SmartHMA
Work plan in WP2 - Methodology Analyses and System Requirements Definition

Daniel Zinkiewicz (daniel.zinkiewicz@wasat.pl)
Wasat Sp. z o.o.
WP2 description

- WP2 will provide the relevant functional and performance requirements at system and subsystem level.
- Gathering requirements from representatives of users community will be a highly structured process conducted with their active participation.
- Compliance with relevant ESA, OGC and international standards will be taken into account as a main part of analyses.
- Final part of the work will be requirements capture for tablet based and EO application.
- Tasks are divided by Wasat and Spacebel
- **Outcome:** SRS - Software Requirements Specification
SmartHMA WP2 methodology

WP2100 description

• Subtasks to be performed by Wasat
  – Analyses of existing standards of EO and geodata distribution on mobile environment and systems.
  – Definition of user need for data and EO services gathering on the mobile devices.
  – Definition of mobile system performance monitoring
  – EO SmartHMA use cases definition
  – Definition SmartHMA system high and low concept
WP2200 description

Tasks performed in WP2200

- Identification of applicable HMA and OGC (including HMA-S) standards for accessing RSS environment and systems.
- Interface requirements for HMA-SE (possibly including DREAM, ESE and HMA-S TestBed) services accessible by SmartHMA
- Identification of service endpoints available for testing purposes
- Description of interface requirements for discovery and access to EO products, collections and services accessible from the SmartHMA mobile application.
- Analyses of possibilities of integration external HMA services into SmartHMA application
- Contribution to System Requirements (in terms of interface requirements and Mobile client expected capabilities) and Technologies Analysis Report
SmartHMA WP2 methodology

SmartHMA requirements gathering methods

Following methods of SmartHMA requirements gathering will be used:

- Use cases
- Study analogous systems (EO/GIS related and web based version of services)
- Prototyping (with use of web-based implementation of HMA related services i.e. FedEO)
- Work in the target environment
- One-on-one interviews with experts
- Joint application development (JAD) – groups of potential users.
- Brainstorming
From user needs to user requirements

- The user needs which are explored and defined on the examples of achievements of running SSE portal and in case of other ESA initiatives like EO-DAIL allow us to describe the most important functional requirements of HMA standardise SmartHMA.
- Open source software requirements are going to be taken into account during our preliminary research.
- Following aspects will be included in requirements definition process:
  - **User Needs** will present the qualitative improvements expressed by the user, together with a concise presentation of the high level interaction between systems and the different actors involved (e.g. use case).
  - **User Requirements** will describe in a structured form the set of statements originated by the users describing the functions, performance and capabilities that the system will bring to them during its utilisation.
  - **System Requirements** identifying, allocating and specifying the System Requirements taking into account the compliance with relevant international standards.
Main use cases

- User and stakeholders requirements are described and expressed as ‘use cases’ now and cover the following aspects:
  - Authentication of users - how to identify the users on mobile device in a secure way?
  - Authorisation and controlling the access to the content and user privacy
  - How to effectively search for the desired products and resources?
  - How to access the products in the user friendly way?
  - How to modify and adapt to native application the data acquisition process?
  - How to eventually pre-process the initial products once discovered and accessed via tabled based device?
  - How to order the products that are offered?
SmartHMA Requirements Definition

Initial system requirements

- Proposed system will be designed for the most popular systems embedded into mobile devices.
- SmartHMA will be dedicated to Android OS.
- Android 2.3 and higher versions will be main requirement to run and use SmartHMA application.
- SmartHMA will be optimised for tablet devices with at least 7” screen size (parallel with large phone size screen - WVGA).
- Usability of SmartHMA platform - several types of mobile devices with different capabilities should be supported: mainly tablets as devices with match of the requirements.
- SmartHMA will be developed with all Android development manners and good practise.
SmartHMA Requirements Definition

Initial architecture requirements

- SmartHMA will be available on the devices with Internet connections.
- SmartHMA will retrieve data and DAIL/SSE services or other HMA related products.
- SmartHMA platform does not require any change to existing data serving interfaces and existing processing web service interfaces,
- SmartHMA application behave in REST-ful architectures the same way as desktop applications.
- SmartHMA synchronization processes should allow to obtain services to handle vector, raster, and tile date in all situations of varying and potentially intermittent connectivity.
- SmartHMA architecture should work offline (geospatial cache, locally collected/updated data, essential data needed to support working in the field) and serve as a cache for deferred synchronization,
- Data must be cached / stored upon download so that it can be accessed when not connected to Wi-Fi or a cellular network.
- Deployed using an enterprise mobile device management system.
- Deliver project updates via Android application store and open source repositories.
EO data requirements

- The proposed solution in form of SmartHMA application must provide core functionality of HMA standards and implement main achievements of SSE portal, EO-DAIL portals, forthcoming SSE/DAIL and HMA-SE Portals
Detailed technical requirements with regard to EO data accessibility are outlined below.

- **Data Integration** by the SmartHMA will need to perform dynamic network data synchronising and parsing of EO metadata obtained from different service providers.
- The SmartHMA platform must integrate data from disparate sources including ESA EO service protocols implemented in new DAIL/SSE portal.
- Different types of the EO data feeds will need to be parsed and displayed depending on the section / area of the SmartHMA application.
- The SmartHMA application must allow the user to search the EO metadata and separate service provider feeds by keywords or phrases.
- The SmartHMA platform must allow the user to filter data by region and other criteria specified by HMA standards.
- The SmartHMA application must fully integrate WMS, WFS and geoportal services with map-based background within the running tablet-oriented application screen.
Applied standards

- In case of existing standards we will base our development on:
  - HMA project standards regarding the catalogue services, ordering services and Online Data Access Services.
  - ECSS standards: ECSS-E-40 Part 1B, ECSS-Q-80B
  - OGC Mobile Apps: Definition, Requirements, and Information Architecture (OGC 12-119r1)
  - OpenGIS Location Services (OpenLS): Core Services (OGC 07-074)
  - OGC 07-118 (Security Token Service) needed to perform EO product ordering using OGC 06-141 protocol.
  - Integration with Web SSO systems (e.g. ESA EO-SSO system).
Thank you!