SmartHMA

Introduction of SmartHMA project objectives

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Wasat Sp. z o.o.
SmartHMA – mobile platform for deployment of HMA standardised services into different types of non PC system environments in frame of RSS architecture.

- **Prime-Contractor** - Wasat Sp. z o.o.
- **Sub-Contractor** - Spacebel
- **Sub-Contractor** - Department of Geoinformatics, Gdańsk University of Technology
Main objectives

Core objectives

• **RSS** - The SmartHMA as a HMA implementation is going to complement ongoing researches in a field of **Research/Service Support** and Ground Segment Technology section of ESA' Earth Observation Ground Segment Department.

• **Mobile** - The aim is the development of a new platform for distribution of existing services and those that will be introduced in the near future, in the form that will be acceptable by **mobile devices** (mainly tablets).

• **Open Source** - The main objective of the SmartHMA project is to **develop** and **validate** an **open source** operational platform architecture which implements a set of Heterogeneous Missions in **native thin clients** for access to **Ground Segment services** from the GMES Contributing Missions (GCM) and the ESA missions.
Main objectives – HMA

HMA

• Input for SmartHMA development - activities, which were performed (or are ongoing) under ESA contracts such as:
  – HMA-Interoperability (HMA-I)
  – HMA Testbed (HMA-T)
  – HMA-Follow On (HMA-FO)
  – HMA for Science (HMA-S)
  – and other ESA related outcomes which have produced or will produce interface specifications standardised through the OGC Consortium
Main objectives – mobile role

Mobile

• Generally SmartHMA project has the objective of providing a practical outline of how to use HMA standards relevant for access and interaction among heterogeneous Earth Observation (EO) missions distributed on mobile operational systems – Android tablets.

• Another relevant goal is to describe the interactions of the payload data ground segments with EO data exploitation for scientific purposes, (downstream) services and data integration or assimilation with data sensors embedded in mobile devices – e.g. GPS, camera.
Main objectives – Open source

Open Source

- Development of SmartHMA platform will provide an open source client product which will integrate ESA software development approach, open source standards and most common open source development tools.

- On the mobile client side we will focus on Android platform extended by open source JAVA geospatial libraries (i.e. Geospatial Data Abstraction Library - GDAL) for geodata management and presentation.

- Adaptation of open source tools for Android environment and implementation Android extension
Main objectives – native approach

Why Android?

- Android is a software platform initially developed for smartphones, but is now also developed for tablets. In many cases Android is a first platform which is used in open source development related to implementation of geo services and geodata.

- Most of the OGC standards allow the introduction of native implementation of a mobile service and an application. This reason plays an important role in a choice of methodology and tools for development of the future SmartHMA platform.
Main objectives – native approach

Why Android?

- On the mobile client side we will focus on Android platform as the one widely representative for tablets market. (c.a. 60% market share and 400 mln. tablets units worldwide - Gartner).

- Although the Android platform uses Java as a programming language, it is much different to develop for mobile devices than for computers. Therefore it necessary to adjust objectives of HMA and ESA EO data distribution standards and interaction with EO data users who utilize mobile devices.
Main objectives – main tasks

Core tasks of project

- The main tasks in the SmartHMA project can be summarised as follows:
  - evaluation of adaptation of HMA specification client software to the non PC system platforms;
  - development of a tablet-based open source client with Android as a representative platform for introducing HMA and ESA EO data distribution standards;
  - examining and adaptation of an appropriate User Interface design and the way it would best suit for EO datasets searching, presentation, ordering and modification;
  - using different EO data sources and integration information on mobile devices from different service providers with their initial pre-processing;
  - evaluation of different approaches to building HMA standardised architecture with the networking part between a thin client and a server;
  - evaluation of identity management integration (e.g. EO-SSO) in the context of mobile clients.
Main objectives – EO/DAIL

EO/DAIL interfaces

- According to the technical objectives of extending SSE/EO-DAIL environment SmartHMA will be based on outcomes of the FedEO project, SSE project (running portal) and service protocols of the new DAIL/SSE software. Initially it will support:
  - Protocols defined as an outcome of running ESA DAIL/SSE project or first version of FedEO services.
  - OpenSearch interfaces for discovery of products (outcome of HMA-S project).
  - OpenSearch interface for Feasibility Analysis (outcome of HMA-S project).
  - OGC WPS 2.0 (outcome of HMA-S project).
  - Updated OGC CIM EP protocol (outcome of HMA-S project) – used for service and collection catalogues.
  - EO SPS (Sensor Planning Service) (outcome of DREAM and HMA-SE projects).
  - Ontology Access Service accessing a Sesame repository with SKOS concepts using VoID or SPARQL.
Main objectives – Standards

Relation to existing standards

- In case of existing standards we will base our development on:
  - OGC Mobile Apps: Definition, Requirements, and Information Architecture (OGC 12-119r1)
  - HMA project standards regarding the catalogue services, ordering services and Online Data Access Services.
  - 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 !