Chapter 12
Developing Web3D Tools for Promoting the European Heritage

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ABSTRACT
Virtual reality environments are ever more going online. This trend, opened by videogames, will open new important opportunities to enhance cultural tourism, given the possibility of creating compelling virtual adventures set in the context of artistic and natural beauties. The authors are exploring these challenges in the context of the Travel in Europe (TiE) project, and developing tools to build enriched virtual environments where the player could explore faithfully reconstructed places and live there information-rich, contextualized experiences. The TiE architecture is based on a state-of-the-art commercial game engine, with massive multiplayer online games (MMOG) facilities that support access to multiple concurrent users, plus ad-hoc designed modules. The 3D model is completely geo-referenced. In each covered area, a few points-of-interest (POIs) are implemented. These buildings are rigorously reconstructed at a high level of detail. The textures for the rest of the palaces are built dynamically by the TiE system using a statistical template-based algorithm that exploits local characterizations of common architectonic elements. The TiE virtual world is enriched by geo-localized, contextualized MicroGames (mGs). mGs are simple, short games that focus the player’s attention on a particular item that is found during exploration of the 3D world. mGs are typically taken from well known simple game models, such as Puzzle, MemoryGame, and FindTheWrongDetails. The main concept that underpins mGs is that, they should be intuitive and easy to play, so that the player can focus on the contents rather than on learning.

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how to play. Preliminary informal tests have suggested that the approach is valid and that the enriched 3D environment supports the contextualized promotion of artifacts, products and services, which is an important growing demand from institutions and enterprises that want to valorize the resources of a territory.

INTRODUCTION

Local communities and institutions are becoming more aware of the need for promoting their region to a variety of audience, through techniques that would allow them to appreciate what it has to offer it in a pleasant and meaningful way. There are a number of attractions that characterize a territory and may be of interest to a diverse range of people. These attractions can include its cultural and natural heritage, buildings, history, speciality products, food, and accommodation, sport resorts, as well as the social values of its people. This promotion of a region can produce important commercial benefits as well as enhance interpersonal interaction of its people with the international community.

New Information and Communication Technologies (ICTs) are important for developing systems to support the promotion of a region (Arnold, 2008). In particular, the Web 2.0 technologies are providing tools (e.g. Social Networks, Forums, Interactive Maps, Travel Recommender and Booking Systems, Instant Communication Support, Conversational Digital Agents (Conrady, 2007)) that are greatly improving the services offered to tourists and general citizens. An important advancement for the future is likely to be the technology called Web 3.0, which is likely to embrace online 3D Virtual Worlds (VWs). Next generation websites will feature virtual environments that are able to provide the user a more compelling and involving experience (Brutzman & Daly, 2007). VWs are already popular among video gamers, and many large user communities have already established around famous Massive Multiplayer Online Games (MMOGs), such as World of Warcraft (Blizzard, 2008). Many technologies such as hardware video-chips and software tools developed for videogames can be used in other application fields such as 3D virtual worlds.

We are exploring these opportunities and challenges in the context of the “Travel in Europe” (TiE) project (Bellotti, Berta, De Gloria & Zappi, 2008), which is aimed at implementing an innovative means to promote and popularize European heritage. TiE is building a platform that will provide tools through which third party content developers will be able to build online 3D VWs, where users will live challenging and compelling experiences by interacting with virtual representations of the European heritage. From a business point of view -- which has been analyzed in an early survey phase of the project -- the TiE platform intends to meet the ever growing demand for advanced interactive systems to able to promote the European heritage on a wide scale (e.g. through the Internet) while being deeply root in the local regions. In particular, we predicated that the platform should be able to meet three major needs from cultural and tourism stakeholders’ viewpoint:

- **Promotion of a region:** The proposed system can be thought of as an evolution of the current advertising systems used for promoting resorts and regions on TV/ magazines/journals.
- **Support for a geographic-context based knowledge acquisition:** The exploration of the various attractions should not be purely virtual, but also connected to the real world. The proposed approach intends to support knowledge acquisition/analysis