Situated Simulation of a Hellenistic port in West Crete

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ABSTRACT

A situated simulation is a window into an alternate reality. Imagine walking to an archaeological site, holding up a screen, and seeing in it an image of how the buildings and land just behind the screen looked 2000 years ago. As the spectator turns and moves, the images in the screen turn and move to correspond to her position and point of view. That is what a situated simulation accomplishes. While thirty years ago this could only be accomplished in science fiction, now it is possible due to the remarkable technical characteristics of smart phones and tablets. The screens provide high-quality images, the graphics processing engines permit rapid three-dimensional visualization, GPS provides accurate spatial location, and accelerometers give precise orientation.

Situated simulations (sitsims for short) have been developed for the Parthenon in Athens, the Roman Forum, the Oseberg Viking ship, and a few other locations. Here we describe the application to the Hellenistic harbor town of Phalasarna in West Crete.

Phalasarna is a favorable site for a situated simulation because today it is a beautiful and apparently undeveloped region between mountains and the sea, but was for hundreds of years the location of a Greek city state. At its height around 333 BC, Phalasarna had a military harbor, surrounded by city walls, with fortification towers and battlements extending for kilometers to surround an acropolis. According to ancient geographers, the acropolis had a temple dedicated to goddess Dictyna, and was the first city travelers encountered when sailing to Crete from the West.

The citizens of Phalasarna were famous mercenaries, who participated in foreign wars, and also acted as pirates, taking loot at sea. In 69 BC, a Roman army conquered Crete to suppress piracy. It is very likely that Phalasarna was the first city they destroyed at the outset of this campaign. But this was not the most destructive event the city experienced, for in 365 AD an enormous earthquake and tsunami raised this part of Crete 6.6 m above the sea and put the harbor out of service forever.

Systematic excavations of Phalasarna began in 1986 and have continued to the present. The region that was once a harbor is now on dry land 200 m from the sea. It is ringed by the remains of defensive walls and fortification towers. After excavation, we find they survive in height to as much as 5 meters. Other excavated areas of note include the harbor quay, public baths, the channel entrance to the harbor, and a wine factory.

The Phalasarna sitsim we are developing can provide visitors with an immediate visual grasp of this complicated history. A first layer of the sitsim focuses on the harbor area and acropolis in 333 BC showing the towers as they appeared when new, homes and a temple on the acropolis, and triremes moored to the quay gently rocking in port. A second layer of the sitsim shows the same area in 69 BC, and provides an animation of the Roman attack.

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In future development we intend to expand the virtually reconstructed area beyond the harbor and acropolis, and to visualize the earthquake and tsunami of 365 AD. In addition, we will provide three-dimensional visualizations of some of the thousands of artworks and artifacts found during excavation, placing them in locations where they might originally have been found, creating a virtual outdoor museum.

Thus visitors of the future will rapidly acquire an understanding of the archaeology, history, and geology of Phalasarna, with modern information technology literally creating a window into the past.