

RTD Fact Sheet Template

<Location-enabled Mobile Search and Guidance> RTD FACT SHEET	
Reference Measure	FUN 8.2 Location-enabled Mobile Search and Guidance
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Author(s)	Lúcio QUINTAL
Editor(s)	xxx (by ISIS)

Context and Purpose

Madeira islands receive tourists all year round from all over Europe and Madeireans increasingly opt for local leisure and tourist activities. The adoption of technologies like GPS is increasingly popular in leisure, sports activities and mobility in general. This measure consisted on the development, implementation and promotion of a pilot service for creating and publishing walks/routes, preferably to be performed on foot or public transportation. The service is called "Funchal Routes" (English). This was a new service introduced by CIVITAS-MIMOSA aimed at supporting leisure activities which support sustainability and a changing mobility culture. It includes a mobile phone application for Android and iPhone devices, a mobile web access and desktop web portal, all integrated. The service follows a social media approach for sharing information. Once created and published, a walk can be printed on paper or downloaded to a mobile phone. A user / tourist is guided in the path he is taking and receives multimedia descriptions of elements of interest (attractions) along the route.

Before CIVITAS MIMOSA no such service or such type of applications was available in Madeira and in many other places (even Google Maps was not fully available for Madeira when MIMOSA started in Funchal). Such a service encourages the use of new technologies in the mobility scope. As planned in DoW, RTD for this measure addressed: i) The analysis and definition of requirements for services and the supporting technological platform and, ii) The design of an appropriate solution for a practical implementation. Additionally some results from Evaluation may also be considered for the purpose of this deliverable, namely two of the indicators measured.

Description of RTD Activity

Stage 1 - Analysis and definition of requirements for services and the supporting technological platform: Definition of the pilot service to develop, serving both local citizens as well as visiting tourists. Analysis of the ISNOVA knowledge based platform. ISNOVA was the result of a previous INTERREG III-B project involving Madeira, Canaries and Balearic islands. ISNOVA platform comprises a knowledge-base/database system available as a source/framework for different types of front ends. This part encompasses both back office (server platform) and front office analysis (for desktops and handhelds).

Analysis and definition of requirements for this service have been based on DoW description for the measure and on a State of the Art (SoA) analysis for "Mobile GPS based tour guides" (Dec 2008 – Mar 2009). First version of DoW (April 2008) proposed the development a pilot project for a regional online / web service providing the possibility of searching for relevant information and guidance upon a given location, via GPS and/or Galileo, including information related with mobility, accessible for both handhelds and desktops, indicating the position of a user on a map; information on nearby services/attractions; support to pedestrian navigation for visits to points of interest with related information about each point. SoA analysis consisted mainly on Internet searching for

related information: Platforms; Existing services; Projects; Papers and Articles. The different types of sources of information analyzed included, among others: MobileTrails platform/service (Peneda Gerês, PT); The Prague Information Service (Prague, CZ); Navidoo service (Doubs region, FR); Barcelos 3D walking with GPS (Barcelos, PT); GPSTourist service (Corfu, GR); GPMAPS Service at Hesperia hotels; The Mobile Tourism Guide (m-ToGuide) EU project; Paper on “Developing a Location Based Tourist Guide Application” (University of South Australia); Paper on “SocialandTechnicalPitfallsDesigningaTouristGuide System” (LancasterUniversity, UK). SoA analysis provided an overview on the existing services and their advantages (in particular those derived from location aware via GPS), supporting technologies and platforms used, and types of User Interfaces being used/proposed.

Included under this stage was also the analysis of the existing ISNOVA platform in order to identify the necessary modifications/improvements on that platform. Documentation related to ISNOVA was available from the deliverables of ISNOVA project (architecture; web services integration; database structure and other less technical documents such as “Sharing knowledge about destinations”).

Stage 2 - Design of an appropriate solution for a practical implementation: This was an iterative task as the final solution was the result of the gradual improvement of the system. In terms of back-office, the upgrade of existing information in ISNOVA database/knowledge base included: Geo-referencing of content; the number/category of resources available was increase (for e.g. new categories “attractions” and “activities” have been created); Descriptions have been expanded to support different languages (Portuguese, English, etc); New type of content/media have been added, in particular audio descriptions. Modifications and enhancements included adapting existing layers of the platform and adding new modules/components. One such modification was the incorporation of a search engine with a capacity to make queries and present results with geo-referencing in maps via GPS.

In terms of front-office, it consisted in two parts: i) Design and development / implementation of a client application to smartphones. It was intended that customers could access the service in the most generic possible, regardless of concrete operating system of mobile phone. In order to achieve this independence, mobile web browser access to the service should be supported and in order to optimize implementation for major phone models in the market, Android and iOS should have specific mobile applications. Specific mobile applications not only allow users to follow a walk/route but also allow them to record a walk while doing it.

ii) Also included in front-office was a the implementation of a web based tool, allowing the creation, editing and publishing of walks. Walks recorded with the mobile application may also be edited using the web tool before publication. Walk definitions have been represented in XML.

Brainstorming sessions have been conducted in order to clarify and prioritize requirements, namely to define which parts to implement first, to define interface functions and layouts and to define standards to be used/supported. Cooperation and establishing partnerships with other local partners (besides project partners). Entities contacted include Regional Board of Tourism (DRT), “Electricity Company” (Empresa de Electricidade da Madeira) and “Cartography and Property Registration Service” (DRIGOT). A few meetings have taken place with these entities. Their main contribution was in standardising data structures for the platform database as well as providing maps and part of the initial content.

Stage 3 - Evaluation: One indicator measured in 2010 via a survey, while the platform was being developed, asked for the “**Willingness of potential end-users/clients in using such a service**”.

Acceptance and expected public support of potential clients/users of the service was evaluated by questioning visitors of CIVITAS-MIMOSA stand at Expo-Madeira 2010. The question was part of a survey which resulted in 792 valid answers from participants. The specific question related to this service was the following: “Please indicate how useful you find the following service to you:- Electronic guide service with geolocalization of points of interest (attractions) in Funchal”. 67% of the participants said that it would be Useful (44%) or Very useful (23%). This corresponds to the yellow plus ”mist green” sectors in the chart of Figure 1.

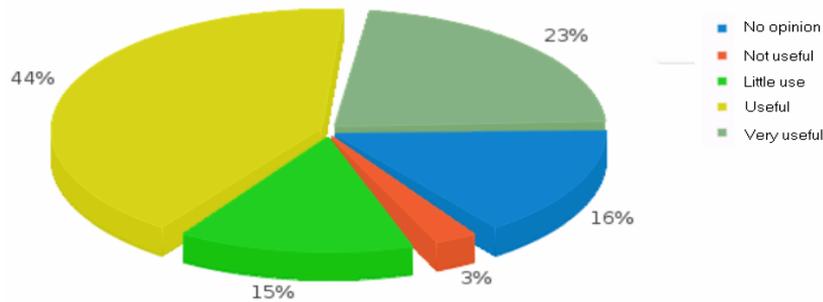


Figure 1: View of the assessment survey evaluating the willingness of potential end-users/clients in using such a service. The survey was carried in July 2010 at Expo-Madeira

From the collected answers indication is that such a service was/is viable and interesting for residents and tourists as well (considering that 50% of the installations of the mobile application are made by tourists, as indicated by statistics from Google Play downloads after the service become operational and presented in MRT report for this measure).

Outputs and Results

Main results from RTD activity in this measure was the characterization of the service, the supporting platform (backoffice) and the front-end web based desktop and mobile applications. A comprehensive and specific request for proposals, with a clear definition of objectives and requirements also resulted from from RTD activity. The service was called "Funchal Routes". Once created and published, a walk can be printed on paper or downloaded to a mobile phone. Mobile and web access run integrated. A user / tourist is geographically guided in the path he is taking and receives multimedia descriptions of elements of interest (attractions) along the route. With the specific mobile application applications users may also record a walk along the route. The following architectural features have been defined for the platform.

Back office:

- Operating System Platform server: Linux;
- Manager Database: Postgres;
- Web Server: Mongrel (based on Ruby on Rails). Which later was converted from Ruby on Rails to Mono technology;
- Joomla Content Management System.

Figure 2 corresponds to the main screen of the web tool which supports the design/editing and publication/sharing of walks created by end users.

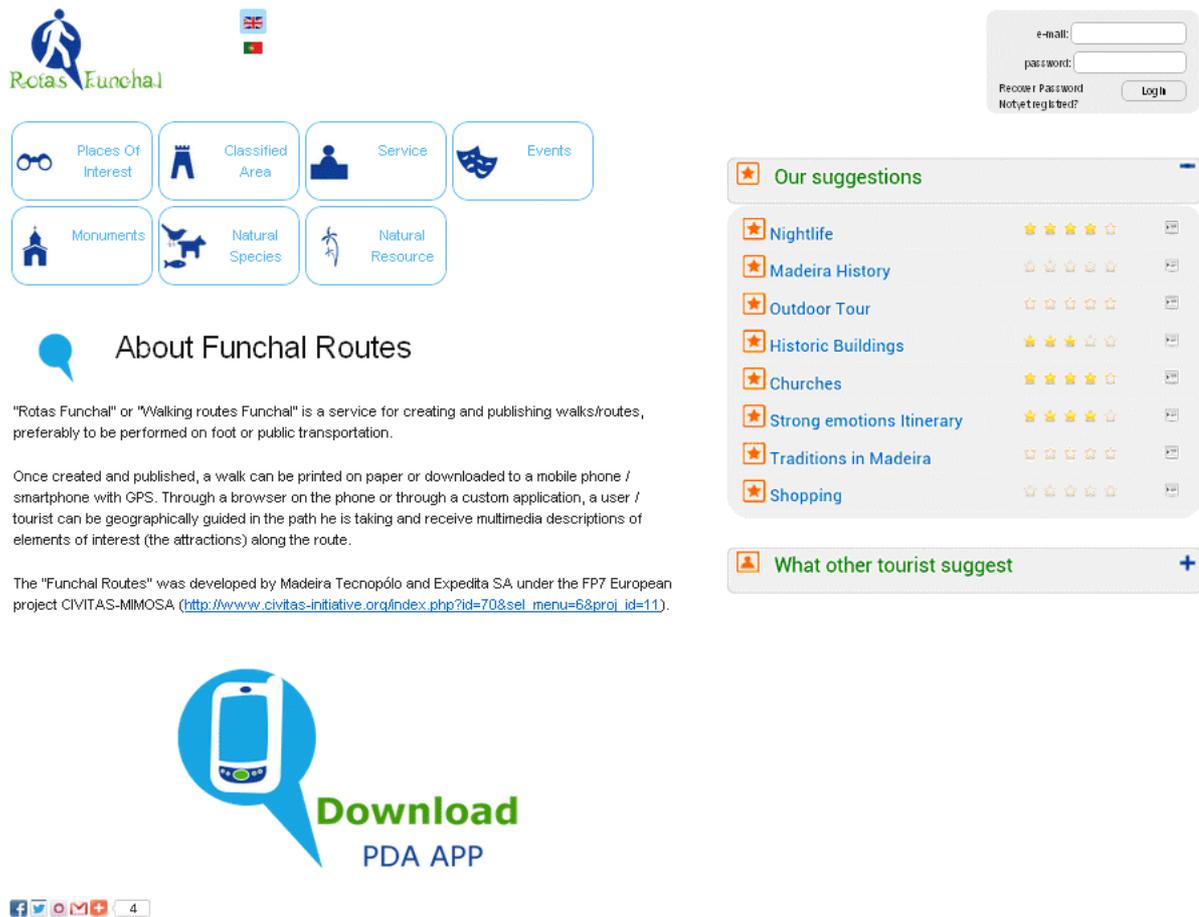


Figure 2 - Main screen of the web tool

Front office:

- Implementation of a web tool which supports the design/construction and sharing/publication of walks created by an end user;
- Mobile applications: At the beginning different options of development tool solutions for handheld platforms have been tried, namely Appcelerator Titanium; PhoneGap and FeedHenry, in order assure the best compatibility trade-off among major handheld systems (Android, Windows Mobile and iPhone). The decision was to use FeedHenry for compatibility with both Android and iPhone smartphones, even if it imposed some restrictions which prevented optimization of the application for a specific platform.
- Transparent access to routing of existing walks using one of three possibilities: i) using the specific mobile application for Android or iPhone; ii) using a mobile web browser in any mobile phone; iii) using desktop web access.

Resulting Decision-making

Being an innovative service, “Funchal Routes” follows a social media approach for creating and sharing/providing content. It combines location-based information (via GPS) and multimedia content in an attractive manner.

Beginning with the existing ISNOVA knowledge-base provided a reference framework for multimedia data management and access to web services. Putting the focus on a mobile application and complementing it with the desktop web application facilitated the process of interface/interaction design. Designing for mobile interfaces often contributes to simpler and more

intuitive interfaces. Web information available offline (on paper): Although the full usage of the service requires some technological background, it will be possible to profit from it by “just” printing on paper available/suggested walks and using the printed material as a traditional paper guide. This additional function is likely to increase the usage of the service.

The service may also be very attractive to some specific type of users: For users already familiar with technologically oriented services (e.g. younger people) this type of guidance service may be much more attractive than a traditional guided walk using a paper guide or with a human guider.

The potential usage of such a service is certainly beyond what is being implemented and explored in this measure. The combination of location-awareness (via GPS) and availability of contextual multimedia content (text, image and audio) may well be used in many other ways not envisaged by the work being currently carried with measure FUN 8.2. Some interesting synergies and derived services may result from the existence of this service: i) This service is suitable for integration with a rental bike service. That is something to be tried in the future; ii) This service is suitable to provide content to other providers who may eventually create related new services in a kind of mashup approach. A modular approach was applied during implementation (e.g. standard web-service based access to data sources).

Lessons Learnt

As for lessons learned and recommendations, the main issues have been: i) to ensure that the system/service delivers what users need and want and, ii) to start prototyping and testing as soon as possible:

- Make sure that you involve field key players since the beginning and make sure that they demand or are willing for the proposed service and would pay for it if required.
- If possible try to implement the new service over something that already exists and has proven to work. If it's necessary to develop a platform from scratch or a new layer of service on top of existing layers, make sure that its developed by people with previous experience in such work.
- Analyse and assess users/target needs throughout before designing a new solution in order to maximize client/end-user acceptance.
- Start prototyping and testing your service as soon as possible in order to ensure more robust results and have time to improve the system. Early prototyping and testing ensures early detection and fixing of bugs during concrete usage, allows carrying early validation and improvement on user acceptance, namely in what refers to User Interface, Functional components and Content provision/delivery.
- Rigorous subcontracting rules must be put in place in order to avoid or at least minimize the effects of substantial delays derived from such third party entities.

Cost-effectiveness

Planned RTD activities for this measure addressed mainly the analysis and definition of requirements for services and the supporting technological platform and the design of an appropriate solution for a practical implementation. Additionally some results from Evaluation may also be considered for the purpose of this deliverable, namely two of the indicators measured. One impact indicator evaluated was related to Quality of the Service, measured by running an online questionnaire/survey, including “Funchal routes” service specific questions and more general questions related to mobility in Funchal. Most relevant findings are:

- In overall the degree of satisfaction of users who answered the survey is high and 88,8% of them find the service convenient or very convenient.
- Information provided is considered useful and accurate by all users.
- With this new service many users (62,5%) found new routes which can be done by walking and 88,8% of them say they will recommend it to friends.
- 80,0% of users find the information delivered useful for planning their trips/walks.

- Part of the users (10%) state that they now walk or hike more frequently than before starting using this service, which is already a very good indicator that this type of service contributes to people changing their lifestyle towards more healthy behaviours.
- While the vast majority of users (88,9%) use the service while walking, it is interesting that 33,3% of users consider using it when driving by car, followed by cycling and using Public Transport.

We conclude that RTD results are in line with expectations, are conclusive and allowed for informed decisions.

Dissemination and Exploitation

This measure and the associated service is easily transferable (and scalable as well) to other cities/locations. It was one of Funchal's measures selected for the Transferability Workshop, in Bologna (22-25 May 2012). In terms of user perspective/demand, a survey indicated that 67% of potential clients/users of the service consider it as Useful or Very useful. Being an innovative service, "Funchal Routes" follows a social media approach for creating and sharing/providing content. It combines location-based information (via GPS) and multimedia content in an attractive manner. For users already familiar with technologically oriented services (e.g. younger people) this type of guidance service may be much more attractive than a traditional guided walk using a paper guide or with a human guider. This service is also suitable for integration with a rental bike service. This service is suitable to provide content to other providers who may eventually create related new services in a kind of mashup approach. A modular approach was applied during implementation (e.g. standard web-service based access to data sources).

Relevant transferability and scalability features are:

Transferability features:

- This service may easily be transferred to other cities/locations, without the need for major adaptations:
 - Links pedestrian mobility habits with culture & leisure;
 - Can be installed locally or can run on cloud technology;
 - Costs of replicating the service to other cities is low. Technology is already developed and applications are available on Open-source and easy to modify/adapt code;
 - Time span planning to operation will be of 3 to 6 months.

Scalability features:

- Additional types/categories of information may be added as necessary;
- The backoffice/database system of ISNOVA XDMS is able to automatically provide data to third-party providers by means of Web-services;
- It may be expanded in order to support an increasing number of users;