D4.1.2

Experiment progress report including intermediate results

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This deliverable describes the interim progress on the driving experiment in Schladming. It includes information on the status on architecture implementation, integration/usage difficulties and initial results. The document provides facility developers and testbed operators with information on aspects of usability prior to usage by open call experiments and the next release of baseline components.
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1. Executive Summary

This deliverable presents the current interim progress in the driving experiment at Schladming. The focus is on providing information about the current status and updates to the initial plan. In general the progress has been satisfactory and is mostly in line with the plan. Some minor delays have occurred but no major impact is expected on the driving experiment.

The preparatory steps for the first experiment run in December 2012 have been completed to a large extent with some final integration work and tests pending.

The architecture was found to be feasible and the data integration workflow has been set up.
2. Introduction

This deliverable is an intermediate progress report for EXPERIMEDIA's driving experiment at Schladming focusing on augmented reality services and UGC at large-scale live events. Driving experiments are used to provide requirements during facility development and to verify and validate the facility capabilities to be used by further experiments that are either funded during the open calls or unfunded.

The driving experiment at Schladming provides insights into core elements of the EXPERIMEDIA facility and alongside also strives to maximize the value impact for the venue itself. Schladming as a tourist destination relies on visitors and their satisfaction. With intensified competition among tourism destinations it is paramount to provide a competitive advantage to attract new visitors as well as to retain loyal tourists. Within the driving experiment the main objective for Schladming is to provide visitors and citizens with innovative future internet technology solutions that improve the on-site experience. Users should have the information at hand to enable the best possible experience and ideally the EXPERIMEDIA technologies deployed in the experiments will help to attract new visitors to the region, improve the visitor retention rate and contribute to a positive economic development of the region.

As part of the experiment, the creation of a mobile application (or "app") has been started. It allows visitors to experience the region and its activities in a modern and innovative way. The app also helps visitors of events at Schladming like e.g. the ski world championships to find co-occurring events and related places and help them see where "the party is on". Besides that it also provides additional information about points of interest in the vicinity. The driving experiment integrates components from the Pervasive Content Component (PCC) and Social Content Component (SCC). It also communicates with the Experiment Content Component (ECC). Facilities and infrastructure at the Schladming venue are explored and during the implementation of the driving experiment the venue development is also driven.

In this scenario, Social Networking Sites are exploited as an interface between real-world and virtual information, and for location-sensitive real-time evaluation of service and tourist venue offers. Other technologies are "actuated" through the social interconnection of users.

For the purpose of the experiments, data will only be captured during the experiments themselves, inside the ethically and legally controlled environment of the experiments.
3. Experiment Architecture and Implementation

This section provides updated information on the driving experiment architecture and implementation details which have already been described on D4.1.1. The experiment's background has also already been described in D4.1.1 as well as related to the operational aspects in D3.1.1, D3.1.2, D3.1.3 and D3.1.4. As the focus of this document is to provide a progress report we do not reiterate the already given explanations but rather inform about changes and new information available.

In general the overall approach and architecture remain intact with only minor changes (cf. D4.1.1). During the implementation work for the driving experiment we have discovered possibilities to reduce the amount of personal data that is stored inside the EXPERIMEDIA environment without limiting the functionality. We have consequently tried to follow an approach where external content from social networks is only retrieved on the client directly from the external sources without replicating the personal data in the experiment's data repositories. This greatly reduces the potential for privacy related issues. We also ensured at all times that privacy and ethics related aspects are fully addressed and that the driving experiment complies with all relevant regulations.

In addition we have started an evaluation of interfacing with further Android-enabled devices such as Ski goggles from Recon Instruments with advanced features. Further investigation and hardware for tests is needed to assess the viability of pursuing this approach further. At the moment we are targeting "real" Android devices such as smartphones and tablets. Currently the driving experiment software is fully compatible with devices running Android 1.6 or higher. According to a current distribution¹ about active devices on Google Play store in the 14-day period ending November 1, 2012 this includes 99.9% of all active Android devices.

A screenshot of the augmented reality view on the driving experiment app is shown in Figure 1. This view augments information about points of interest in the camera view. Additional information is also retrieved from further sources such as social networks where for instance Facebook likes and comments are displayed and the related external social content site can directly be accessed. A personalization according to likes, check-ins or comments from friends is also done on the fly. Further content such as ratings and consolidated information from various sources will also be shown in the final driving experiment app. In addition to the augmented reality view also further views are offered to the users as shown in Figure 2. A list view of POIs as well as a map view is provided. Through usage figures this allows insights into the acceptance of different presentation modes. It has to be noted the current screenshots are from an intermediate developer version and the released version will contain further features.

A screenshot of the interface for emotional sensing through the Babylon interface is shown in Figure 3. In addition to this QoE measurement tool further questionnaires are available inside the application to capture user feedback.

Figure 1: Augmented reality view screenshot from driving experiment app with link to social network site

Figure 2: Screenshot of list and maps view

Figure 3: Emotional sensing through Babylon interface

An example for the JSON data returned from the tourism board's data repository about points of interest is displayed in Figure 4. This data is also used in the content management system of the region to serve the website of the region at http://www.schladming-dachstein.at as shown in Figure 5. Through this integrated data flow it is also possible to provide unique information across different channels and use the officially provided information in the driving experiment.
In the driving experiment this information is even enhanced with further data sources which are believed to increase the value to the visitors - one of the hypotheses to be confirmed in the experiment. Berger et al.\(^2\) already argued that mobile information systems provide additional value to tourists, however, without providing empirical evidence.

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4. Progress and Difficulties

This section provides information on the progress of the driving experiment and any difficulties we encountered. Overall the progress has been satisfactory albeit with some slight delays. Nevertheless we expect that our initial plan to run the first experiment cycle in December 2012 should be met. As planned, no experiment run has been made yet and therefore experiment results are not available at this point in time. We have however been able to successfully contribute to the facility building, the evaluation and evolution of baseline components and engage actively with new open call experimenters. The driving experiment is en route and active communication on a regular basis has been established with new experimenters to ensure timely access to all relevant and required resources.

4.1. Progress

According to the implementation plan presented in D4.1.1 a short explanation of the progress made is provided here:

- Testing of WiFi and mobile environment: The free WiFi in Schladming has been rolled out in the 2011/12 winter season and has attracted a large number of users. The network performance is satisfactory and our tests showed that the network also operates stable enough for the driving experiment. Requirements for potential further uses will be negotiated as needed. An analysis of the traffic in the first season showed that the top sites used by guests were Facebook, Google and YouTube. Through the integration of Facebook content in the driving experiment app we follow this trend and provide instant access to the channels that guests are most interested in. A distribution of the devices used by guests to go online in Schladming showed that the majority of guests used mobile devices for accessing the free WiFi. In addition the mobile network coverage and performance was satisfactory in our initial tests. One of the largest mobile operators in Austria A1 also provides commercial SLAs in case a guaranteed performance is required. An independent test of mobile networks in Austria also showed that mobile networks in Austria deliver excellent performance which is superior to mobile network performance in Germany or Switzerland which have been evaluated in the same test by the magazine "connect".

- Mobile EXPERIMEDIA App: The conception phase of the app has been completed and implementation has started with a completion degree of approximately 85% at the moment. Unit tests have been started as well as integration tests with the Infonova, AR and social network infrastructure. Final implementation work for the first test run is still pending.

- Setting up the Data Management Infrastructure: The server setup and configuration has been completed as well as the installation of the database backend. The required templates and the application server have been prepared. The Infonova R6 Core and WebAC modules have also been installed and configured. The data model as well as the

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3 Cf. http://www.a1.net/business/loesungen/a1-mobil-sla for more information

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interface to the AR platform have been created. Final integration work and tests are pending. Further user interface adaptations to WebAC for easy manual editing are planned.

- Import of data from Schladming POI Database using the REST API: The interface to Schladming tourism board CMS has been created and integrated with the EXPERIMEDIA POI data management platform. According data models have been defined, import and update procedures have been defined. The read-interface to the Schladming CMS is fully operational.

- Setting up Social Network infrastructure: Integration with the social network infrastructure has been started and final integration work and tests are pending.

- Integration tests: Initial integration tests have been successfully completed. Final integration tests for the first experiment run are planned.

The release of the driving experiment app is planned for December 2012 and results will be immediately shared with the venue and new experimenters.

4.2. Difficulties

During the implementation of the driving experiment some minor difficulties have been encountered. Due to some delays and knock-on effects on the critical path a minor overall delay in the implementation phase has been observed. This dependencies and delays have been successfully resolved and the initial plan to have the first experiment run in December is very likely to be met.

Data pool: Some delays have been related to the establishment of access to the data-pool from the tourism board CMS where some previously unexpected technical issues had to be resolved. The data-pool has eventually been established successfully and is in full operation now.

Third-party social network content: During the implementation of the driving experiment we observed some difficulties with accessing content on social networks that is used to provide personalized content on the client. In order to retrieve external information we rely on the capabilities and performance of third parties that is outside of our control. For instance when accessing Facebook content some functionality is provided by the API while some information is not accessible in a direct way and work-arounds needed to be found. While as an example it is directly supported by the Facebook API to retrieve the total number of likes for a given page it is not directly possible to retrieve the number of likes by friends. Different approaches had to be evaluated that are able to deliver the desired information in an acceptable response time. We also encountered several other occasions where we had to deal with limitations imposed by third party APIs. Moreover it has to be noted that most third party providers (such as Facebook) reserve the right to make changes to their interfaces and data offered without any prior notice. Therefore we also designed the driving experiment in a way that I could also be run in a limited version in case access to third party material was unavailable.
5. Future Plans

In line with the plans presented in D4.1.1 we expect to have the first experiment run in December 2012. Before running the experiment some final implementation work and tests need to be finalised.

The results from the first run will be shared with the relevant stakeholders and insights will be taken to identify further improvements to the experiment.

In January and February 2013 the improvements will be integrated in the driving experiment and the second experiment run will be done. The final results are expected to be available by June 2013.
6. Conclusion

In this deliverable we have presented the current interim progress of the driving experiment in Schladming. The initial plans and architecture could mostly be met even though some minor delays have occurred and some additional unexpected difficulties had to be mastered. The preparation of the driving experiment is expected to be finalised for the first experiment run in December 2012.

The first experiment results will be made in a timely manner to the relevant project stakeholders.