UTILISING VIRTUAL REALITY IN CAR VISUALISATION

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ABSTRAK

Kertas ini menunjuk dan mengkaji potensi menggunakan 3D Studio Max dalam mempelbagai kesan bagi kereta “visualisation”. 3D Studio Max merupakan alat altematif dalam mempamerkan kereta ‘tisualisation”. Kertas ini juga menerangkan kesan proses implementasi dan perkara yang dipelajari menerusi proses pembangunan dengan menggunakan pelbagai perisian. Objektif kertas ini adalah untuk mendapatkan maklumat terhadap proses kelakuan tanpa implementasi terhadap mengeluarkan fizikal badan kereta dahulu, mengurangkan masa bagi menghasilkan kereta “visualisation” melalui teknologi realiti maya (VR), mengurangkan kos tanpa implementasi terhadap badan kereta tetapi dapat dilihat melalui kereta “visualisation” terhadap kereta tersebut, dan melihat perbandingan kelebihan dan kelemahan antara 3D Studio Max dan Cortona VRML (bahasa pemodelan teknologi realiti maya) Client. Secara keseluruhannya, objektif-objektif projek telah dilaksanakan pada tahap permulaan. Pertama, ianya membolehkan maklumat terhadap proses kelakuan tanpa implementasi yang sebenar terhadap fizikal badan kereta. lni adalah kerana pada tahap sebelum perekaan, rekaan yang spesifik telah ditentukan. Melalui tahap rekaan selepas kereta “visualisation” telah dianimasikan, kereta ‘tisualisation” dapat dilihat tanpa proses pembuatan model kereta dahulu. Projek ini juga mengurangkan masa kerana projek ini hanya mengambil masa 3 bulan untuk disiapkan. Selain itu, ianya mengurangkan kos kerana kesan akhir yang sebenar dapat dilihat melalui kereta “visualisation”. Akhimya perbandingan antara kelebihan dan kelemahan antara 3D Studio Max dan Cortona dapat dilihat.

Kesignifikan melalui projek ini ialah 3D Studio Max dapat dijadikan sebagai alat altematif bagi kereta “visualisation”. Bagaimanapun terdapat limitasi pada perisian ini. Sekiranya dibandingkan dengan Cortona ianya merupakan alat yang lebih baik untuk interaksi kerana pengguna dapat menggunakan pilihan “walkthrough”. Cortona juga mempunyai limitasinya sendiri.

Pada masa akan datang, kereta “visualisation”’ dapat diimplementasi dalam mereka produk baru industri sebelum pembuatan model produk dilaksanakan.

ABSTRACT

This paper illustrates and investigates the potential of using 3D Studio Max in enhancing the car visualisation effects. 3D Studio Max is atn alternative tool that can be used in presenting car visualisation. This paper describes the implementation processes and the lessons learned in the "findings" throughout the development process by using various software. The objectives are to obtain information on the process behaviour without a real implementation of the car physical body yet, shortening set up times of producing a car visualisation by utilising virtual reality (VR), minimising costs in tcrms of not creating the physical body of the car yet but through car visualisation to view on the car, and comparison of advantages and disadvantages between 3D Studio Max and Cortona VRML (Virtual Reality Modelling Language) Client- Overall the conclusions answer the objectives which have been stated in the early stage. First it allows obtaining information on the process behaviour without a real implementation of the car physical part. This is because from the preliminary design the specific kind of design is being set. Then through the design stage after the car visualisation is being animated, the car visualisation can be seen without making the car model yet. Next the project answers the objective of shortening set up times because the project only takes 3 months to do the car visualisation. Besides it also minimise costs because we can see the final outcome through car visualisation. Lastly, the comparison advantages and disadvantages between 3D Studio Max and Cortona had been made.

The significant from the project is that 3D Studio Max can serve as an alternative tool for car visualisation. However there are limitations of the software. If compared to Cortona, it is a better tool fcr interaction because the user can interact with the car visualisation by using the "walkthrough" option. Cortona also has its own limitations compare to 3D Studio Max.

In future, the car visualisation can be implemented into designing the new industrial product features before implementing it.

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May Buddha bless all the efforts that had been made. Saddhu! Saddhu! Saddhu!

DEDICATION

This thesis is dedicated to my beloved father, mother and sister.

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LIST OF ABBREVIATIONS

2D	-	2 Dimension
3D	-	3 Dimension
6DOF	-	6 Degree of Freedom
BMW	-	Bavarian Motor Works
BOOM	-	Binocular Omni-Oriented Monitor
CAD	-	Computer Aided Design
CAESAR	-	Civilian American and European Surface Anthropometry Resource
CAVE	-	CAVE Automatic Virtual Environment
DMA	-	Digital Modeling Assembly
GM	-	General Motor
HITL	-	Human Interface Technology Laboratory
HMD	-	Head Mounted Display
IDEF	-	Integrated Definition
MOOs	-	MUD Object Oriented
MUDs	-	Multi-User Dungeons
OPT	-	Occupant Packaging Toolkit
SAE	-	Society of Automotive Engineers
VAC	-	Vehicle Attitude Control
VR	-	Virtual Reality
VRRV	-	VR Roving Vehicle
VRML	-	Virtual Reality Modelling Language

WoW	-	Window on World
WWW	-	World Wide Web

CHAPTER 1

INTRODUCTION RESEARCH

CHAPTER 1: INTRODUCTION RESEARCH

1.1 INTRODUCTION

Nowadays, it is not surprising that many organisations, particularly smaller companies, are confused over the application of Virtual Reality (VR) serving as prototyping. It is still the case that many companies are unaware of what VR technology has to offer, many also do not think that it has any applicability to their business needs or simply believe that the technology is too complex and expensive. However, as hardware and software prices continue to fall, and as technologies converge, we are seeing the development of digital and virtual visualisation systems specifically optimised in terms of cost and capability for the needs of small and medium enterprises.

VR serving as prototyping has come a long way in recent years, away from the production of crude images and cumbersome headsets that many still associate with the technology.

An element of the confusion surrounding VR as prototyping is that the technology is synonymous with other technologies already utilised widely across industry and the term itself is loosely applied to a wide variety of activities. The term virtual visualisation is not, in our opinion, restricted to the use of a discrete item of software to visualise the behaviour of a real life product. It also encompasses an approach to product development that takes advantage of individual technologies, such as computer aided design (CAD) and the successful adoption of e-mail technology, to build an efficient product development capability based principally on greater collaboration between designers, engineers, marketers and customers.

It is the desire to reduce time-to-market, cut costs and speed up product development that is driving the exponential development and adoption of virtual visualisation tools. A

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