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# Προηγμένες τεχνολογίες στην υπηρεσία της ψηφιοποίησης της άυλης πολιτιστικής κληρονομιάς- η περίπτωση του Mingei

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*Ινστιτούτο Πληροφορικής - Ίδρυμα Τεχνολογίας και Έρευνας*



# Mingei and Craeft – EC Horizon Programme

HORIZON  
EUROPE

The logo for Mingei features the word "Mingei" in a dark blue, sans-serif font. The letter "M" is stylized with a vertical red bar on its left side and a diagonal yellow bar crossing it from top-left to bottom-right.

*art of the people for the people*

## Mingei

Representation and preservation of Heritage Crafts

<https://www.mingei-project.eu/>

Horizon 2020 (822336)



*care, judgement, dexterity*

## Craeft

Craft Understanding, Education, Training, and Preservation for  
Posterity and Prosperity

<https://www.craeft.eu/>

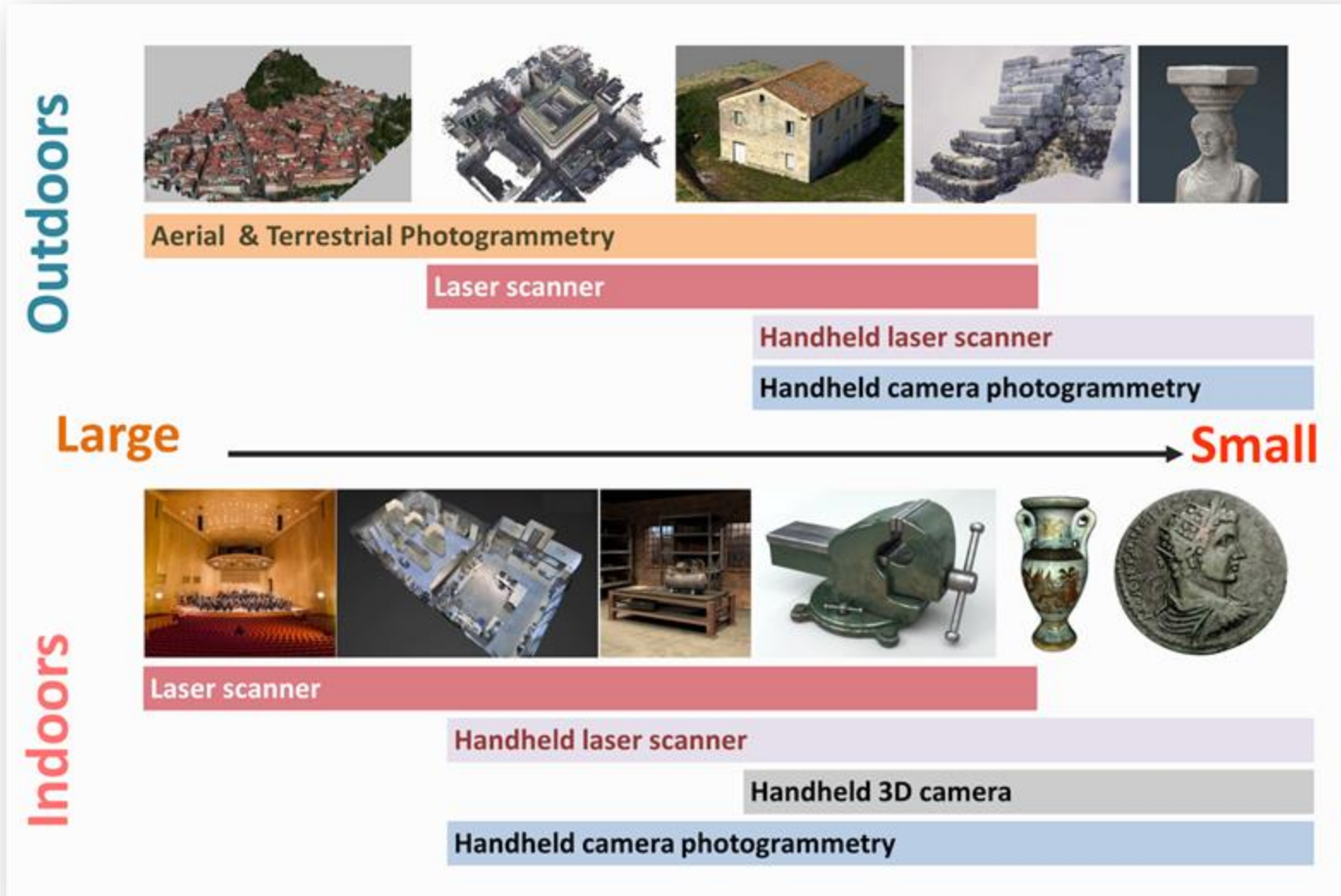
Horizon Europe (101094349)



Craeft is a Research and Innovation Action funded under the Horizon Europe programme of the European Commission (101094349)



# Material Heritage



# Large Scale Structures



## PYRGI

*Chios, Greece*

3D Reconstruction



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# Knossos Palace



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# Medium Scale Structures

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## **MITATA** *Psiloritis UNESCO* *Global Geopark, Greece*

3D Reconstruction



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# Medium Scale Structures

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# Craft products & Tools (Endurants)

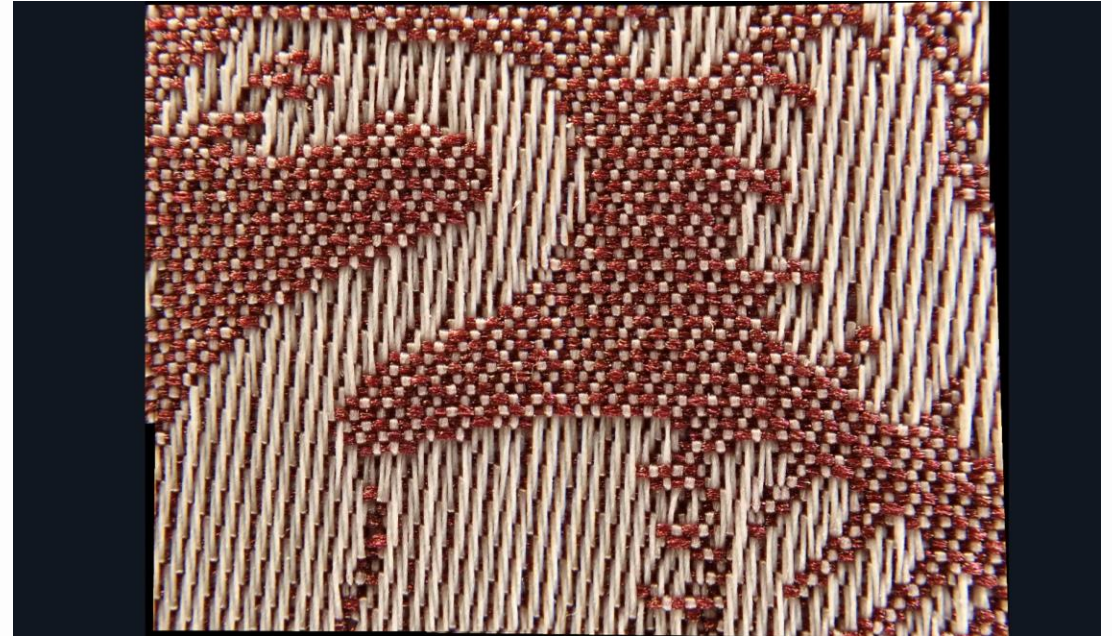
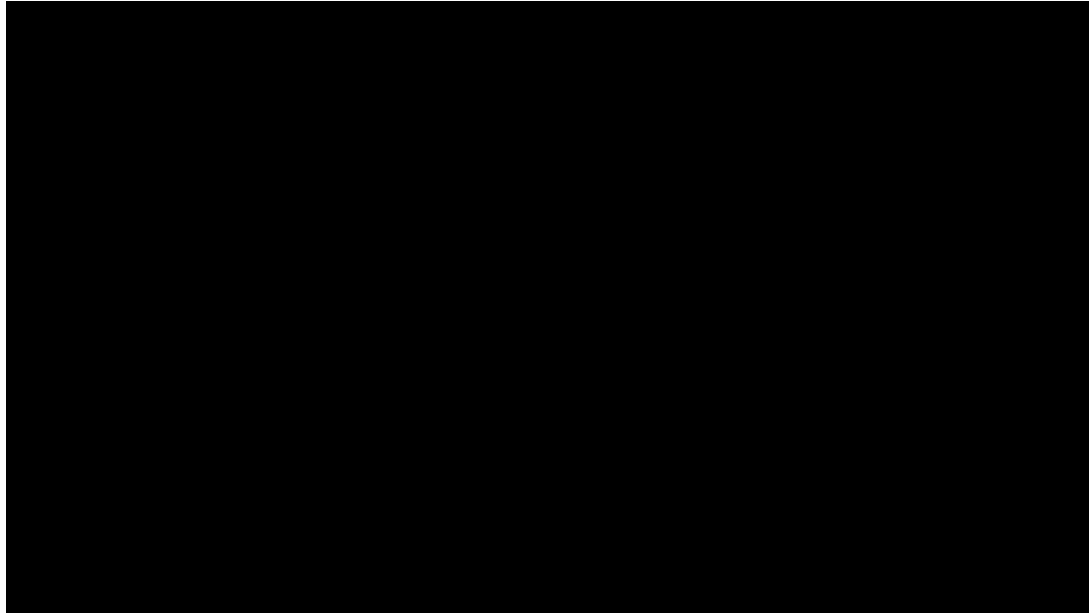
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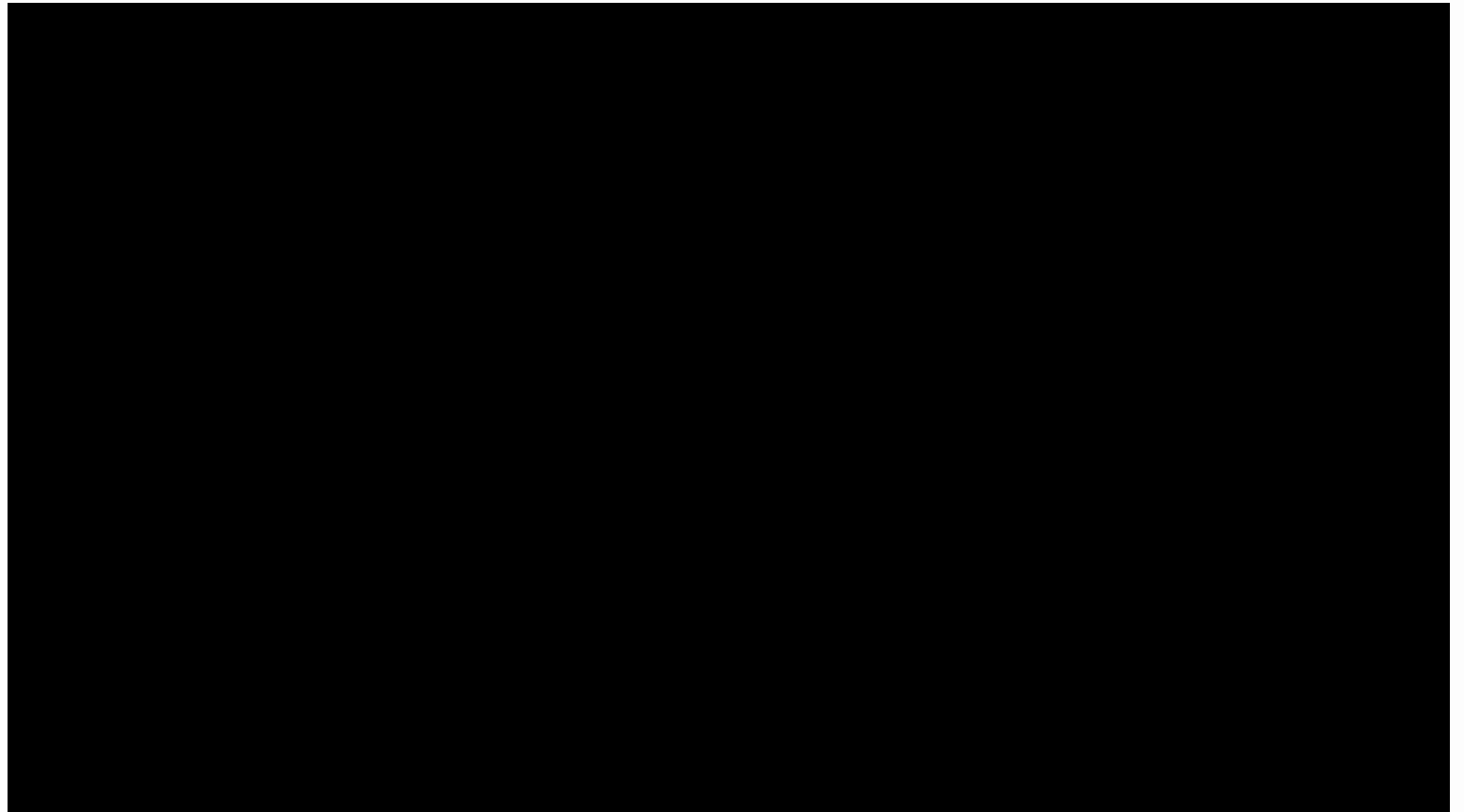
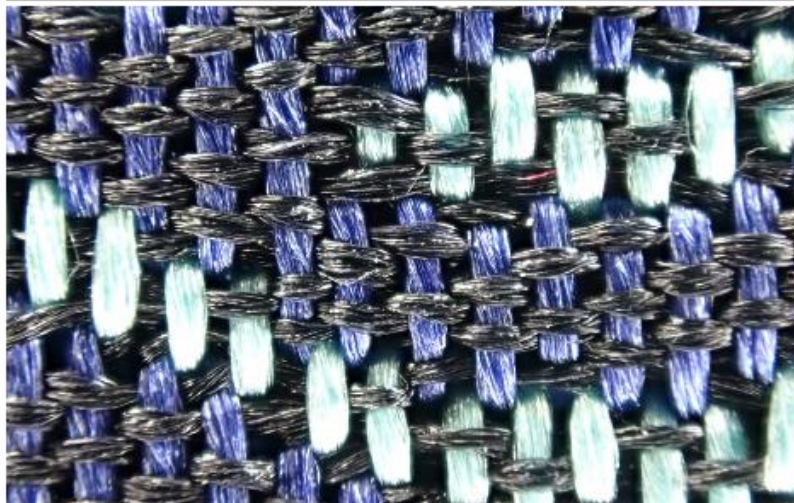
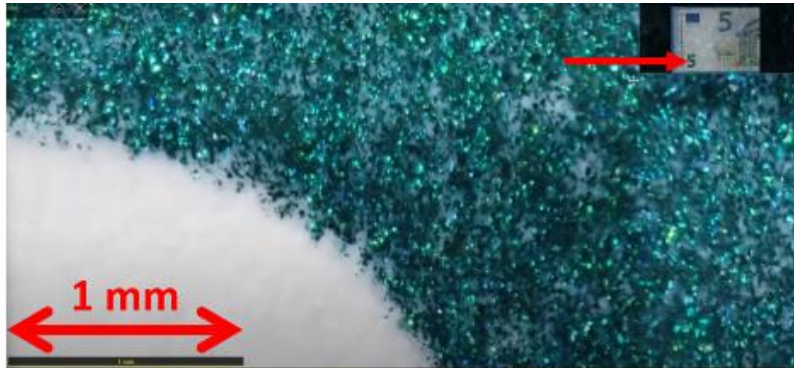
# Prototype scanner

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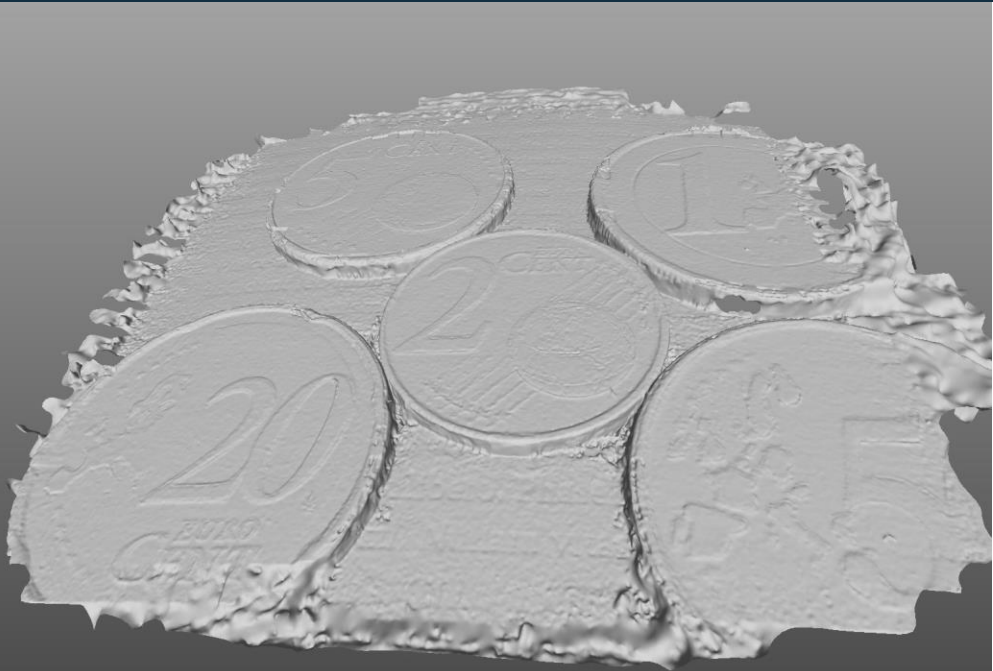
# Very small scale structures

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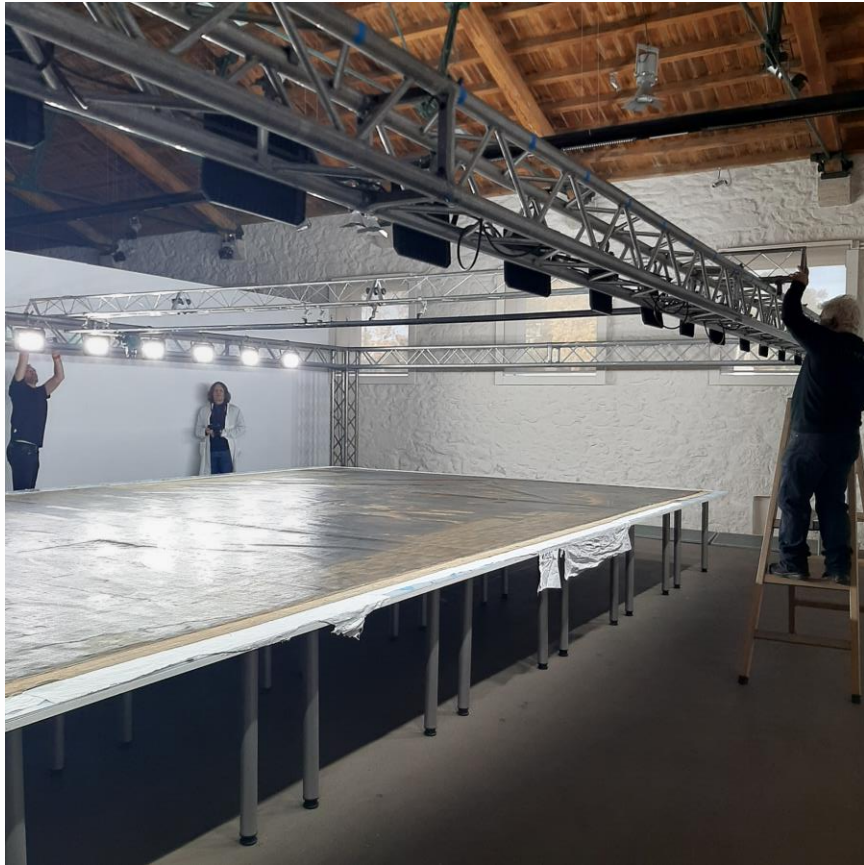
# 2½D surface scanning





# Large Scale Paintings

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# Motion

Large (body, bodies)

Small (hands, feet)



Simple (visibility)



Complex (clutter)

Optical MoCap

Visual body tracking (RGB)

Visual hand tracking (RGB, RGBD)

Inertial MoCap

Mechanical MoCap

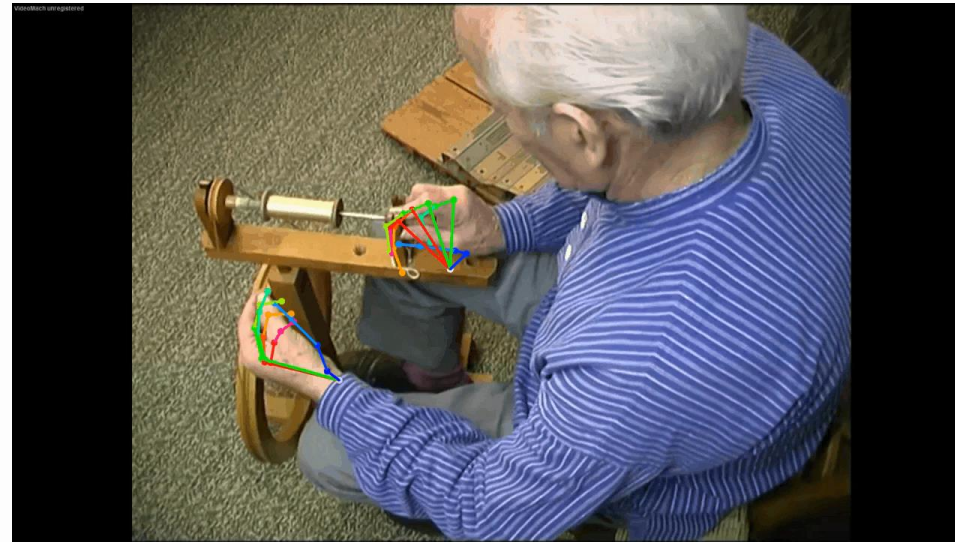
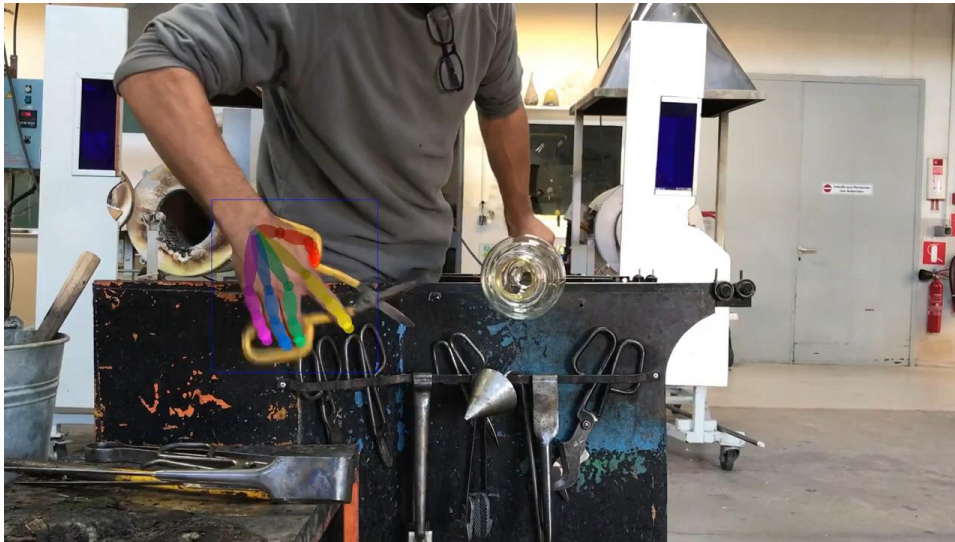




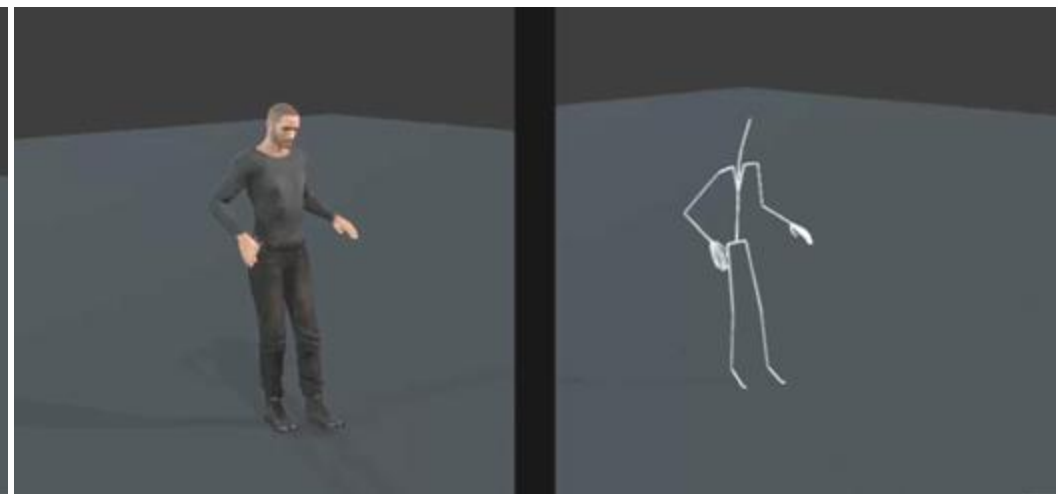
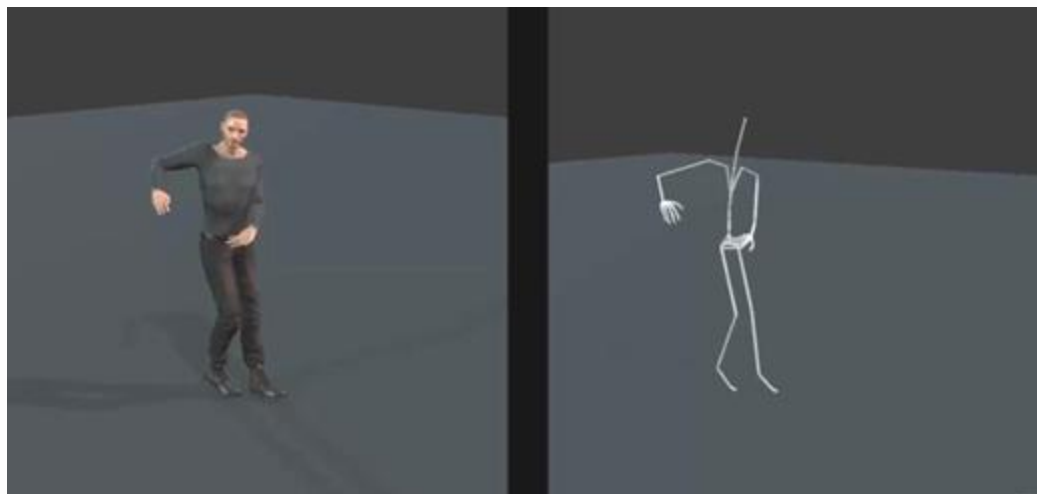
# MoCap

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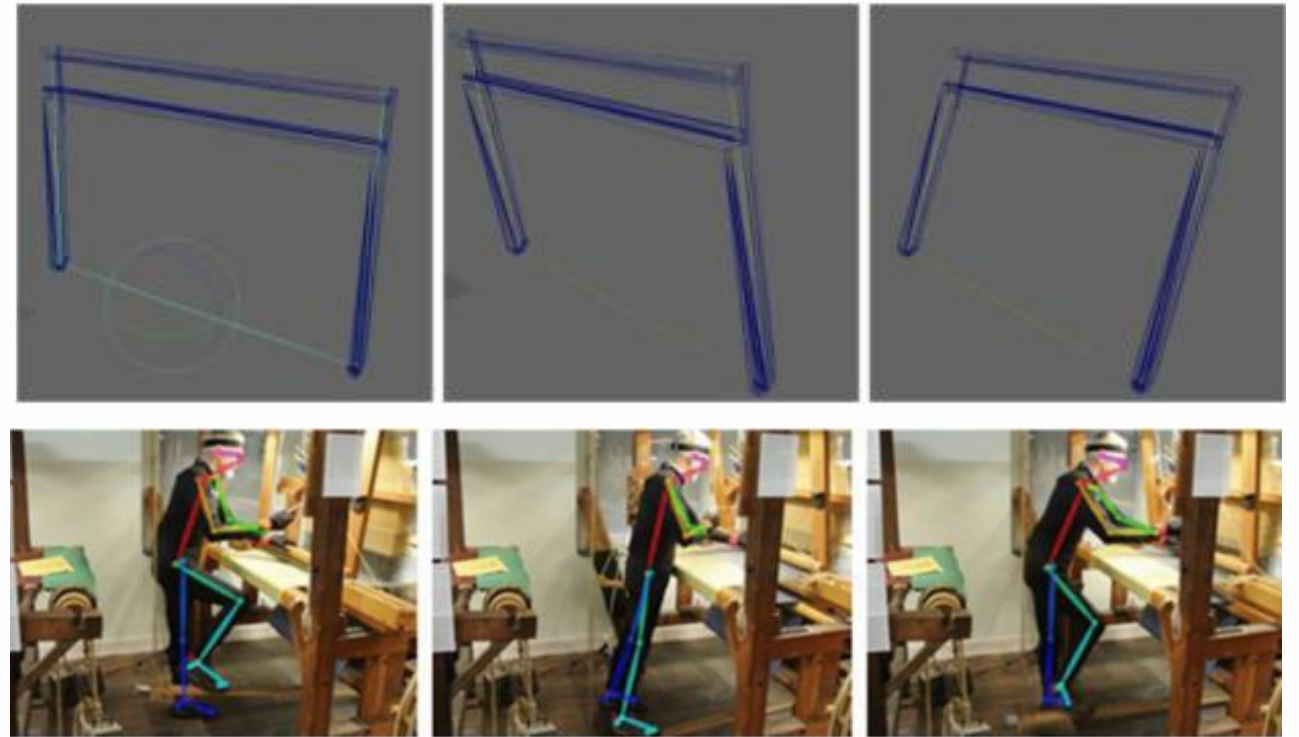
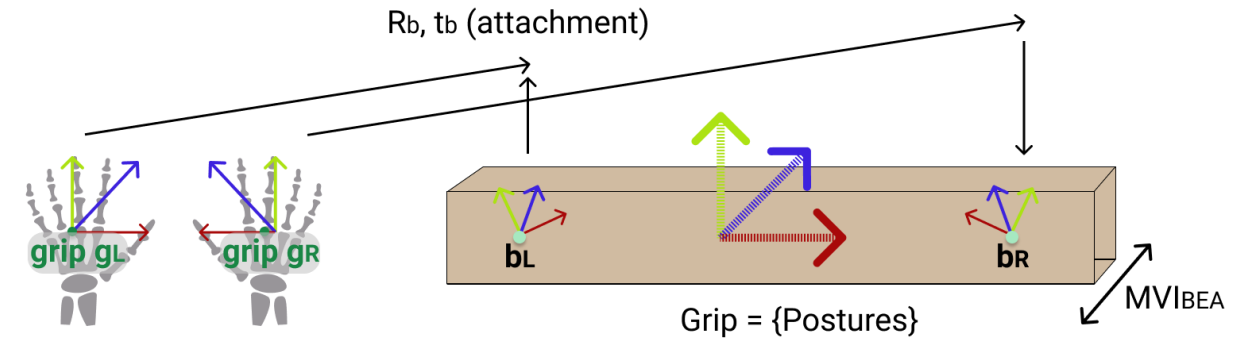
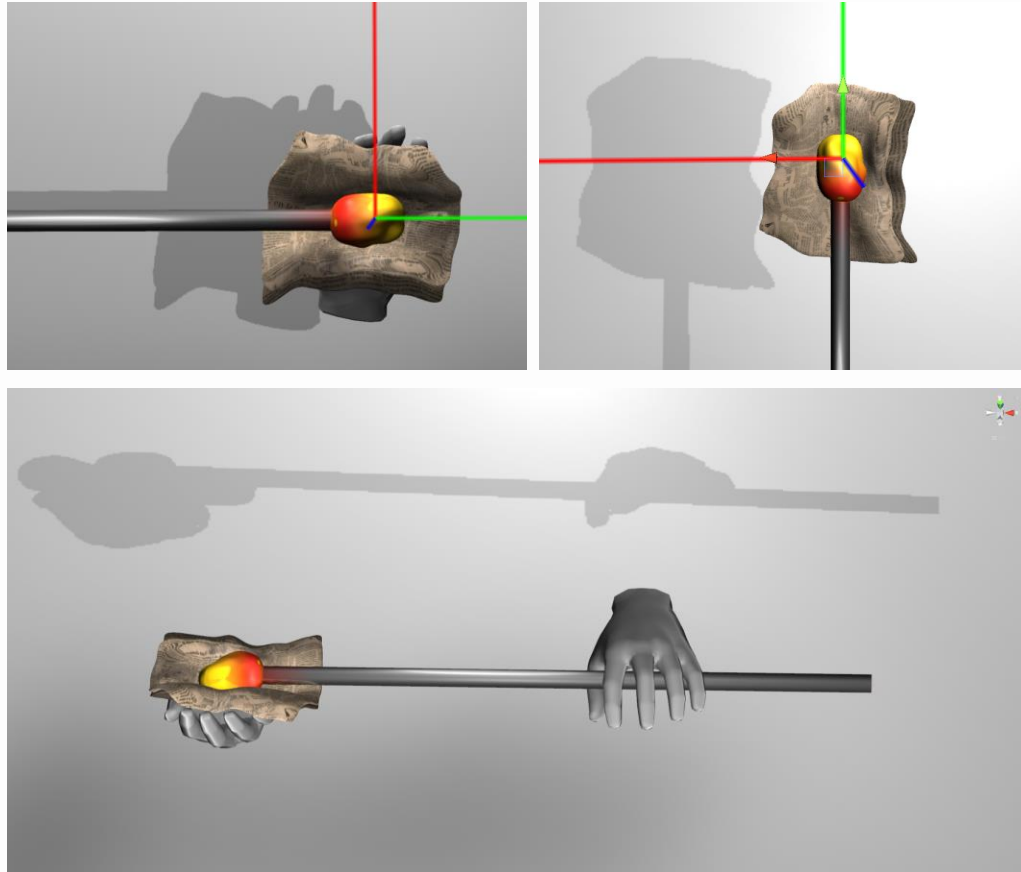
Inertial and mechanical, MoCap for accurate finger motion recording.



# MoCap (hands & body)



# Gesture annotation



[An Approach for the Visualization of Crafts and Machine Usage in Virtual Environments](#), (2020) *Int. Conf. Advances in Computer-Human Interactions*.





# Dictionaries & Jargon

## Furnace

*An enclosed structure for the production and application of heat. In glassmaking, furnaces are used for melting the batch, maintaining pots of glass in a molten state, and reheating partly formed objects at the glory hole.*



## Batch

*The mixture of raw materials (often silica, soda or potash, and lime) that is melted in a pot or tank to make glass. Cullet, as well as minor ingredients such as colorants, can be added to the batch to help the melting process.*



# Dictionaries & Jargon

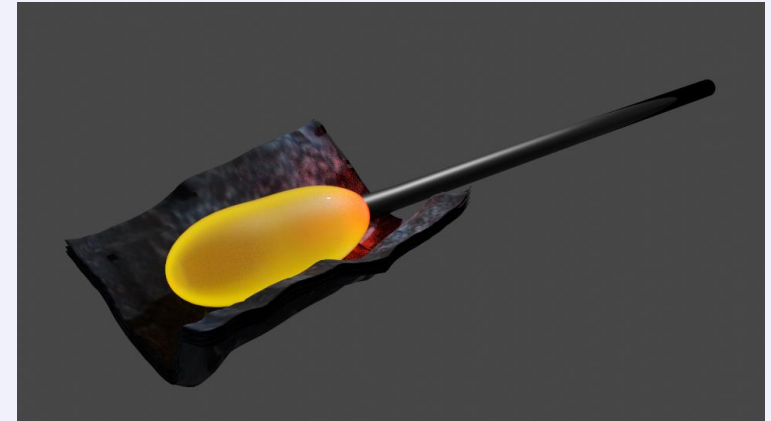
## Clapper (noun)

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.





# 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.

zenodo

April 7, 2020

### Mingei Ontology

Carlo Magagnoli, Valeriana Baralesi, Daniela Merli, Nikolaus Pitarakis, Vincenzo DeLuca

This repository contains the "craft ontology (CRO)" developed in the Mingei project (<http://www.mingei.org/>). CRO is provided as an (OWL) (<https://www.w3.org/OWL/>) ontology using the (Turtle syntax) (<https://www.w3.org/2001/rdf-syntax-ns.html>).

CRO is an application ontology obtained by integrating several existing ontologies, notably:

- (CIDOC CRM) (<http://www.cidoc-crm.org/>), a top ontology and an ISO standard forming the conceptual
- (Narrative Ontology) (<http://www.narratives.eu/ontology.html>), a domain ontology focused on the
- (SKOS) (<http://www.w3.org/2008/09/skos/>), a domain ontology for knowledge organization,
- (SKOS) (<https://www.w3.org/2008/09/skos/>), a domain ontology recommended by W3C for the
- (SKOS) (<https://www.w3.org/2008/09/skos/>), for simple resource description.

Mingei has received funding from the European Union's Horizon 2020 research and innovation programme under

Files (35.4 kB)

Name	Size	Preview	Download
Mingei-Ontology-master.zip	35.4 kB		
Mingei-Ontology-master	93.8 kB		

Options

Show only:  Literature (0)  Dataset (0)  Software (0)  Unknown (0)

Options to this version

Publication date: April 7, 2020

DOI: [10.5281/zenodo.3742828](https://doi.org/10.5281/zenodo.3742828)

Keyword(s): [Mingei](#) [Ontology](#) [Crafts](#) [Cultural Heritage](#)

Grants: [European Commission](#)

- Mingei - Representation and Preservation of Heritage Crafts (822336)

Communities: [Mingei H2020 Project](#)

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Versions

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10.5281/zenodo.3742828

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



# Contextual data

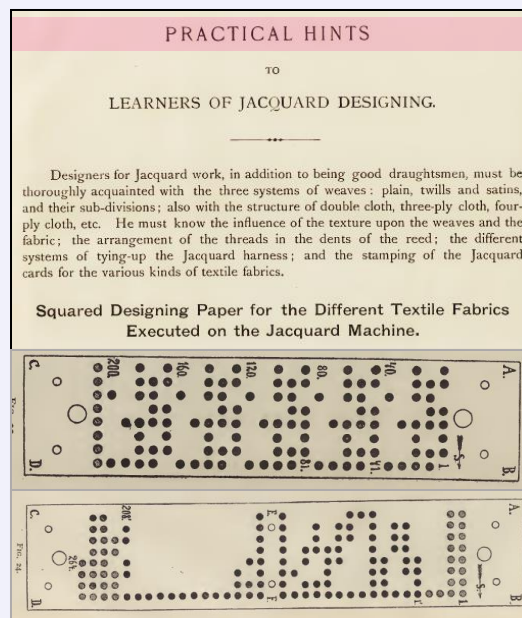
## Verbal

Literature, media

Testimonies

Audiovisual

Digital text



Methods of analysis:

OCR, Audio to Text, Geographical & Bio DBs  
**Keywords, Names, Translation**



## Visual

Symbols

Maps

Narratives

Illustrations

Methods of analysis:

Image Analysis, Computer Vision  
**Measurement, Recognition**

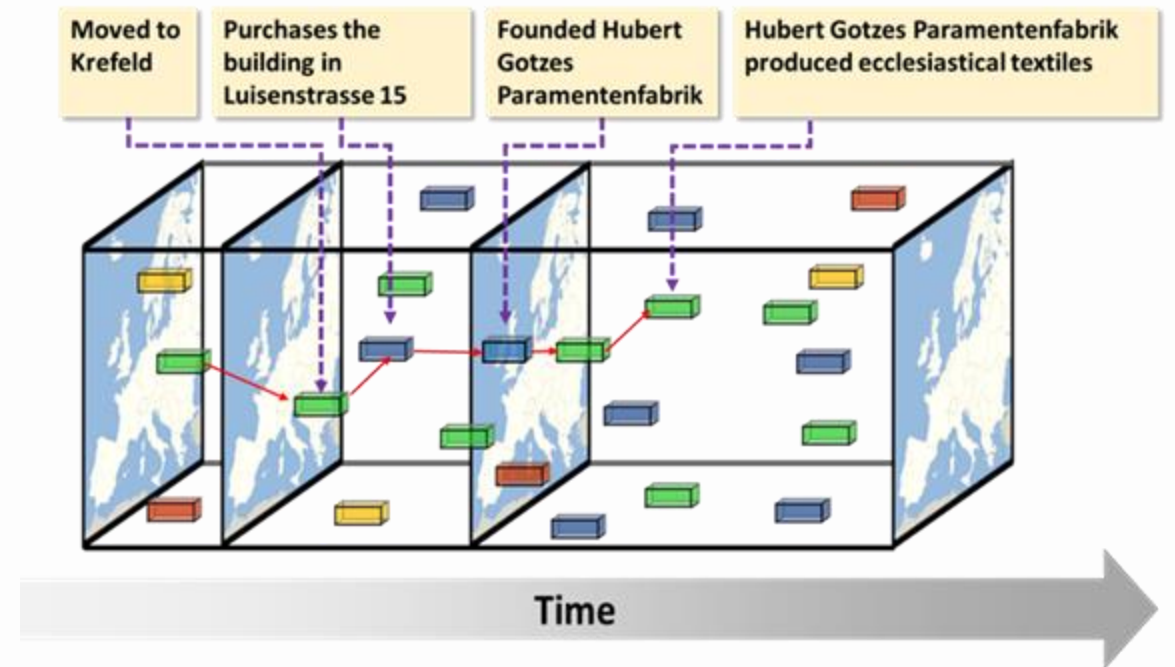


# Events and narratives

## Event



## Fabula



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



# Historical documentation

Online Platform

Login

## The story of Ecclesiastical Fabric Weaving in Krefeld

Narration

Narration of Ecclesiastical Fabric Weaving in Krefeld

Presentation

The Ecclesiastical Fabric Weaving in Krefeld

### The Ecclesiastical Fabric Weaving in Krefeld

The settlement of religious refugees in Krefeld as stimulus for church textile production

Krefeld began to develop into one of the most important silk metropolises in the German-speaking territories in the 17th century. One reason for this was the fact that many religious refugees settled in and around the town which formed part of the territory ruled by the House of Orange under which the town received the status of a "religious asylum".

The transition from linen weavers to silk industries

Many of the Mennonite families which move to the town were linen weavers, spinners, merchants and employers of outworkers. At the beginning of the 18th century linen weaving was increasingly being replaced by silk production, a development which was also supported by the government. Silk fabrics being luxury articles were in greater and greater demand and due to the influx of specialists, in particular from France, the quality of the fabrics continuously improved. The silk industry in Krefeld experienced its biggest boom in the mid-19th century. Krefeld became Germany's silk town. Some companies specialised in certain products, for example, velvet weaving, heavy-weight and light-weight, patterned and plain silk fabrics. One special field was ecclesiastical textiles.



"Little Brother" with a classical baroque flower p...



"Little Brother" with a classical baroque flower p...

#### Related Events !

- 📅 1607 Mennonites arrived in Krefeld
- 📅 1785 The invention of the first mechanical loom
- 📅 1842 Foundation of Casaretto's Company
- 📅 1852 Exhibition of ancient masterpieces of Christian art
- 📅 1887 Exhibition of Religious Fine-Art, Weaving and Embroidery from the Past
- 📅 1905 The foundation of Hubert Gotzes company called "Hubert Gotzes Paramentenfabrik".

#### Key Actors



Franz Johann Joseph Bock



Gottfried Diepers



Hubert Gotzes



Jakob Theodor Gotzes



Karl Matthias Gotzes

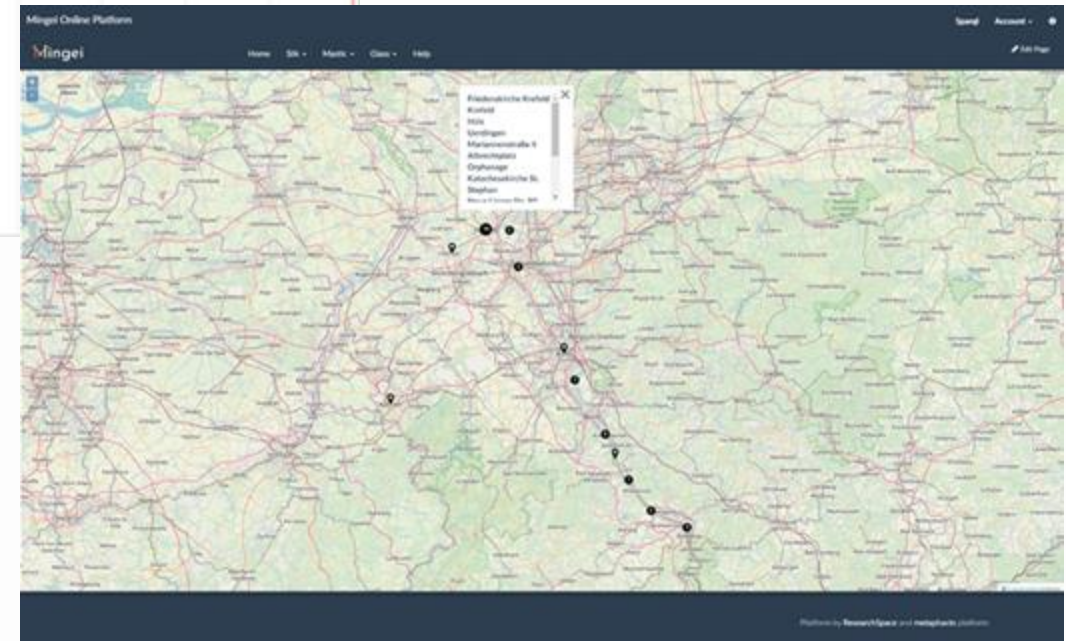
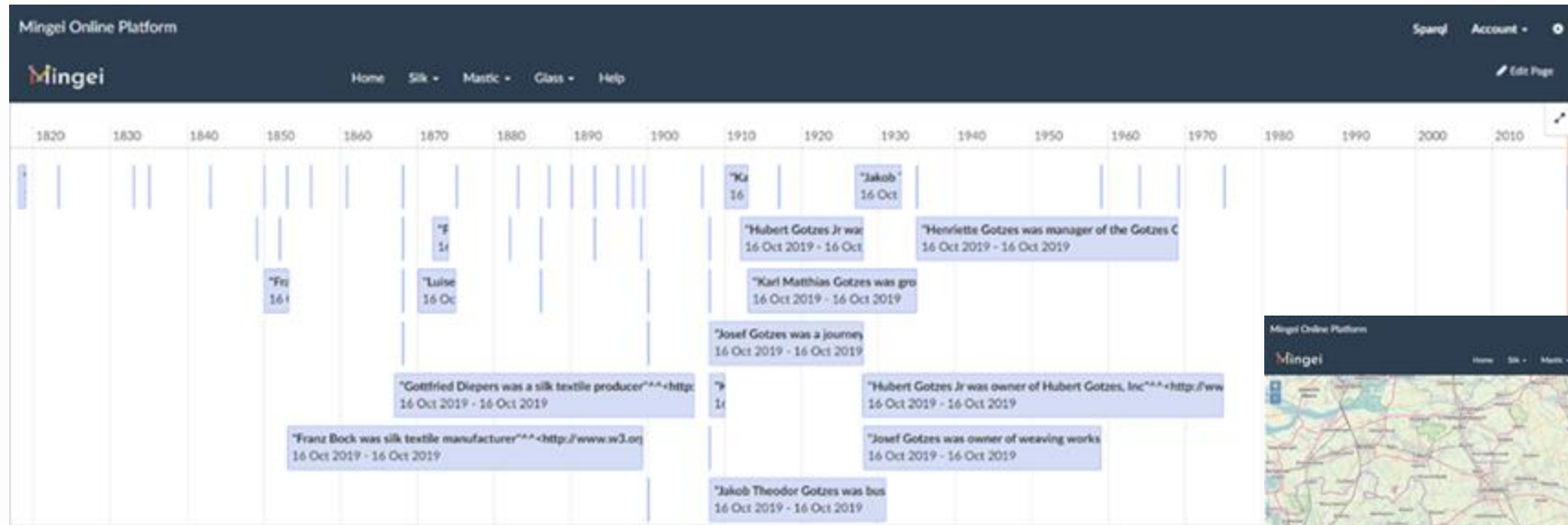


Mennonite minority in Krefeld





# Data presentation tools





# Presentation of narratives

## The Krefeld textile industry

### Jacquard technology



### Thirty Years War

The Thirty Years' War was a war fought primarily in Central Europe between 1618 and 1648. One of the most destructive conflicts in human history, it resulted in eight million fatalities not only from military engagements but also from violence, famine, and plague. The deadly clashes ravaged Europe; 20 percent of the total population of Germany died during the conflict. One of its enduring results was 19th-century Pan-Germanism, when it served as an example of the dangers of a divided Germany and became a key justification for the 1871 creation of the German Empire.

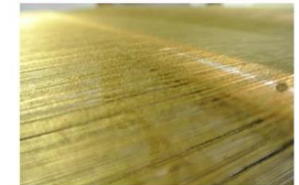
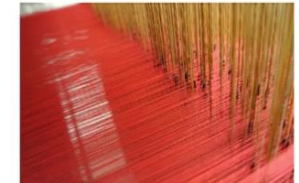


### Witch Hunts: Religious Persecutions in Europe in the 17th century.

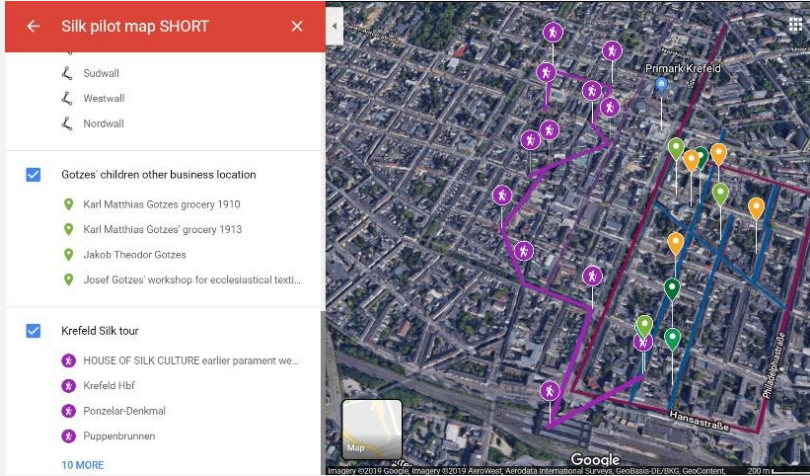
Many religious refugees settled in and around the town of Krefeld, which formed part of the territory ruled by the House of Orange, under which the town received the status of a "religious asylum". The persecutions began in the Bishopric of Würzburg. Concurrent with the events in Würzburg, Prince-Bishop Johann von Dornheim would embark upon a similar series of large-scale witch trials in the nearby territory of Bamberg. The witch hunts expanded into Baden following its reconquest by Tilly while the Imperial victory in the Palatinate opened the way for their eventual spread to the Rhineland. The Rhenish electorates of Mainz and Trier both witnessed mass burnings of suspected witches during this time. During this time the witch hunts also continued their unchecked growth, as new and increased incidents of alleged witchcraft began surfacing in the territories of Westphalia. The persecutions continued until the death of Ehrenberg in July, 1631. The excesses of this period inspired the Jesuit scholar and poet Friedrich Spee (himself a former "witch confessor") to author his scathing legal and moral condemnation of the witch trials, the *Cautio Criminalis*. This influential work was later credited with bringing an end to the practice of witch-burning in some areas of Germany and its gradual abolition throughout Europe.



### Silk Weaving



# Sense of place and time





# Web presentation

## 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 <a href="#">1. Blowing and Shaping</a>	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 <a href="#">2. Leg and foot laying</a>	5
2. Leg and foot laying	The leg and the foot of the carafe are constructed.	leads to step <a href="#">3. Transfer to punty</a>	3
3. Transfer to punty	The glass body is transferred from the blowpipe to the punty.	leads to step <a href="#">4. Cervix refining</a>	3
4. Cervix refining	Cervix is refined.	leads to step <a href="#">5. Cord laying</a>	0

## Process schema preview

The schema below shows the main steps, their subsequent substeps, if any, as well as the description of their relationship (i.e., order in which they occur, any specific condition, and other execution order details).

Steps and substeps	Execution order conditions
<b>0. Blowpipe cleaning</b>	
<b>1. Blowing and Shaping</b>	
↳ Gathering	Leads to step: Bubbling
↳ Bubbling	Leads to step: Second Gathering
↳ Second Gathering	Leads to step: Blocking
↳ Blocking	Leads to step: Body blowing
↳ Body blowing	
↳ Necking	occurs in parallel with Master shaping body Assistant blowing
↳ Master shaping body	waits for Assistant blowing then Finishing body
↳ Assistant blowing	waits for Master shaping body then Finishing body
↳ Finishing body	
<b>2. Leg and foot laying</b>	
↳ Leg laying	Leads to step: Foot laying
↳ Leg gathering and Overhead drop	Leads to step: Leg shaping
↳ Leg shaping	

## Carafe making process

View | Authoring | Set steps | Related media objects | Process preview | Process preview (expanded view)

**Name** Carafe making process

**Description** This is the process of making a carafe Bontemps' style.

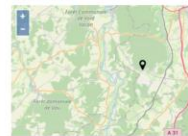
**Activity participants** Jean-Pierre Moloux (role: Glassmaker) Dominique Jamis (role: Assistant)

**Process schema** Glass schema [Schema preview](#)

Steps	Set order	Substeps
0. Blowpipe cleaning	1	0
1. Blowing and Shaping	2	5
2. Leg and foot laying	3	3
3. Transfer to punty	4	0
4. Cervix refining	5	0
5. Cord laying	6	4
6. Beak cutting	7	3
7. Handle laying	8	3
8. Finishing carafe	9	3
9. Annealing	10	2

### Location

Vyennes-le-Château



### Related Images



[View all related media objects](#)

**Process steps**

- 0. Blowpipe cleaning
- 1. Blowing and Shaping
- 2. Leg and foot laying
- 3. Transfer to punty
- 4. Cervix refining
- 5. Cord laying
- 6. Beak cutting
- 7. Handle laying
- 8. Finishing carafe
- 9. Annealing

### 1. Blowing and Shaping

This subseries results in the shaping of the carafe main body. The master blower and his assistant are collaborating in order to achieve the process objective.



[01\\_blowing\\_1.mp4](#)

[01\\_blowing\\_2.mp4](#)

### Steps

#### Gathering

The glass master starts the blow of the furnace. Before putting the blowpipe in the fire, he checks if it is normal. He puts the blowpipe vertically in the furnace. He waits for the blowpipe to get hot and the glass to be ready to use. He pushes the blowpipe, creating a small bubble in the glass. He blows the furnace and the blowpipe is gathered.



[01\\_gathering\\_1.mp4](#)

[01\\_gathering\\_2.mp4](#)

[01\\_gathering\\_3.mp4](#)



### 2. Leg and foot laying



[Leg\\_and\\_foot\\_laying\\_slowmotion3](#)



[Leg\\_and\\_foot\\_laying\\_slowmotion2](#)



[Leg\\_and\\_foot\\_laying\\_slowmotion1.mp4](#)

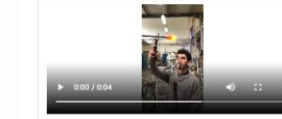


[leg\\_laying\\_07](#)

### Substeps

#### Leg laying

The glass master starts creating the carafe base. The assistant takes out of the furnace a new molten blob of glass and he is checking the exact position that should be placed. The glass master places the molten glass on the inflated glass and cuts it with metal shears. He pushes the molten glass on the inflated glass using the wide side of the jacks. He wipes the glass with the wet paper. After that, he uses a metal pallet in order to flatten the base of the carafe.



[01\\_leg\\_part\\_1.mp4](#)



[01\\_leg\\_part\\_1a.mp4](#)



[01\\_leg\\_part\\_1b.mp4](#)



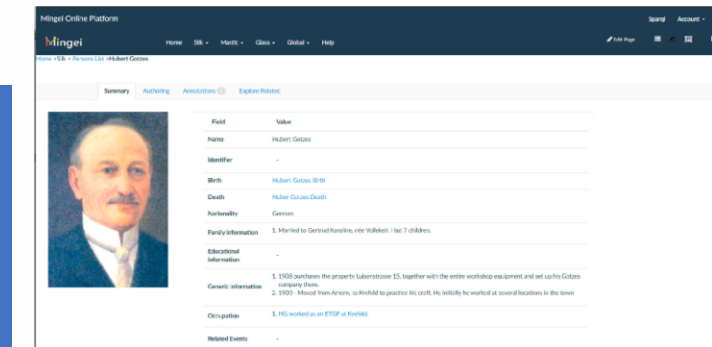
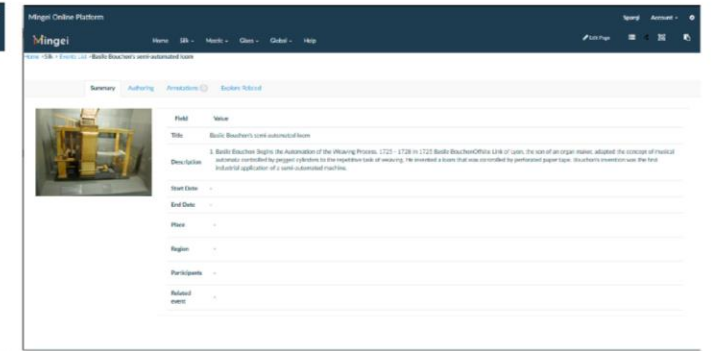
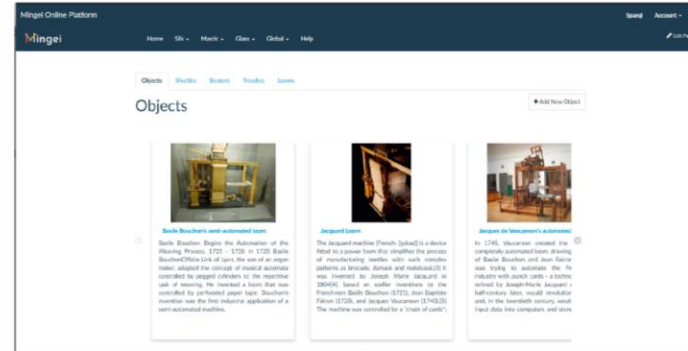
# Access and management of CH digital assets

**Machine-interpretable**  
established standards in  
Semantic Web.

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

**Digital**

**Human-comprehensible**  
Web-based GUI, hyperlinks, illustration



**Recommendation: Preservation of physical and digital media**

Zenodo storage, Europeana findability

**Recommendation: IPR**



# Semantic annotations

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- Getty
  - *AAT: Art & Architecture Thesaurus*
  - *CONA: Cultural Objects Name Authority*
  - *TGN: Getty Thesaurus of Geographic Names*
  - *ULAN: Union List of Artist Names*
- Geonames: for locations
- Semantics.gr
  - *ekt-item-types*
  - *ekt-unesco*
  - *thematic\_tags*
  - *craft-item-types*
  - *searchculture-persons*





# MOP Digital assets

## Create New Related media object

\* required field

Type\*

Image

URL address of media source\*

https://upload.wikimedia.org/wikipedia/commons/4/46/RO\_B\_Bellu\_cemetery\_entrance.jpg

Name\*

Bellu cemetery info image

Description

Entrance into the Bellu cemetery, Bucharest, Romania

Submit

Reset

**Media object (short)**

Media name\*

After bubbling

Description

Abstracted exemplar of the glass material after completion of the bubbling process

Source (URL address)

http://mop.mingel-project.eu/media/Glass/images/Glass\_Procedure/blowing\_and\_shaping/bubbling/3\_after.png

Media object fragments

Media name\*

After bubbling (pipe and glass only)

Description

Enter description here...

Media fragment source (url address)

http://mop.mingel-project.eu/media/Glass/images/Glass\_Procedure/blowing\_and\_shaping/bubbling/3\_after\_fragment.png

Media name\*

After bubbling (glass only)

Description

Enter description here...

Media fragment source (url address)

http://mop.mingel-project.eu/media/Glass/images/Glass\_Procedure/blowing\_and\_shaping/bubbling/3\_after\_fragment\_glass.png

Associate with

Bubbling

Creative commons license

CC BY SA

Creator

Eliia Montbruki

Creation date

2021-05-31

Save Reset

**Media object (full)**



# Ethnographic representation

Specify Execution Order

Step name: Necking

Current order option: Any

Other order options: Select one of the below to change the current order option

Any

[Goes to step](#)

[Goes to parallel steps](#)

[Waits for](#)

[Condition checking](#)

[Last step](#)

Save Cancel

Specify Execution Order

Step name: Necking

Current order option: Any

Other order options: Select one of the below to change the current order option

[Any](#)

[Goes to step](#)

[Goes to parallel steps](#)

[Waits for](#)

[Condition checking](#)

A. What is the condition that should be checked?

Finished

B. What will happen if the condition is met?

[Goes to step](#)

[Goes to parallel steps](#)

[Waits for](#)

[Condition checking](#)

C. What will happen if the condition is not met?

[Goes to step](#)

[Goes to parallel steps](#)

[Waits for](#)

[Condition checking](#)

[Last step](#)

Save Cancel

Specify Execution Order

Step name: Necking

Current order option: Any

Other order options: Select one of the below to change the current order option

[Any](#)

[Goes to step](#)

[Goes to parallel steps](#)

[Waits for](#)

[Condition checking](#)

A. What is the condition that should be checked?

Finished

B. What will happen if the condition is met?

[Goes to step](#)

[Goes to parallel steps](#)

Step1:

Step2:

[Add](#)

[Waits for](#)

[Condition checking](#)

C. What will happen if the condition is not met?

[Goes to step](#)

Which step comes next?

Blowing

[Goes to parallel steps](#)

[Waits for](#)

[Condition checking](#)

[Last step](#)

Save Cancel

[Waits for](#)

[Condition checking](#)

C. What will happen if the condition is not met?

[Goes to step](#)

Which step comes next?

Blowing

[Goes to parallel steps](#)

[Waits for](#)

[Condition checking](#)

[Last step](#)

Save Cancel

- **Branching points**
- **Parallel tasks**





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# Thank you



Craeft is a Research and Innovation Action funded under the Horizon Europe programme of the European Commission (101094349)

