

# Supporting Users in Organizing their Vacation Before, During, and After the Travel

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## Abstract

To embrace the challenges of the mobile communication era and of the personalized travel planning aid, eTourism web portals need to evolve from the simplified perspective of pre-visit organizational tools to the wider perspective of personal travel advisors and companions, featuring useful, usable, accessible and engaging services before, during and after the travel. This paper describes some recent evolution of the commercial version of the Trip@dvice travel recommender system in this direction, to meet the requirements of the next generation of travel advisors. The ultimate goal is to transform a travel plan into a sort of personal trip diary: a canvas on which the practical, emotional, and visual traits of the travel experience are composed by users.

**Keywords:** Travel Planning; Recommender Systems; Mobile Services

## 1 Introduction

The difficulty of travellers in finding, selecting, and organizing their preferred tourist items and services while interacting with complex tourist portals is well known by the specialized scientific research community. Tourist portals provide a wide set of services and contents allowing their visitors to acquire rich information on the promoted destinations; but for inexperienced users it can be difficult to discover the specific tourist items of interest and organize them in a well structured travel. To overcome this problem, decision support technologies are adopted by the most advanced tourist portals to provide tools and functions which guide users in planning their vacation (Fesenmaier, Werthner & Wöber, 2006)(Adomavicius & Tuzhilin, 2005). In particular, *recommendation services* are functions that exploit information about travellers' personal characteristics, needs and preferences, information about products characteristics, and possibly the behaviour of the community of other users, to suggest tourist products and services that seem most interesting for the current user. *Travel planning* services comprise, instead, user-friendly functionalities that support users in composing their itineraries by selecting and arranging in a personalized cart the preferred tourism items, i.e. places to visit, attractions, accommodations,.. and also by supporting user generated contents like personal notes, blogs, comments on travel items etc. The possibility of sharing personal itineraries or product evaluations with a

community of travellers additionally strengthens users' engagement. Indeed, many of the most successful eTourism web portals exploit personalization and community services to foster: engagement, faster and easier interactions, customer loyalty, likelihood of repeated visits and, ultimately, increase the look-to-buy ratio.

The new opportunities and challenges emerging from the powerful growth in mobile communications open new scenarios for supporting travellers also at the very moment when the need for information occurs (Horozov et al., 2006; van Setten et al. 2004). The user may be allowed to query for recommendations also during the on-trip phase (e.g., about local restaurants), or the system may push suggestions on its own initiative (e.g., when interesting events occur nearby). Adequate support may be provided to the user to manage possible revisions to her current travel plan through the mobile device, i.e., to delete or reschedule travel items and to add new ones, possibly keeping track of all the changes made while on the move for later inspection of the complete travel history when back at home. Or social network functionalities may be integrated to allow travellers to publish their personal travel diaries while on the move.

This paper describes some recent evolution of the commercial version of the Trip@dvice travel recommender system to provide enhanced support to users of eTourism portals in: finding the tourism products that best fit their needs; composing the optimal personal itinerary; get help and support also during the travel itself; collect and share memories for keeping enjoying the travel experience also when back at home.

## **2 From Travel Planning to Experience Building**

### **2.1 Recommendations and travel planning facilities before the travel**

The Trip@dvice recommendation and travel support system can be integrated in tourism web portals to personalize the results provided by standard search engines according to the actual user needs and preferences, and to support the user in building her personal travel plans. Trip@dvice implements a travel recommendation methodology that incorporates a human choice model derived from specialized literature on traveller's behaviour (Grabler & Zins, 2002), and extends the Case Base Reasoning methodology that takes advantage of choices made by users with similar preferences and behaviour (Lorenzi & Ricci, 2005).

**Getting to know the traveller.** Several sources of information are exploited in Trip@dvice to acquire data about users' travel constraints, needs and preferences. Apart from the actual products put in their carts, form-based explicit requests for preferences still represent the most reliable source of information. As suggested by findings in (Mahmood et al., 2008) that prove the acceptability of system requests at specific points during the interaction, users are explicitly solicited by the system to provide their general travel preferences at early stages during the portal access. Information is gathered about specific travel constraints (e.g., means of transport,

preferred type of accommodation, travel companions) but also about general interests that might reveal preferences for certain types of tourist products (e.g., interest in culture and museums, preferences for sport activities, curiosity for local customs,..). In a recent project, Trip@dvice has also been successfully integrated with an alternative preference profiler based on a more enjoyable activity, like the selection of preferred pictures from a set of specifically tagged photos (Berger et al., 2007). For the sake of *scrutability*, users are allowed to inspect and modify their travel profile at any time.

**Guiding the traveller through the search.** Various functionalities integrate the baseline recommendation service to help users find their way through the content. At the beginning of their interaction with a eTourism web portal, users might not have clear ideas about what exactly they are looking for: Trip@dvice computes initial product recommendations even before the user starts searching, by exploiting a recommendation algorithm and the personal travel profile, in the attempt of reducing the number of explicit search queries required to reach the desired products. To help users make up their minds, the system can also select and show complete itineraries composed by other users with similar travel preferences to provide some source of inspiration.

Alternative ways for searching complement the Trip@dvice recommendation functionalities, as users might wish to explore the available information from various perspectives: (i) search/explore the content by geographical navigation through maps, (ii) search by text, (iii) advanced search filters where the user can modify query constraints and immediately get a smooth transition to the display of the new set of results without page reload or long waiting times by exploiting Web 2.0 technologies (see Fig. 1, for sample filters integrated in *VisitTrentino*). When no products are found that satisfy the search query or, at the opposite, too many are found, the system is able to suggest the best way to refine the original query (query relaxation or query tightening) to get more focussed results reflecting the user personal preferences. When displaying the list of search results, items can be ranked according to how best they seem to fit the travel profile and previous product choices, therefore showing more relevant information first.

**Collecting and scheduling products.** At any time during users' interaction with the portal, the Trip@dvice component provides support for collecting in a *travel plan* interesting products or information for later review. To help users define the timeframe for their travel activities, a personal calendar is included to schedule travel activities and products to specific date and time intervals. Trip@dvice can also be integrated with booking systems so that users can ask for availability and direct booking of products included in their travel plans. Customers being less fast and decisive in their purchase decisions may return to the site at a later stage and then buy already selected products.



**Fig. 1.** Enhanced search filters integrated in VisitTrentino



**Fig. 2.** Sample screenshots for the mobile travel plan inspection services integrated in VisitFinland

## 2.2 On-trip assistance

Several extensions of Trip@dvice are currently under development to allow users to benefit from recommendation and travel planning services while being on the move, either during the trip itself, or simply when using the mobile device during spare time to plan the next vacation. In a mobile setting, however, many constraints severely reduce the amount and the complexity of the information to be presented to users, e.g.: limited display size, display quality and computing power varying according to the device, reduced transmission bandwidth, instable connection, limited interaction modalities (e.g., uncomfortable keyboards, uncomfortable scrolling when no pointing device is available), reduced user attention and reduced interaction abilities due to the concurrent execution of other activities, and/or environmental disturbing factors. As a first step in understanding the difficulties of engineering a commercial system that needs to support users anywhere and anytime, a subset of the travel planning functionalities has been implemented, namely the inspection from a mobile device of the list of personal travel plans created using the normal web portal (so that the user can, for example, recall the details of the hotel she has to go to or the events/attractions scheduled for the day). To promote the wide usage of the service and limit portability problems, the currently adopted implementation solution is based on mobile internet technology for Web access from mobile devices running a WAP 2.0 enabled browser. However, for future developments, more sophisticated mobile applications will be considered. This first mobile solution has been designed and validated through a user evaluation study and has been successfully integrated with the services offered by *VisitFinland*, the new country portal of Finland (see screenshots in Fig. 2).

### 2.3 From Travel Plan to Personal Diary: enjoying memories after the travel

The new version of the travel planner now grants users also the possibility of (i) enriching their travel plans by adding personal notes, bookmarks, and images (either imported from the PC file system, bookmarked from material published by other users, or taken with the camera of the mobile device during the travel), and (ii) sharing the travel plans with a community of friends. The ultimate outcome of the interaction of the user during the various stages of the travel (before, during and after) with the eTourism portal integrating Trip@dvice is the composition of a sort of a personal diary of the trip: a canvas on which the practical, emotional, and visual traits of the travel experience are composed.

## 3 Conclusion

This paper presented some recent evolution (fostered by market demands) of the commercial version of the Trip@dvice travel recommender system aimed at turning the planning of a trip into a more engaging, emotional and socially relevant process that spans across: the very initial idea of the travel, the decision process of how the personal itinerary should look like, the practical issues of booking and scheduling dates, the enjoyment of places and events while on site, and the building of memories for later reminiscence. We gratefully acknowledge the fruitful collaboration with the partners of VisitFinland (MEK – the Finnish Tourist Board, EC3 Networks, Siemens, Asio, Lixto) and of VisitTrentino (Trentino S.p.A, Informatica Trentina) that stimulated the evolution of Trip@dvice technology.

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