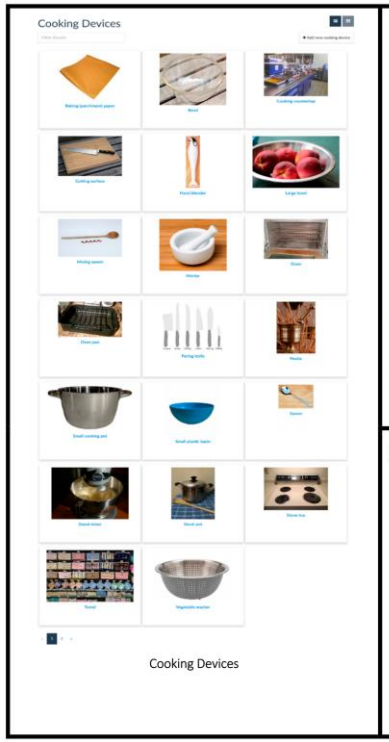
Representation and Presentation of Culinary Tradition as Cultural Heritage, (2021), ***Heritage***, doi:3390/heritage4020036.



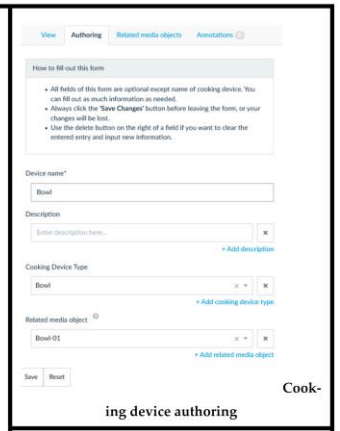




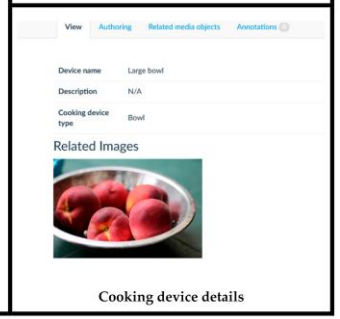
Cooking Ingredients



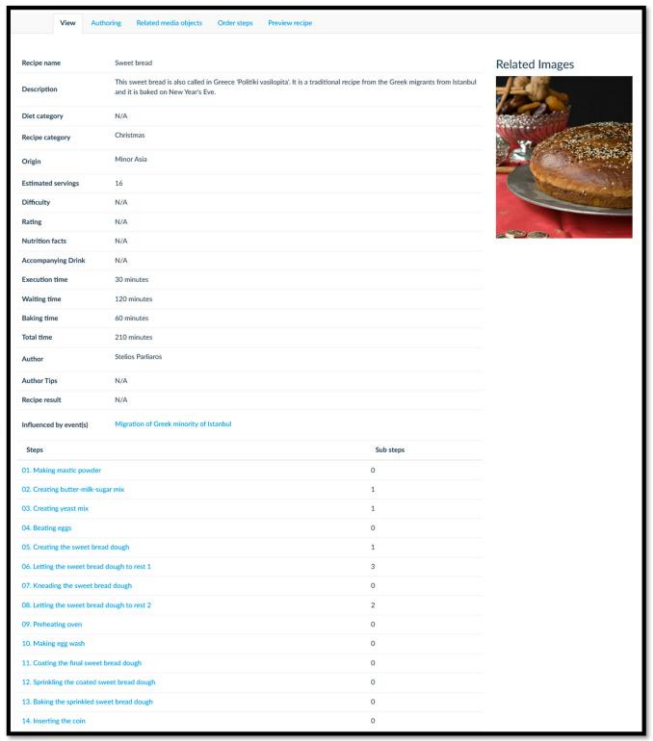
Cooking Devices

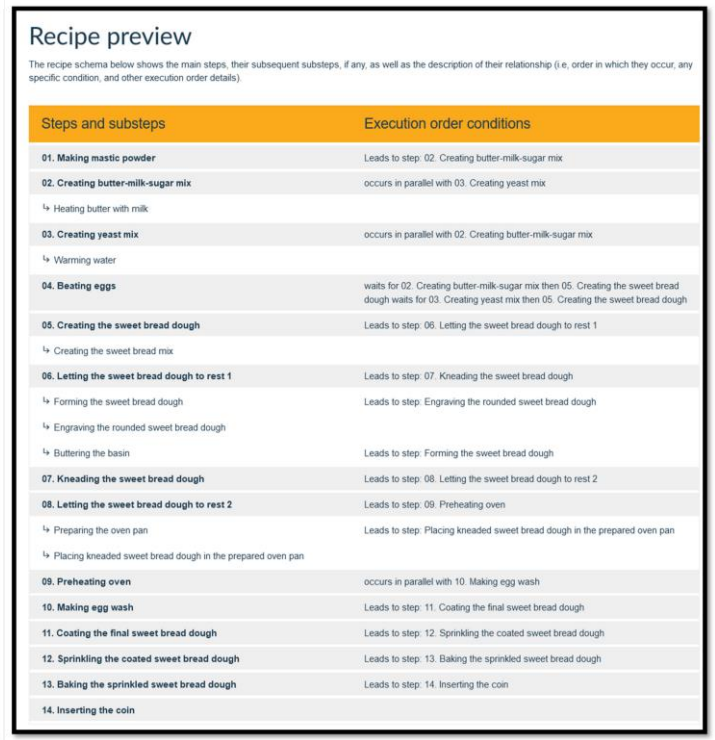


Cook-ing device authoring

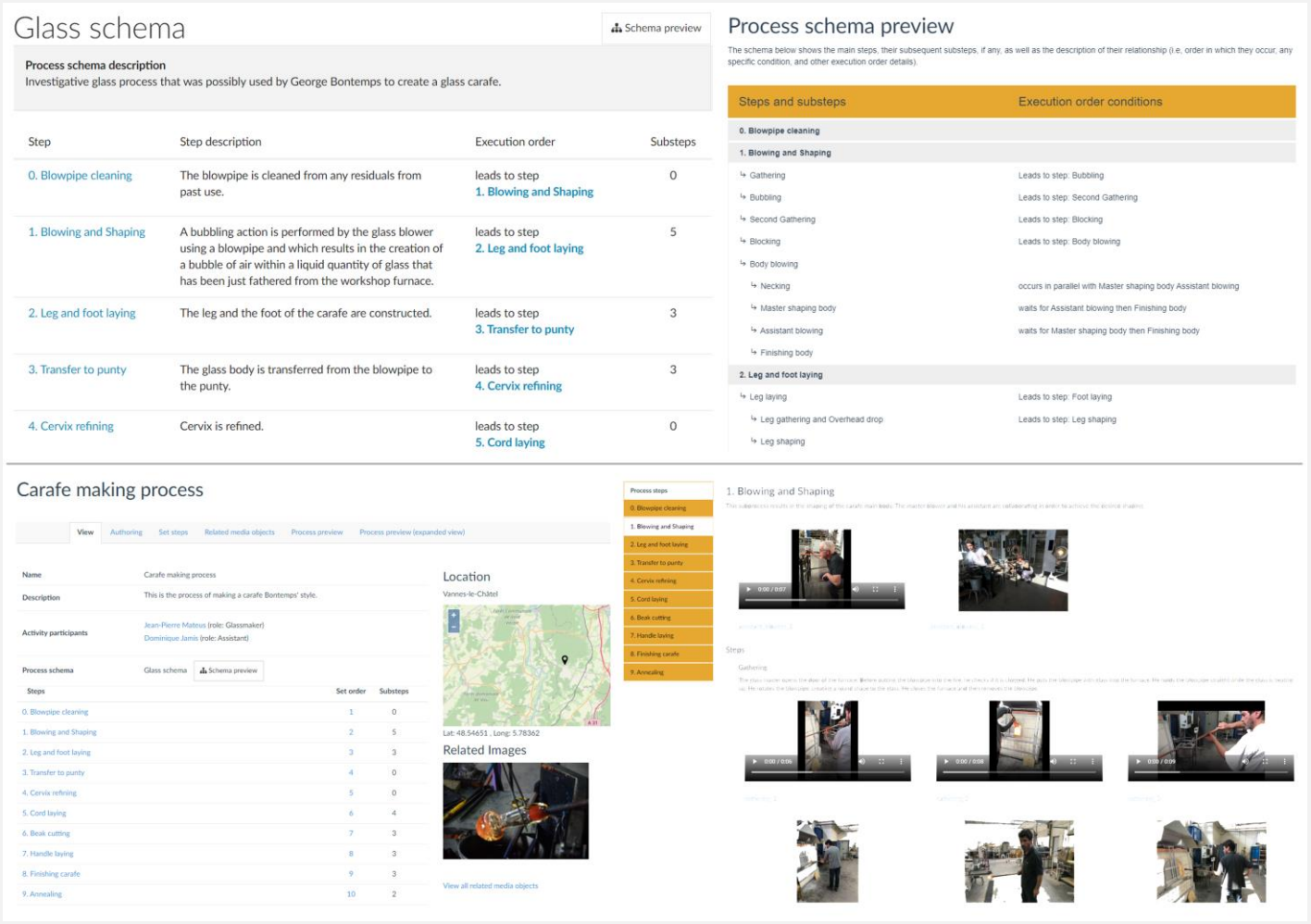


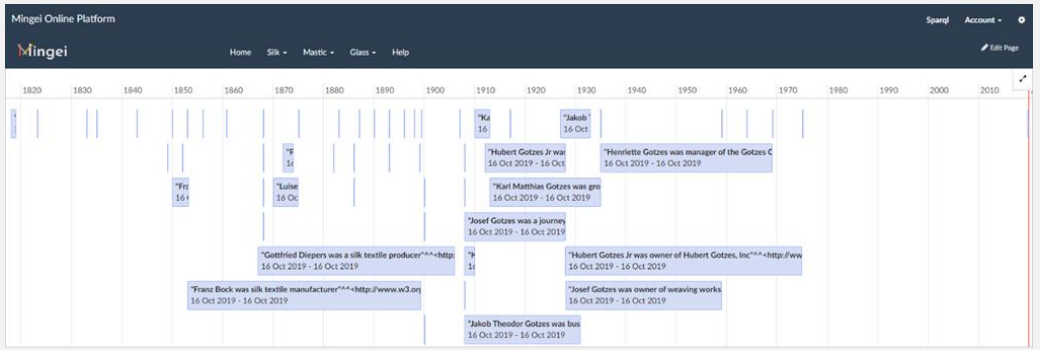
Cooking device details

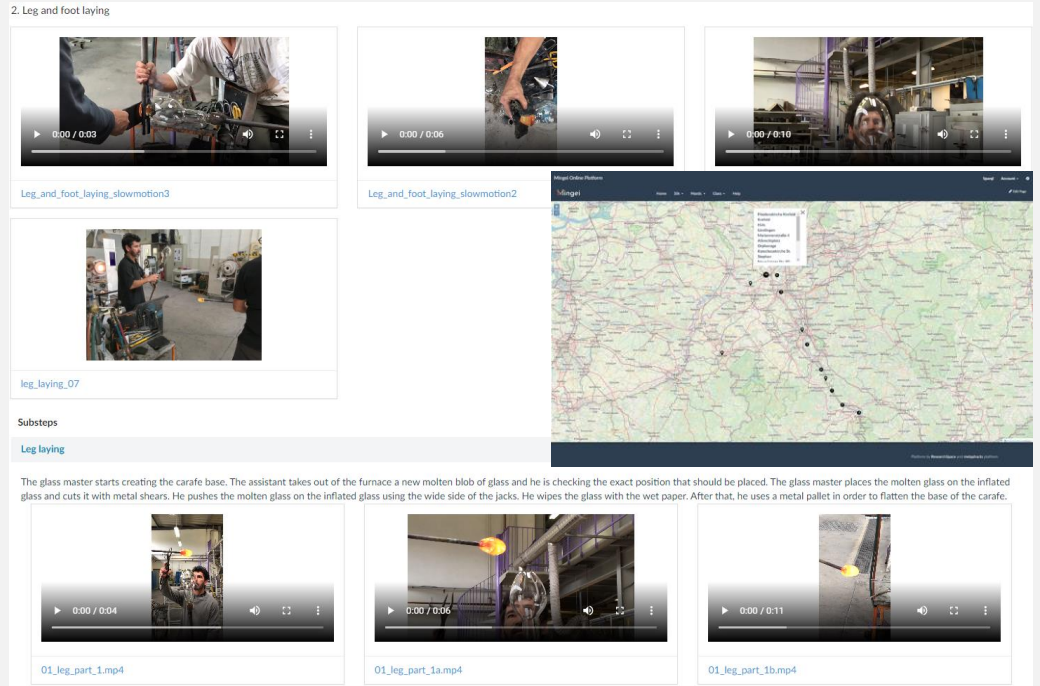




Web presentation







Narration


Silk pilot map SHORT
Sudwall
Westwall
Nordwall
Gotzes' children other business location
Karl Matthias Gotzes grocery 1910
Karl Matthias Gotzes grocery 1913
Jakob Theodor Gotzes
Josef Gotzes' workshop for ecclesiastical texti...
Krefeld Silk tour
HOUSE OF SILK CULTURE earlier parament we...
Krefeld Hbf
Ponzelar-Denkmal
Puppenbrunnen
10 MORE
Primark Krefeld
Hansastraße
Google
Cafe MARI
Din-A-Null Kommunikationsdesign

Dictionaries & Jargon

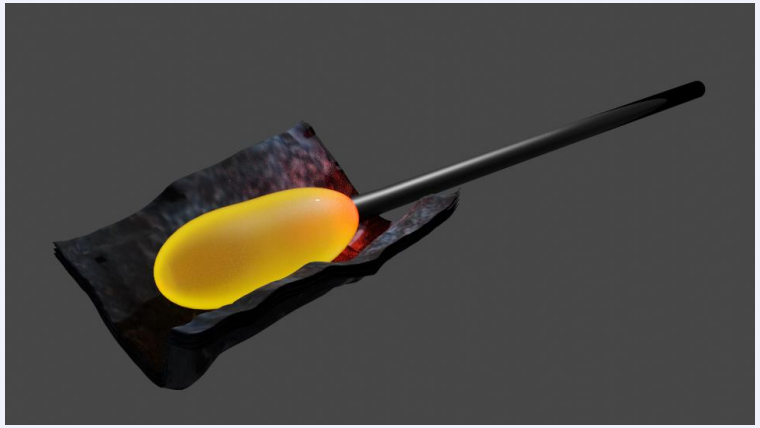
What is it called?
What is it for?
How do I use it?

Clapper
(noun)

*A **tool** consisting of two rectangular pieces of wood joined at one end by a leather hinge. There is an aperture in one of the pieces of wood, and this holds the stem of a goblet or wineglass while it is being made. The clapper is used to squeeze a blob of glass in order to form the foot.*

Finishing
(verb)

*The **process** of completing the forming or decoration of an object. Finishing can take the form of manipulating the object into its final shape while it is hot, of cracking off before annealing, or of cutting, enameling, grinding, or polishing.*

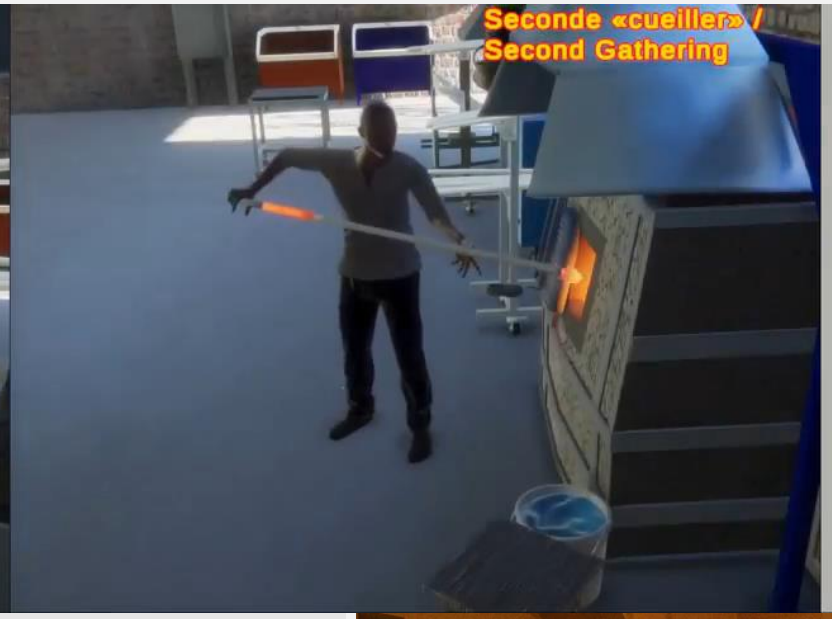


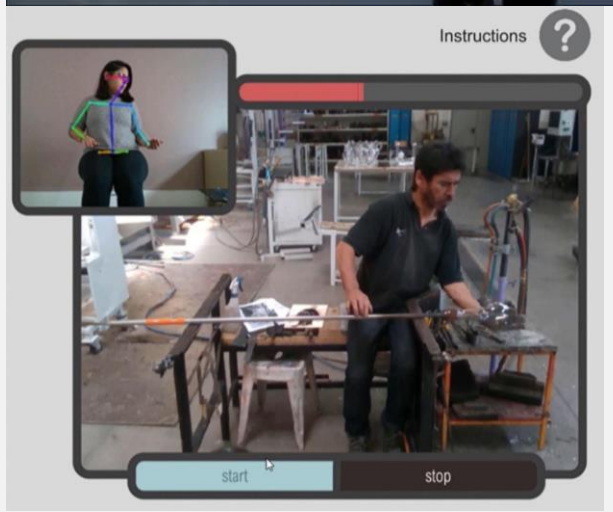
Virtual exhibitions

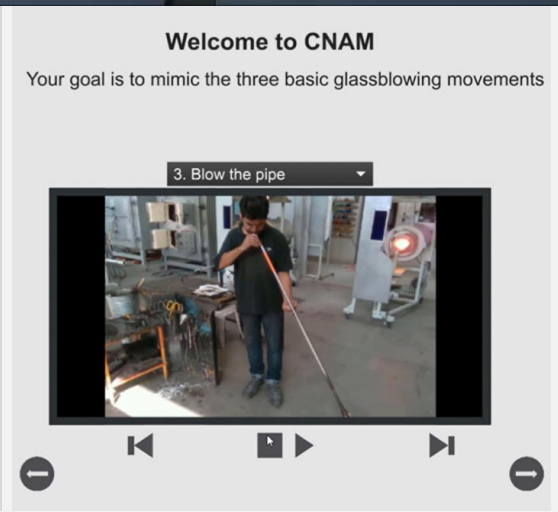
Past and in-storage collections

Mingei

Education

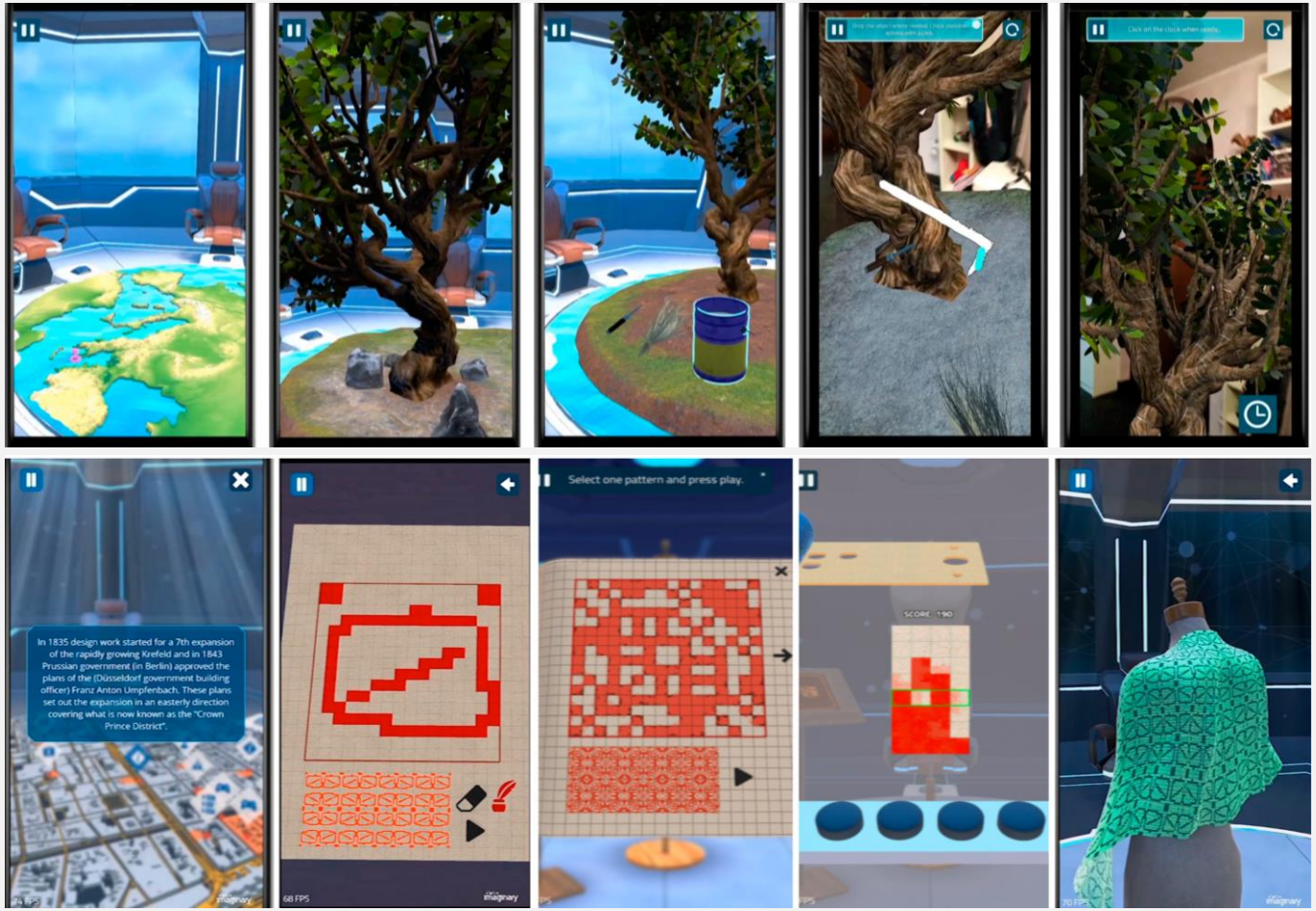




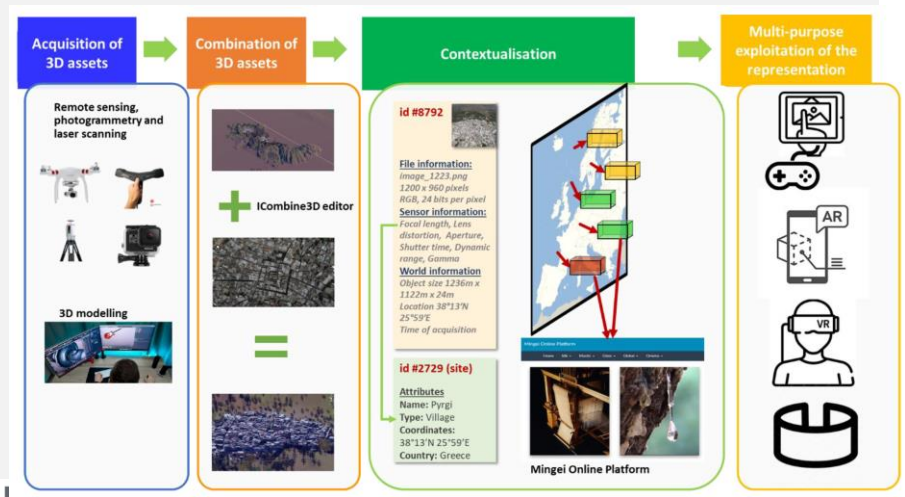


Mingei

Edutainment



Sense of place



Multi-scale presentation of spatial context for Culture Heritage applications, (2022) ***Electronics***
doi:10.3390/electronics11020195

Mingei

Place gastronomy










Thank you

Mingei