HERCULES

Sustainable futures for Europe's HERitage in CULtural landscapES: Tools for understanding, managing, and protecting landscape functions and values

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D7.2 Smartphone based application for crowdsourcing powered data collection

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Executive summary

Deliverable 7.2 “Smartphone based application for crowdsourcing powered data collection” is a prototype smartphone application. The application named “My landscape ratings” has been submitted to Google Play and is currently waiting for approval. Once accepted it will be available on Google Play and the link to it will be communicated via the projects web page (http://www.hercules-landscapes.eu).

The application technology is closely connected to deliverable 7.1 “Repository of spatial and alphanumerical datasets”, since data upload (sync) of the user’s “records” is transferred directly to the repository and is upon successful upload immediately seen on the Knowledge Hub for Good Landscape Practices (Knowledge Hub). The smartphone application is inter-connected with the web-based Knowledge Hub (see deliverable 7.1) and supports many different instances of specific applications, each focused to crowd-sourced data-collection about specific topics. Due to specifics of native mobile-based applications each of the application instances needs to be implemented as its own application and submitted to the application market place. For the sake of demonstration and understanding we have focused this document to the first application instance, called “My landscape ratings”. We believe that this instance represents the overall functionalities and capabilities of the platform. However, as described, this is just first of the many instances which will be implemented for specific use-cases and stories.

The core functionality of the prototype is collecting various types of (geo-referenced) data. The current application has been tailored to be used by HERCULES partners to collect geolocated data (geotagged photos) and gather additional information on how users perceive their landscapes for the “European-scale survey on landscape practices” carried out by work package 6. In order to achieve that the prototype has been configured as a survey-like application, allowing users to take a photo (of a landscape or landscape feature), answer to a short list of questions by choosing predefined answers and add comments.

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1 Introduction

We have designed and implemented a prototype "Smartphone based application for crowdsourcing powered data collection" for the Knowledge Hub of Good Landscape Practices (Knowledge Hub). It is inter-connected with the web-based Knowledge Hub and supports many different instances of specific applications, each focused to crowd-sourced data-collection about specific topic. We have focused this document to the first application instance, called "My landscape ratings". However, as described, this is just the first of the many instances which will be implemented for specific use-cases and stories.

"My landscape ratings", a survey-like mobile prototype application has been submitted to Google Play. Its icon can be seen in Figure 1. Once accepted the application will be available on Google Play and the link to it will be communicated with HERCULES partners and wider public via the projects web page (http://www.hercules-landscapes.eu).

Figure 1: Application icon.

The application has been configured in collaboration with work package (WP), allowing users to take a photo, choose predefined answers to a few questions and add comments. The application is meant to be a part of "European-scale survey on landscape practices" (deliverable 6.1 within WP 6), and will collect geolocated data (geotagged photos) and gather additional information on how users perceive their landscapes.

The prototype heavily relies on deliverable 7.1 "Repository of spatial and alphanumerical datasets". Knowledge Hub data repository acts as a storage system, since data upload (sync) of the user's "records" is transferred directly to the repository. Immediately after successful synchronisation the user's "record" can be viewed on the Knowledge Hub web GIS application. In a sense the core technology of the mobile application can be viewed as a simplistic interface with the Knowledge Hub.

We see this deliverable as the start of an iterative process of customisations of the application based on the actual needs from HERCULES partners. Actual requirements, ideas and wishes will hopefully crystallise through the next months or maybe even later and we will collaborate with partners in order to provide what is necessary to reach the HERCULES objectives.

2 Smartphone application implementation

The implementation of the smartphone application is a two component system:

- Android-based mobile application (what user gets)
- Data repository (underlying server-side system, where data from mobile application is eventually stored) + web GIS (Knowledge Hub web GIS, where project partners/stakeholders/… can view and eventually analyse collected data)

This report will focus on the first part, the mobile application, since the data repository and web GIS platform has been covered in the report of deliverable 7.1. The two deliverables are very closely related, in fact, this prototype application could not work without the deliverable 7.1, and could be viewed as a simplistic interface with the Knowledge Hub.

2.1 Application content

HERCULES Description of Work document describes the prototype application as an application "which will be able to collect geolocated data and allow users to give feedback on proposed good landscape practices". The document continues that "it is planned to engage public by use of game-stories, e.g., by asking them to match geo-tagged historic photos with up-to-date images, thus providing us a good input for analysing landscape change".

The deliverable somehow deviates from the description. Not in the core technology, but in the content that is being gathered. The implementation of the application allows easy reconfiguration, providing HERCULES with an extensible tool for asking public for specific things (for instance to collect feedback on proposed good landscape practices).

At the moment the application for the deliverable 7.2 has been configured for the use case of WP6 task "European-scale survey on landscape practices". The survey we have implemented for this prototype has been devised in collaboration with Claudia Bieling (University of Freiburg, leader of WP6). The questions and (predefined) answers are given in Table 1.

Table 1: Survey on landscape practices (by Claudia Bieling).

Question	**Possible answers**
Do you live in the area (20 km around this place)?	– Yes – No – I have a secondary residence here
How did you get in touch with this place?	– I grew up or live(d) with it – Through family – Through friends – Through media – I discovered it on my own – Don' remember – Other Additionally, user can add comment.
Do you know about the history of this place?	– Yes, a lot – Yes, a little bit – Not very much – Not at all Additionally, user can add comment.
Would you be interested in knowing more?	– Yes – No Additionally, user can add comment.

Alongside the survey, users will have the opportunity to add a photo of the place and add a rating of the place (standard rating stars, 5 stars meaning they really like the place).

2.2 User authentication

Upon opening the application, the user is asked to authenticate since this is expected from the data repository (see Figure 2). First time user can register directly from the application.

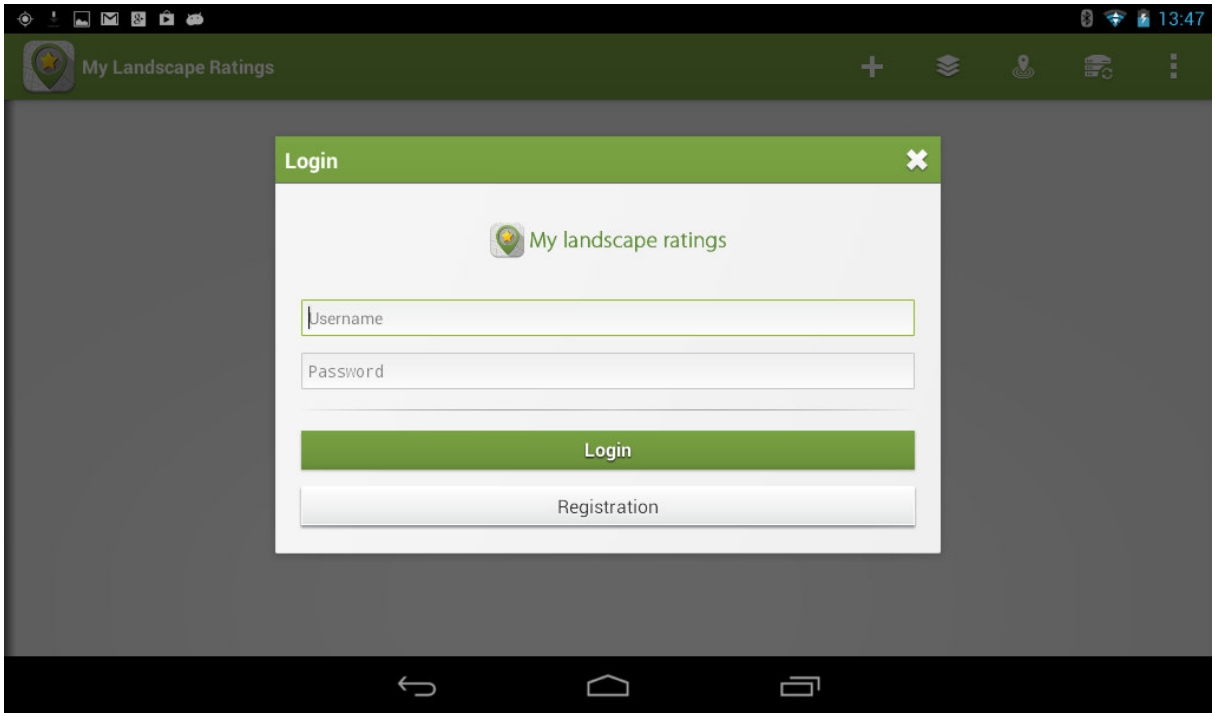

Figure 2: Login screen.

2.3 Information dialog window

After successful login, the user is shown information about the application, e.g. the purpose of the application, contact details, etc. (see Figure 3).

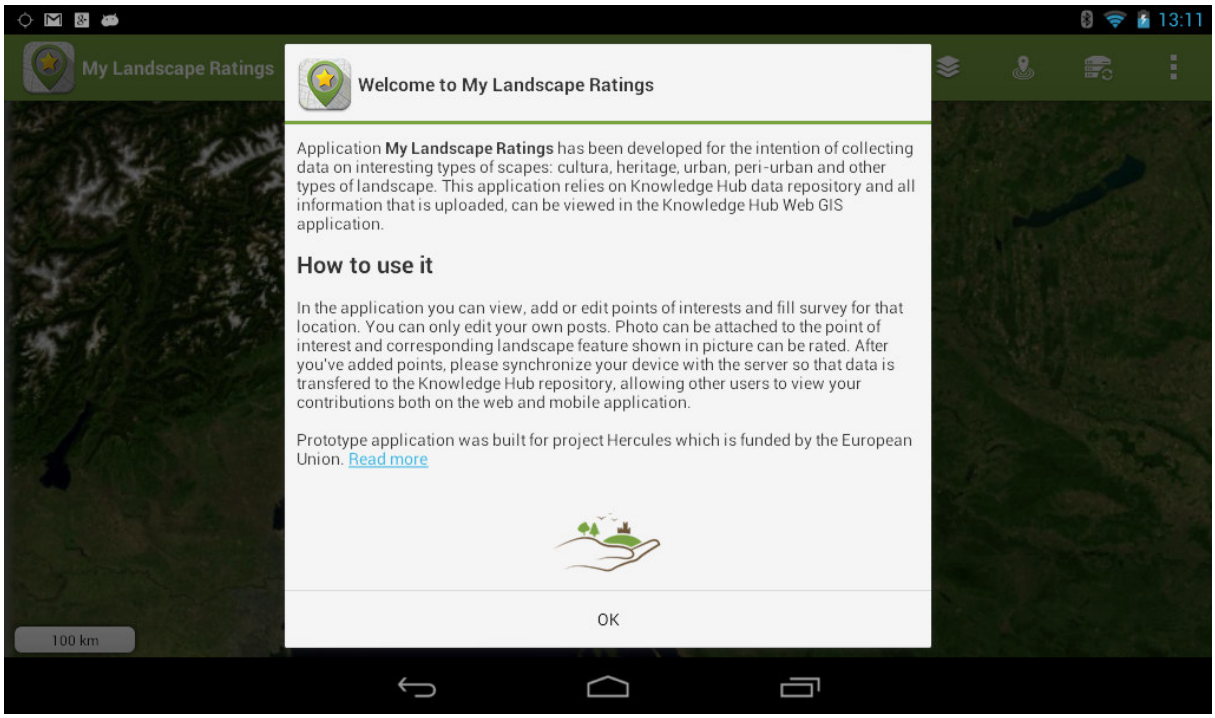

Figure 3: Information dialog.

2.4 Main window

The main window shows a map (see Figure 4) which can be zoomed in/out and panned using multitouch gestures. Users can choose a map (base layer) amongst the rasters that are available on the Knowledge Hub.

Existing records (also from other users) are shown on the map with the symbol that is defined on the Knowledge Hub. The user can open and view existing records.

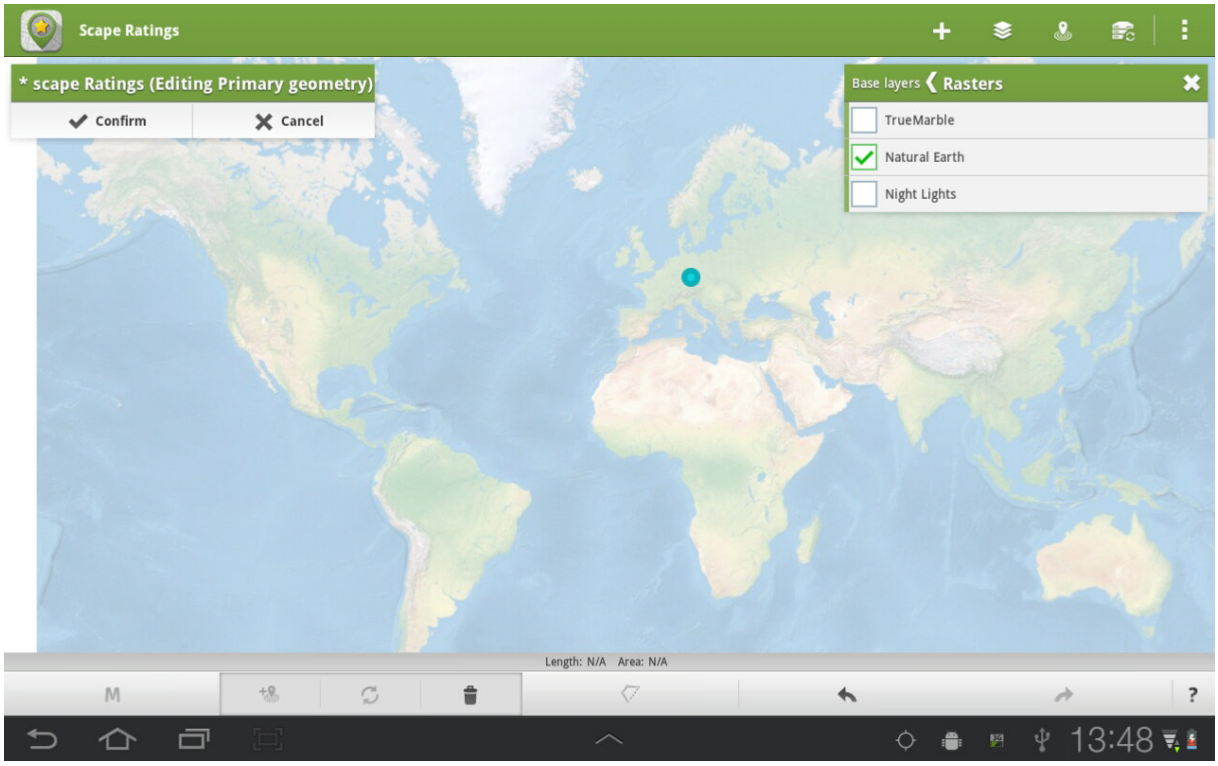

Figure 4: Application main window, showing Natural Earth raster map as base layer.

2.5 Adding a new record

The user can create a new record by pressing the "+" sign in the application top bar (see Figure 5).

Figure 5: Adding new record starts by touching the "+" sign.

Upon adding a new record, a floating dialog with the survey is displayed (see Figure 6).

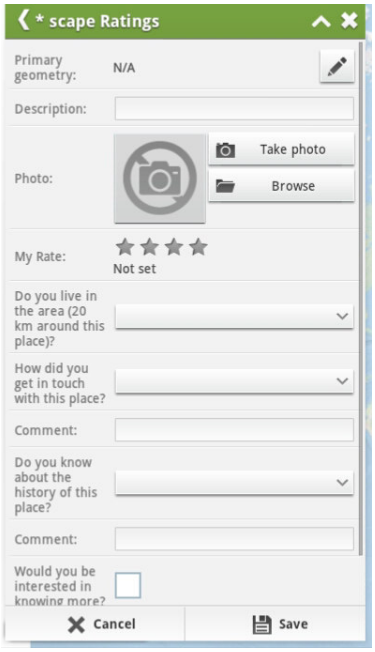

Figure 6: Creation of new record. The survey is in the floating dialog on the left.

A new record follows the model given by the survey specifications (given in the beginning of chapter 2). The user can input the location by hand or use the mobile device GPS system to geolocate the photo (see Figure 7 and 8).

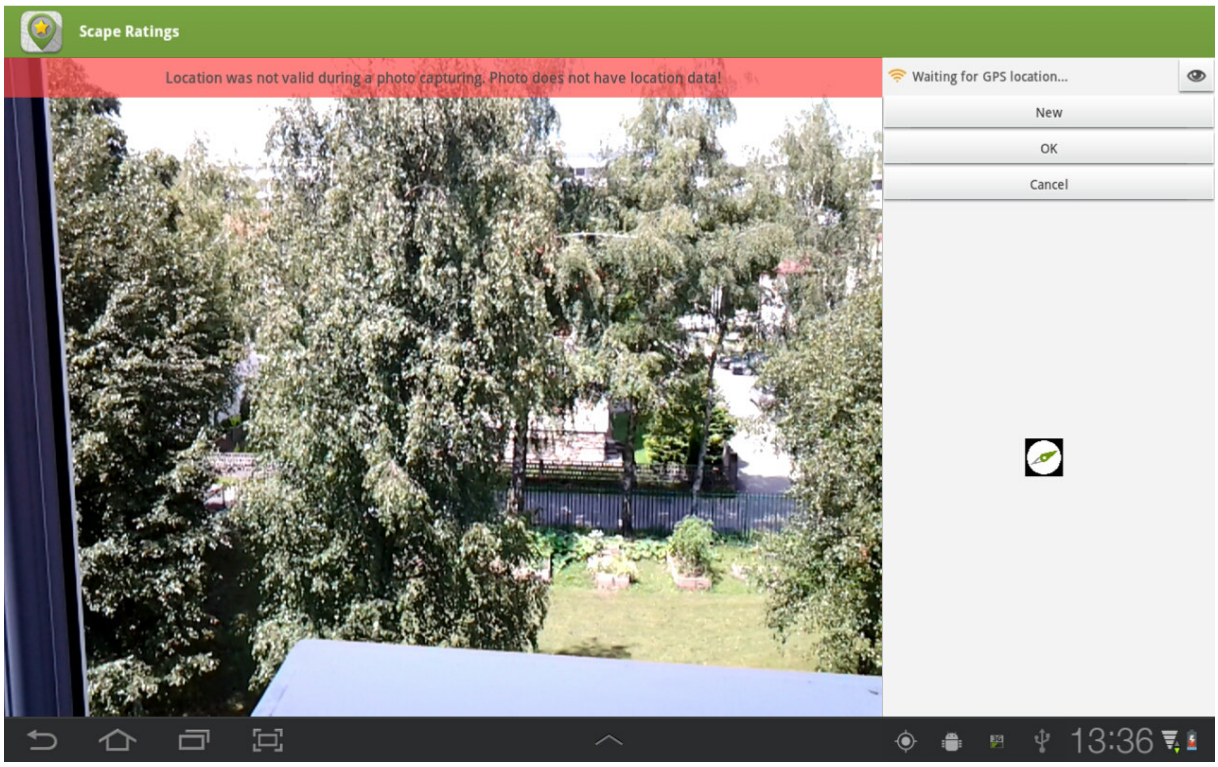

Figure 7: Waiting for mobile device GPS location to geotag the taken photo.

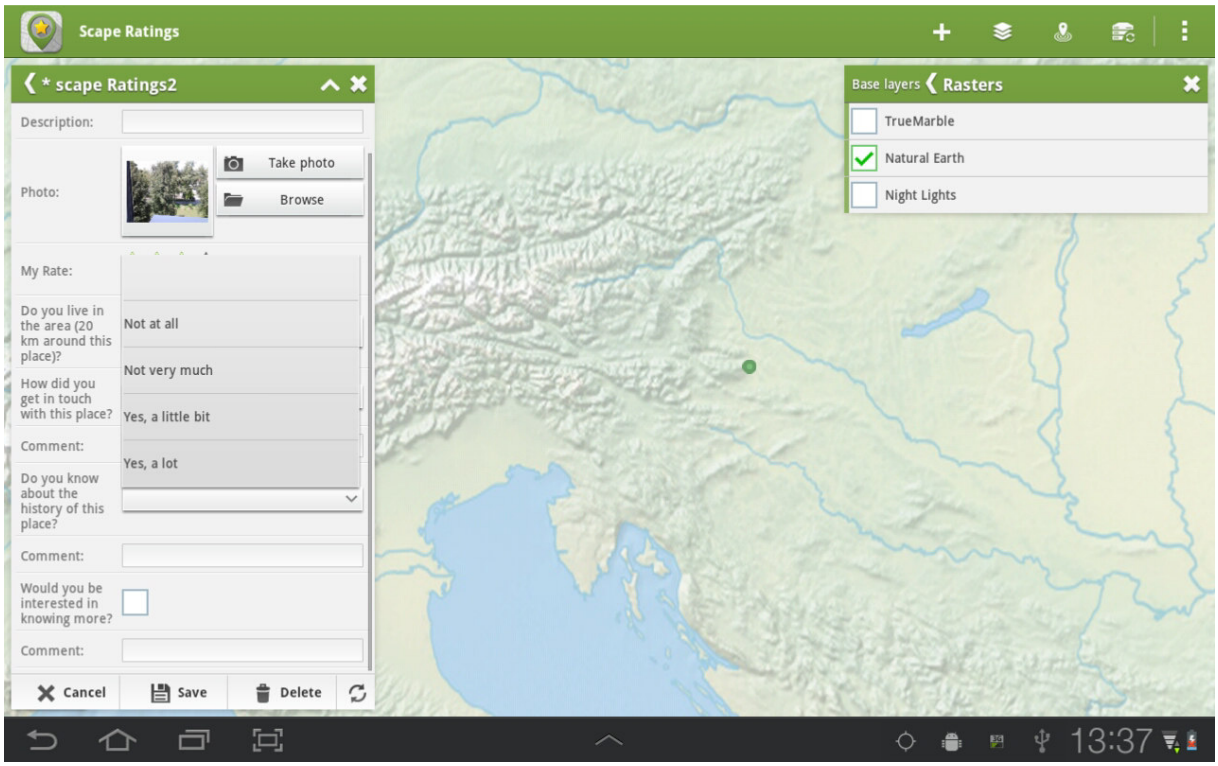

Figure 8: Filling the survey for a view from the Sinergise office.

2.6 Uploading the record to the Knowledge Hub

Upon completing the survey, the user can upload the record to the Knowledge Hub by pressing "sync" button from the main bar (see Figure 9).

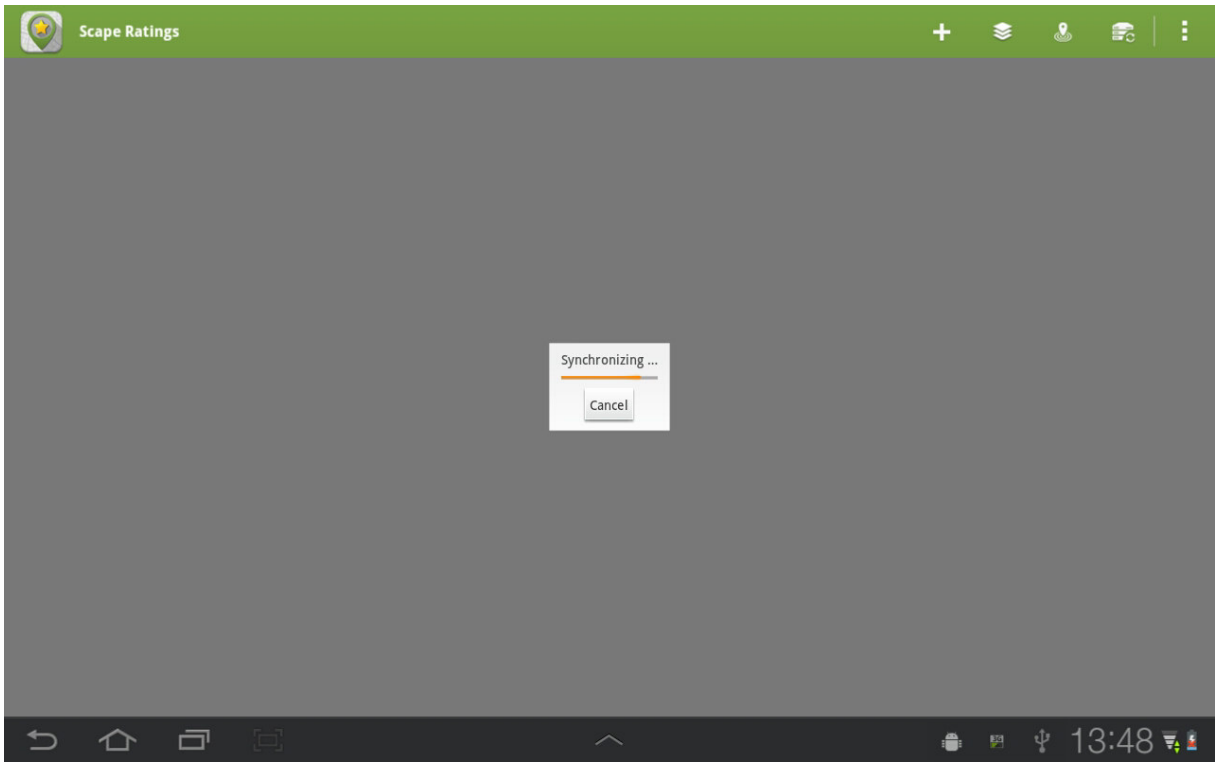

Figure 9: Synchronisation with Knowledge Hub database.

Upon successful synchronisation, the record can be viewed both from the mobile devices (of all users) and via the Knowledge Hub web GIS application.

Note: this process flow, adding location-aware record with defined set of additional data, can be configured within the Knowledge Hub and customized for specific use-cases (e.g. for validation of landscape typology, land cover, etc.).

3 Conclusion

The Android based smartphone application was designed in a way to be configurable, therefore to be able to cover as many cases as possible. The initial prototype was built to support WP6's "European-scale survey on landscape practices" as that specific WP had already defined specific requirement for data collection. Throughout the next months we believe that other Wps will follow suit, each of them resulting in similar, but customized, mobile application.

The underlying technology is designed in a way to be easily configurable for each specific case and will therefore allow different uses throughout the HERCULES project.