Navigational System and Desktop Environment Design Within the Virtual Space

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1 Declaration

I hereby certify that the work embodied in this thesis is the result of original research and has not been submitted for a higher degree to any other University or Institution.

(Signed): .....

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3 Abstract

This study explores the development of patterns for the visual design of interface elements within a virtual environment. The document will outline the process for this study and will formalise an approach for future research.

Commonly, existing interface systems allow for the representation of data storage, manipulation and navigation via two dimensional structures. With the emergence of virtual reality systems in medicine, military and entertainment there becomes a need to transform this limited two dimensional representation into one that best facilitates the new environment. The proposed model will incorporate application menu systems and the modes of manipulation of data in specific applications.

The framework for a prototype of the interface has been produced as well as a structure for assessment via user interaction and response. This framework will provide a template for understanding the base interaction with the operating system, that is, how to organise files and initiate software, as well as the operation of a simulated software package. If the prototype were built then it would be viewed as a virtual environment and the interaction could take place via the use of either mouse (or similar prop) or data-glove. Future study could include the actual building of each of the interface variations and putting the series of users through the prescribed experiment procedure.

Applications of an interface resulting from testing such as this could be found within a range of fields. Military training currently makes use of virtual simulation and this could provide access to information needed within operational procedures. Similar technologies could be adapted for pilot control systems within a visor display. For medical research, where virtual surgical techniques are being used, information could be accessed within the operating environment that had otherwise been contained in adjacent systems outside immediate reach. Real world application of these models would be limited at this time by the use of the appropriate computing power, however, the future use of this study could have broader application within the development of game technology, internet access and data mining.

The proposed experiment requires the development of interface variations based on a predefined pattern structure that informs the design of certain elements and of the tasks to be performed. The patterns included in this study form the initial set from which a library could be extended and developed upon. While these pattern definitions are crucial

to the execution of the experiment, they have been presented here in Appendix A to preserve flow and readability of the document.

The review of the current literature within this study covers a range of publications related to the development of virtual and augmented environment interfaces. A summation of the tools, devices, techniques and constraints which affect this area of development has been included. The review is presented to provide broad background information for the reader, building a context through which the experiment should be viewed.

The purpose of this study is to provide a method through which the visual representation of an interface can be more consistently assessed. This will be achieved through the use of a pattern language for a development framework, providing interface consistency in structure and principle. This is significant to the field as currently the assessment of visual representation is conducted across projects without a consistent framework and the subsequent learning is not readily transferred across applications.