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An Archaeological Database for Threatened North Island Rock Art in New Zealand

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INTRODUCTION

Rock art offers an important window into the worldview of past people, yet in New Zealand's North Island it is poorly understood and at risk of loss. A first step towards addressing this is initiating a systematic archaeological review of Māori rock art sites across the Island[1,2]. This review requires an information system that must be responsive to archaeological inquiry in the short term and manageable as community level archives in the long term. It has to facilitate ready access to rock art records by iwi communities whilst also protecting their cultural property interests. We describe the researcher-centric process followed to understand requirements and design an appropriate data schema as well as the software solution created that enables electronic data collection and query for this review of heritage information. Describing the existing archaeological field data collection solutions we evaluated, we also share lessons learned, challenges faced, and future directions envisaged for the software solution.

Our team includes Dr Gerard O'Regan who is an archaeological research fellow and is the Principal Investigator of the review. He evaluated existing information systems in New Zealand and found they did not fully address the kind of recording and archiving need for the North Island rock art project. Enlisting the support of the Centre for eResearch at the University of Auckland to create an appropriate information system for this research endeavor, a team was formed with Noel Zeng and Katy Butterworth as the primary developers for the software solution.

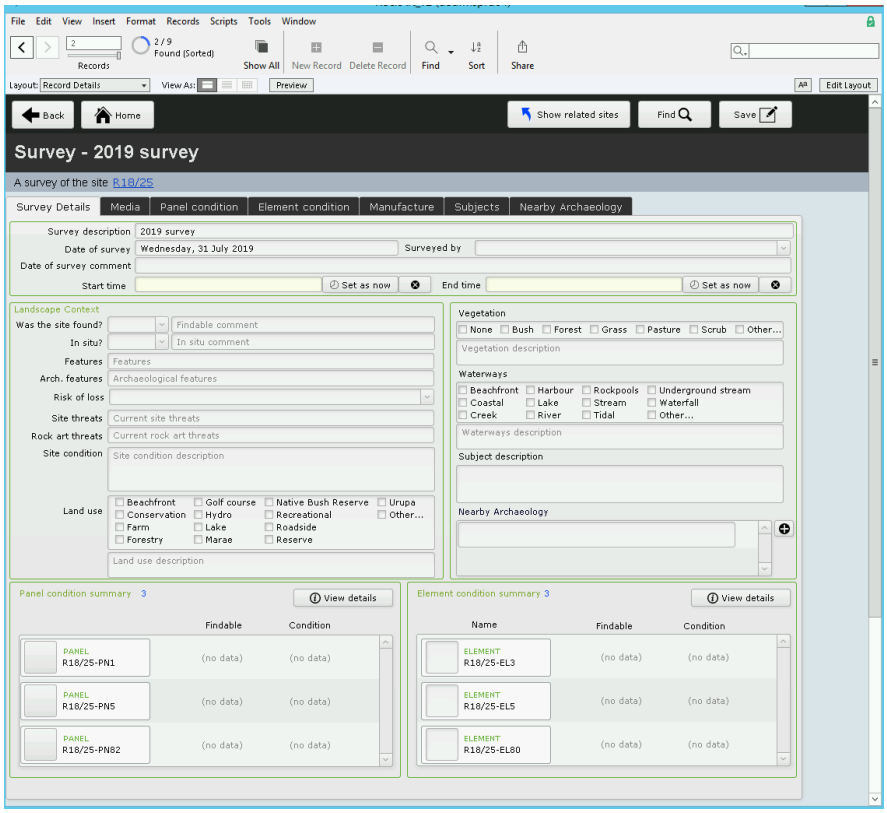

Figure 1: A screenshot of the information system.

SOLUTION DESCRIPTION

We designed a data schema that captures current and past location, status and context information of rock art sites. Using the data schema, we then implemented an information system as a relational database with data entry and query forms. This uses FileMaker[3], a cross-platform relational database platform that incorporates graphical user interface design and scripting tools. We have ensured that data from the database can be exported to be used in other software for further query and analysis. An offline functionality has also been implemented to allow for data browsing, query and entry without Internet connection, such as in remote sites without cell network coverage. Changes made offline can be synchronised to the master database instance.

PROCESS

In order to build a solution that meets the research needs throughout the project, we began by mapping out its requirements at each of the different stages. Against that we also evaluated the two related archaeological information systems in New Zealand, to identify strengths and weaknesses in those for the kind of heritage management information envisaged for this project. These were the South Island Māori Rock Art Project database established by the Ngāi Tahu iwi [2], and ArchSite[4], the web-interface of the New Zealand Archaeological Association Site Record Scheme, the officially recognized inventory of archaeological sites in NZ. This resulted in a list of feature requirements and a data schema that formed a basis for evaluating solution options.

Different data collection solutions and platforms were explored and evaluated for their ability to address our requirements. We narrowed down our options to either building a custom data collection solution using a relational database platform such as FileMaker or configuring an existing data collection platform such as the Field Acquired Information Management System (FAIMS)[5]. We decided to build a custom data collection application using FileMaker due to its flexibility and the availability of existing University infrastructure and expertise, and future usability and relevance for anticipated community users. We built the application and conducted usability testing with O'Regan and others and fined tuned the system based in response to that testing.

The finished application is now being deployed so that it is available for data collection and query.

LESSONS LEARNED

Mapping out the research through its distinct stages has been valuable as a starting step, as has been thinking through the strengths and weaknesses of other systems. Usability testing has been vital for understanding what elements help users accomplish their goals in the system and what needs improvement. Keeping technology costs to a minimum has influenced decision making during development but cost savings should be evaluated in terms of final stability and scalability of the application.

FUTURE DIRECTIONS

We plan to expand access to the database so that it supports the management of the dataset by iwi communities, while respecting the cultural property interests of each iwi. This requires implementing a user account system that protects access to information that is sensitive to each iwi.

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