

# SERVICES IN SUPPORT OF PROMOTING TERRITORIAL TOURISM AND CULTURE: THE LIVING LAB PROJECT EPULIA

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## 1. Introduction

Recent studies have revealed that the tourism industry has recognized and exploited the advantages offered by ICT (Information and Communications Technology) in managing its relationship with the customer, by enhancing its web presence, but especially by facilitating the management and administrative relations of structures and institutions operating in the same sector: web technology and its derivations are able to control a series of coordinated and integrated actions ranging from visual communication of content and information, to the management and control of services and structures related to tourism and territory. Mobile devices (mobile phones, smartphones, tablets, netbooks, etc.) have the highest degree of penetration among the population: 97% of Italians have one, for a total of nearly 50 million devices.

Nowadays Internet access is preferentially through mobile devices. In this, mobile marketing, which is one of the best marketing strategies available, exceeds web marketing and recommends the use of different tools, integrating them into a system of practices with high level of personal involvement.

In this way the software applications become a creative workshop. In one year the increase in software applications launched by companies (mobile branded app) was 186% on a sample of the top spenders in advertising. Interactive media, such as augmented reality, are getting more and more spread. Augmented reality is not intended to replace or reduce the complexity and the richness of direct and sensorial on-field experience, but it can extend the opportunities for experimentation and accessibility to different types of user, in line with digitization trends promoted at international and local levels. There is a growing need to attract and engage the tourist through ready-to-use smart devices/mobile phone applications which allow economic and commercial benefits to be gained.

It may be useful, for this purpose, to look at the Living Lab approach, based on continuous interactions with the end user [1 - 2].

The process is essentially based on the generation of requirements, design and evaluation. These steps are repeated in three iterative design cycles that take their name from the result:

- **Concept**
- **Prototyping**
- **Final design of the system.**

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The design is focused on finding solutions based on the needs of users and communities, abandoning the classical view of the design according to which the user is the subject of theoretical studies and is excluded from the design process. This scenario is characterized by a clear balance between the figures involved in the design process [3 - 5].

The end user is effectively part of the team project as an “expert of his own experiences”, and is facilitated in expressing himself through the researcher who must be able to engage him in his activities.

## 2. The EPULIA Project

The Apulian territory owes its success to the uniqueness of the territory, for its landscape and its historical, cultural and gastronomic heritage, which cannot be found elsewhere. Apulia and its heritage, therefore, need to be supported by technological systems and tools to ensure the tourist visitor is offered the widest possible range of integrated services. In correlation with the rapid spread of smartphones and tablets of the last generation, the latest augmented reality (AR) technology has defined a new orientation for the IT market.

The goal of the project “Enjoy Puglia using Ubiquitous technology in Landscape Interactive Adventures” (EPULIA) is to develop innovative and technologic applications through which users can enjoy entertainment and educational contents in an interactive way by means of multimedia and mobile technology. The platform aims to provide services which support the promotion of the cultural tourism of Apulia, and provide tourists with information and interesting contents, including routes and itineraries, with the definition of real interactive and geo-referenced maps, also providing directions to where typical accommodation can be found. The main objective is to define a new methodological approach to the interdisciplinary sharing of contents and educational themes. This will enable the promotion of cultural and environmental itineraries, capable of providing innovative multimedia contents and a variety of communication channels so that an adequate knowledge of the Apulian territory can be acquired, in particular that of the Valle d’Itria, which lies between the towns of Locorotondo, Martina Franca and Cisternino.

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With the support of the skills of SMEs (LifeResult, Info.Sist and Cedimpresa) and the Research Laboratory (Consortium CETMA - Engineering, Design and Materials Technologies Center ) in terms of research and experimentation, the project aims to integrate into the web platform, prototypes of interaction in real time using Augmented Reality (AR) technology, testing ways of utilizing the technology to involve all perceptual modalities [10]. The goal is to develop a system of voice interface with a virtual in-

terface, useful for improving access to virtual reality technologies for users who do not have the skills or physical ability to use a keyboard and a standard mouse (users with disabilities). The applications allow you to view digital contents relating to tourist sites of interest. In particular, through the use of augmented reality technology and mobile devices, the EPULIAAR APP, will allow the user to view places of interest together with the associated digitized cultural contents [11].

At a methodological level, the project, EPULIA, aims to start from the definition of the needs of multi-target users and from the definition of system requirements, in order to subsequently identify the most appropriate architectural scheme for the thematic platform. With a view of internationalization, the project intends to pursue the following actions:

- promotion of new digital tools at the service of tourism;
- creation of collaborative environments for the enjoyment of multi-channel contents.

An ICT project, regardless of the type of target, of the size of catchment area and of the specific objectives it intends to achieve, is based on the integration of different components. Methodology, technology, organization, processes and procedures, must be integrated into a model of complex service which needs to be designed so as to meet, effectively and efficiently, not only the needs of the user, but also the expected results and an adequate return in terms of a positive organizational impact and cost/benefit.

The Living Lab approach, based on the iterative method has the advantage of increasing knowledge through dialogue among the participants. The sharing of this knowledge enriches and improves the learning process and facilitates changes in the perspective of an innovative design. In order to allow interaction within the development team, all players involved must be equipped with an open mind to be able to perceive, aggregate, and analyze the ideas and spontaneous reactions of the users.

The EPULIA project will deploy multi-modal and multi-channel applications based on the innovative technique of augmented reality. It will include user friendly and multilingual interactive interfaces, which will guide the user through routes and touristic itineraries populated by digitized contents and cultural heritage enjoyed in new interactive ways and realized with the most advanced web oriented technologies and 3D.

The prototype of the digital archive, which will be built as part of the project proposal, will have as its main feature, the availability of places located in the territory and organized in GIS-based interactive maps which allow the user to retrieve information in the shortest possible time. This map will allow points of interest to be selected in addition to services in support of the promotion of the cultural tourism of Apulia able to provide information of interest for the tourist together with technologically advanced services that, through systems accessible by means of mobile technology, provide tourists an added value in information retrieval.

The applications listed below, allow the digital contents relating to the various places of interest to be viewed:

- ▶ Through the use of augmented reality technology (which allows you to overlay information for visualization in camera mode) and the use of a mobile device (mobile telephone, tablet or webcam), the *EPULIA AR APP* will allow the user to visualize digitized touristic points of interest with cultural contents associated to them, in two different ways [9]:

- **on site** (places of interest): pointing with a mobile device equipped with a video camera and gyroscope, the user can view additional content related to points of interest in the area to interact with data stored in suitable structures;
  - **remote**: the user will be able to evaluate a proposed path of interest.
- The *EPULIA Virtual Tour APP* will allow the user, from a geo-referenced map and distinct areas of interest, to directly select an area, to virtually visit it and, possibly, to investigate the surrounding area. For each point of interest, in agreement with the project partners, thematic itineraries were created; they were then populated with virtual multimedia and interactive contents relating to the landscapes, historical aspects and detailed information on the socio-economic fabric of the area (accommodation, catering, food and wine, local products, museums, etc). The user can select the path or the scene to be displayed in landscape mode directly from a virtual map (Google map), guided by icons which are placed at various cultural or touristic points of interest. The virtual navigation interface through simple controls enables operations like zooming, tracking and reference detection to be performed [8]. Consequently, the user is able to move from one scenario to another, by simply selecting markers. The application described allows anyone, in any location and with any mobile device to enjoy and appreciate the beauty of the historical and cultural heritage and landscape located in the Valle d'Itria. The versatility of the principal applications in the project allow for immediate adaptation to other territorial contexts.

Below (Figure 1) is an architectural scheme which describes the organization of the entire system.

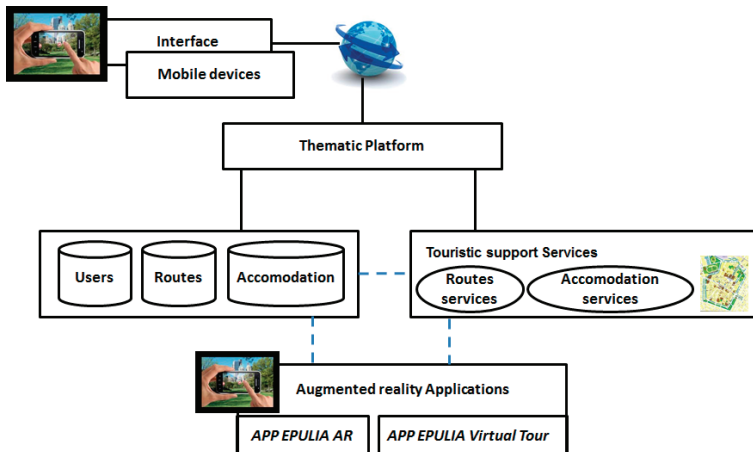


Figure 1. The EPULIA architecture

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## Biographical notes

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