

Entry

# Safeguarding Traditional Crafts in Europe

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**Definition:** This entry discusses the challenge of safeguarding crafts in Europe. Safeguarding is defined herein as the systematic process of understanding, representing, preserving, and valorizing crafts following the recommendations of UNESCO and the UN-World Tourism Organization. The abovementioned challenges are discussed through a multidisciplinary prism starting from the scientific challenges in the information and communication technologies sector and expanding the discussion to ethical, legal, and policy-making measures and recommendations to safeguard crafts as a form of tangible and intangible cultural heritage but also as a source of growth and impact for the communities that practice them. To this end, the role of education and training for craft preservation is discussed, considering that the declining number of practitioners and apprentices is considered today the main threat to their preservation.

**Keywords:** crafts; craft understanding; craft representation; craft preservation; craft valorization

## 1. Introduction

Crafts have been an important part of the European cultural and historical identity since the Industrial Revolution, the establishment of applied art schools, and the Arts and Crafts [1] and the Bauhaus movements [2]. At the same time, craft history is related to the origins of modern societies, history, culture, and local traditions, as well as personal and family memories, to which all general audiences can relate. The study of crafts in social, historical, and economic contexts reveals aspects of Europe's history (e.g., [3]), the impact of global events, and technological progress in different locations in Europe, as well as memories of past European societies and their current values. The internationally celebrated vocabulary of traditional and contemporary European designs, as well as those from local sociohistorical contexts, are reused and promoted through their diffusion in new products [4].

Crafts are an important and recognized component of European cultural heritage (CH). Intangible cultural heritage (ICH) forms an important part of Europe's cultural and historical identity, while crafts comprise a pillar of European culture and European cultural industries. Many crafts have common roots all around Europe, while influences vary according to region and context.

This entry discusses the urgent matter of safeguarding crafts in Europe. Their decline will negatively affect our understanding of European culture and CH and will be followed by the social and economic de-valorization of the regions, communities, and countries in which they are practiced. This article starts with a discussion on the current state of the art in Section 2, followed by an overview of the technical progress achieved toward a scientific methodology and tools for the representation and presentation of crafts as a first step towards their preservation (Section 3). Of course, this cannot be achieved without the help of craft communities, which are the core of our craft traditions. Their empowerment is the main topic of discussion in Section 4. In the globalized economy, while facing mass-production countries, craft communities should be equipped with the appropriate tools to protect their intellectual property, design, and know-how by facilitating existing protection



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methods and making the most out of the European legislation currently in effect. These subjects are discussed in depth in Section 5. Finally, Section 6 discusses the preservation of craft practice. It is argued that by empowering formal and informal education, a new generation of European craft masters will emerge. This entry concludes with a collection of policy recommendations to further support the goal of safeguarding crafts in Europe and future research directions.

The contribution of this work is summarized as a systematic attempt to identify the current landscape of crafts safeguarding by summarizing existing methods, tools, research efforts, and legal instruments. At the same time, it provides concrete directions to support the further utilization of each of the above to further empower safeguarding efforts at all levels. As such, it can be used as a guide to craft representation and presentation projects. Furthermore, it lays the foundations for future work both at research and policy levels and highlights the necessary building blocks according to a wide, multidisciplinary perspective. It is aspired that this work has the potential to engage more people from interdisciplinary domains in safeguarding traditional crafts as living heritage, a source of common traditions, and a sustainable form of eco-friendly production and heritage valorization.

## 2. Background

This section provides orientation regarding the significance and value of traditional crafts, highlighting the urgency of their safeguarding. Further background information will be presented as part of the authors' deeper research into each of the identified components of safeguarding as the systematic process of understanding, representing, preserving, and valorizing crafts. These will be complemented when appropriate with best practice examples for the utilization of the current state of the art.

### 2.1. Crafts in Europe

Crafts hold a place in Europe's history, shaped by pivotal periods like the Industrial Revolution [5]. Their value extends beyond mere artisanal skills, as crafts offer insights into historical, societal, and economic dimensions. To appreciate their true significance, one must consider these broader contexts.

Europe's cultural heritage institutions (CHIs) and creative and cultural industries (CCIs) assume crucial roles in the EU economy and the flourishing tourism sector. Their involvement in the preservation and promotion of crafts, which represent both tangible and intangible cultural heritage, can yield substantial benefits. It underscores the symbiotic relationship between crafts, cultural institutions, and the creative economy, highlighting the potential for mutual growth and enrichment.

Craft has significance for Europe since it promotes integration of diverse European societies, thus contributing to the formulation of a sense of belonging and the spread of democratic and social values [6]. This is primarily the case for crafts, as many have a common base across Europe and are of cross-border nature. As a form of ICH, crafts are transmitted across generations, providing communities and individuals with a sense of identity and continuity, creating more resilient, competitive, and culturally aware societies [7–9].

### 2.2. Traditional Crafts as an Economic Resource

In 2006, the global exports of crafts attained USD 186.5 billion [10] and are particularly important for the economy of developing countries [11], with Asia and Europe leading global exports. For example, the Indian handicraft industry evolved rapidly from USD 1.2 million turnover in 2004 to USD 1.9 billion in 2006 [12]. However, after the economic crisis, the share of craft products in the world was reduced to 2% [12]. Currently, it is argued that supporting and streamlining the digital representation of ICH assists this growth [13].

Tools for education play a pivotal role in upholding and ensuring the enduring sustainability of the crafts economy [14]. By harnessing the economic benefits stemming from

the reuse of digital assets, substantial resources can be generated to support the preservation of cultural heritage [15]. Consequently, the integration of digital documentation, representation, and presentation has the potential to wield a favorable impact on crafts, ushering in a promising era of advancement and preservation for this vital cultural domain.

### 2.3. *Endangered Crafts and the Need for Preservation*

In contemporary consumer-oriented societies, the widespread accessibility of low-cost, mass-manufactured products has significantly diminished the market potential for handmade crafts, relegating them to a niche market [16,17]. This shift has rendered crafts vulnerable, particularly heritage crafts [18]. The underlying causes of this decline in crafts vary across European nations, as identified by pertinent EU initiatives [19,20]:

- Apprentice demotivation and lack of certification of craftsmanship and products. The subject of certification is still under debate [21–24].
- Competition from cheaper products, especially products produced in Asia [25].
- Regression of the workforce, and unlike what traditionally happened in the past [26], there is little interest from young people in taking up these professions.
- Availability and price of raw or ‘natural’ materials [27].
- Lack of government incentives to support craft production and entrepreneurship.
- Limited or no financing for start-up craft businesses.
- Crafts are associated only with heritage and the past, making them unattractive for young people to choose a crafts-related profession in advanced economies.

### 2.4. *Safeguarding Crafts*

This entry starts with the assumption that safeguarding is a complex challenge that cannot be addressed by focusing on a single level of intervention. As such, safeguarding is defined herein as a collection of measures that include understanding, representing, preserving, and valorizing. Each measure has multiple dimensions that cannot be exhaustively addressed in a single contribution. It is aspired that through this work a basic understanding of these aspects can be achieved, followed by recommendations on a policy level regarding the future outlook of crafts in Europe.

### 2.5. *Contribution*

As a concrete contribution, this work analyzes the existing state of the art at multiple levels, and the authors contribute to a roadmap for their safeguarding both at scientific and policy levels. This work can thus function both as a how-to guide for craft representation and presentation projects and a valuable source of fine-tuning for future research attempts in the domain. At a policy level, valuable recommendations are made to further support craft entrepreneurship at a European level.

## 3. **Understanding and Representing Crafts through Digitization**

Despite their cultural value, endeavors to represent crafts are fragmented across different regions and themes. In this entry, techniques for building craft representations are explored, alongside ethical aspects related to such digitization initiatives. These representations rely on digital resources, semantic data, and pre-existing literature, as well as on well-established digitization and representation techniques, and they have the capacity to capture and safeguard both the tangible and intangible dimensions of crafts.

### 3.1. *A Scientific Methodology*

Addressing the urgent need for the preservation of crafts was the main objective of the Mingei Horizon 2020 project [28] and was manifested through a methodology for their representation, supporting the curation of digital assets [29]. The representation achieved through the Mingei approach is proficient in encompassing a wide range of knowledge related to crafts. It encompasses aspects such as the craft’s objects and their creation, the

hand movements and tool utilization that define the motor skills involved in crafts, as well as the societal, economic, and historical importance of crafts.

Achieving a representation of crafts is the first step in the digital conservation of knowledge, but it is not a simple task at all, due to the multiplicity of craft dimensions, and the heterogeneity of data, knowledge, and contexts. To systematize and replicate craft representations for the multiplicity and diversity of crafts, the Mingei craft representation protocol has been developed as a method and accompanied by the technical tools to implement this method [30]. The Mingei protocol is a proposed method comprising guidelines, tools, and instructions that are based on the state of the art in the humanities, natural sciences, and computer science [30]. An ontology and supporting controlled vocabularies have been developed to properly encode and digitally preserve the collected knowledge [31] according to international, semantic web standards adopted by the cultural heritage (CH) sector [32].

To achieve this goal, Mingei advanced the state of the art in terms of theoretical organization of this knowledge by conceptualizing crafting processes, contextualization narratives, and recipes that act as the connecting glue between the heterogeneous knowledge elements and data [33]. This “glue” is implemented as formal semantic relations that interconnect knowledge elements [34]. A layer of auxiliary tools was developed and utilized to prepare content and provide multimodal access to the represented knowledge [35–37]. The tools to implement the proposed organization were provided through a semantic knowledge-authoring platform, the Mingei Online Platform (MOP) [38].

The MOP implements the systematic process for craft representation and presentation as proposed by Mingei. This process can be summarized in a series of steps as follows. In Step 1, the documentation is acquired in the form of digital assets that are relevant to the representation of a craft. Based on these assets, knowledge about a craft is acquired and semantically represented using MOP (Step 2). Subsequently, in Step 3, researchers formulate several text-based narratives that present the targeted sociohistorical context. These narratives are used to identify events and their causal dependencies to formulate representations of fabulae. Then, in Step 4, narratives are considered as different ways of telling the story. In Step 5, different presentations are created to explore multimodal modalities using different technologies (e.g., the web, VR, AR, mobile devices, books, etc.). In the same way, crafting processes are modeled following the abstraction of a process schema and a process. The process schema defines what should ideally be carried out, while the process represents an execution of the schema in the real world. Process schemas are created in Step 3 and processed in Step 4. A variant presentation of a process is the objective of Step 5. Following this step-by-step process, in Mingei, the MOP served as the representation and digital preservation of knowledge. At the same time, due to the underlying ontology, represented knowledge became compliant with international standards and with the European Data Model (EDM) [39].

The literature has started to emerge recently, providing a theoretical basis for the representation of ICH [40]. An approach toward defining a heritage craft representation can be found in the ICCROM report on heritage crafts and their conservation [41]. This report defines craft dimensions that are relevant to craft representation. The report sheds light upon the fact that crafts in general encompass both tangible and intangible dimensions.

The state of the art was extended by providing crisp methods to identify and collect knowledge on crafting processes and craft contextualization. Through this approach, stakeholder diversity leads to a variety of needs and requirements. Craft representations should make use of complementary views of the represented content.

The Mingei approach was validated in pilots that explored the potential of contributions to specific use cases in different learning contexts: informal education and leisure, formal education, and craft-oriented tourism [42–44].

### 3.2. Ethical Considerations

Considering that the representation of a craft involves human participants, it is mandatory to satisfy several requirements. Ethics, data protection, and health and safety requirements are an integral part of research in Europe from beginning to end, and ethical compliance is pivotal for the success of the digitization project and the accessibility of its results. Compliance with these requirements is not only respecting the legal framework but also aiming to provide high-quality research, ownership, and sustainability of results.

In the case where the digitization project regards research with human participants, the approval of designated ethics committees is a prerequisite. The designated ethics committee for the digitization project should be identified and contacted at this stage. No interaction with human participants is to take place unless pertinent ethics requirements are satisfied. Compliance with data protection laws and health and safety regulations is determined by identifying the environments and modalities of digitization. In Table 1, pertinent requirements and relevant materials are summarized.

**Table 1.** Requirements for conducting research with human participants and relevant materials.

Requirement	Material
Ethics	European Commission’s ethics self-assessment guidance, Ethics Appraisal Procedure
Data protection	GDPR law and additional national laws
Health and safety	Usage guidelines and safety warnings of devices used in the digitization project, EU and national laws for the transportation of goods, use of machinery, and manned or unmanned vehicles

The individual requirements of each human participant should be investigated, as community members may belong to a sensitive population [45]. It is important to consider that traditional craftspeople can be old and, as such, individual requirements for sensitive population groups need to be considered and applied. These requirements also include adapting to the mindset of indigenous communities or social groups [46].

In the case where the digitization project is carried out in collaboration with a CH institution (CHI), this can also involve digitization and documentation of the description of physical assets and collections of these institutions. These should be implemented by acquiring appropriate licenses and can provide an initial orientation of the relevant assets of the craft that is identified as relevant for digitization. The topic of insurance for artifacts that are to be handled or digitized should be brought up and planned if relevant, according to the conventional practices followed by content and asset owners [47].

CHIs and craft communities often have curated material already prepared in the form of literature, guides, brochures, or even interactive multimedia presentations. Typically, CHIs have a catalog of their items that includes digital collections, along with pertinent metadata. In initial communications, it is important to specify these assets as potential assets for the knowledge collection of the digitization project and ensure the provision of appropriate usage rights concerning the objectives of the project.

### 4. Empowering Craft Communities

Crafts are traditionally practiced within communities with the same geographic reference due to the availability of natural resources and the transfer of knowledge and know-how between generations (e.g., [48]). Today, craft communities still exist in a physical location or are built through multiple forms of digital cooperation [49]. In all forms of communities, a sense of belonging promotes inclusion, empowerment, and learning for each individual and at the same time gives the opportunity to brand community products and each person’s craft [50–52]. As such, crafting communities are still today considered a source of reputation and valorization of crafts, and their empowerment is considered fundamental for safeguarding crafts.

This section provides different activities out of which communities can gain more value, reputation, and income.

#### *4.1. Involving Craft Communities in Craft Preservation*

The participation of craft communities in any digitization effort is fundamental and beneficial both for the digitization project and the craft community. Waiting to start digitizing all possible artifacts and interviewing all possible stakeholders and, only then, trying to find the meaning of the acquired data without any help would lead to suboptimal results. Collaborating with the practitioners and the community of the particular craft will help obtain an understanding of the craft, its insights, and its essential concepts. For formally encoding craft descriptions and comparatively understanding craft expression in different times and places, curators, and the perspective of the humanities will be needed. In all stages, walking together with local craft communities and scientific experts included in the same group will concurrently support representation (i.e., documentation, inventorying, description) and presentation (narration, practical and conceptual engagement, re-use). This is essential even for the most practical reason of establishing a common understanding and vocabulary about the topic at hand between collaborators.

#### *4.2. Enhancing the Economic Potential of Craft Communities through Thematic and Cultural Tourism*

The development of local crafts can contribute to the provision of more sustainable tourism services and resources [53,54]. ICH tourism such as craft experiences is associated with prolonged visit durations, which are required for their appreciation and experience [55]. The World Tourism Organization of the United Nations (UNWTO) has stressed the need to safeguard ICH and invest in sustainable tourism, together with local communities [13]. In this context, the participation of craft communities in the formulation of thematic tourism products and services is central to the success of ICH tourism. At the same time, tourism stakeholders benefit from tourism development alongside the local society by establishing projects with communities [13].

Recent trends in CCIs [56] show that ICH tourism can be combined with digital dimensions provided electronically to increase interest and financial impact [57,58]. Such approaches demonstrate the value of crafts in sustainable development by facilitating income-making as a driving force for the preservation of crafts [59]. By providing competitive, educational, and compelling tourism experiences, the visibility of European crafts can be increased [59]. This can be further supported by craft digitization approaches that can offer attractive presentations of crafts that engage interest and provide a comprehensive and accurate picture of crafts. These are aligned with the UNWTO recommendation to follow and support digital documentation and communication of ICH values [13]. Such approaches can be built on top of international standards for the documentation of CH [60] and the state of the art in interaction, narratives, and storytelling. Digital outputs of the project provide content for tourism experiences and products. Education and delectation content are carefully balanced, and selling goods through official outlets and licensed retailers can provide a valuable source of financial income [13].

#### *4.3. Capacity Building*

The adoption of new technologies facilitates the evaluation, improvement, and further deployment of digital approaches in traditional crafts. Through digital technologies and capacity building in digital technologies, the craft sector can survive in the globalized economy by investing in reputation building and distinctiveness by employing digital media for promotion of the special know-how and identity [61,62].

#### *4.4. Sustainable Innovation*

Craft products exhibit a local identity that is directly linked to their reputation, external appearance, and know-how for making them. Promoting crafts, thus, highlights the need

for a sustainable relationship with the local environment (minerals, fauna, flora) as a provider of local materials and contributes to the sustainability of the local population [63]. Digital dimensions attached to artifacts can provide information on the sociohistorical context of their creation but also practical information such as instructions for their repair and certificates of materials and composition indicating whether they comply with the sustainable use of the environment. The regional promotion of local crafts enhances local cultural tourism and also alleviates the burden of locations suffering from over-tourism [64,65]. Policymakers and governmental bodies are equipped with sustainable green growth practical tools and regional product and material promotion, and they can increase the regional reputation and reinforce tourism, while also creating new jobs stemming from material savings and new professions to accommodate the increased possibilities that digital aids offer.

#### *4.5. Lessons Learned from the COVID-19 Pandemic*

The recent pandemic, but also climate-related (floods, wildfires) or economic (war in Ukraine, heightened energy and travel costs) changes have altered the cultural landscape in Europe. Arts and crafts have proven their value as a form of decompression for the European population during the lockdowns enforced during the pandemic [66]. The creative economy in general was greatly affected across the world [67–70] and moved to the dematerialization of creative businesses/services as the only available option for its survival during the crisis [71]. The pandemic showed that CHIs and creative communities are considering becoming more active online through podcasts, live content, and game creation; e.g., 40% of the museums increased online visits when closed, and 41% increased visits when they re-opened due to online engagement during the pandemic [72,73]. At the same time, people involved in craft training and craft production have adapted their strategies by intelligently applying ICT technologies to provide online tutoring [74] and employing digital marketing to enhance the visibility and availability of their products online [75].

#### *4.6. Engaging CCIs in Crafts to Enhance the Economic Potential of Traditional Craft Products*

Recent studies have illuminated the economic power of the CCIs. A 2006 European Commission survey highlighted that, by 2003, these sectors were responsible for 2.6% of the European GDP and employed approximately 5 million individuals [6]. Further emphasis was given in the UN's Creative Economy Report 2013 and the 2009 EC survey "Cultural Influence on Creativity" [76,77]. By 2008, the creative economy had generated 8.5 million jobs in EU countries, constituting 3.8% of the total labor force and contributing 4.5% to the European GDP [78]. These compelling statistics have sparked discussions concerning the cultural economy in Europe and the potential contradictions within EU policies [79,80].

The Council of Europe has acknowledged the crucial role of CCIs in realizing the Lisbon Strategy goals. The European Parliament, through Resolution 2002/2127 (INI) in 2002, underscored the importance of CCIs in shaping cultural products and services [81]. UNESCO and the European Culture Program have recognized culture as a driver of economic development. In Europe, the year 2009 was designated as a special focus on creativity and innovation. These developments signify a growing awareness of the transformative potential of CCIs in shaping Europe's economic and cultural landscape [82].

### **5. Protecting Intellectual Property in Crafts**

Traditional craftsmanship, including its distinctive designs, reputation, and style, faces the constant threat of imitation and misappropriation. While a dedicated framework to safeguard traditional crafts is absent, there are ongoing efforts in the realm of intellectual property (IP) protection. Initiatives like the World Intellectual Property Organization's (WIPO) Intergovernmental Committee on IP and Genetic Resources, Traditional Knowledge, and Folklore (IGC) [83] are actively working to bridge the gap between intellectual property systems and the concerns of craft practitioners.

WIPO [83] outlines how existing IP rights (IPR) like trademarks, geographical indications, copyrights, industrial designs, and patents can serve as tools for practitioners and craft organizations to advance their interests. These legal instruments can be leveraged to shield traditional crafts from unauthorized replication and adaptation, as well as prevent the deceptive use of their style and reputation. This underscores the evolving landscape of legal protection for traditional crafts in the face of contemporary challenges.

According to [84], IP in crafts can have three distinct components: (a) reputation; (b) appearance; and (c) know-how. Each one can be IP protected as presented in the following sub-sections.

#### 5.1. Reputation and Distinctiveness

There are many ways of building on reputation and distinctiveness. A trademark serves as a recognizable sign used by a company to distinguish its goods or services from others in the market [85,86]. It can be made up of various elements like words, symbols, colors, and more. The main purpose is to indicate the source of origin and prevent confusion with similar offerings from competitors. Registering a trademark provides legal exclusivity, allowing the owner to prevent unauthorized usage of identical or similar marks. Currently, several researchers have examined the issues of IPR protection through trademarks in various national and international legislation contexts (e.g., [87–90]).

Collective marks and certification marks can be used by associations to identify products from their members (e.g., [91]). These marks distinguish goods or services within a group and do not require individual certification. On the other hand, certification marks ensure that products meet specific standards, such as geographical origin or quality. Both types of marks aid indigenous communities in promoting their crafts, maintaining authenticity, and supporting fair economic returns.

Geographical indications (GIs) can be used on products that possess qualities or characteristics essentially linked to a specific geographic area. These GIs are significant for products resulting from traditional practices and knowledge passed down through generations [92]. They safeguard the reputation of products, prevent misleading practices, and contribute to maintaining niche markets associated with certain regions. In the EU, legal protection of geographical indications for agricultural products and foodstuffs was established in 1992 [93]. In 2022, the Commission adopted a proposal to offer protection to products such as Murano glass, Donegal tweed, Limoges porcelain, Solingen cutlery, and Boleslawiec pottery [94] to enable producers to protect craft and industrial products and their traditional know-how.

Unfair competition laws are designed to prevent dishonest practices in the market. These laws can be utilized to combat false claims regarding authenticity, origin, or other misleading information. For instance, they can address situations where products falsely claim to be indigenous or authentic, allowing legitimate producers to take action against such misleading practices and protect their genuine offerings' reputation.

#### 5.2. Appearance

Copyright law safeguards creative works, providing automatic protection upon creation [95]. Copyright owners have exclusive economic rights, benefiting financially for a fixed period, often the author's life plus 50 years. These rights prevent unauthorized reproduction and adaptation. Additionally, moral rights encompass authorship claims and protection against modifications that harm reputation. Crafts like enamel works, jewelry, sculptures, and more can be protected if original and artistically valuable (e.g., [96,97]).

Design protection pertains to the aesthetic appearance of a product, including shapes, patterns, and colors. Registration is required in many countries, with criteria like novelty, originality, and individual character. Protection typically spans around 25 years. Design owners can prevent similar product production, sales, or distribution. Designs purely driven by technical aspects might not be protected. Some countries may exclude crafts from design protection, focusing on industrially produced items.



### 5.3. Know-How

Patents safeguard novel inventions with inventive steps that can be industrially applied. The patent holder gains the right to prevent commercial use of the invention for a set duration, often around 20 years (e.g., [98–101]). Patents indirectly protect crafts by covering tools or processes involved in their creation. New functional elements such as tools and machinery can be patented.

Trade secrets comprise confidential information offering a competitive advantage. They can relate to product composition, manufacturing methods, or specialized know-how [102,103]. Keeping this information hidden maintains its value and prevents competitors from using it. To qualify, the information must be confidential, valuable due to its secrecy, and steps must be taken to maintain its confidentiality. Unlike patents, trade secrets are automatically protected as long as they remain confidential. Practitioners with trade secrets can prevent unauthorized acquisition, disclosure, or use of the information.

### 5.4. European Legislation and Regulatory Efforts

- Regulation 1151/2012 on quality schemes for agricultural products and foodstuffs provides a clear framework for the protection of designation of origin and geographical indication. Mingei serves this goal through digital certificates of craft products [104].
- Regulation 1007/2011 on textile fiber names and the marketing of the fiber composition of textile products [105].
- Directive 2001/29/EC harmonizes certain aspects of copyright and related rights in the information society, which could have implications for protecting original designs and artistic works associated with handicrafts [106].
- European Heritage Label is an initiative that aims to highlight sites that have played a significant role in European history, culture, and integration. It could potentially cover certain handicraft traditions and techniques [107].
- Consumer Rights Directive (2011/83/EU) outlines consumers' rights in the EU, including information requirements for distance selling, which could apply to the sale of handicrafts online [108].
- European Structural and Investment Funds (ESIF) support regional development, including initiatives that could benefit small businesses and artisans involved in handicrafts [109].
- The COSME Program is an EU program that supports the competitiveness of small and medium-sized enterprises (SMEs) and could provide resources for artisanal businesses [110].
- Circular Economy Action Plan: the EU's focus on promoting a circular economy could impact the materials and practices used in handicrafts, encouraging sustainable and eco-friendly approaches [111].
- General Product Safety Directive (2001/95/EC) establishes the general safety requirements for consumer products in the EU, including handicrafts [112].
- Regulation (EU) No 1151/2012 establishes a framework for the protection of geographical indications and designations of origin for agricultural products and foodstuffs, which could extend to certain traditional handicraft products [104].
- Customs Union: the EU's customs union and trade agreements could impact the import and export of handicrafts and related materials [113].
- Regulation 1907/2006 on the protection of human health and the environment regards chemicals that, "besides industry, are applied to chemicals in our day-to-day lives, for example in paints, clothes, and furniture" [114].
- VAT regulations: depending on the country and type of product, different VAT rates might apply to handicrafts [115].

## 6. Preserving Craft Practice

The most significant threat to the sustainability of crafts stems from the decreasing number of practitioners and apprentices [116]. This underscores the importance of support-

ing craft education, generating interest, and offering business incentives to facilitate the intergenerational and enduring acquisition of craft skills. Motion-driven representation and semantic knowledge representation serve as the foundation for educational applications, which can be used for tourism, community engagement, and museum education.

### *6.1. Current State of the Art*

In the EU, Mingei was the most recent project that supported craft education through digital tools and provided motivation to businesses to support the intergenerational and sustainable learning of crafts (e.g., [117]). Craft training at different initiation levels is important for two reasons: (a) craft training and apprenticeship are parts of the craft representation to be presented, and (b) the ability to teach a craft enables its preservation and authenticity. In Mingei, the teaching process provided a basis for authoring instructions and training experiences.

Online training was provided by the Mingei Online Platform, and interactive applications were facilitated to present the practice and transmission of crafts through generations including digital assets, illustrated instructions, and motion summarizations. Training in the craft workshop was supported by VR applications and MR surfaces that introduced a craft through hands-on exercises. Hands-on tasks teach by demonstrating essential craft gestures, dexterities, and the use of tools. This way, a first-person, participatory, and engaging educational experience was provided. Instructions and motion drove narratives to support the demonstration.

Educational applications on crafts contribute to craft education [118], and in Mingei, a preliminary approach included well-documented, introductory craft training experiences to enhance craft understanding by introducing basic craft concepts to potential apprentices. Mingei further explored contributions that counter the lack of instructors, the geographical remoteness of apprentices, and lack of training sites. Mingei also studied how such applications could counter student demotivation, stemming from a lack of certification.

Mingei has improved the quality and learning value of traditional craft techniques through novel methodologies for the representation and simulation of craft techniques and a systematic technical and theoretical framework for applying the outcomes to the European sector of occupational training. The adopted approach integrated training organization in the project and piloted outcomes in the context of training programs, ensuring that the results can be directly applied at a European-wide level and can be integrated with minimal effort. At the same time professionals, communities, maker spaces, and fab labs were provided with all the necessary tools both online and onsite to facilitate their involvement and enhance their status and reputation worldwide.

### *6.2. New Research Directions in Europe*

Currently, in Europe, a new roadmap for safeguarding traditional crafts is proposed [119] stemming from the Horizon Europe project “Craeff” [120].

The implementation of this roadmap is expected to advance the current state of the art a step forward toward a deeper understanding of crafts. To this end, the purpose of this roadmap is threefold. Firstly, it outlines goals and activities that hold promise for contributing to craft preservation. Secondly, it aids policy-making and decision processes, contributing to product authentication and material traceability. Thirdly, it serves as a reference for craft preservation.

Through the implementation of this roadmap, Craeff aims to deal with the complexity of understanding the creative processes involving “care, judgment, and dexterity” [121]. These processes demand interdisciplinary input from anthropology, cognitive science, art history, physical sciences, and computational sciences. They are needed to fully encompass the multifaceted nature of crafts, which are not only a living heritage but also a source of income and a manifestation of the mind through “imagery, technology, and accumulated knowledge” [122].

Craeft has set up challenging goals due to the diverse dimensions that crafts encompass. The proposed roadmap offers directions toward documenting and sustainably preserving crafting techniques. Craeft, in this context, refers to the art of creating objects using manual skills and tools. Crafted items are typically produced in limited quantities, highlighting the uniqueness of each creation. Pye [121] distinguished between the “work of certainty”, where actions are predetermined, and the “work of risk,” involving actions dependent on the practitioner’s care, judgment, and dexterity.

The roadmap proposes the integration of computer-aided craft education and training to improve accessibility, streamline the learning process, enhance practicability, and eliminate geographical limitations in craft education. This strategic plan aims to expedite craft education and training by employing immersive aids, craft simulators, advanced digitization, and visualization techniques. These tools are envisioned to broaden access, optimize learning outcomes, facilitate hands-on practice, promote safety awareness, and overcome geographical obstacles in craft education. Immersive interfaces play a pivotal role in providing virtual craft experiences, given the hands-on nature of craftsmanship. The integration of haptic feedback into these interfaces is essential for training in craft techniques and conveying the tacit knowledge inherent in craftsmanship.

To support material efficiency, part reusability, and energy conservation, simulating craft workflows is proposed. The simulation aims to predict the outcomes of novel techniques for specific tasks and operations. Safety is paramount for training adult craftspeople, and even more so for younger individuals. Presently, workshops are off-limits for children. However, skill development is often more effective at a young age, traditionally acquired through early apprenticeships. Therefore, the roadmap emphasizes the importance of introducing realistic craft-based games and toys that can captivate children’s interest and provide safe learning experiences from a young age. Additionally, the strategic plan recognizes the social benefits stemming from the role of art and culture in our lives. Craft activities are increasingly acknowledged for their positive impact on individual and community well-being, whether pursued as a profession, a leisure pursuit, or a means of social engagement [123].

## 7. Conclusions and Recommendations

In the ever-evolving landscape of modernity, the preservation of traditional crafts in Europe stands as both a tribute to the past and a commitment to the future. These crafts, woven deeply into the cultural tapestry of our societies, encapsulate the essence of heritage, skill, and identity. As the fast-paced currents of technological advancement are navigated, there is an imperative to safeguard these crafts, ensuring they continue to thrive, inspire, and connect generations. Of course, this cannot be achieved without country members and the EU as a whole being actively engaged in the challenge of safeguarding. To this end, this work concludes by considering three directions.

The first concerns recommendations at a policy level that should be implemented by the EU to support safeguarding and are the output of a systematic study on heritage crafts by the Mingei Horizon 2020 project. For the formulation of the recommendations, European and global recommendations on the preservation of crafts and intangible cultural heritage in general have been studied in various sources including UNESCO and the European Commission through the prism of the multidisciplinary expertise brought by Mingei. Three iterations of reporting of these recommendations were made in the form of three policy briefs created by the project. The consolidated recommendations of the final version are summarized as part of this research work.

The second direction summarizes future research directions in the domain involved in this research work and is aligned with the presentation of the subjects in the previous sections.

The third direction calls for a roadmap conceived as an interdisciplinary synergy between artisans, researchers, policymakers, and communities.

### 7.1. Policy Recommendations

This entry concludes with policy recommendations that are judged suitable for driving interventions in Europe:

Recommendation 1: Strengthen the European crafts sector by encouraging collective business models, networks, and partnerships to move from small-scale to wider and more sustainable schemas. Furthermore, support micro-businesses that are currently the driving force of craft preservation in European society, and whose long-term viability is not guaranteed, and bind crafts with the rural space and thematic tourism. Build sustainable relationships and networks between stakeholders to promote the creation of communities of craft, cultural, and industry stakeholders. Safeguard craftswomen who face various responsibilities in the home and working environment, ensuring that their craft heritage is preserved and transmitted to the next generations.

Recommendation 2: Encourage the transmission, recognition, and accreditation of craft knowledge and skills by linking informal educational organizations and the formal education sector. In Europe, there is an urgent need to connect informal learning on crafts happening in a craft workshop with a craft master and craft apprentices with formal learning and certification. Additionally, empower craft education, training, and certification by implementing appropriate accreditation systems for craft skills acquired through both informal and formal learning. As a side measure, empower festivals as bearers of tradition, crafts, and intangible cultural heritage that bring together performances, crafts, food, and local products.

Recommendation 3: Adopt cutting-edge technologies in craft practice, training, and education guided by the INNOCRAFT study [124] by combining (a) traditional know-how with new technologies:

- Education and training curricula that reflect on the tradition and foster intellectual and technical innovation, increase the value of education and training programs appropriating technical aids per craft requirements, reduce training and experimentation costs, reduce the distance between instructors and students, acknowledge training, and document personal skills and contributions to the state of the craft;
- Education, training, and tutoring services that represent through re-enactments traditional techniques, tacit knowledge employed, and skill development, using immersive media and telepresence, educational environments and simulators;
- Development of design skills for new products based on traditional techniques, reusable inventories of designs and techniques in contemporary products, craft-related physical toys, and digital games;
- Fabrication aids for digital design technique development and manufacturing of physical aids and tools dedicated to specific designs and techniques together with design inventories and style adaptation tools to respond to changing trends and multiple audiences.

(b) building platforms and methodologies, curricula, entrepreneurship skills, and vocational training to support the following:

- Re-enactable craft representations, digitally enhanced education and training aids, and appropriation of these aids in craft-training curricula;
- New “hybrid craft” products that integrate design and craft skills, but also contemporary commodities to respond to needs for personalized items and the living environment;
- Entrepreneurship skills relevant to product promotion, reputation building, design, valorization, clientele expansion, and revival of small businesses through cultural awareness, online presence, and realistic product presentation;
- Capacity enhancement and upskilling for digital design and fabrication skills, online presentation, and promotion;
- SME growth by stimulating policy learning and building capacity to improve the implementation of regional development policies and programs.

And (c) revive and valorize traditional techniques in new products:

- Recovery of lost techniques economized by simulation, eliminating implausible workflows, and then testing them in the workshop;
- Digital design for crafts and fabrication capacities economizing production and widening expression possibilities;
- Digital dimensions for added value on craft products, through online content and certificates;
- Valorize the content of traditional crafting in games and toys, which simplify dexterity challenges and provide introductory creative experiences. Craft engagement for all, as a means of expression, wellness, development, and recreation, economized by utilizing cutting-edge, haptic-enabled immersivity, and enabling the participation of elders and remote students.

### 7.2. Future Research Directions

In the context of safeguarding traditional crafts, future research endeavors should focus on supporting a deeper understanding of crafts by dealing with the complexity of the creative processes. It is considered of extreme importance to support the aforementioned policy recommendations by requiring interdisciplinary research efforts through the following:

- Anthropology, to provide a systematic ethnographic decomposition of craft practices and art history to understand the social and historical context of their practice;
- Cognitive science, to comprehend and model cognitive processes and perceptual stimuli in craft processes;
- Physical sciences, to support comprehension through accurate simulation of craft processes in a wide range of tools, materials, and process execution parameters;
- Computational sciences, to support AI-based generative simulations of craft processes in different contexts and to predict the outcomes of novel techniques for specific tasks and operations;
- Human–computer interaction, to support realistic training of craft practice through immersive technologies integrating haptic actuation and feedback.

### 7.3. Concluding Remarks

The journey to safeguard traditional crafts is a multidimensional endeavor, requiring collaboration across disciplines, sectors, borders, and a strong political commitment to the cause. It is a bridge between the legacy of time-honored techniques and the innovation of contemporary tools. This preservation effort encompasses not only the tangible artifacts and techniques but also the intangible threads of stories, values, and community bonds. As this path is navigated, a roadmap emerges. It is a roadmap paved with interdisciplinary synergy, where the expertise of artisans, researchers, policymakers, and communities intertwine. It is a roadmap illuminated by technological advances, offering immersive experiences, digitization, and simulation to carry ancient wisdom into the digital age. It is a roadmap that respects the rhythms of tradition while embracing the dynamism of change.

In preserving traditional crafts, we are not just conserving artifacts; we are nurturing a living legacy that bridges generations and enhances cultural diversity. The challenges are manifold, from the need for recognition and support to the revival of interest among the younger generation. Yet, in the face of these challenges, the collective commitment to safeguarding these crafts shines brightly.

Ultimately, the endeavor to safeguard traditional crafts in Europe transcends time and borders. It is an investment in the preservation of our shared history, an ode to the artisans who have shaped our culture, and an investment in the generations who will carry these crafts into the future. Through collaboration, innovation, and unwavering dedication, the flame of traditional crafts can continue to illuminate our path, reminding us of the beauty and resilience of our cultural heritage.

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