TripMentor Project: scope and challenges

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Abstract. We present Tripmentor, a novel project, that is related to
tourism in the region of Attica. The project has as main scope to pro-
vide rich media content to tourists through a web and mobile environ-
ment in two languages trying to guide them through alternative routes
that include places of interest as well as organizations with offers to
tourists. The project interconnects people with places and events in an
automated manner trying to personalize on each tourist's personality.
The challenges of the project are mainly technological as through the
processes of the project a) automated information about venues must be
collected, b) information about events related to venues must be fetched
and finally c) data related to system users and mainly their profile should
be discovered and created in order to offer a unique experience to each
of them. We present the scope of the project as well as the challenges of
its implementation.

Keywords: tripmentor, tourism, personalization, geodata, cultural re-
lated information, social media

1 Introduction

Attica is rich in cultural and recreational opportunities, but these are still inac-
cessible to its visitors, due to lack of knowledge of the Greek language in which
the content, events and places are mainly communicated and due to the un-
precedented amount of information about entertainment, artistic, cultural and
sporting events in the area. The history of Attica can be experienced at first
level through visits to archaeological sites and museums, but its wealth and im-
portance is highlighted through the semantic connection of points of interest

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and activities with shared narrative. Existing sources of information either list individual activities that can be undertaken by visitors, or offer predefined, inflexible guided tours, in which visitors can participate. The proposed platform / application intends to fill the gap identified by the Strategic Tourism Promotion Plan 2016-2020 of the Attica Region, producing immediate recommendations tailored to the characteristics of every type of visitor.

This paper presents Tripmentor project, that concerns the development of a bilingual service (English, Greek) in the form of a web-interactive platform and mobile application that provides a personalized, integrated and unique travel experience to the visitor of the Attica region. Alternative map routes are proposed to the traveler connected to the app for recreational purposes, including stops at the selected points of interest with real time information on cultural, recreational and athletic events. Suggestions and related recreational proposals match the travelers preferences (profile type), determined through a specific internal functionality of the platform, which combines information that the user provides with user-related data extracted from social media. Each route includes stops that have meaningful, cultural, chronological or thematic relevance to each other, while the available time of the visitor is considered and co-examined with the duration of the visit to each stop and the time needed to move between stops, creating personalized narration- storytelling and incorporating gamification elements, depending on the characteristics of the visitor and the weighting of the user's personal interests.

The objectives of the project are: a) personalization and personalized service to the user-visitor, b) providing multi-level recommendations for a comprehensive and holistic experience, c) ensuring the uniqueness of the experience gained, d) offering a highly interactive and adaptable system, d) exploiting their satisfaction visitors from the platform / application to promote it and ensure its sustainability.

The rest of the paper is structured as follows. Section 2 presents the project in brief while section 3 describes the technological challenges of the project. The next section depicts the challenges of the project and the paper finalizes with a discussion.

2 Tripmentor Interactive Tourist Guide

To date, a variety of typologies and categorizations of tourists have been developed, which do not take into account that the associations and motives of tourists are complex, nor that the conteporary tourists experience the journey with a focus on new technologies and social media. In a level beyond the formulation of modern typologies, on the one hand the role of the tourist narrative, as a component of Experience Design, and on the other hand gaming and gamification is emerging as an important driver for personalization and the uniqueness of the experience that Tripmentor offers.

Correspondingly, techniques used so far to extract data from the profile of social media users are limited, utilizing only a limited amount of the available

Fig. 1: The Tripmentor project logo

data, while these data are not combined with data from third-party sources,, while the techniques of extracting user profile profiles through games are in experimental stage. Also, with regard to the configuration of the Point of Interest / events, existing web collection techniques are of a general nature and do not merge information from scattered sources. Under the proposed action, research is being carried out to develop further and to improve the existing tools in order to specialize and respond to them needs of the project.

For foreigners, non having prior knowledge of the entertainment- artistic- cultural- sporting ecosystem of the region and of Greece in general, and accounting for the fact that the relevant information is mainly communicated in Greek by the relevant media (websites, events in social media, etc.), it is almost impossible for them to match their preferences with the numerous and varied events offered in the Attica.

The Tripmentor platform aims to fill the gap of easy-to-access and systematic touristic information availability, creating relevant narrative routes that fit to the preferences (characteristics interests) of each visitor.

Three parties are involved in the project developments: a) Panteion University, Department of Communication, Media and Culture, which will develop the rules and the theoretical framework for the typology of visitors (profiles, preferences, etc.) and points of interest (history, culture, etc.), and match them within appropriate storytelling gamification scenarios, b) the University of the Peloponnese, Department of Informatics and Telecommunications, which will undertake the data mining process and the design development of a performant platform software c) the company Geoapikonisis S.A.P.GE., a private company, which will integrate the research results and individual software tools at the Tripmentor platform.

3   Issues in technology

The project is built upon several different technologies due to the fact that a) it is essential to collect data from several different sources, b) it is a large part of the procedure to be able to collect direct and indirect data about the personalities of the users and c) finally shall be able to interconnect logically and semantically

the collected and generated data in order to create a rich media environment for the end users of the system. Figure 2 depicts the architecture of the system.
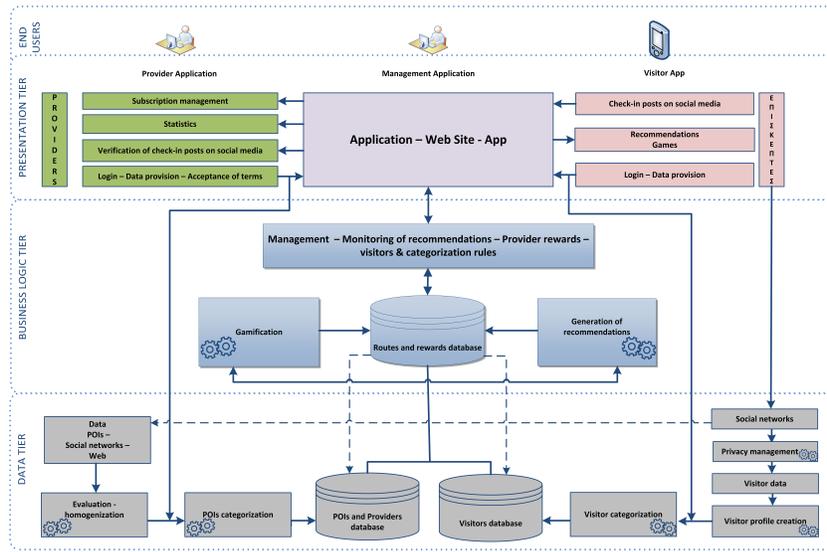

Fig. 2: System architecture

The system encompasses of different objects that cooperate and interact in order to synthesize the final system experience. The object types are users, their profile, places of interest and events. Finally, each venue is actively involved in the procedures offering opportunities for rewards through gamification procedures.

3.1 Definition of the tourist's typology

The categorization of tourists based on their interests, choices and behavior at the visited venues proves to be particularly difficult in practice, as can be seen from the large number of typologies that emerged, especially since 1970, by psychologists, sociologists and anthropologists who tried to relate types of tourists, incentives that drive them to travel and the types of tourism they finally choose. However, the associations are complex and complex, while the motivation is rarely "one and only", as it is usually an amalgam of needs and desires, with the result that, especially during the last decade, we refer to "multi-engineers" tourists ([3], [5]).

In particular, the term "tourist incentives", which form the basis for the formation of a typology of tourists, means all those psychological and mental trends that encourage people to visit a place in order to satisfy their tourist needs and desires. These are social-psychological factors (social patterns, lifestyle, types of

personality, mass media etc.), demographic (gender, age, marital status, education etc), economic (income, , travel costs, etc.) as well as institutional and organizational factors (development of the tourism sector in the country of origin, institutional framework governing the country's international relations, etc.).

Therefore, a modern typology is required, which takes into account the complex ways of behavior that are encountered in the contemporary socio-economic reality, especially for the tourists of the Attica Region. Given that there will never be a typology that reflects the behavior of all tourists, what we are interested in point to is that, in general, the interpretations that have often been suggested for the motivation of tourists, lead to the conclusion that tourism allows for escaping from an existing situation or facilitating the search for another reality ([6]). Also, the fact that the experiences of each trip vary, leads to the conclusion that particular attention should be given to the possibilities offered by tourism to tourists to "impress" different social roles or to strengthen their social position through the social and and the social significance that tourists themselves attach to their journey in relation to the social characteristics of their "normal" life ([3], [4]). At this point, the role of storytelling and gamification is key to creating a web-interactive platform / app that will provide a personalized, unique and unique travel experience to the visitor of the Attica region.

3.2   Creating a database of cultural, sporting and recreational capabilities

Database crawling techniques already exist based on crawling and analysis of content sites, e.g. Scrapy, ABBYY InfoExtractor SDK. However, current approaches are of a general nature, with no focus on tourism / cultural activities, and do not combine information from dispersed sources (eg websites, Facebook, Twitter, TripAdvisor), which would enable the composition of a complete picture of the activities, opportunities but also the opinion of the community. To this end, we will develop specialized models for tourism and cultural activities, as well as techniques for synthesizing information from different sources. At the same time, based on the metadata created by the process of collecting and processing, a categorization of points of interest from clustering algorithms (eg, agglomerative, k-means) will be performed and existing software libraries (eg hierarchical agglomeration clustering). As a result, a database of cultural, sporting and recreational capabilities will be created that will contain reliable and up-to-date information that will incorporate the views of the public and be appropriate for making recommendations to users. For non-tourist sites, interactive web-based sources will be mapped.

3.3   Gamification procedures

The platform will be used to:

 − create a user profile
 − advertise and promote a tourist product (mainly to social networks) and

– deliver the user experience in an extended and more appealing fashion

With regard to gamification elements, techniques for extracting user profile profiles through games are already only at an experimental stage, and through the proposed action will be extended and implemented on a large scale. Advert games are already in use, but their use under the proposed action will be combined with their targeted configuration and the recommendation for users to use according to their profile. Finally, although gamification has already been applied in the tourism sector [2], the same does not apply for the extensive gaming of the experience, the proposed action will also innovate in this direction, while introducing the additional feature of customizing the degree of gamification according to the user profile.

3.4 User profiling from Social Media

Most online users today have an account at least one major social network. In social networks, users maintain their profile, from which we can extract useful data, including interests and social relationships, which we can use in the TripMentor project to make recommendations and generally adapt the content provided to users.

Under the proposed action, user profile data will be exploited outside of the social network that is published along with the typology of visitors and will be processed to identify latent factors that lead user preferences and choices for further refinement and extension of standardization through the already existing know-how of the University of Peloponnese ([7], [8]), in conjunction with log libraries (eg, matrix factorization library).

4 Project challenges

The challenges of the project derive from the accomplishment of its main goals:

– Personalization and personalized service
– Multilevel recommendations for achieving holistic experience
– Uniqueness of experience
– Direct communication and interaction with the visitor
– Leveraging user satisfaction

By trying to accomplish the aforementioned the project, it is obvious that the challenges of the project are related to the take up of the system by the users and to the ability of the system to adapt on each of them. The following paragraphs describe how each challenge is expected to be faced.

In order to achieve personalization on the end-users and provision of personalized services the system is categorizing the visitors' profile based on his Facebook, or generally social media, profile. Furthermore the user can provide information about her profile by completing a simple questionnaire. This categorization is continuously updated based on activities offered in the region of

Attica. It is of great importance capture the users' profiles accurately and exploit them as effectively as possible, generating successful and appropriate recommendations.

The system shall offer a holistic experience to the end users in order to differentiate from alternatives offered. In this scope the system creates multilevel recommendations for the users based on all activities offered in the area including cultural events, museums, archaeological sites, sports activities, walking tourism - urban and urban, entertainment and nightlife. Furthermore, the system is enhanced with three alternative routes, with specific stops at proposed points of interest / events, with information on the best time spent, the optimal way of traveling (public transport / taxi / car), the cost of travel and the total duration of the journey. In this way, the experience becomes complete and holistic.

A crucial issue for the system is that it can be impersonal to the end users. This can be tackled by offering the possibility of communication at any time. This issue is also alleviated with the usage of the online platform and the mobile application both including real-time results. Furthermore, the gamification mechanism, that accompanies the user throughout the journey and rewards him when he communicates his presence to the proposed stops both on the platform and on other social media, is a means of keeping the user alert and engaged.

It is important to enable the users rate their experience as well as share it. It is expected that a rating system for the provided services can be beneficial for both the platform and its users. Generally, the participation of the user can be expressed by communicating the presence of the user to the recommended venues that significantly contribute to the visibility of the platform to new potential users, by creating a community of users with the ability to comment, record experience on the route as a whole, and for each proposed stop, and by publishing Platform Efficiency Indicators for Points of Interest, which will be valuable for entering into trade agreements.

5   Discussion

In this paper, we presented the scope, and challenges of the Tripmentor project as well as the technological aspects of its implementation. The project intends to provide a novel approach to the experience of tourists in the region of Attica involving the organizations to the procedures of achieving it.

As the personalized tourist services market is continuously growing to accommodate new products and services, and since there is no similar web platform / application offering personalized recommendations to Attica visitors based on their personal preferences with a single narrative context, the service proposition of the TripMentor project is going to cover the real need to match visitor preferences with the available options and to give great impetus to the visitor's day. The increase in the number of tourists, with a prolongation of the tourist season and the emergence of Attica as a city break destination, are objectives of the prefecture of Attica under the Strategic Tourism Promotion Plan 2016-2020, to which the platform / application can contribute.

Tripmentor will help (a) increase the sales of businesses and organizations in the region, (b) maintain jobs throughout the year, and (c) to enhance the competitiveness of the Attica economy at international level by i) increasing / improving the visibility on the internet and the recognition of the organizations and businesses in the region that are active in the provision of cultural, recreational and tourist services; ii) the increase in consumption of the tourist, artistic, recreational products of the region as well as products from other sectors linked to tourism; and (iii) the diffusion of visitors throughout the territory of the As Attica, either they make a short vacation at in Attica, Attica or incorporate as part of their holiday in Greece. At the same time, both the research and the implementation of TripMentor will contribute to the production of knowledge and systematization of the already existing information. Significant benefits can arise from the emergence of new points of interest in Attica, the systematic recording, categorization and historical-geographic-sense-narrative connection, the thorough study and formation of the specialized typology of visitors to Attica and its correspondence with the points of interest, and finally the emotional involvement of visitors with the place and the recording of their degree of satisfaction.

Acknowledgment

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