ArtSampo – Finnish Art on the Semantic Web

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Abstract. This paper presents first results of ArtSampo a collaborative Finnish linked open data (LOD) infrastructure for publishing fine art collections on the Semantic Web and for facilitating Digital Humanities research. The infrastructure consists of the ArtSampo Knowledge Graph (KG) whose initial version was compiled from the metadata of the three art museums of the Finnish National Gallery. A semantic ArtSampo portal was built on top of the KG for searching, browsing and analyzing the underlying data. The Finnish ontology infrastructure and international datasets are used for harmonizing and enriching the data.

Keywords: digital humanities · fine art · cultural heritage · portals

1 Introduction

Art is an important part of cultural identity. Contrary to the fears that web services showcasing information on museum collections would cause a decrease in visitors to said museums, these kind of services have instead become an important tool for marketing and distributing information for museums and the number of visitors has been growing nationally in Finland. These collections, however, have been divided between both various museums as well as private collections, making it harder to get a good general picture or even access a particular art object at suitable time and place from the perspective of the visitor.

Though not an comprehensive replacement to physically going to view an art object, a web service containing information on the collections could alleviate these problems or, on the other hand, enrich the physical visit experience by providing additional insightful information that can be accessed without the access limitations based on time and place. Various ontologies and vocabularies already exist for describing art like Getty Research Institute's[3] Art & Architecture Thesaurus (AAT), Universal List of Artist Names (ULAN) and Getty Iconography Authority as well as the ICONCLASS [1] iconography classification system for describing the contents of art works. Linked Data (LD) on art has also been published as a part of projects like Europeana[4] as well as the Linked Art [2] project involving various high-profile museums.

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[3] www.getty.edu/research/tools/vocabularies/

[4] https://www.europeana.eu/

ARTSAMPO is a project to create a web service for Finnish art collections to facilitate an easy way of searching, browsing and analyzing of the data for both the general public as well as researchers by combining collection information from different museums in one place and utilizing semantic web technologies to enhance the users' search experience. As a part of the project, the collections data is transformed into RDF and made available as a data service for use in research. A user interface (UI) utilizing faceted search [7] and offering integrated data-analytic tools is also built on top of the data to make it accessible and explorable without SPARQL knowledge. ARTSAMPO is a part of the Sampo series [3] for publishing cultural heritage data on the Semantic Web.

2   ArtSampo Knowledge Graph and User Interface

The current version of the ARTSAMPO KG is based on the metadata on the collections of Finnish National Gallery provided as open data [5]. These collections include over 58,000 art objects and 6,400 artists and span multiple different museums (Ateneum Art Museum, Museum of Contemporary Art Kiasma and Sinebrychoff Art Museum). This data was transformed from JSON files to Turtle-serialized RDF data.

The initial version of the KG consists of approximately 1,100,000 triples. The KG uses three classes for modeling the data: *Art Object*, *Person* and *Multimedia*. All types of art objects are instances of the *Art Object* class. People are modeled with the *Person* class and linked to art objects via the art object instance. Images of art objects are modeled through the *Multimedia* class and linked to the art objects similarly to the artists. All other metadata related to the aforementioned classes is modeled through properties getting literal values.

The user interface (UI) for the ARTSAMPO KG is built with the Sampo-UI framwork [5]. The landing page of the portal lists the *application perspectives* available in the portal. The portal is split into two different perspectives: *art objects* and *persons*: By choosing the *art objects* perspective the user is presented the data as rows of art objects, while the *persons* perspective lists all the people related to various art objects in the data.

The user can filter the search results in the faceted search view by using the provided facets to select the wanted values for various properties. For example, in Fig. 1 the use has selected *Ateneum Art Museum* as the wanted organisation and all results are thus from the collections of Ateneum Art Museum. With the provided data-analytic tools the user can easily visualize the results. Fig 2 visualizes the most common art object materials for the selected subset of data (i.e., Ateneum Art Museum's collections) as a pie chart.

3   Discussion & future work

The ARTSAMPO project adds Finnish art and art history to the growing number of Finnish Cultural Heritage (CH) KGs and portals. The plan is to expand the
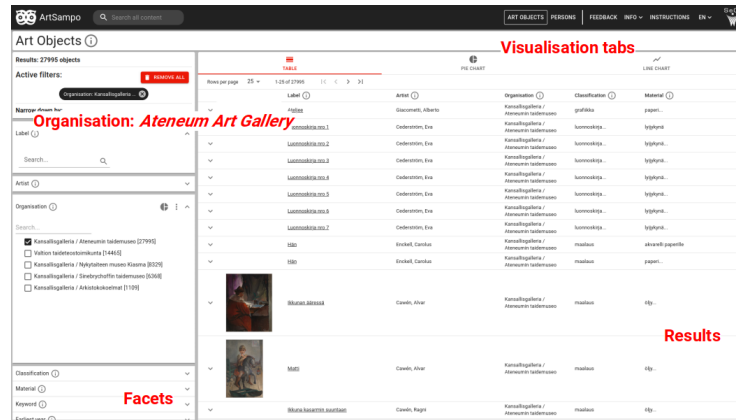
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[5] `https://www.kansallisgalleria.fi/en/api-sovelluskehittajille`

Fig. 1. The faceted search view of the portal with *Ateneum Art Museum* selected in the *Organisation* facet

current data included in the KG by integrating openly available data from other Finnish museums and galleries as well as from international collections featuring Finnish art. With an easily usable UI for searching and filtering the data, the data is also more accessible to the common art museum visitor in comparison to just publishing the data in LD format.

Rather than just focus on modeling the collection data, another integral part of the ArtSampo project is to connect it to other data sources, such as other Sampos, Wikidata and ULAN, to contextually enrich the existing data. With the basic biographical information on the 6,400 artists present in the original subset of data, possible links to other data sets could be found for around 1,900 of the artists. Links to BiographySampo [4] and AcademySampo [6], for example, could be used for enriching the artist data with biographies by the Finnish Literature Society as well as academic and genealogical information respectively. There is also letter correspondence data of more than 10,000 letters in total from from the archives of the Finnish Art Society and the Finnish National Gallery, the latter of which could be linked to ArtSampo through the Constellations of Correspondence (CoCo) [8] project.

Another aspect of the project is to look into automatic content description by analyzing the available images and generating iconographic descriptions of those to supplement the possibly already-existing keywords that have been used for those particular art objects. The goal is to release the finalized KG from the project as Linked Open Data (LOD) for use in research on the Linked Data Finland[6] platform.
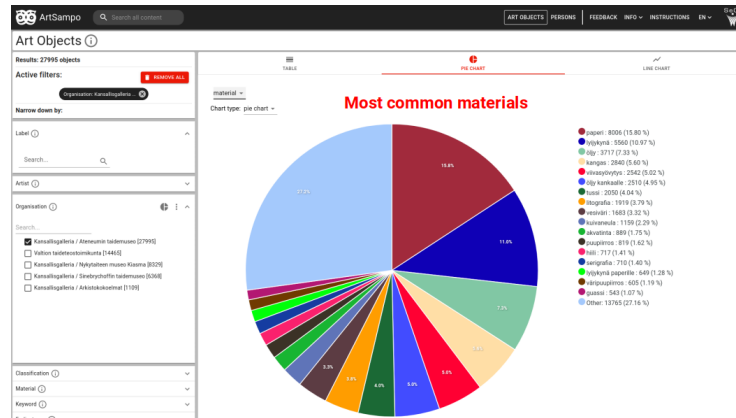

Fig. 2. A pie chart visualization showcasing the most common materials for works belonging to Ateneum Art Museum's collections

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