Facilitating Researchers with Visualizations of a Digital Cultural Heritage Site

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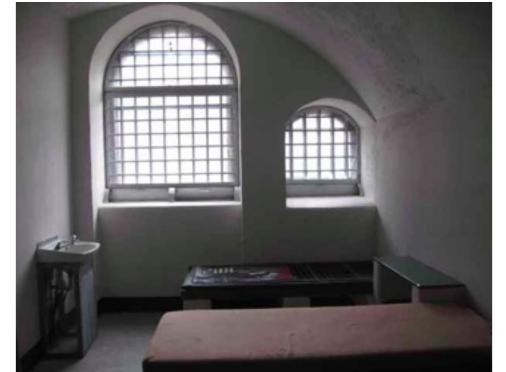University College Cork
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Objectives

Create a interactive 3-D environment to facilitate exploration of a cultural heritage site, Spike Island, and investigate its application:

- As a research tool for professionals, *e.g.* archeologists, historians;
- As a teaching aid;
- As a means of disseminating knowledge in an engaging way to the public.

Exploration in Context

Serendipitous curiosities and consequent learning are prompted by context [Sohn et al, 2008]. By relating different types of information in a common context, connections between otherwise disparate sources can be drawn, and deeper understanding occurs.

Managing the Data

This work seeks to provide a virtual 3-D environment, associated content management system and meta-data scheme to admit this type of exploration.

The CMS extends Drupal to allow indexing and presentation of audio, video, image and 3D models. Rich sets of meta data are also provided for each object allowing their placement in historic, geo-spatial and other contexts.

Creating the 3D Environment

A fully interactive 3D environment was created using Autodesk 3ds Max and rendered using Unreal Engine.

The exterior landscape was accurately created from Ordinance Survey data, while building exteriors and interiors were modelled from CAD drawings. Detailed textures were created from photographic information. Ambient sounds were added to add verisimilitude.
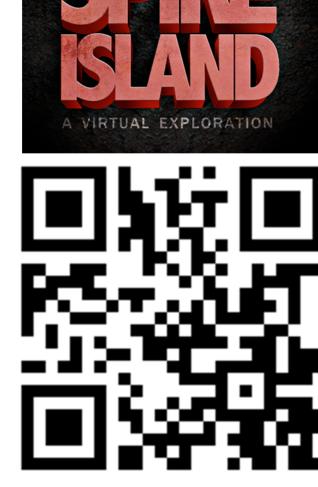
The environment is fully interactive; users can move through the environment and discover and examine a small number of artefacts. Currently the environment is available only as a desktop application. It will be ported to mobile platforms.

Sohn, T., Li, K., Griswold, W., Hollan, J. (2008). A diary study of mobile information needs. CHI 2008, April 5-10, 2008, Florence, Italy.

Ongoing and Future Work

Two strands of development are ongoing:

1. Evaluation of the interface as a teaching aid and professional tool. It is envisaged that this will lead to further feature development and applications.

2. Creating a means of smart linking artefacts in the 3D environment, *e.g.* census data and houses in the model.

Data Access within the 3D Environment

Issues:

- Presentational: Endeavour to display documents within the environment or display externally, *e.g.* embedded browser.

- Naming scheme: How to create connection between representations and information fragments, e.g. URIs, Linked Object Data, Handle System

– Integrating data distributed across several sources about a single artefact.

Current Work

- Extend the CMS to add support for a common URI scheme for naming objects (based on the Handle System - http://www.handle.net/), and provide a means of adding semantic metadata to documents and other artefacts to create associations.