Interface requirements for comparison search application
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Note to Lynda: this document explains two things:
- requirements for the comparison search interface
- design rationale for the components of the interface (this part has no research value but written as per your request, consist of design consideration that leads to the interface look and feel). Information about this is at the 'Interface Design' section.
- if you have any question but its not in this document, its probably because i didn't think its worth mentioning or no research value. Let me know if you want more information on a particular design decision.

1 Use cases

There are 3 comparison search use cases:
1. Compare two sets e.g. two museum collections. What are the similarities and differences between the East-Asian collection from the Rijksmuseum Volkenkunde Leiden and the East-Asian collection from the Tropenmuseum Amsterdam?
This use case is the generic use case. Other use cases are a special case of this use case.
2. Compare two items e.g. two artworks. What is the difference between the painting "Vase with twelve Sunflowers" by Van Gogh stored at Neue Pinakothek, Munich and the painting "Vase with twelve flowers" by the same artist on displayed at Philadelphia Museum of Art, Philadelphia?
3. Compare one item against a set e.g. What are the **similarities and differences** between "The Sunflower" paintings by Van Gogh and his other paintings?

2 Functional Requirements

This section provides a list of functional requirements of a comparison search interface.

1. enable object comparison and set comparison use cases.

2. the interface should enable four functions: *(a) object selection, (b) set refinement, (c) object comparison - view mode, (d) object comparison - exploration mode*. At any state, user should be able to go back and make changes.

   (a) object selection: enable query for objects and store in a selection 'container'. A container serves as a place to temporary store all objects which are interesting to the user before he compares them. It saves time from doing repeated search.
   (b) set refinement: choosing object from selection 'container', mainly adding and deleting selection.

(c) object comparison - view mode: see all properties and values of objects. Similar[1] properties and/or values are grouped.
(d) object comparison - exploration mode: enable to change constraints, change focus on a certain property or value and see results.

3. for set comparison, merge property information together in a visualization.

4. comparison of objects that has physical properties(location, size, color) are better with visualization (images, map)

nice to have: a save object(s) selection.

General design requirements:
- **GR1** Tasks which are related to each other should be presented in the same time and the same visual space.
- **GR2** Tasks should be clear and the process between task should be obvious.
- **GR3** The most important task should be placed in center of the working area.
- **GR4** Important (sub)task should be highlighted.

Constraints

1. the properties used in the research will be manually filtered

2. there will be a restricted number of properties allowed (e.g. less then 50)

3. the interfaces will only use properties common to both sets

3 Interface Design

Presentation of properties and values of different object(s) in the set(s) are the key of comparison search interface. Attention will be given to:

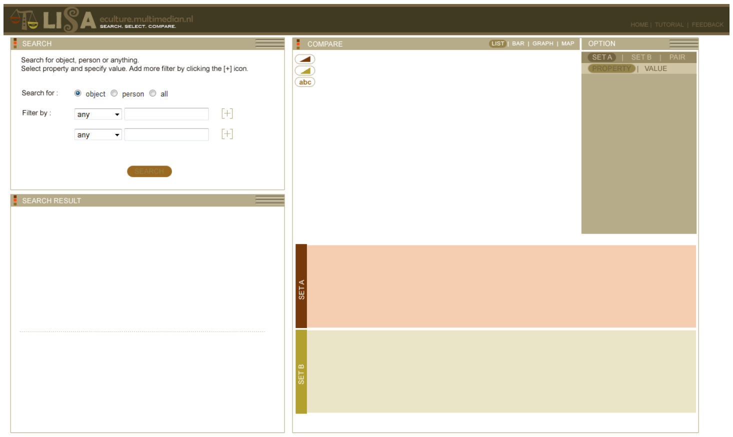
1. how to present (sub)properties to best support comparison search

2. how to present values and its numbers to best support comparison search.

Interface
The comparison interface is divided into three task areas: 'Search', 'Search Result', and 'Compare' panel. See Fig.1.

'Search' and 'Search Result' should be in the same interface because both tasks are closely related to each other. 'Search Result' and 'Compare' should be in the same interface because users need to be able to select items from 'Search Result' and put them in the 'Selection' part of the 'Compare' panel. Because of these dependencies, all three panels are displayed in one interface (see GR1).

[1] the notion of 'similar' will be defined later



Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

Search for : ● object ○ person ○ all

Filter by : any [+]

any [+]

SEARCH

Figure 1: Initial state. 3 different panels: Search, Search Result and Compare panel.

Searching a set from the repository

The user performs an ’advanced’ search, e.g. search for all art objects from the Rijksmuseum collection that is made by Rembrandt van Rijn.

The ’advanced’ search functionality should let users specify the exact set that he is looking for i.e. do not rely on any clustering mechanism of the search result.

After from the ’Search Result’ panel, the user drags and drops items to the selection area, either Set A or Set B (see Fig.2). The action is repeated until both sets are defined (see Fig.3).

Visualization

In the center of the interface there is a ’Visualization’ panel and an ’Option’ panel. The visualization panel have 4 variations: list, bar, map, and graph.

3.1 List

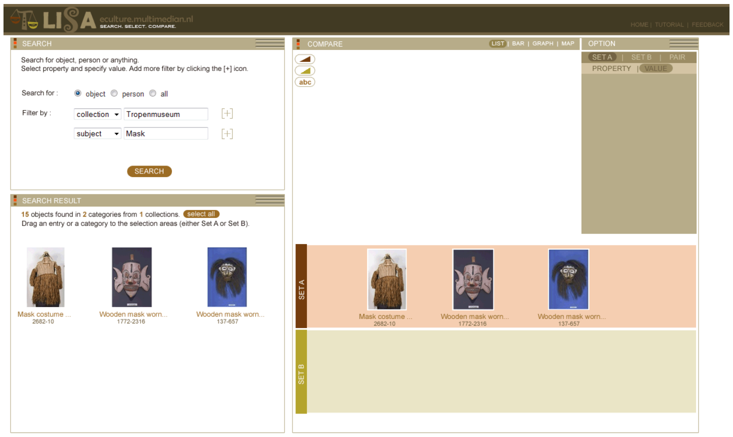
A list is a basic row-to-row comparison of different property. It is the baseline visualization that is well known in any comparison search task.

3.2 Map

The map visualization shows all location values of a specific property. To think in the future: also non-direct location values e.g. culture 4. This visualization is useful for location specific values.

3.3 Bar

Bar displays all values, ordered either by alphabetical or by amount (large to small). The Bar has a ’property carousel’ where users can scroll and select a property. When



Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

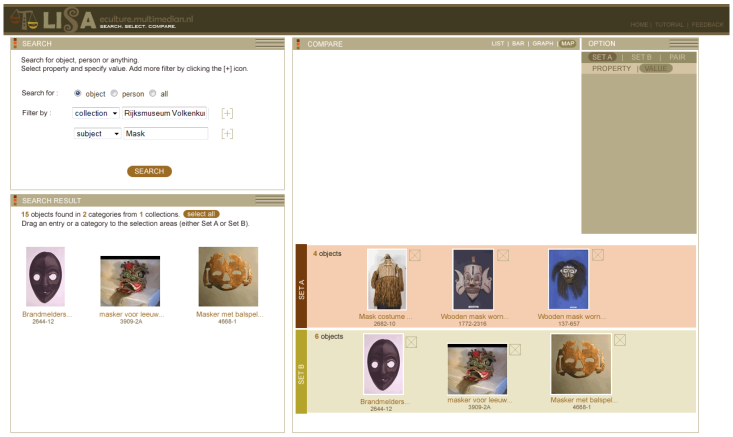
Search for : ● object ○ person ○ all

Filter by : collection ▾ Tropenmuseum [+]

subject ▾ Mask [+]

15 objects found in 2 categories from 1 collections. select all
Drag an entry or a category to the selection areas (either Set A or Set B).

Figure 2: Searching and defining a set.



Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

Search for : ● object ○ person ○ all

Filter by : collection ▾ Rijksmuseum Volkenkui [+]

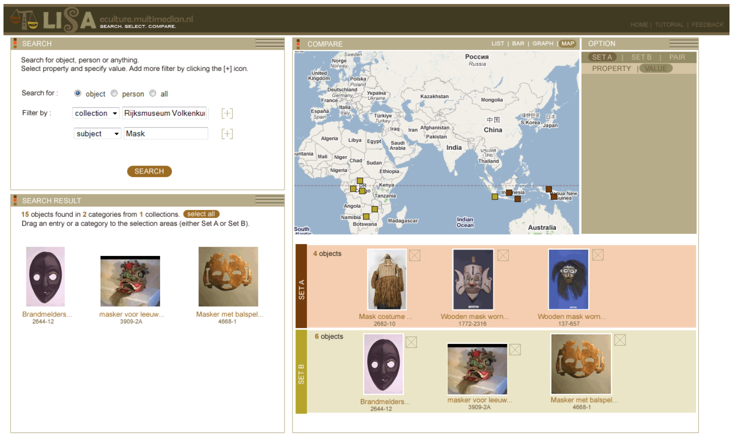
subject ▾ Mask [+]

15 objects found in 2 categories from 1 collections. select all
Drag an entry or a category to the selection areas (either Set A or Set B).

4 objects

6 objects

Figure 3: Set A and set B defined.



Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

Search for : ● object ○ person ○ all

Filter by : collection ▾ Rijksmuseum Volkenkui [+]

subject ▾ Mask [+]

15 objects found in 2 categories from 1 collections.
Drag an entry or a category to the selection areas (either Set A or Set B).

Brandmelders... 2644-12
masker voor leeuw... 3909-2A
Masker met balspel... 4668-1

4 objects
Mask costume ... 2682-10
Wooden mask worn... 1772-2316
Wooden mask worn... 137-657

6 objects
Brandmelders... 2644-12
masker voor leeuw... 3909-2A
Masker met balspel... 4668-1

Figure 4: Map visualization.

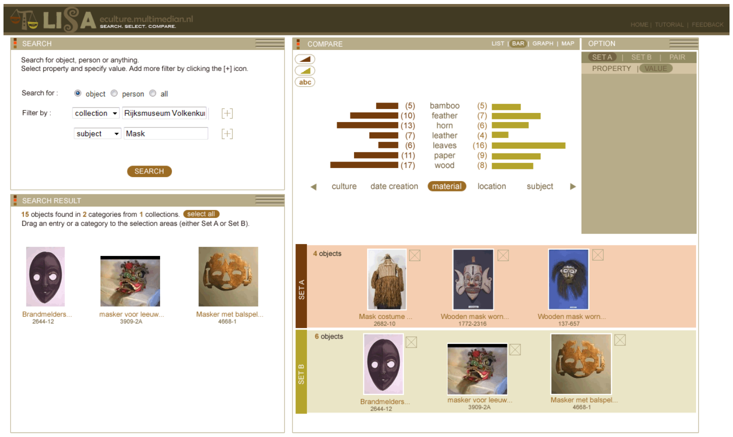
a property is selected, a corresponding values of all properties from the two sets are display 5. This interface is very useful for detail value distribution analysis.

3.4 Graph

The graph visualization presents all values of both sets for two user-defined property (see drop down selection). X-axis and Y-axis can be dynamically configured (see fig 6). This interface is useful for comparing value distribution over two different properties.

3.5 Option: semantic manipulation

The option panel is used to semantically manipulate property and values for visualization. It consist of 3 features:
1. property manipulation: show/hide property; show/hide subproperty. see fig 7
2. value manipulation: merge/collapse values. see fig 8910
3. property pair: aligning different property for comparison. see fig 11



Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

Search for : ● object ○ person ○ all

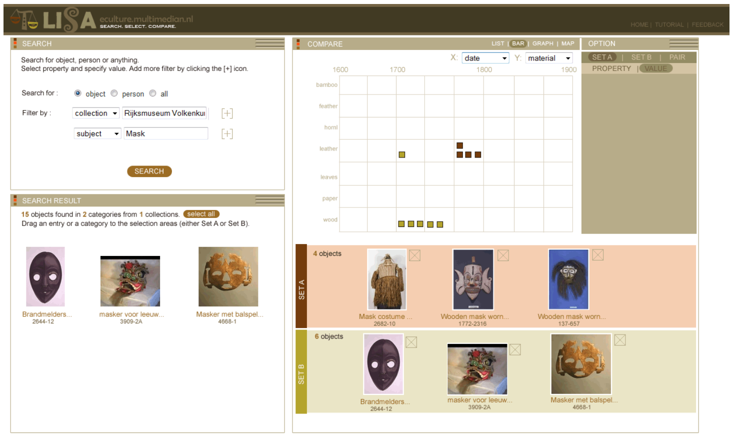
Filter by : collection Rijksmuseum Volkenkui

subject Mask

15 objects found in 2 categories from 1 collections.

Drag an entry or a category to the selection areas (either Set A or Set B).

Figure 5: Bar visualization.



Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

Search for : ● object ○ person ○ all

Filter by : collection Rijksmuseum Volkenkui

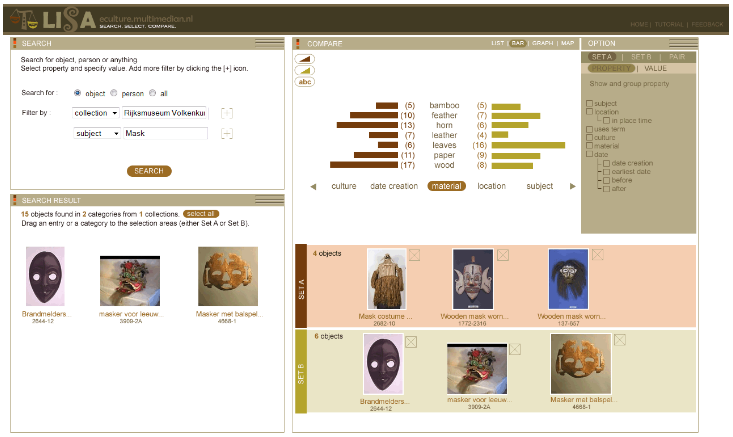
subject Mask

15 objects found in 2 categories from 1 collections.

Drag an entry or a category to the selection areas (either Set A or Set B).

X: date Y: material

Figure 6: Graph visualization.



SEARCH

Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

Search for : ● object ○ person ○ all

Filter by : collection ▾ Rijksmuseum Volkenkui [+]

subject ▾ Mask [+]

SEARCH RESULT

15 objects found in 2 categories from 1 collections. select all
Drag an entry or a category to the selection areas (either Set A or Set B).

OPTION

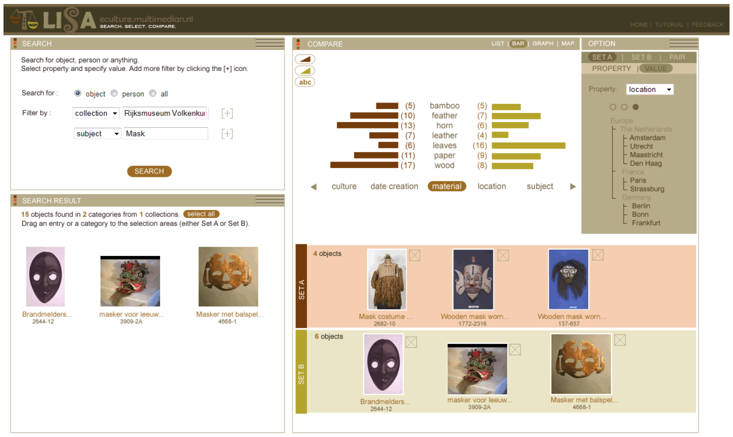
SET A | SET B | PAIR

PROPERTY | VALUE

Show and group property

□ subject
□ location
└ □ in place time
□ uses term
□ culture
□ material
□ date
├ □ date creation
├ □ earliest date
├ □ before
└ □ after

Figure 7: Manipulating properties of a set



SEARCH

Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

Search for : ● object ○ person ○ all

Filter by : collection ▾ Rijksmuseum Volkenkui [+]

subject ▾ Mask [+]

SEARCH RESULT

15 objects found in 2 categories from 1 collections. select all
Drag an entry or a category to the selection areas (either Set A or Set B).

OPTION

SET A | SET B | PAIR

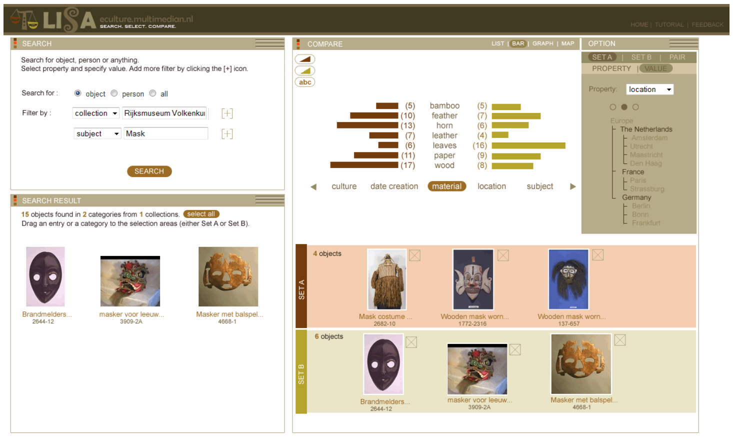
PROPERTY | VALUE

Property: location ▾

○ ○ ●

Europe
├ The Netherlands
│ ├ Amsterdam
│ ├ Utrecht
│ ├ Maastricht
│ └ Den Haag
├ France
│ ├ Paris
│ └ Strassburg
└ Germany
 ├ Berlin
 ├ Bonn
 └ Frankfurt

Figure 8: Merge and collapse values of a property within 1 set



Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

Search for : ● object ○ person ○ all

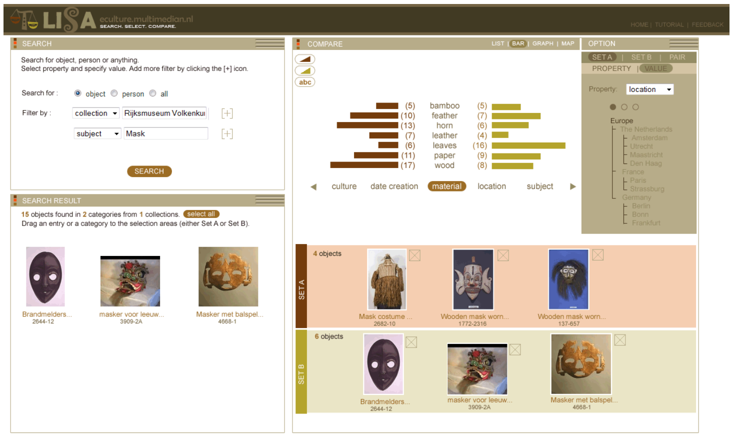
Filter by : collection Rijksmuseum Volkenku [+]

subject Mask [+]

15 objects found in 2 categories from 1 collections.
Drag an entry or a category to the selection areas (either Set A or Set B).

Property: location

Figure 9: Merge and collapse values of a property within 1 set



Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

Search for : ● object ○ person ○ all

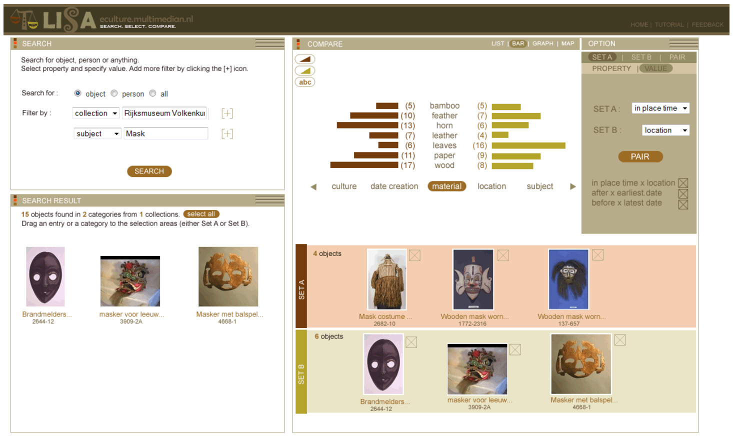
Filter by : collection Rijksmuseum Volkenku [+]

subject Mask [+]

15 objects found in 2 categories from 1 collections.
Drag an entry or a category to the selection areas (either Set A or Set B).

Property: location

Figure 10: Merge and collapse values of a property within 1 set



Search for object, person or anything.
Select property and specify value. Add more filter by clicking the [+] icon.

Search for : ● object ○ person ○ all

Filter by : collection Rijksmuseum Volkenkui [+]

subject Mask [+]

15 objects found in 2 categories from 1 collections. select all
Drag an entry or a category to the selection areas (either Set A or Set B).

SET A : in place time

SET B : location

in place time x location ☒
after x earliest.date ☒
before x latest date ☒

Figure 11: Pair properties from 2 sets