

# SmartHMA

## Introduction of SmartHMA project objectives

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## SmartHMA

*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*

## 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.

## 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

## Mobile

- Generally SmarHMA 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**.

## Open Source

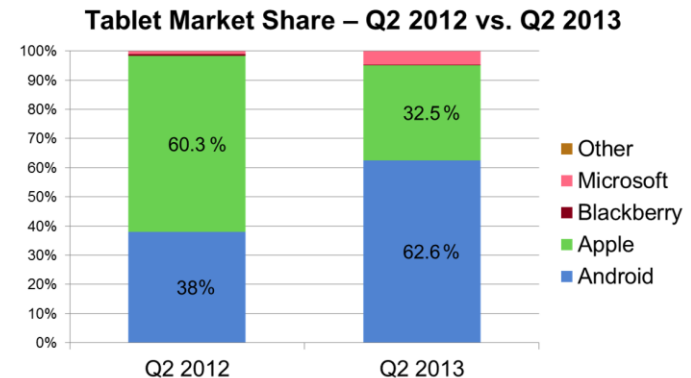
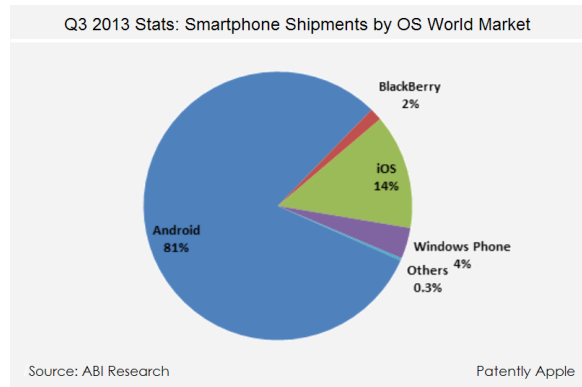
- Development of SmartHMA platform will provide an open source client product which will integrate ESA software development approach, open source standards and most common open source development tools.
- On the mobile client side we will focus on Android platform extended by open source JAVA geospatial 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

## 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.

## 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.



## 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.

## 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

## 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 !