Instructions for Using FindSampo

1 What is FindSampo

Findsampo is a research prototype portal and a data service for studying Finnish archaeological finds made by the public, especially metal-detected finds. The underlying finds database (called “Löytötietokanta”) was created by the Finnish Heritage Agency (FHA) and is published by the Semantic Computing Research Group of Aalto University and University of Helsinki as a Linked Open Data service at the Linked Data Finland platform (LDF.fi) https://ldf.fi for public demonstrational use.

FindSampo data can be used either programmatically via the APIs provided by LDF.fi or by the semantic portal *FindSampo - Finnish Archaeological Finds on the Semantic Web*. In the following short instructions of using the portal are given.

2 Landing page

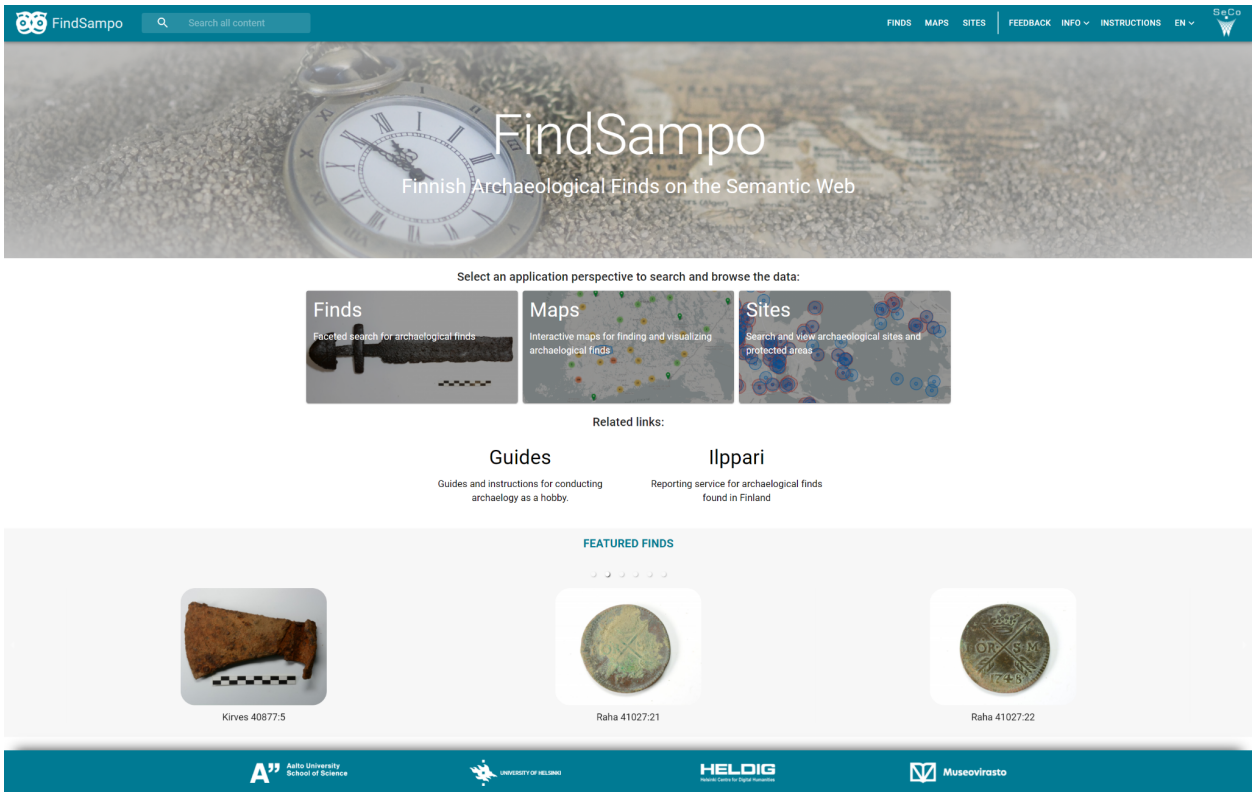

Figure 2.1 Landing page of FindSampo Portal: https://findsampo.fi

The landing page of FindSampo Portal (Fig. 2.1) contains the following *application perspectives* to the data serving different use cases and user needs.

1. **Finds** - Faceted search for archaeological finds
2. **Maps** - Interactive maps for finding and visualizing finds
3. **Sites** - Search and view archaeological sites and protected areas

By clicking on the corresponding box on the page, the corresponding application is opened.

In addition, there are two other applications linked to the landing page:

- **Guides** leads to a page where guides and instructions for conducting archaeology as a hobby are listed
- **Ilppari** leads to the Ilppari reporting service of FHA for archaeological finds found in Finland

Instructions on using the three application perspectives are given below. The latter two applications provide instructions of their own at their web pages.

3. Finds - Faceted Search for Archaeological finds

This perspective, illustrated in Fig. 3.1., is used for searching and browsing archaeological finds using a set of facets on the left: Text search, Object type, Material, Place, Date, Period, Length, Width, and Weight.

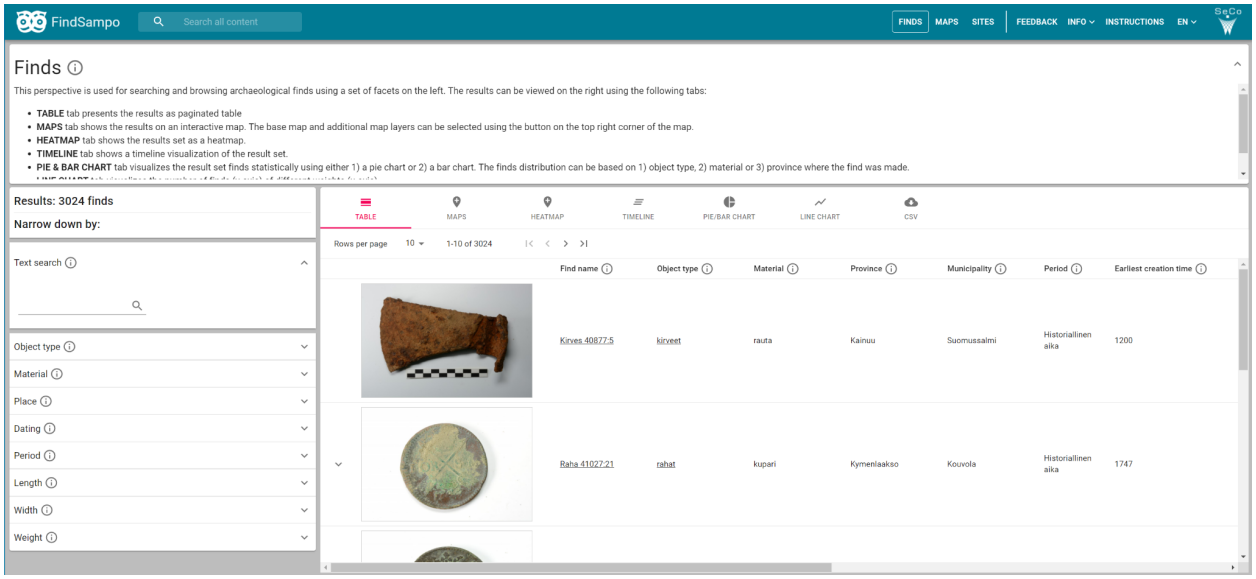

Figure 3.1 Finds perspective for searching finds (on the right) by selection in facets (on the left)

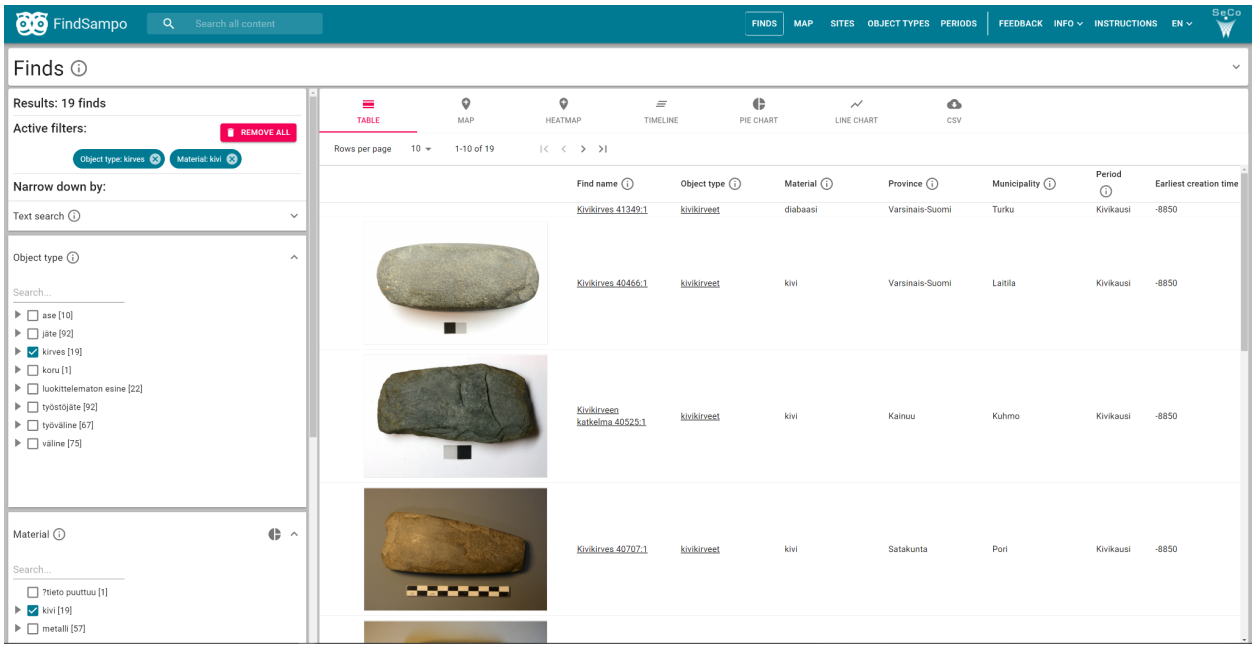

Figure 3.2 Finds perspective for searching finds (on the right) by selection in facets (on the left)

3.1 Using Faceted Search to Filter Result Sets

The idea of faceted search is to narrow down finds of interest by making selections on the filter facets on the left hand side column in Fig. 3.1. By default all finds are shown as the results set on the right. The facets can be opened by clicking the expansion button “v” for filtering. The same button on the upper right corner can be used for viewing/hiding short instructions.

In Fig. 3.2 the user has opened the Finds perspective. After this the facet Object type and Material has been opened, and type “axe” (kirves in Finnish) was selected from Object type hierarchy and the material “stone” (kivi in Finnish) on the Material facet. As the result, the 19 stone axes listed as the *result set* on the right were found with related metadata shown in the table. From the Material facet one can see that there are also 57 metal axes and for one object the material is missing - the facets also indicate missing information in the data for better data transparency.

Each row in the result set represents a find and the column a metadata element and its value, possibly as a link. For example, by clicking on the Object type, e.g., “kirves” (axe), a page of the object type with links to its terminological definitions in external data services is opened. By clicking on a Find name column value link, the homepage of the corresponding find is opened showing aggregated information about the find. For example, the first result in Fig 3.1, i.e. *Kirves 40877:5* (Axe 40877:5), is shown in Fig. 3.3.

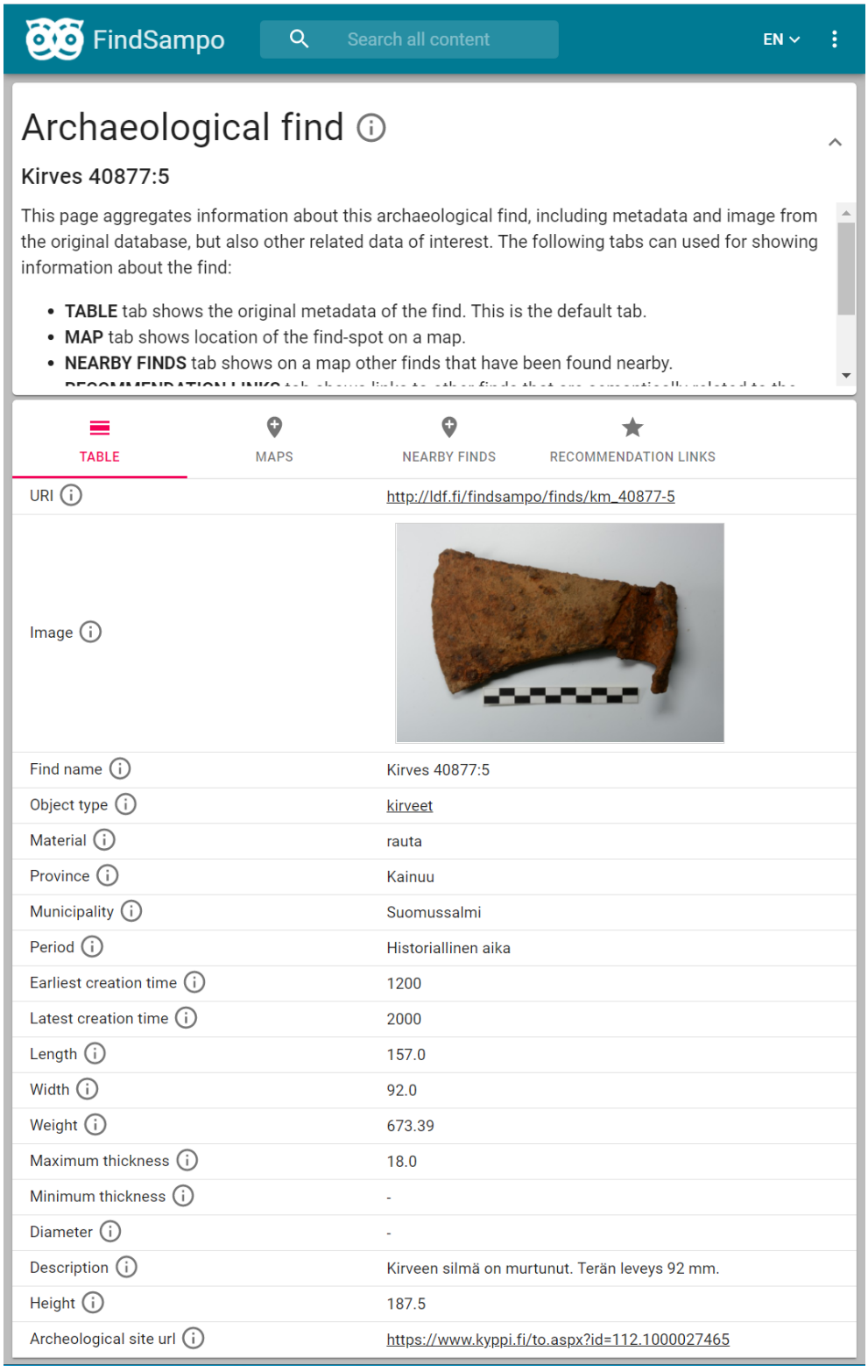

Figure 3.3 Homepage of a find with metadata listed in the TABLE tab.

Using a single filter

There are three kind of facts available:

1. *Text search* facet filters the results set by matching the query text to the name, catalogue number, and object description of the finds. A space between search words corresponds to logical "OR", so that “keihäs miekka” would search for “keihäs” (spear) or “miekka” (sword). However, it is possible to user quotes “...” to search for a strings that contain spaces. IT is also possible to use wildcard characters “?” (any letter) or “*” any string. Since the data in FindSampo is only in Finnish only Finnish text is searched for even in the English user interface.
2. *A category filter*, such as Object Type and Material, shows possible categories in which the finds belong, displayed either as a list or as a hierarchical tree structure (if available). The number of results is shown in brackets for each value and is updated after any filtering action on facets. This prevents selections that do not return any results,
3. *An interval filter*, such as Weight and Date (year), selects finds whose corresponding numerical value belongs to the specific numerical filtering interval.

Facet selections can be made in any order. Once a value is selected in a facet, the results and hit counts on the facets are automatically updated.

Multiple values can be selected within a single category filter. Selecting multiple values generates results that contain any of the selected values, i.e., it creates a logical OR query. For example, selecting both *spear* and *sword* as subcategories of weapon means that the union of the both spears and swords are returned.

From a logical point of view, selections from different facets creates an AND query for finds, as all filter selections must hold at the same time.

Selected values of the facets appear in the Active filters section at the top of the list of filters. To deselect a filter, click the “X” mark next to it in the Active filters section. You can also deselect a filter value by unchecking the check mark in the filter’s value list. There is also a REMOVE ALL button to deselect all active facet filters. The Active filters section only appears if there are filter values currently selected.

Searching within a Category Filter

A category filter may contain lots of categories. It is therefore possible to search for categories within a category filter by using the search field at the top of the filter. All possible values of a filter remain visible at all times. The values of the filter that match the search term are indicated by a purple underline.

To search for a category within a filters type search term into the search field. If there are matches, a number will appear to the right of the search field, indicating the number of filter values that match the search term. Click the arrows to the right of the search field to cycle

through the results. As you click the arrow, a different filter value will appear at the top of the list. Matched filters are underlined in purple. Click the checkmark next to a filter value to activate it. The results (and also other hit counts on the filters) are automatically updated.

Tabs for Visualizing Individual Finds

The homepage of a find, as depicted in Fig. 3.3, contains of several tabs for showing information about the find:

- **TABLE** tab shows the original metadata of the find. This is the default tab opened.
- **MAP** tab shows location of the find spot on a map.
- **NEARBY FINDS** tab shows on a map other finds that have been found nearby.
- **RECOMMENDATION LINKS** tab shows links to other finds that are semantically related to the find, including, e.g., finds with similar object type, made of similar material, and from the same time period. Such recommendations can be created automatically based on the connections in the underlying linked data.

Tabs for Visualizing Result Sets

In the Sampo-UI model, also each perspective may contain additional tabs for studying and visualizing the results set in different ways. The tabs can be selected on top of the results set, as in find homepages. In the Finds perspective there are the following tabs available:

MAPS tab shows the result set on an interactive map. It is possible to select from the following base maps:

1. Mapbox Light (OpenStreetMap) (default)
2. Background map (provided by National Land Survey of Finland)
3. Topographical map (provided by National Land Survey of Finland)
4. Aerial map (provided by National Land Survey of Finland)

In addition, two historical map layers can be added transparently on top of the contemporary base map, by clicking a symbol on the upper right corner of the map: Karelian topographic maps (issued in 1928-1951) and Senate Atlas topographic maps (issued in 1870-1907).

HEATMAP tab shows the result set as a heatmap, see Fig. 3.4 for an example.

TIMELINE tab shows a timeline visualization of the result set.

PIE & BAR CHART tab visualizes the result set finds statistically using either 1) a pie chart or 2) a bar chart. The finds distribution can be based on 1) object name, 2) material or 3) province where the find was made.

LINE CHART tab visualizes the number of finds on the y-axis of numerical values on the x-axis, such number of finds in the data as a function of the weight.

CSV tab is used for downloading the result set as a CSV file for further analysis in an external tool, such as a spreadsheet program.

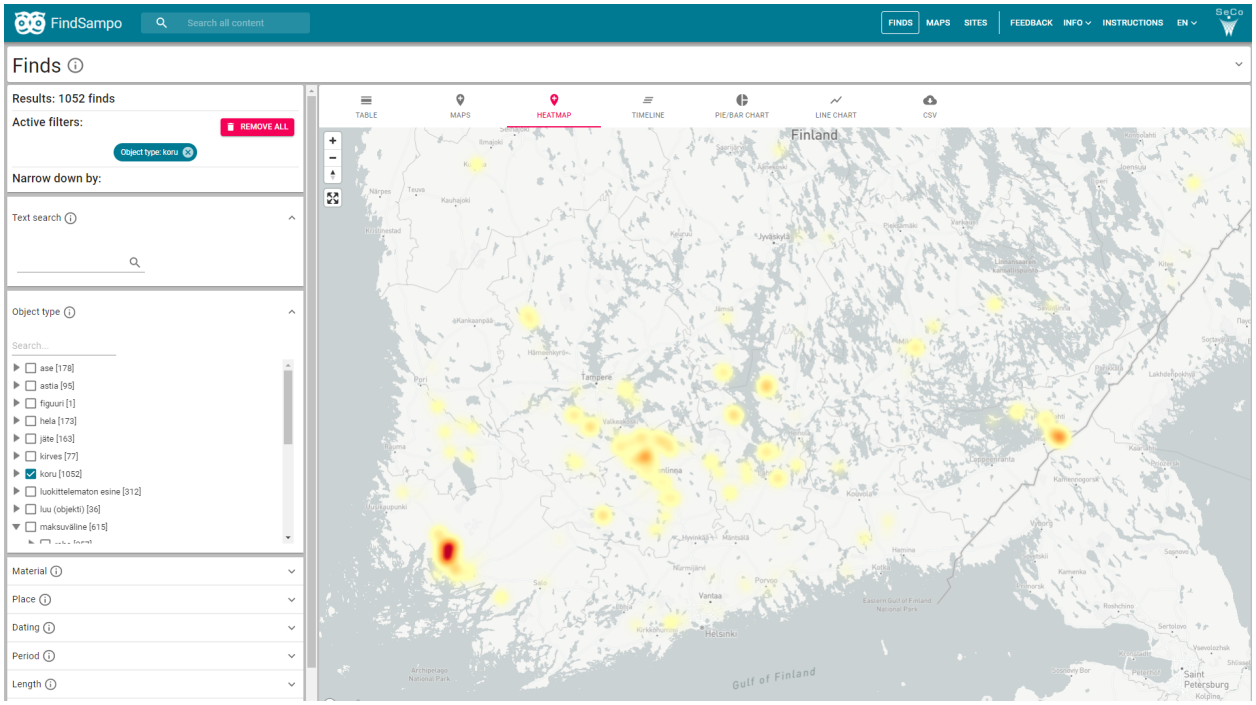

Figure 3.4 Heatmap visualization of found pieces of jewelry (koru).

4 Map - Interactive map for visualizing finds

This perspective is a shortcut that leads to the MAP tab of the Finds perspective for searching and visualizing finds on interactive maps.

5 Sites - View archaeological sites and protected areas

This perspective first asks permission to locate the user and then shows registered archaeological points and sites around the user where metal detecting is prohibited. The base map can be selected as in Finds MAP tab view with the option of using layered historical maps, too. This perspective is based on GIS services provided by the FHA.