Characteristics of Success - Virtually There

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ABSTRACT

This paper describes a successful capstone project. A combintaion of a good team and strong methology combined with creativity and technical skills produced a solution that exceeded all expectations.

1. INTRODUCTION

The capstone project is an important component of most Information Technology degrees, the Bachelor of Information Technology (B.InfoTech) at Otago Polytechnic is no exception. Fincher *et al.* (2001) describe "keys for success" for projects. While they intend these measures to be used in establishing programmes, rather than specific projects, they do present a useful yardstick for sucessful projects. The Otago B.InfoTech is perhaps unique in its strengths in complete systems, including both hardware and software. In this paper we examine a successful student industry project with view to highlighting some of these measures of success.

1.1 Otago Musuem

The Otago Museum was established in 1868 and is the key culture and heritage organisation for the Otago region. With a collection of over 1.7 million items, the Otago Museum is one of the four largest museums in New Zealand. With a long term duty of care responsbility, the vast majority of these items are in storage but this does not sit freely with a mission statement including "to inspire and enrich our community, and enhance understanding...". A solution for this contradiction was the challenge set for this project group in 2002.

2. MOAS AND VIRTUALLY THERE

The Musuem had previous experience with 3D capture of artefacts but it was prohibitively expensive and performed on a individual piece basis. The solution is essentially a 3D capture and display system (Figure 1). Although the turntable was the most visible part, the true strength of the project was the fact that an integrated system was produced. To reduce the effort and time required for each object to a matter of seconds, required an integrated yet modular system. The solution is not "rocket science", the only real novel solution is an optical switch to control the camera, yet, as Loudon (2001) argued, sometimes it is the robust and creative application of old ideas in a new way that provides innovation.

The group adopted the "SDLC with emphasis prototyping" approach promoted at Otago Polytechnic. In the case of the hardware system this was seen is several stages (Figure 2). The initial testing was on a converted record player, the test items chosen to reflect difficult artefacts (a shiny pink pig and a rock with almost indiscernible striations). A virtual prototype was used to establish design parameters for lighting and focal arrangements. The first production prototype was used in the client's environment before the production version of the turntable was manufactured to industrial specifications. The timeline of the project demonstrates the importance of a structured methodology and clearly identified deliverables and milestones (Figure 3).

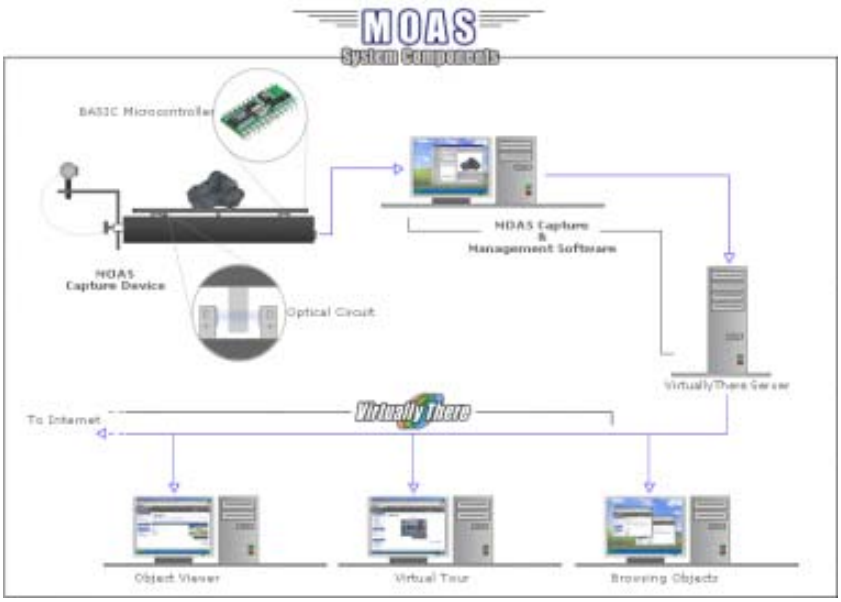

Figure 1: MOAS system components

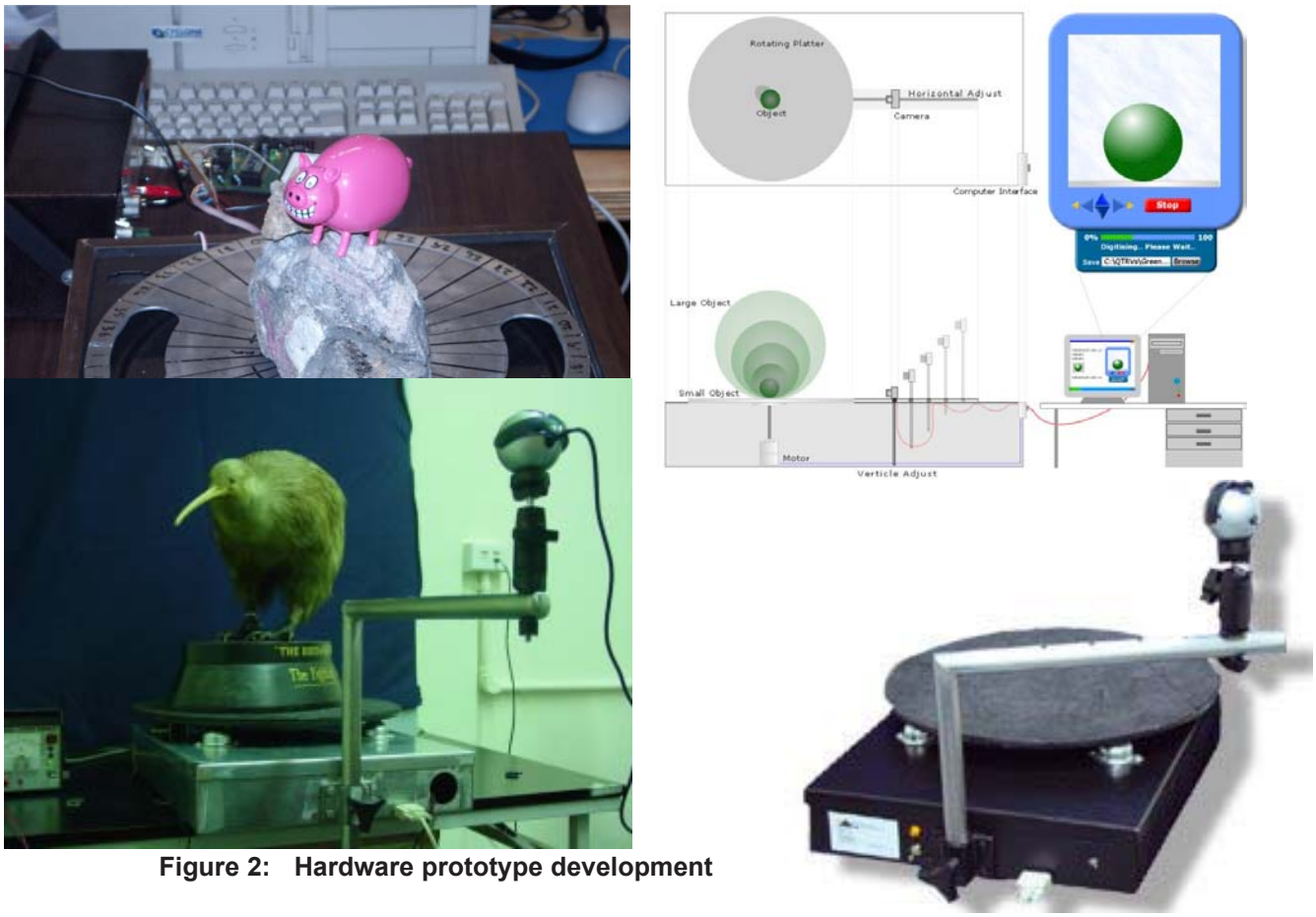

Figure 2: Hardware prototype development

Prototyping was also used in the development of the software applications, to both test development approaches and as a communication tool for the clients (Figure 3). These were, in the main, revolutionary rather than evolutionary prototypes although the strict coding standards applied by the group meant that even early prototypes were relatively robust. The finished system has several software components to capture, manipulate, store and present both the 3D artefacts and a virtual tour of the Museum. This was achieved by the development of an intranet style application that integrates MOAS components (capture, management, and database) and their output (36 images). The interface that fits with the existing

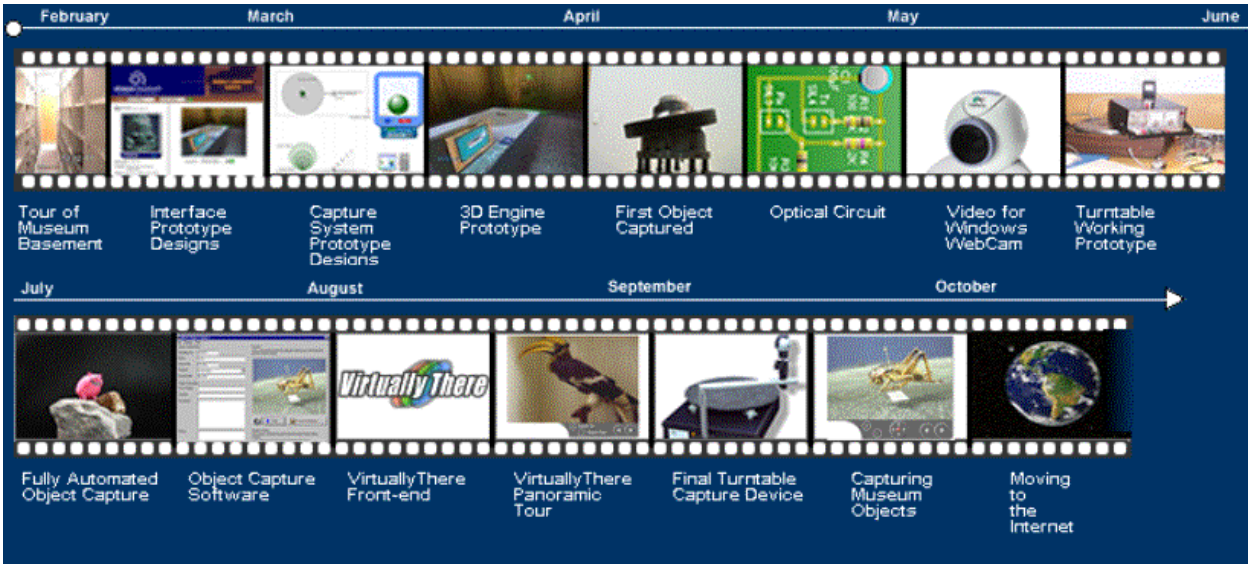

Figure 3: Project timeline and key deliverables.

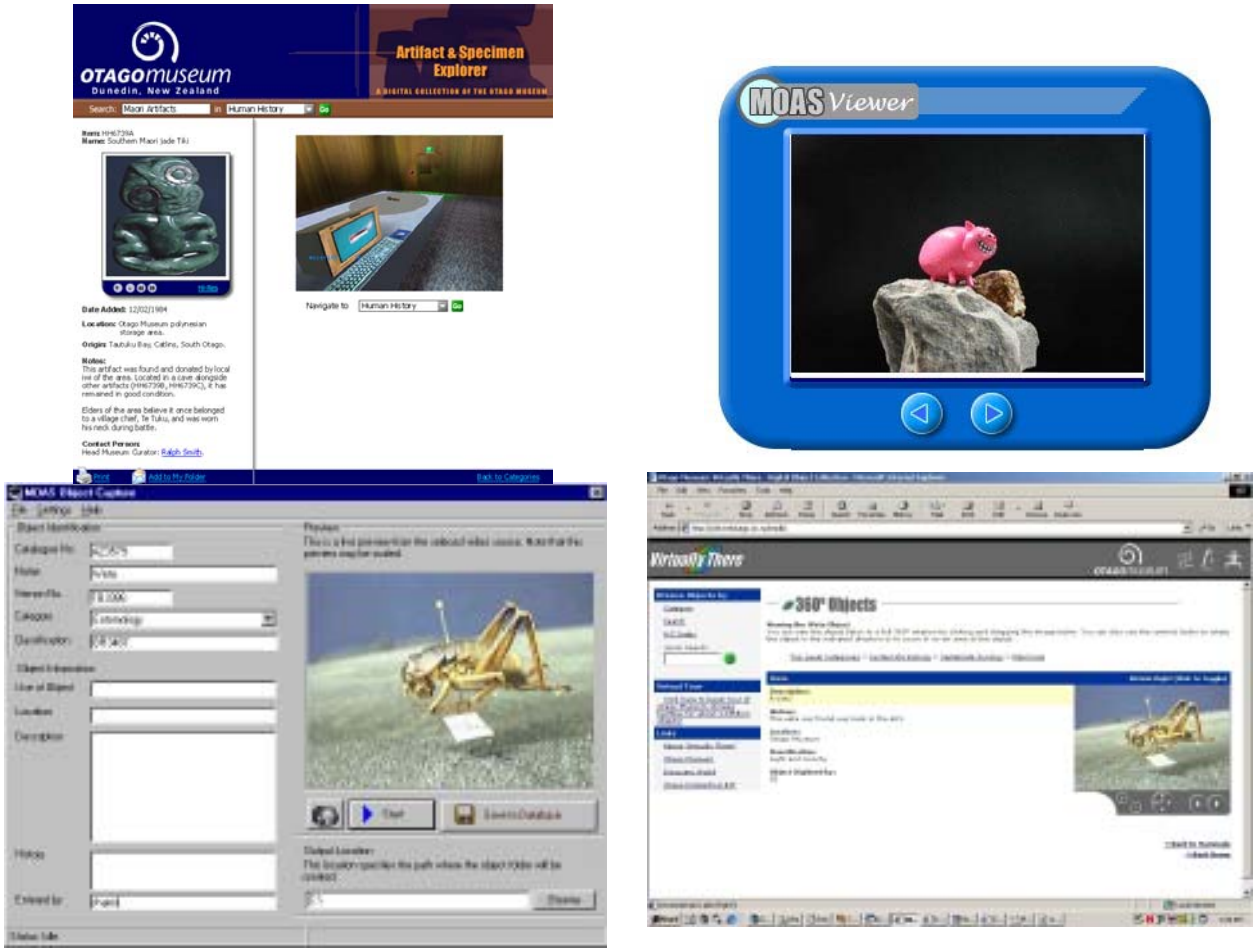

Figure 3: Software prototyping

Otago Museum website, logos and other publications and is designed for a broad audience. The database supports an unlimited amount of object categories with unlimited levels of hierarchy and is presented in a way that allows users to easily navigate large numbers of objects and to interact and manipulate the digital objects. Using SQL and Active Server Pages the system implements recursive queries to manage large taxonomy of object categories and generates dynamic and complex search queries based on many different object attributes. An object viewer was developed and implemented in JavaScript with additional Visual Basic Code to watermark the images. The object viewer includes a pre-loader, zoom controls, rotation

Figure 5: Client letter from Clare Wilson, Otago Museum

controls, pan controls and toggle rotation controls. The website itself is managed with Macromedia dreamweaver.

3. CONCLUSION

This project was an outstanding success, and continues to be so. Fincher *et al.* (2001) state the importance of finding good clients, providing a real service to the clients but of the client's having realistic expectations. In this project we could not have wished for better clients, and, at the time of delivery the client was very pleased, the project "exceeded expectations" (Figure 5). All four students graduated with the "Award for Excellence the B.InfoTech". The project also managed to achieve the additional benefit of creating significant exposure for both instiutions (Figure 6). This figure also shows the group who operated in a cohesive unit while assigning individual responsibilities and showing much individual flair.

In the last six months the research and development have continued. Since the project

Figure 5: Publicity for project (Otago Daily Times 24/05/02)

concluded the Museum has continued this development with the help of the students (now graduates). Clare Wilson reports:

> *"The Museum has established a website (omvirtuallythere.co.nz) which we are working on with a view to linking to our main website so that visitors can take a "virtual tour" of the basement. We are also working with the National Library on a national project called "Go Online New Zealand (GONZA)" into which we will be feeding the 3d objects. This is a very exciting project and we have been able to become involved as a result of the 3d imaging project. We are also looking at extending the use of the techology into merchandising our shop on-line."*

The aim of the capstone projects at the culmination of the degree programme is to "make learning real, by integrating theory and practice through authentic problems, processes and deliverables" (Fincher *et al.* 2001 p57). This paper has demonstrated in words and pictures an extremely successful project, a real project of which we a really proud. It is hoped that others will emulate this project, both in approach adopted and in reporting successes.

REFERENCES

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