

Web browsers prescribe the ways we access and navigate knowledge and communities online. Since the 1990s browser software has been an arena for artistic interventions ranging from quirky standalone browsers to performative pieces to minimalist browser add-ons. The (im)possibility of navigation is not taken for granted and is probed, questioned, and reformulated through such software practices. We propose navigation as a mode of exploring interactive software that allows researchers to collectively document manifold facets of artists' browsers.

Navigation

Reihe
Begriffe des
digitalen Bildes



Navigation



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Table 1. Morphological box of JODI's %WRONG Browser .co.kr.

Dimension		Characteristics									
Content type	Code	Rendered	Navigation (Link)			Date	Time				
	Interaction possibility	Text input	Highlight via double click on text			Navigate via double click on button	Escape to end program				
Trigger	User (external)					Program (internal)					
Page layout	Navigation area (bottom across)		Date area (top across)		Text input (left side)		Content area (left, center, right)				
	Flicker effect	Highlight			Background		None				
Sound effect	Click sound (double tool sound)			Loading sound (rattling sound)		Ready sound (simple, longer tool sound)					
	Mouse cursor	Arrow			Cross						
Graphical object	Black grid					Rectangular buttons					
	Background color	Red	Green	Blue	Yellow	Cyan	Magenta	Black			
Color		Red	Green	Blue	Yellow	Cyan	Magenta	Black	White		
Text	Highlight color	Red	Green	Blue	Yellow	Cyan	Magenta	Black	White		
		Alignment	Left			Center		Right		Justified	
Motion	Size	Small				Large					
	Motion	Scrolling					None				

How to Capture an ARTifact from the Information Systems Perspective

Problem definition

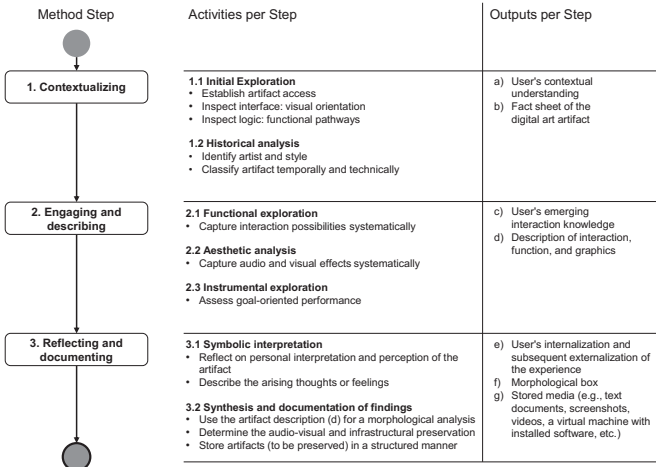
Digitization is transforming not only traditional businesses and everyday life but also other facets of our society, such as the arts. In business, the issue of legacy systems based on obsolete digital technologies has long been a problem. In art, too, this phenomenon becomes significant when artworks are based on digital technologies that are no longer supported. There is a threat that digital artifacts representing instrumental, aesthetic, and symbolic values in various contexts may be lost, so ways must be found to document and archive them for posterity. The field of Information Systems (IS) has a history not only of developing digital artifacts and analyzing their use, but also of documenting these artifacts and archiving design knowledge. Therefore, the question arises: How can an artistic digital artifact be documented and archived for posterity from an IS perspective? For this purpose, a method, described in terms of a set of steps necessary to perform a task¹, was developed using approaches from the area of design archaeology.² The result is demonstrated on JODI's *%WRONG Browser .co.kr*.

- 1 Salvatore T. March & Gerald F. Smith: Design and Natural Science Research on Information Technology. In: Decision Support Systems, vol. 15, no. 4, 1995: pp. 251-266.
- 2 Leona Chandra Kruse, Stefan Seidel & Jan vom Brocke: Design Archaeology. Generating Design Knowledge from Real-World Artifact Design. In: Bengisu Tulu, Soussan Djamasbi & Gondy Leroy (eds.): Extending the Boundaries of Design Science Theory and Practice. Cham 2019, pp. 32-45.

Reflection on our approach and description as a method

Our approach to documenting the digital art artifact can be divided into three steps: 1) Contextualizing, 2) Engaging and Describing, and 3) Reflecting and Documenting (Fig. 1). In Step 1, the documenter attempts to understand the artwork in its context. This involves two sub-steps: the initial exploration which examines the type of art artifact present and how to interact with it, and the historical analysis which determines what information is available about the artifact, e.g. through internet research. In addition to gaining an understanding of the context, the documenter also creates an initial fact sheet containing the key information about the digital artifacts. In Step 2, the documenter seeks to build up knowledge about

Fig. 1. Documentation method for an artistic digital artifact.



the possibilities for interacting with the artifact through real interaction with the artifact itself and, in parallel, creates an unstructured transcript of the engagement.

This takes place in three sub-steps: an examination of the artifact's functions, a study of its aesthetic elements and, finally, a consideration of its fitness for purpose. Thus, the output of this step is two-fold; on the one hand, the documenter accumulates knowledge and skills for interacting with the artifact, and on the other hand, they create initial unstructured documentation. For example, in the %*WRONG Browser .co.kr* study, documentation includes "clicking colorful buttons in front of web page names → double-clicking to navigate." This step of engaging and describing should be conducted by two people, if possible. That way, one person interacts with the artifact while "thinking out loud", i.e. verbalizing any thoughts in an unfiltered way, so the two people can reflect on the interaction together. This provides the basis for the documentation.

In Step 3 (Reflecting and Documenting), the documenter now also adopts an interpretive approach. First, the functional descriptions of Step 2 are supplemented by the description of the artifact's effect on the viewer. Next, the documenter finally archives the artifact in the optimum format.

An example of the symbolic interpretation notes from the first of these sub-steps was that %*WRONG Browser* triggers "a sense of insecurity or fear of malware" and an "urge to recognize patterns that do not appear to be there." In the second sub-step, the documenter performed a synthesis of all the collected findings. A morphological analysis of the %*WRONG Browser* user interface was conducted for this purpose. The consolidated representation of the artifact in a morphological box (Table 1) enables the reader to think through the possible configurations of the artifact relatively easily, even with-

out having access to the digital artifact. The archiving was done with screenshots (Fig. 2).

During the Reflection process in Step 3, we were able to identify three principles that strongly characterize the design: 1) constant flow, 2) limited agency, and 3) deconstruction of browsing. Constant flow describes how the digital artifact in its various states continuously changes the configuration of the characteristics described in the morphological box, e.g. a change of the background color from green to red. Limited agency highlights the fact that these configuration changes can only be controlled by the user to a limited extent, i.e. many characteristics described in the morphological box cannot be selected by users themselves. Deconstruction of browsing describes how the browsing experience is taken apart so that only text segments, colors, shapes, and sounds remain, which are difficult for the user to navigate and interpret.

Discussion of results

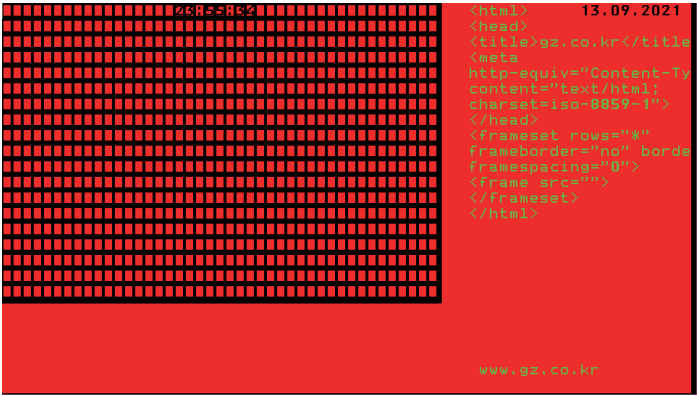
In this paper, a method was developed that allows a documenter to examine and experience a digital artifact of the present while recording it for posterity. In doing so, it was shown that instruments familiar from the IS domain are also transferable to other disciplines that deal with the archiving of knowledge about digital artifacts. Approaches adopted from the area of design archaeology³ helped us to analyze an existing artifact and capture knowledge about its design. The morphological analysis and presentation of the results in a morphological box⁴ assisted us in coping with the complexity of the described artifact.

In our study, we draw on established approaches of the IS discipline by developing a method, using systematization approaches such as morphological boxes, and capturing design

³ Cf. Chandra Kruse, Seidel & vom Brocke.

⁴ Fritz Zwicky: *Discovery, invention, research through the morphological approach*, New York 1969.

Fig.2. Screenshot of JODI's WRONG Browser .co.kr.



Dimension	Characteristics								
Content type	Code	Rendered	Navigation (Link)	Date	Time				
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Mouse cursor	Arrow			Cross					
Graphical object	Black grid			Rectangular buttons					
Background color	Red	Green	Blue	Yellow	Cyan	Magenta	Black		
Text	Color	Red	Green	Blue	Yellow	Cyan	Magenta	Black	White
	Highlight color	Red	Green	Blue	Yellow	Cyan	Magenta	Black	White
	Alignment	Left		Center		Right		Justified	
	Size	Small				Large			
Motion	Scrolling				None				

Table 2. Example of a configuration in the morphological box to describe a screenshot.

knowledge in design principles. What is new from the IS perspective is that we apply these approaches to digital artifacts already designed and being used. With this, we adopt a new perspective; instead of putting the main focus on actively designing and prescribing, we focus on analyzing and persisting design knowledge.

Capturing digital artifacts through documentation and, where possible, preservation allows subsequent individuals who do not (or no longer) have the opportunity to experience and witness a digital artifact first-hand to learn about it second-hand instead. Second-hand viewing, unfortunately, does not allow later users to experience the social component of a digital artifact or to experience using it individually for themselves. Still, documentation of the technical aspects can allow posterity to engage with the digital artifact, even if it is no longer available. This will enable individuals studying the digital artifact in the future to learn/speculate about its meaning and the experience of using it.

The developed method uses a morphological box to produce the key documentation of the digital artifact. The identified dimensions and characteristics allow the possible states of the artifact to be classified for a better understanding. The combination of the artifact's screenshot (Fig. 2) and morphological box, in which the visible configuration of the artifact is marked off (Table 2), ensures better classification of what can be seen in the image and the possible configurations that have not been captured.

Overall, the developed method helps the documenter to appropriately document and preserve a digital artifact for posterity. Using the research behind this paper, it could be shown that this method was suitable for documenting *%WRONG Browser .co.kr* and that different result types could be generated.

In addition to the morphological box, a further aspect that is of particular importance is ensuring the complete persistence of the digital artifact. This can be achieved using a virtual machine in most cases. However, digital preservation is becoming more difficult with the increasing popularity of distributed digital software (distributed among different computers).

The developed method can be used for the documentation of other digital artifacts beyond *%WRONG Browser .co.kr*. This makes these artifacts comparable, although to a limited extent. Over time, repeated application of the method could be used to collect possible dimensions of different artifacts in a knowledge base, making it increasingly easy to describe new digital artifacts and potentially classify them according to various categories.

As a limitation, it should be noted that the source code of *%WRONG Browser .co.kr* was not available for examination and preservation. Source code is an important aspect of evaluating and interpreting a digital artifact, as analysis of its content allows conclusions to be drawn about decisions made during the design process. Moreover, source code itself is a medium that allows conclusions to be drawn about the programmer's level of knowledge and skill. Even if running an executable file is no longer possible, an analysis of the source code can reconstruct the behavior and presentation of the application to a certain extent.


Furthermore, no evaluation of the method was conducted, and it could not be determined how domain experts, such as art historians, may perceive the added value or usability of the method. As future research, the described method could be compared with approaches from other disciplines and should be evaluated by domain experts.

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Das DFG-Schwerpunktprogramm ‚Das digitale Bild‘ untersucht von einem multiperspektivischen Standpunkt aus die zentrale Rolle, die dem Bild im komplexen Prozess der Digitalisierung des Wissens zukommt. In einem deutschlandweiten Verbund soll dabei eine neue Theorie und Praxis computerbasierter Bildwelten erarbeitet werden.

