

# Process-centric Cataloguing of Intangible Cultural Heritage

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## Abstract

Museums and archives collect and store documentation of processes of intangible cultural heritage (ICH), such as craftsmanship skills, acts, and events recorded in videos, audio tapes, manuscripts, photos, and transcriptions. Such recordings are typically catalogued in an object-centric way as documents, using schemas such as Dublin Core. Also in event-centric models the focus has been on tangible cultural heritage. In this article we point out the importance of cataloguing not only the documentation object or related events, but the actual cultural process, such as a craftsmanship skill. Using special process-centric metadata for ICH, one can search for information about the elements and parts of intangible processes, not only documentation objects. Furthermore, process descriptions can be linked to related tangible and intangible objects in collections and Linked Data repositories on the web, facilitating rich and detailed semantic recommendations to end-users. To test and evaluate this idea, we created a metadata model for representing cultural processes, and applied it to the video documentation of traditional shoemaking with visualization and real time semantic recommendations on the CultureSampo portal.

## 1. Safeguarding Intangible Cultural Heritage

Intangible cultural heritage (ICH) means<sup>1</sup>

*“...the practices, representations, expressions, knowledge, skills – as well as instruments, objects, artefacts and cultural spaces associated therewith that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity...”*

The domains of ICH are aural traditions and expressions like language, performing arts, social practices, rituals and festive events, knowledge and practices concerning nature and universe, and traditional craftsmanship with tacit knowledge<sup>2</sup>. Documenting and safeguarding this heritage, and encouragement to preserve also all perishable records, notably electronic and documentary heritage resources<sup>3</sup>, emphasize the need of special cataloguing metadata and solutions in cataloguing systems. In this way the knowledge of processes would be more searchable and interoperable.

ICH is connected to the tangible, sometime very strongly, like in the case of craftsmanship, which is a production process involving materials, equipment and end products. Intangible heritage can even be defined as the actual interpretations made in relation to objects.<sup>4</sup> Sometimes the connection is weaker, like in some performing arts, although objects like costumes and musical instruments are used here, too.

Phenomenon centric safeguarding of culture has become more and more important in museums. In 2003 the General Conference of the United Nations Educational, Scientific and Cultural Organizations (UNESCO) adopted a new treaty, the Convention for the Safeguarding of the Intangible Cultural Heritage.<sup>5</sup> The convention has now been ratified by 142 countries.<sup>6</sup> The purposes of the convention are to safeguard the ICH, to ensure respect of the ICH of communities, groups and

individuals, to raise awareness at the local, national and international levels of importance of the ICH, to ensure mutual appreciation thereof, and to provide international cooperation and assistance. This shift in focus brings in spotlight the museums' capabilities to catalogue the substance of ICH as carefully and thorough as it is done in the case of tangible heritage.

In Finland the tradition to document the intangible everyday life in film started in 1911–1913, when the first films were taken of tar making process in Lapland. During years 1935–1941 there were enthusiastic ethnologists like Kustaa Vilkuna and Sakari Pälsi, and film makers like Eino Mäkinen, who recorded disappearing agricultural phenomenon by making some 30 short ethnographical films. These films contain wedding ceremonies, fishing practices during winter and summer, processes of different agricultural activities and occupations, craftsmanship like shoemaking, lacemaking, baking, making rowing boats, and so on. The Second World War interrupted the document work for almost a decade.<sup>7</sup> Finnish museums started year 2009 a project known as TAKO<sup>8</sup>, inspired by the Swedish Samdok project<sup>9</sup>. The central task of TAKO is the documentation of present day life, including family life, festivals, and processes of craftsmanship and factory production.

Traditional cataloguing practices in museums are object-centric, focusing on representing tangible objects in terms of their features. Intangible phenomena are different in nature, requiring different cataloguing models and practices. For example, crafting processes typically break down into a narrative structure of mutually related sub-events. Obviously, explicating such knowledge in museums would help an end-user of a collection management system or a public portal to find the information (s)he is looking for, and to combine tangible and intangible heritage to each other. It is important to systematically recognize and catalogue important aspects of traditions too pass them to next generations. However, methods and tools for describing processes are still incomplete, even if there are versatile event-centric metadata systems and standards available, such as CIDOC CRM<sup>10</sup> and LIDO<sup>11</sup>.

In this paper we present a simple model for representing narrative event structures. The model is applied in a case study to cataloguing the process of shoemaking documented in a film, and to publishing it on a semantic portal. Our goal is to discuss and demonstrate, by using a small operational example application, the potential of process-centric cataloguing of ICH in museums, and to stimulate further research on how ICH could be catalogued in museums using Semantic Web and Linked Data technologies<sup>12</sup>.

## **2. Craftsmanship as a Cataloguing Object**

Document films of ICH are typically catalogued by using metadata about the media object, concerning e.g. the length and format of the film, name of the film maker, place where the film was taken, and name and occupation of the artisan on the film. The content of the process itself is explained e.g. by keywords, classifications, and sometimes with explanatory free text transcriptions. For example, the Finnish National Visual Archive (KAVA)<sup>13</sup> has catalogued document films<sup>14</sup> with content analyses, where the cataloguer transcribes very precisely the scenes in the film with time coding. The whole film is catalogued with keywords, not the scenes separately. According to cataloguers, content analysis is very time consuming, and this is why document films are usually catalogued in a lighter way, leaving out the transcription.<sup>15</sup>

In a craft producing process, a worker or an artisan, changes materials from one form into another by a sequence of actions. Usually there are also working tools in attendance. The craft process can often be divided into main processes and these further into smaller sub-processes or sub-sequences. Different sub-sequences are interesting as processes of their own, not only the whole narrative.

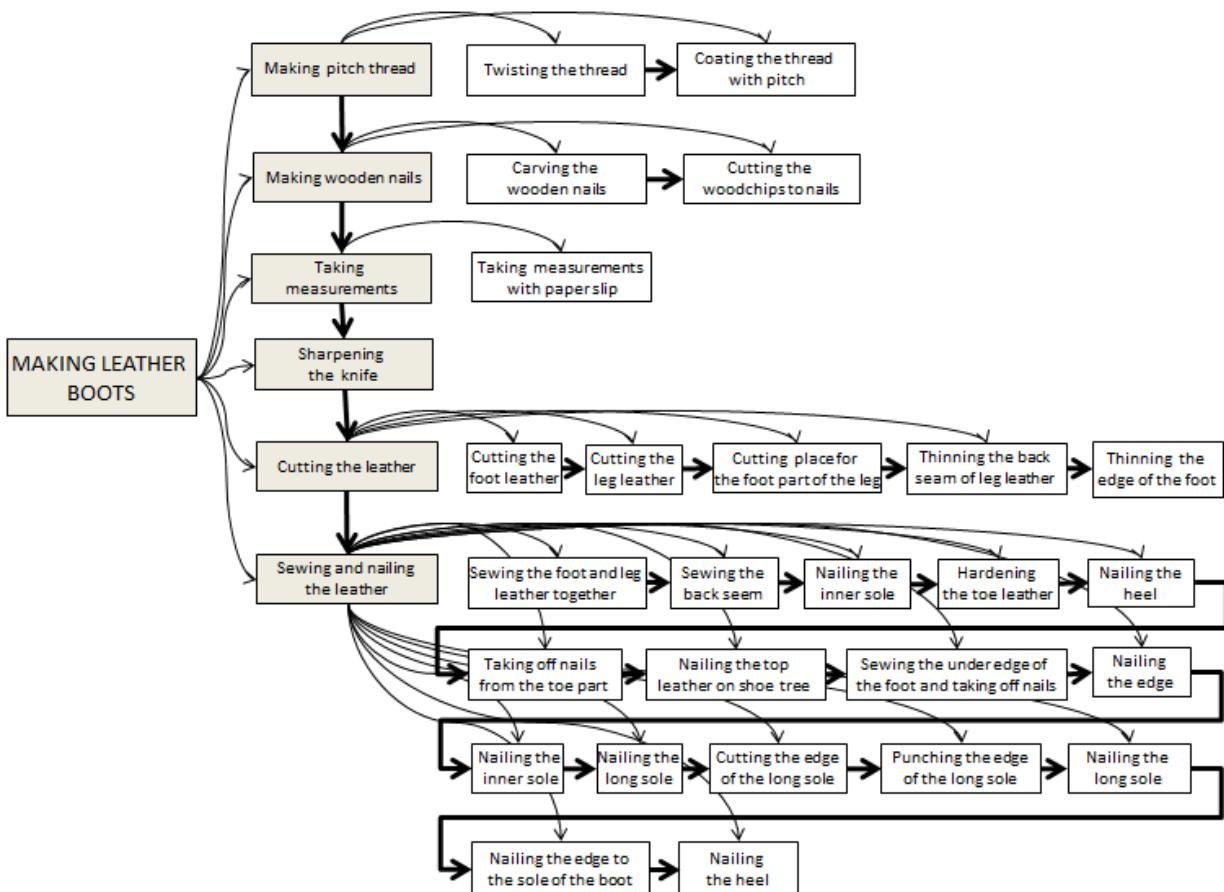
In order to represent such process structures, three major types of metadata are needed. First, processes should be decomposed into sub-processes using next-sub-process relation that tells the temporal order in which sub-processes follow each other, and part-of relation that tells, how a larger process breaks down into sub-processes. Second, the subject matter of each sub-process need to be described, including e.g. persons involved, tools, materials, methodological aspects, working practises, durability, and spatial aspects. Based on such descriptions, each sub-process can be semantically linked with related museum collection data, weather it is intangible or tangible, and with other Linked Data resources. Third, each process must be mapped on the timeline of the film documentation using start and end points.

Process-oriented analysis and cataloguing makes it possible to index different sub-processes to e.g. different artisans, materials, and techniques. When searching for content, sub-processes can be found according to indexing, as well as the actual points in time where the searched phenomenon or an object is present on the film. The whole process as well as its parts can be visualized separately.

We next present by a case study, how craftsmanship process documented in a film in Espoo City Museum was modelled, annotated, and utilized on a semantic portal using the presented model.

### 3. Case Study: Shoemaker Wirlander Makes Leather Boots

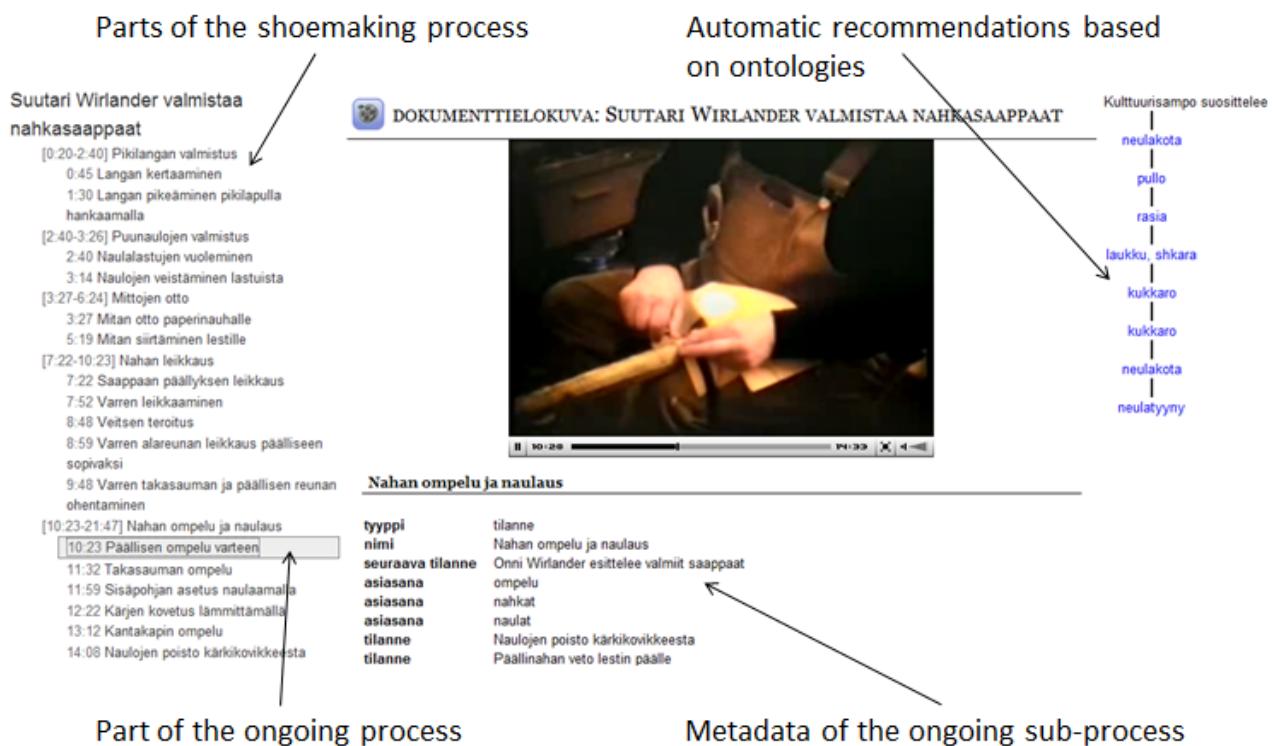
Espoo City museum documented in 1985 how Onni Wirlander, at that time a 74 year old shoemaker, made a pair of traditional Finnish leather boots. The process was filmed by Olle Palmroos. Shoemaker Onni Wirlander worked at that time in Espoo Kvarnby in his own workshop. In addition to the film there was also a tape recorded interview with a transcription.



**Figure 1.** Process structure of making leather boots.

Our goal was to analyse and represent the shoemaking process underlying the film in such a way that end-users of the CultureSampo portal 1) could understand and learn the crafting process of this particular case, 2) could find and view different sub-processes and points inside the film, and 3) could find objects related to the process parts, recommended automatically by the system.

Modelling the process involved explicating the narrative process in terms of hierarchically arranged sequences of sub-processes, as depicted in Figure 1. The process was represented in six main sequences and part of these further in terms of sub-sequences. Here thin arrows point from a process to its sub-processes, and thick arrows to the next process in time. Each (sub)-process was annotated by a start and an end time on the film, and by subject matter keywords taken from a multi-domain keyword ontology. Both the process modelling and video annotation were done by a museum curator in Espoo City Museum, using the SAHA metadata editor<sup>16</sup> connected to the ONKI ontology service<sup>17</sup>.



**Figure 2.** Screenshot of the craft producing process of making leather boots in CultureSampo.

Wirlander explains aloud in the film the process using a special vocabulary, both in Finnish and Swedish. The film lasts 21 minutes and 47 seconds. The curator formed the names of the sequences with common terms in order to help end-users to understand the process. It is obvious that this kind of analysis should be done immediately after documenting the process, while one is still able to verify the details from the artisan her/himself, and not, like in this case, three decades later.

Figure 2 depicts the user interface for viewing the shoemaking process in CultureSampo. The interface is created automatically based on the semantic process model and annotations<sup>18</sup>. On the left, parts of the process are shown as a hierarchical table of contents, based on the structure of the process (Figure 1). By clicking on a sub-process, the video related to that part is shown in the middle with attached metadata below it. As the video is shown, semantic recommendation links to related objects in CultureSampo are shown on the right in real time, changing as the video goes on from a sub-process to another. The user is able to view any part of the process by selecting the wanted part from the process list on the screen. For example, if the end-user selects the sub-process

“sewing and hammering leather”, then the system shows on the screen active recommendation links to other objects, such as needle cases, nails, and leather objects. The links are produced automatically by CultureSampo, based on the underlying semantic RDF graph of hundreds of thousands of linked data objects in CultureSampo, originating from over twenty memory organizations<sup>19</sup>.

#### 4. Discussion

Traditional museum cataloguing is *object-centric* focusing on tangible heritage objects and their features. In addition, *event-centric* approaches have been developed especially for harmonizing knowledge structures for semantic interoperability. In this paper, we presented the idea of *process-centric* cataloguing for representing and storing intangible cultural heritage processes, such as craftsmanship. To test and evaluate the idea in practise, an annotation and publishing framework was designed and implemented, and a case study was carried out. The same process-based approach has been applied in CultureSampo also to modelling farming practices, ceramics making, and to representing the narrative of the national Finnish epic Kalevala. Although detailed process modelling and annotation requires human and monetary resources, we feel that the extra work and cost can be justified in many cases when cataloguing valuable ICH. The needed technology is already available.

The major research question behind our work is: how should metadata about intangible cultural heritage processes be represented, so that 1) relevant information is not lost or forgotten and 2) the intangible can be later be searched for effectively and linked to other forms of cultural heritage? We are confident that ontologies, Semantic Web and Linked Data are the right technological direction to follow, and propose that work towards developing ontology-based process-centric metadata schemas for museums should be initiated.

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#### References

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<sup>1</sup> Convention for the Safeguarding of the Intangible Cultural Heritage.

<http://unesdoc.unesco.org/images/0013/001325/132540e.pdf>

<sup>2</sup> Dorner, Peter. 1994. The Art of the Maker. Thames and Hudson. London.

<sup>3</sup> Boylan, Patrick J. 2006. The Intangible Heritage: a Challenge and an Opportunity for Museums and Museum Professional Training. International Journal of Intangible Heritage vol. 1/2006. Pages 54–65.

<sup>4</sup> Stefano, Michelle L. 2009. Safeguarding intangible heritage: five key obstacles facing museums of the North East of England. International Journal of Intangible Heritage vol. 4/2009.

Skounti, Ahmed. 2009. The authentic illusion. In Smith, Laurajane & Akagawa, Natsuko (edit.) Intangible Heritage. Routledge. London. Pages 74–92.

<sup>5</sup> Convention for the Safeguarding of the Intangible Cultural Heritage.

<http://unesdoc.unesco.org/images/0013/001325/132540e.pdf>

<sup>6</sup> Status of Ratification of Convention for the Safeguarding of the Intangible Cultural Heritage.

<http://www.unesco.org/eri/la/convention.asp?KO=17116&language=E>

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<sup>7</sup> Isien työt. Kansatieteellinen Filmi Oy:n lyhytelokuvia vuosilta 1936–1939.

<http://www.kansatieteellisetfilmit.fi/videot5.htm>

<sup>8</sup> An acronym from the Finnish words tallennus (acquisitions and documentation) and kokoelmat (collections). TAKO – Acquisition to collections through cooperation

<http://www.nba.fi/en/nationalmuseum/tako>

<sup>9</sup> Samdok was founded in 1977 and is an association of eighty museums in Sweden.

<http://www.nordiskamuseet.se/publication.asp?publicationid=4213>

<sup>10</sup>CIDOC Conceptual Reference Model <http://www.cidoc-crm.org/>

<sup>11</sup> Lightweight Information Describing Objects LIDO <http://network.icom.museum/cidoc/working-groups/data-harvesting-and-interchange/what-is-lido.html>

<sup>12</sup> W3C Semantic web <http://www.w3.org/standards/semanticweb/>

<sup>13</sup> Kansallinen audiovisuaalinen arkisto KAVA <http://www.kava.fi/>

<sup>14</sup> Silent films like “Villasta langaksi” ( year 1954, From wool fiber to yarn) or “Raanun kutoja” (years 1955–1956, A weaver of a “raanu” textile). Kansallinen audiovisuaalinen arkisto KAVA.

<http://www.kava.fi/kokoelmat>

<sup>15</sup> Peltola, Tiina. 2004. An email information concerning cataloguing practices of KAVA.

<sup>16</sup> <http://www.seco.tkk.fi/services/saha/>

<sup>17</sup> Finnish Ontology Library Service ONKI <http://onki.fi/>

<sup>18</sup> The implementation is available online in the portal CultureSampo – Finnish Culture on Semantic web 2.0 as the documentary film “Suurtari Wirlander valmistaa nahkasaappaat”:

[http://www.kulttuurisampo.fi/kulsa/video.shtml?itemUri=http%3A%2F%2Fwww.seco.tkk.fi%2Fapplication\\_s%2Fsaha%23Instance\\_ID1200334280286](http://www.kulttuurisampo.fi/kulsa/video.shtml?itemUri=http%3A%2F%2Fwww.seco.tkk.fi%2Fapplication_s%2Fsaha%23Instance_ID1200334280286)

<sup>19</sup> Hyvönen, Eero & Mäkelä, Eetu & Kauppinen, Tomi & Alm, Olli & Kurki, Jussi & Ruotsalo, Tuukka & Seppälä, Katri & Takala, Joeli & Puputti, Kimmo & Kuittilinen, Heini & Viljanen, Kim & Tuominen, Jouni & Palonen, Tuomas & Frosterus, Matias & Sinkkilä, Reetta & Paakkarinen, Panu & Laitio, Joonas & Nyberg, Katarina. 2009. CultureSampo - Finnish Culture on the Semantic Web 2.0. Thematic Perspectives for the End-user. Proceedings, Museums and the Web 2009, Indianapolis, USA.

<http://www.seco.tkk.fi/publications/2009/hyvonen-et-al-culsa-mw-2009.pdf>

Mäkelä, Eetu & Hyvönen, Eero & Ruotsalo, Tuukka. 2012. How to deal with massively heterogeneous cultural heritage data – lessons learned in CultureSampo. Semantic Web – Interoperability, Usability, Applicability, vol. 3, no. 1.

<http://www.semantic-web-journal.net/content/how-deal-massively-heterogeneous-cultural-heritage-data-%E2%80%93-lessons-learned-culturesampo>

<sup>20</sup> Semantic Computing Research Group (SeCo). National Semantic Web Ontology Project in Finland (FinnONTO), 2003–2012). <http://www.seco.tkk.fi/projects/finnonto/>