

Domain-Centric View-Based Search

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Abstract. In current Semantic Web view-based search systems views are formed by selecting properties and enumerating all their values as selections. This approach breaks down with multiple content types, such as in the cultural heritage domain, because the number of differing properties, and therefore views becomes unmanageable. We propose a novel solution termed Domain-Centric View-Based Search, in which views are created based on common property ranges and domain ontologies.

1 Introduction

In current Semantic Web view-based search systems [1, 2], views are formed by selecting a property, such as “place of manufacture”, and enumerating all the values of that property as selections. While this works well with uniform data, it breaks down for example in the cultural heritage domain if there many content types with differing properties such as ”time of manufacture” (museum item), “mentioned place” (poem) and “depicted place” (painting, photograph).

In [1], the problem was tackled by promoting the “item type” facet as a first choice, as choosing from it drastically reduces the amount of property facets available. However, this only alleviates the problem, and diminishes the freedom of the user in starting from the facet most natural to them. Thus, for our CultureSampo¹ [3] portal, we searched for other solutions. We discovered that while the properties of the different object types varied, the ontological ranges of those properties were usually limited to a small set of domain ontologies. We thus moved our focus from the properties to the domains, and came up with Domain-Centric View-Based Search.

2 Domain-Centric View-Based Search

The idea of domain-centric view-based search is to form views based on the domains of the properties and not the properties themselves. Analyzing the content in CultureSampo, we ended up with the views: object types, places, times, actors, events, styles, materials, techniques and museum collections.

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¹ <http://www.kulttuurisampo.fi/>

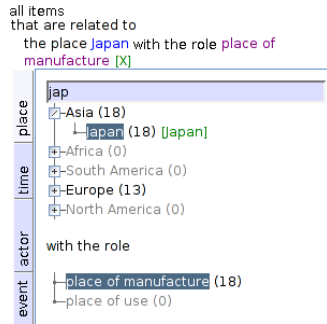


Fig. 1. Domain-centric place facet in CultureSampo

In a prior version [3], we discarded the properties from the user interface completely, and our views selected all items related in any way to the domain concepts (e.g. show anything related in any way to Poland). However, without any references to the properties, the users were lost as to what a selection did and why any particular item was included in the result set. In addition, the expression power of the interface diminished, as one could no longer e.g. search for items made in Japan but used in Europe.

We solved this by including in the presentation the property-concept relationships that place an item in the result set. Also, we brought the properties back to the views, but in a different form, shown in figure 1. Now, a view consists of two selectors: one for selecting the domain concept and another for limiting based on the role (property) that concept has with the search items. Here, the user is free to search both with and without specifying a role, actually increasing the expressivity of the view-based search paradigm. Also, when a role is not chosen, the focus moves more onto the domain constraints themselves, enabling people to look at them through the search results. In essence, the paradigm makes it possible to create virtual exhibitions such as “tell me about 19th century Finnish agriculture through items, photographs and anything you have” in addition to the already priorly possible ones such as “photographs depicting 19th century agriculture events”.

References

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Domain-centric view-based search and presentation generation in CultureSampo

The demo will show how the domain-centric view-based search paradigm is utilized in the CultureSampo user interface, and also how it has led to a visualization interface making it possible to create virtual exhibitions through the domain constraints and look at them through an organized presentation of matching search items. Figure 2 depicts the interface in action, showing how in 1950-1970 most Japanese-made items that made their way into Finland were toys, but beginning in the 70's there is an increase in the import of high-tech products.

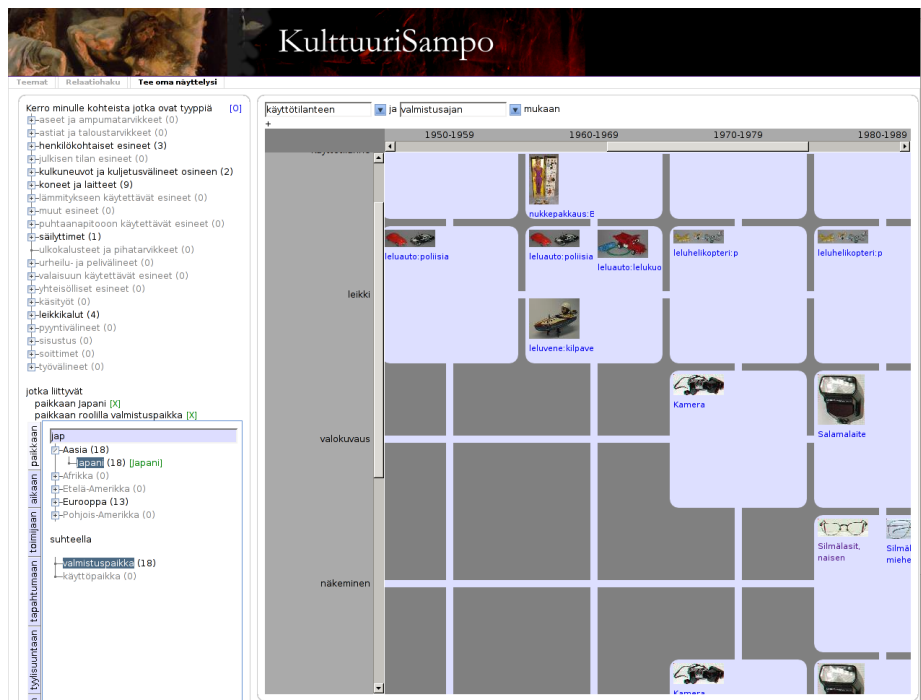


Fig. 2. Domain-centric view-based search and presentation generation in CultureSampo