

# Weaving Tales of Crafts: Narrative Creation for Cultural Heritage Preservation

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## Abstract

This study explores the transformative potential of semantic technologies and formal narratives in preserving and contextualizing Heritage Crafts (HCs) within the Craeft project, a Horizon Europe initiative (2023–2026). By applying the fabula-narration framework and utilizing the Craeft ontology, this research demonstrates how diverse craft knowledge — from creation processes to historical contexts — can be systematically represented, accessed, and visualized by various audiences. A case study on Limoges porcelain illustrates how integrating historical, cultural, and technical dimensions into structured narratives can effectively connect past and present craft traditions.

## Keywords

Narratives, Heritage Crafts, Ontology, Cultural Heritage, Craeft project

## 1. Introduction

Narratives are a foundational element of human cognition and communication, serving for both creative exploration and the articulation of lived experiences. Through the construction and dissemination of stories, individuals not only articulate the intentions, emotions, and aspirations of characters but also delineate the defining characteristics of objects and events, thus crafting a coherent and meaningful representation of their perceived reality [1]. From a psychological standpoint, contemporary theories increasingly underscore that the organization of experiences into narrative structures represents an intrinsic mechanism by which humans interpret and navigate their world [2, 3]. Within this context, narratives emerge as powerful tools for contextualizing the production and evolution of Heritage Crafts (HCs), recognised by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as a form of Intangible Cultural Heritage [4], embodying the knowledge, skills, traditions, and identities of past and present communities. Narratives are able to capture the socioeconomic, technological, and cultural dimensions of HCs while simultaneously illustrating the historical or imaginative trajectories of key actors and transformative events.

The Craeft project [5], a European initiative funded under the Horizon Europe program (2023-2026), aims to document, preserve, and revitalize HCs through innovative digital methodologies. Central to this effort is the examination of eight Representative Craft Instances (RCIs) — glass, porcelain, clay, marble, wood, silver, Aubusson tapestry, and wool textiles — each selected for its historical, cultural, and technical significance. For each craft, the project examines both tangible aspects, such as tools and materials, and intangible elements, including techniques, socio-cultural aspects, and historical contexts. Within the Craeft project, an ontology to formally represent narratives about HCs was developed. Narratives are represented as semantic networks of interconnected spatio-temporal events. These events are semantically linked to one another and to their constitutive components, such as the entities that participate in or influence the events—ranging from persons and locations to concepts, objects, and materials. The Craeft ontology is a CIDOC CRM-based [6] vocabulary and plays a critical role in ensuring interoperable representations of craft practices.

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By leveraging this ontology, the present study seeks to develop structured narratives that capture and convey the intricate essence of crafts, preserving their multifaceted heritage in a digitally accessible format.

## 2. Knowledge Elements in Craeft

The first part of the Craeft project was dedicated to the systematic collection of knowledge elements essential to understanding the eight Representative Craft Instances (RCIs). These RCIs encompass distinct craft domains: Glass (RCI 1), Porcelain (RCI 2), Clay (RCI 3), Marble (RCI 4), Wood (RCI 5), Silver (RCI 6), Aubusson Tapestry (RCI 7), and Cretan Textiles (RCI 8). This structured framework enabled a targeted approach to gathering and analyzing knowledge specific to each craft, with sources tailored to their unique historical, cultural, and technical dimensions.

This knowledge was primarily gathered from an extensive review of the archives of Craeft’s cultural partners, including the National Conservatory of Arts and Crafts (CNAM)<sup>1</sup>, the Centre Européen de Recherches et de Formation aux Arts Verriers (CERFAV)<sup>2</sup>, the Piraeus Bank Group Cultural Foundation (PIOP)<sup>3</sup>, the Technological Center for Furniture and Wood of the Region of Murcia (CETEM)<sup>4</sup>, the Traditional Craft Center Ioannina (KEPAVI)<sup>5</sup>, and the Museum of Cretan Ethnology<sup>6</sup>. Furthermore, rigorous literature surveys were carried out to further contextualize these crafts within broader socio-economic and cultural frameworks, enriching the overall understanding of their significance. Finally, ethnographic studies [7] were performed and offered firsthand insights into traditional techniques and practices involving local communities. The ethnographic studies conducted across all RCIs provide a rich, qualitative foundation for capturing the nuances of craft practices and traditions. The collected knowledge spans different semantic categories, including people, social groups, tools, materials, products, and processes, with a detailed breakdown for each RCI. Table 1 provides a detailed view of the number of elements collected so far in each category for every RCI. The table also highlights the number of narratives created for each craft domain up to now. All the knowledge elements are freely accessible and can be visualized on the Craeft website<sup>7</sup>. It is worth noting that the collection of elements is constantly evolving and continuously enriched.

**Table 1**  
Knowledge collected for every RCI

RCI No	Persons	Social groups	Tools	Materials	Products	Processes	Narratives
1	28	18	27	8	3	1	2
2	8	9	12	11	-	1	1
3	3	10	17	9	2	1	3
4	15	4	17	5	6	1	2
5	17	14	22	6	1	1	2
6	6	20	17	8	-	1	3
7	35	2	12	7	-	1	2
8	55	9	22	43	314	1	2
Total	167	86	146	97	326	8	17

<sup>1</sup><https://www.cnam.fr/>

<sup>2</sup><https://www.cerfav.fr/>

<sup>3</sup><https://www.piop.gr/en/>

<sup>4</sup><https://cetem.es/en/>

<sup>5</sup><https://www.craeft.eu/traditional-craft-center-of-ioannina/>

<sup>6</sup><https://www.cretanethnologymuseum.gr/>

<sup>7</sup><http://mop.mingei-project.eu>

### 3. The narratives in the Craeft Ontology

To organize the collected knowledge, the Craeft ontology was used, offering a robust framework for structuring and narrating the multifaceted dimensions of craft knowledge, encompassing materials, tools, locations, actors and processes. This is an application ontology obtained by integrating several existing vocabularies to maximise its interoperability, notably:

- the CIDOC CRM, a top ontology and an ISO standard forming the conceptual backbone of the Craeft ontology.
- The Narrative Ontology (NOnt) [8], a domain ontology focused on the formal representation of narratives and its geospatial extension (NOnt+S) [9]
- FRBRoo [10], a domain ontology for bibliographic records, resulting from the harmonization of FRBR with CRM.
- OWL Time [11], a domain ontology recommended by W3C for the representation of time.

The Craeft ontology adopts the concept of narrative introduced by the NOnt ontology. It is rooted in two interdependent components: the fabula and the narration [12, 13, 14]. These elements collectively establish a comprehensive framework for analyzing, structuring, and preserving stories, with a particular emphasis on the documentation of crafts. The fabula represents the chronological sequence of events, encompassing both real and fictional occurrences, and serves as the foundational structure of any narrative. It captures all significant moments pertinent to a craft, ranging from its production and technological advancements to its broader socio-cultural implications. This temporal framework is characterized by its inherent coherence, reflecting the natural progression of events. For example, the fabula may document major milestones such as the establishment of a craft guild, alongside intricate details like the mastery of a specialized technique, thereby presenting a holistic view of the craft's evolution.

In contrast, narration is a function used as an interpretative lens through which the raw material of the fabula is transformed into a cohesive and engaging story. It selectively organizes and accentuates specific elements of the fabula while integrating stylistic and medium-specific considerations to shape the audience's perception. Unlike the chronological rigidity of the fabula, narration introduces flexibility by reordering events to achieve thematic coherence or dramatic emphasis. Furthermore, narration is inherently perspectival, encapsulating diverse viewpoints that range from personal, first-hand accounts to impartial, third-person narratives.

The relationship between fabula and narration is dynamic and complementary. While the fabula provides the foundational sequence of events, narration interprets and re-presents this sequence to create meaning. A single fabula can give rise to multiple narrations, each shaped by its intended audience or purpose. This interplay enriches the narrative, allowing deeper engagement and comprehension. In the context of the Craeft project, this structured duality ensures that craft heritage is documented comprehensively while remaining engaging and relevant across diverse platforms and audiences.

The Craeft ontology was populated with the knowledge elements reported in Section 2. The whole graph is freely accessible on the Craeft website<sup>8</sup>. Following the Linked Data paradigm [15], the knowledge elements are represented in the graph by unique identifiers defined in thesauri considered state-of-the-art and *de facto* standards for resource representation. Notable among these thesauri are the Art & Architecture Thesaurus (AAT) [16], the Catalog of Art Collections (CONA) [17], the Union List of Artist Names (ULAN) [17], the Thesaurus of Geographic Names (TGN) [17], and Geonames [18].

The Craeft ontology and the use of these thesauri ensure that the dimensions of HCs are preserved within a structured, machine-readable framework, enhancing both accessibility and usability. By leveraging these resources, the project facilitates the generation of narratives that not only document but also contextualize traditional and contemporary craft practices, safeguarding their tangible and intangible aspects.

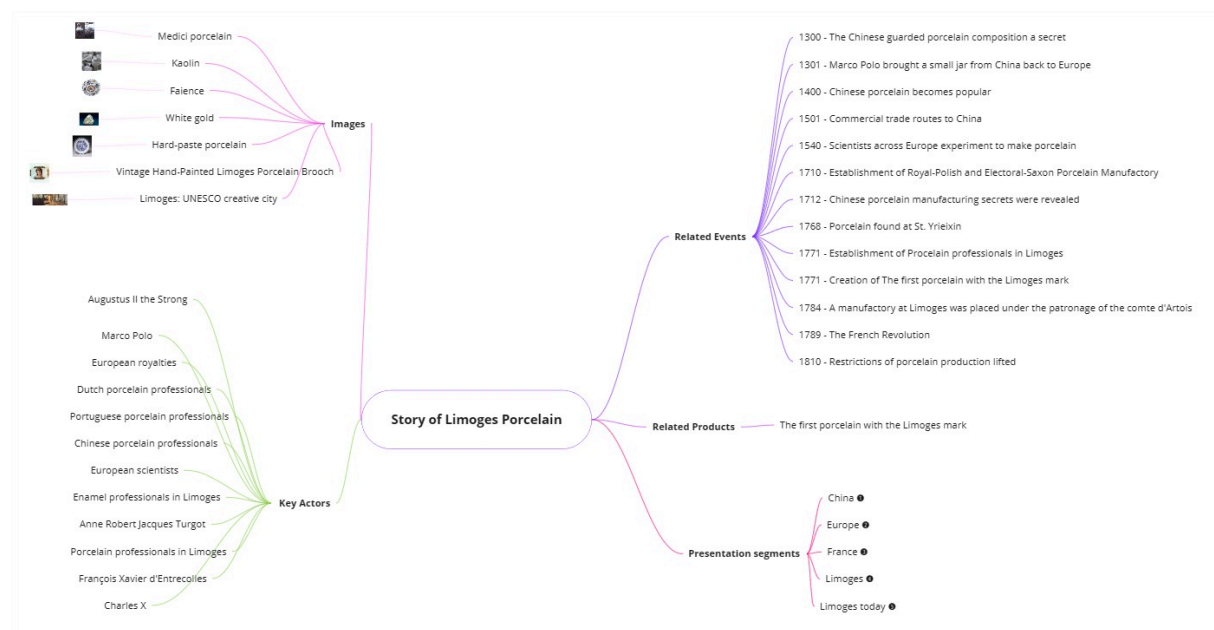
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<sup>8</sup><http://mop.mingei-project.eu/sparql>

## 4. A Case Study: The Story of Limoges Porcelain

As a representative example of the narratives built within the Craeft project, we report the story of the Limoges Porcelain (RCI 2). The narrative of Limoges porcelain underscores a journey of centuries marked by refinement, innovation, and global cultural significance. Initially originating in China, where porcelain had been crafted for centuries, this exquisite material captivated European markets, inspiring significant efforts to replicate its brilliance. The discovery of kaolin deposits near Limoges in 1768 marked a pivotal moment, transforming the region into a cornerstone of fine porcelain production. This discovery catalyzed the establishment of manufacturing facilities by 1771, enabling Limoges to produce porcelain renowned for its luminous white hue and intricate craftsmanship. By the 19th century, Limoges had cemented its reputation as the epicentre of French porcelain, supplying both local and international markets with products that epitomized elegance and artistry.

Figure 1 presents the graph of the Limoges Porcelain narrative. This graph allows retrieving all the events, both from the fabula and the narration, that compose the narrative, along with the actors, associated images, and products. The knowledge collected in this graph is then visualized in a user-friendly way through the Craeft Authoring Platform<sup>9</sup> (CAP). The platform executes predefined SPARQL queries and displays the information in textual format enriched with images or by visualizing events on a timeline and, to some extent, on a map<sup>10</sup>. Here, we have provided only one example as a case study; however, on the CAP it is possible to explore all the knowledge and narratives collected within the project.



**Figure 1:** The knowledge graph related to the Story of Limoges Porcelain.

## 5. Discussion and Challenges

Craft narratives offer considerable potential for preserving and contextualizing cultural heritage, yet they present significant challenges in data representation, interoperability, and engagement. Addressing these issues requires a combination of robust ontological frameworks, adherence to established standards, and innovative tools to ensure both flexibility and usability.

<sup>9</sup><http://mop.mingei-project.eu/resource/rsp:Home>

<sup>10</sup><http://mop.mingei-project.eu/resource/?uri=http://www.mingei-project.eu/resource/8e9d72f9-039f-441c-9543-0b6ff4b8c8f4&tab=summary>

The first challenge, data representation, arises from the complexity of capturing the multifaceted nature of craft narratives. These narratives must integrate historical, technical, and cultural dimensions while maintaining coherence. To tackle this, the Craeft ontology was designed to represent not only the key concepts of narratives but also the intricate processes involved in crafting. This dual capability ensures that the ontology supports both detailed descriptions of specific narratives and the abstraction necessary for broader application across diverse crafts.

Interoperability poses another critical challenge, as it is essential for ensuring that data can be seamlessly integrated and utilized across various platforms and systems. The Craeft ontology was developed as an extension of CIDOC CRM[6], an ISO standard widely adopted for cultural heritage data. By adhering to this standard and employing semantic annotations with identifiers from authoritative thesauri such as the Getty Arts and Architecture Thesaurus (AAT), GeoNames, and the Union List of Artist Names (ULAN), the project achieves semantic consistency. These measures ensure that the data is not only accessible within the Craeft ecosystem but also interoperable with externally linked data environments, fostering broader accessibility and utility.

This key advantage of the ontological approach enhances interoperability by facilitating seamless integration not only with externally linked data environments but also among various components within the Craeft project itself. By using a shared ontology built upon the CIDOC CRM standard, information about craft processes and activities is interconnected, consistently represented, and semantically annotated, ensuring both internal coherence and external accessibility.

Our framework has been explicitly designed with scalability in mind, ensuring applicability not only across various case studies but also extending to other domains beyond the Limoges porcelain example. Preliminary ontology generalizations have already been tested with all other RCIs, as shown in Table 1. Additionally, the same ontological approach has been successfully applied to other scientific domains, such as geographic representation in medieval literature[19] and bio-economic studies of European mountain value chains [20]. These initial explorations demonstrate the robustness of the ontology, paving the way for broader adoption across diverse scientific fields.

Engagement is a dual-faceted challenge involving both the collection and presentation of data. On one hand, the tools used by contributors must be intuitive and efficient to facilitate the accurate and consistent input of information into the ontology. On the other hand, the presentation of narratives must be compelling and interactive to engage diverse audiences effectively. The CAP addresses these issues by providing a user-friendly interface for data management and a flexible framework for presenting narratives in engaging formats. Through interactive features such as visual timelines, maps, and multimedia integration, CAP transforms static data into dynamic storytelling experiences, making craft narratives accessible and immersive.

Looking ahead, the future development of the Craeft project will focus on automating and semi-automating the organization of data into coherent narratives. Narrative extraction, as noted in [21], remains a challenging problem, but advancements in natural language processing, machine learning, and Artificial Intelligence offer promising solutions. By developing pipelines for automated data organization and narrative generation, the project aims to enhance scalability and reduce the manual effort required for crafting narratives. These advancements will not only streamline the documentation process but also enable the creation of richer, more diverse narratives that preserve and promote the cultural significance of HCs.

## 6. Conclusion

This study underscores the transformative potential of semantic technologies and formal narratives in preserving and contextualizing HCs within the Craeft European project. By employing the fabula-narration framework and leveraging the Craeft ontology, this research demonstrates how diverse craft knowledge can be systematically represented, accessed and visualized from various audiences. The case study on Limoges porcelain highlights the value of integrating historical, cultural, and technical dimensions into narratives that bridge the past and present.



Furthermore, this work advocates for collaborative efforts among researchers, cultural institutions, and local communities to ensure that HCs are not only documented but revitalized and preserved. By combining storytelling with cutting-edge technologies, we can safeguard the HCs, making them accessible and meaningful for future generations.

While significant progress has been made in creating narratives, challenges remain in data representation, interoperability, and engagement. Addressing these issues requires continued refinement of ontological models and the adoption of advanced technologies for narrative extraction and organization. The integration of automation, machine learning and Artificial Intelligence techniques holds promise for reducing manual effort while expanding the scope and depth of craft narratives.

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## Declaration on Generative AI

During the preparation of this work, the authors used ChatGPT-4 to check grammar and spelling. After using this service, the authors reviewed and edited the content as needed and take full responsibility for the publication's content.

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