

# Navigating media-rich information spaces using concept graphs – the *abramovic* dossier

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## Abstract

Navigating media-rich information spaces usually involves switching back and forth between categories and lists indexing the material and the actual media presentations. In this paper, we describe a multidisciplinary case study of creating a digital dossier to present a collection of artworks and related information in a more immersive manner, using a concept graph for navigation. The case study is done for the artworks of the Serbian-Dutch performance artist Marina Abramovic, in cooperation with the Dutch Institute for Cultural heritage. In the paper, we describe the design requirements, as well as the technical realization of the *abramovic dossier*. Based on an initial user evaluation, we also indicate directions for future research, and discuss the style criteria for the user interface of our digital dossier(s).

**keywords:** digital dossiers, concept graphs, relation visualization, contemporary art, VRML.

## 1 Introduction

Navigating media-rich information spaces usually involves switching back and forth between categories and lists indexing the material and the actual media presentations. To address this problem, we developed a concept graph navigation system in 3D that allows the presentation of media material and navigation in a more immersive manner, Bolter and Grusin (2000), using a presentation gadget that is closely connected with the navigation facilities offered by the concept graph.

In this paper, we describe a multidisciplinary case study of creating a digital dossier to present a collection of artworks of the Serbian-Dutch performance artist Marina Abramovic, together with the art related information for the preservation and re-installation of these artworks. For the presentation of information we choose a 3D environment which facilitates the presentation of text, pictures and video as well as 3D models of artwork installations. For navigation we developed a concept graph that allows for choosing inter-related concepts, artwork-related information and media recordings of artworks in a

## Design requirements

unified intuitive fashion. When navigating, a preview of the related material is shown in a semi-transparent way, to assist the user in selecting the appropriate node.

The Abramovic dossier<sup>1</sup> resulted from a long-standing cooperation with ICN (the Dutch Institute for Cultural Heritage) and Montevideo (the Institute for time-based arts), in the context of the INCCA<sup>2</sup> project (International Network for the Conservation of Contemporary Art, and the Culture 2000 project).

In a follow-up project, we worked at a digital dossier for Jeffrey Shaw<sup>3</sup>, in which we further explored the incorporation of 3D models of artworks, in this case for the installation *Revolution*.

The structure of this paper is as follows. In section 2, we describe the design requirements of the digital dossier. followed by an overview of the technical realization of the Abramovic dossier in section 4. Based on an initial user evaluation, we indicate, in section 5, directions for future research and discuss the style criteria for the user interface of our digital dossier(s). Finally, in section 6, we will draw our conclusions.

## 2 Design requirements

As material for the *abramovic dossier* there was an interview with Marina Abramovic from ICN, made in cooperation with the Dutch Foundation for the Visual Arts, and a great collection of videos from the Institute for Time-based Arts (Montevideo<sup>4</sup>). In addition, a transcription of the contents of the interview made by Michela Negrini, a student of media art at the University of Amsterdam, who also provided an interpretation as well as a categorization of the works of art.

The digital dossier for the artist Marina Abramovic had to satisfy the following requirements:

requirement(s)

- It must serve as an information source for conservators and curators of contemporary art,
- It must present rich media recordings of all artworks, and,
- In addition, it must provide background information for the general public (non-expert users).

The *abramovic dossier* was developed in 2004 as a collective student project (including students from Computer Science, Information Science and Artificial Intelligence) at the Vrije Universiteit, Amsterdam. The directive with which the students were set to work was, quoting Ted Nelson: *everything must be highly intertwined*. Since virtual museums are by now a common phenomenon, and the virtual atelier for Marinus Boezem (that was realized in a previous casus, [-Agents]) may be considered to be just a variant of this, the 2004 autumn group decided to explore alternative ways of presentation and navigation, in particular the use of a concept graph.

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<sup>1</sup>[www.few.vu.nl/~dossier05](http://www.few.vu.nl/~dossier05)

<sup>2</sup>[www.incca.org](http://www.incca.org)

<sup>3</sup>[www.few.vu.nl/~casus05](http://www.few.vu.nl/~casus05)

<sup>4</sup>[www.montevideo.nl](http://www.montevideo.nl)

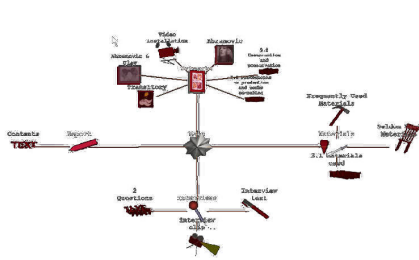


Fig. 2: main node



Fig. 2: presentation gadget

### 3 Realization of the digital dossier

The digital dossier was created with VRML (Virtual Reality Modeling Language), which allows for creating virtual worlds and present them on the web.

As a user interface for navigating the digital dossier, we created a concept graph that represents relational information structures. The concept graph allows the user to detect relations and search for information. Unlike a 3D cone tree, Robertson and MacKinlay (1991), where the complete hierarchical structure is presented, only a subset of the relational structure is shown - three levels deep.

The presentation of the concept graph is dynamic and actually determined by the user's choice. To compensate for the lack of an instant overview, where all information is shown at once, the user can, as already indicated in the previous section, also use keyword search instead of navigation.

Information objects shown in the concept graph are represented by 3D icons. These 3D icons visualize a certain type of information, both conceptual information, that represent categories, and content information types, that represent actual (media) content, including text, pictures and video.

The digital dossier contains different presentation facilities for 2D and 3D content. For 2D media content a visualization facility is needed that is able to present video, images or textual information. This facility is implemented as a content gadget with three windows. In each of the three windows the user can view 2D media content. These windows are positioned in such a way that the user can inspect the information simultaneously. In our experience, three images can be presented at the same time without much visual distortion.

Below the three windows a list of all content related to the selected information object is displayed. By using drag-and-drop the user can view content on a window of choice. If necessary, the user can focus on a particular window with a zoom option, to avoid distraction from the other windows.

Since we adopted 3D technology, we could easily accommodate a 3D model for one of the installation art works by Marina Abramovic. We implemented a plain exhibition room, providing a 3D perspective of the installation Terra Degli Dea Madre that allows the user to manipulate the position of the objects by a click-and-drag function. The 3D environment demonstrates the interactive exploration of the installation of an artwork. By manipulating position and/or

angle of objects, museum curators can get insight into how the artwork could be exhibited.

At this point, we can only speculate how useful such a reconstruction can be as a tool for the conservator responsible for the re-installation, to play around with the presentation parameters, the positioning in space, the overall size, light and ambient effects.

## 4 Issues for future research and development

An initial usability evaluation (with staff members from ICN and Montevideo) indicated that the concept graph supports both intuitive navigation and relationship detection. However improvement of the visual appearance of the digital dossier is definitely possible and desired. In summary, when demonstrating the application to the interested parties, that is ICN and Montevideo, a number of issues came along, that we will here summarize as a list of questions:

style issues

- what icons should be used to identify the elements of the concept graph?
- what categories and relationships are most appropriate?
- how should the information be displayed, simultaneously or more focussed?
- how do we allow the user to choose between multiple information items?
- how do we avoid visually disturbing elements?

Obviously, although the *abramovic dossier* was very positively received, these issues must be dealt with to make it a success. Having a first prototype, we needed to rethink our application, not only with regard to its style of presentation but, as we will discuss in the next section, also in terms of its underlying data representation.

For constructing the actual *abramovic dossier*, we developed a content management tool, that allows the user to browse and edit existing nodes, and to insert new nodes into the graph. However, to preserve the information stored in the digital dossier for future use, we must reconsider the data representation i.e. how the information is stored and structured. To use the information presented by the digital dossier, taking into account future developments in 3D technology or other application contexts, it has to be independent of formatting information. This means that the same information instance can be used for other presentations in a relatively easy way. In particular, in case of the digital dossier the presented information has to be VRML independent.

In re-thinking the *abramovic dossier*, we needed to re-establish what were our goals in developing this application and what our primary data sources. The primary goal, after all, is to support conservators in their task of preserving contemporary art, and to assist them with the re-installation of such artworks.

For the next generation of digital dossiers, we stated the following requirements:

next generation dossier(s)

1. adaptation of representation to Dublin Core<sup>5</sup>
2. XML-based content management, with php forms
3. develop multiple ways to present the information

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<sup>5</sup>[www.dublincore.org/](http://www.dublincore.org/)

## Conclusions

4. provide stylesheets to accommodate user preferences wrt style

Another important question is how we allow the user to interact with the material presented.

## 5 Conclusions

We have argued that a dynamically presented concept graph, as used in the digital dossier, may provide intuitive navigation when dealing with highly inter-related information structures in 3D space. Instead of presenting a complete view of the hierarchy, the concept graph shows only a subset of the information. Presentation of content is separated from navigation but the digital dossier indicates a strong relation between them.

So far, the results of the initial evaluation look very promising for using the concept graph as a navigation paradigm. Evaluation indicates that it is relatively easy to use and that it supports exploratory tasks rather well. As such, the digital dossier can be a solution for dealing with presenting highly interrelated information structures in 3D space. However, to get a more accurate view of the usability of the digital dossier, and in particular concept graphs as a navigation paradigm, we wish to explore more real world applications in the domain of cultural heritage, that may reveal new issues for further development.

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- Montevideo : Bart Rutten, Gaby Wijers

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## *Conclusions*

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