

OMA Mobile Augmented Reality Work Program Overview

4th International Augmented Reality Standards Meeting

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Basel, Switzerland

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OMA – Overview

More than 150 members from across the mobile value chain

- Founded June 2002
- Operators, terminal and software vendors and content providers

Primary deliverables - Interoperable Service Enablers

• OMA Service Enablers consist of software technologies used as building blocks in the development, deployment and operation of applications and services in both fixed and mobile environments. OMA Enablers are defined as specifications that are published by OMA in Enabler Release packages.

Multiple domains

- Architecture, Security, Charging and Network APIs
- Person-to-Person Communications
- Device Capabilities
- Access to Content
- Services Access Interface
- Service Customization

New and improved organizational structures and efficiencies

- Fast track process for omitting or combining steps and deliverables in OMA Process
- Min Max procedure for an alternative path to traditional testing of every OMA enabler

Current and Ongoing Technical Deliverables – more detail in presentation

- 44 service enablers delivered in 2010 with 80 planned for 2011
- Ongoing refinement of interoperability testing program with Test on Demand in Q3 2011
- OMA API launch September 2011—building on success of Parlay affiliation and GSMA OneAPI, subset of OMA ParlayRest
- M2M Communications—enabling terminals as gateways and converged personal networks
- Home Environment Services—new strategic initiative and workshop at OMA meeting in Barcelona in February

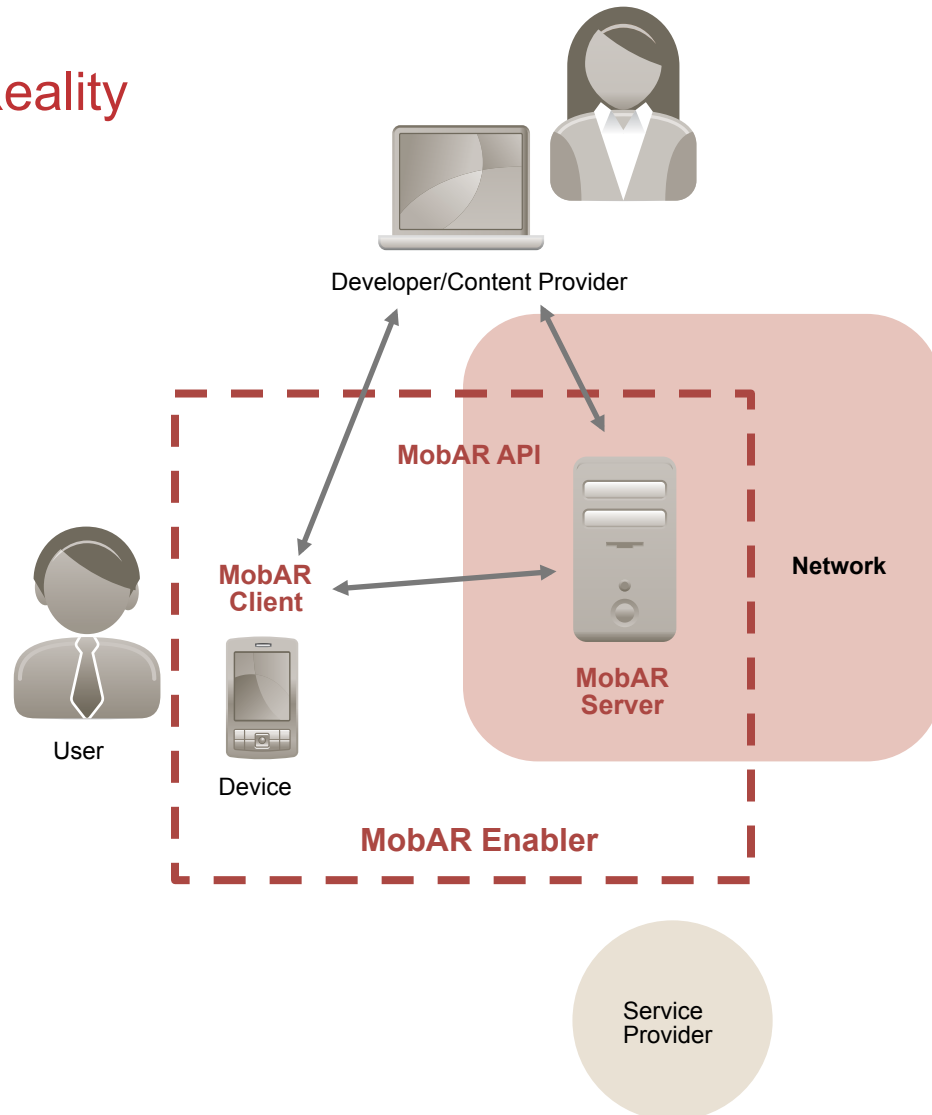
Collaboration with other bodies—including GSMA & ETSI

- Reduce duplication and fragmentation
- New strategic **Ambassador Program** with appointed Board level champions to other bodies
- OMA maintains formal cooperation agreements or frameworks with nearly 50 industry bodies

OMA Mobile Augmented Reality (MobAR) Ecosystem

**The OMA MobAR Enabler
main functionalities include:**

- AR Content Data Format
- AR Transport and Interfaces
- AR Client Features
- Security & Privacy

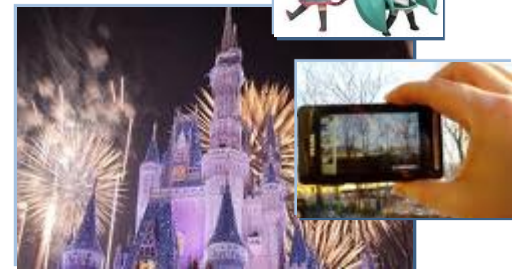


OMA MobAR Use Cases (1/2)

- The OMA AR enabler enhances the user experience in real time scenarios such as travel. Users can access key Points of Interest (POI) in their general vicinity and retrieve geo-localized multimedia content and information in camera views on their mobile phone.



- The OMA AR enabler offers a rich user experience in Gaming scenarios. Using their mobile phones, players can interact with other players in real time, accessing clues, game routes, puzzles, riddles and hidden landmarks that allows them to accumulate points and continue playing.



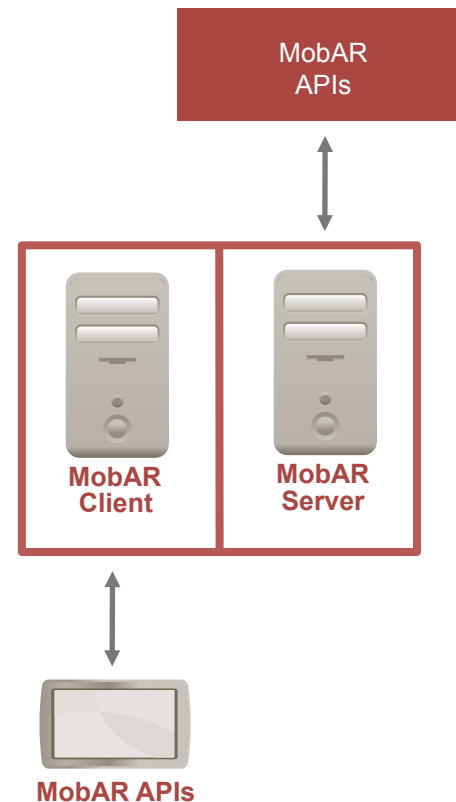
OMA MobAR Use Cases (2/2)

Usage of the AR technology in an Exposure scenario

- The OMA MobAR Enabler implementation exposes its information and capabilities to third-party applications via (client and network) APIs.

Several customization scenarios can be achieved:

- **BASIC** use of MobAR Network API: Customize AR content—for example, a sports equipment manufacturer may provide AR content for advertising in their retail shops.
- **INTERMEDIATE** use of MobAR Client API: The AR application running on the device adds new functionalities to those provided by the MobAR Client. No customization is applied to the AR Content.
- **ADVANCED** use of MobAR Client API and MobAR Network API: The developer can exploit both sets of APIs to implement a stunning AR application.





Benefits of a Mobile AR Standard

- Augmented Reality blends interactive media with the real world in a contextualized and localized format.
- In conjunction with the appealing features offered by AR, the increasing growth of technology and the availability of infrastructure and hardware has encouraged the creation of AR applications with particular focus on the mobile sphere.
- This unique, intuitive user interaction provided by MobAR has the potential to change the way users get information. An example is sharing information through the camera view based on visual images rather than through traditional browsers where information is in narrative or text format.
- Currently, there is no industry-wide standard for mobile AR applications. This has generated concerns about fragmentation across the AR eco-system. OMA MobAR is addressing this issue, and cooperates with other bodies in order to reduce fragmentation.
- Benefits of a standard enabler for mobile Augmented Reality
 - A long-term, sustainable framework for mobile AR will assure the cross-platform exchange of and universal access to AR content.
 - Content providers, including casual users and professionals, may create AR content that can be transported, stored and viewed using different browsers.
 - Light-weight application development by profiling existing complex specifications will lead to the creation of a minimum feature set necessary for the mobile AR services and content interoperability.
 - A standard AR enabler will ensure filtering and personalization of AR content to limit information overload.



OMA MobAR Activity

OMA's first release of the MobAR Enabler will focus on the following work areas:

- Defining use cases and developing requirements
- Scouting existing industry standards that are best suited for mobile AR applications
- Defining the architecture of AR client and server components and their interactions
- Identifying and/or creating extensions of industry standards to fulfill specific use cases
- Creating overall framework for mobile AR applications that can be profiled for different use cases

Timeline

- OMA began work on the MobAR enabler in November 2010
- OMA expects to publish the OMA MobAR 1.0 in June 2012
 - The requirements and architecture will be available publicly by the end of 2011
 - A draft version of these documents is currently available here: http://member.openmobilealliance.org/ftp/Public_documents/CD/Permanent_documents/OMA-ER-MobAR-V1_0-20111017-D.zip



OMA MobAR Accomplishments since June 2011

The OMA MobAR WG has made several contributions to the MobAR architecture since the last international AR Standards meeting in Taichung in June.

The adjustments to the MobAR architecture focus on the **MobAR Client** (device side functional component of the MobAR Enabler) and the **MobAR Server** (network side functional component of the MobAR Enabler) and the interfaces between these two entities as well as the APIs that can be exposed to developers and content providers.

The main functionalities identified for the MobAR Server are:

- AR Content Management, Personalization, Selection and Delivery
- AR Metrics Data Handling
- User Feedback Handling

The main functionalities identified for the MobAR Client are:

- AR Content Retrieval and Rendering
- User Interaction Support
- AR Metrics Data Handling
- User / Device Data Handling
- User Feedback Handling



OMA MobAR Functionalities Details (1/2)

AR Content Management, Personalization, Selection and Delivery (on the MobAR Server) functionalities:

- Storage and management of deployment information related to the AR Target and associated AR Content
- Search for the AR Target and selection and retrieval of the AR Content based on the receipt of requests from the MobAR Client or push requests related to the AR Target and/or AR Content delivery
- Delivery mechanisms (both pull and push) used by the MobAR Enabler between the MobAR Server and the MobAR Client

AR Metrics Data Handling (split between MobAR Client and MobAR Server) functionalities:

- Collection of AR Metrics data about AR Contents and User's interactions with them (e.g. click the displayed AR Content/Marker)
 - This information is collected from the MobAR Client
 - Enhancements to the collected AR Metrics data with the data known to the MobAR Server (such as time-stamp, context etc)

User Feedback Handling (split between MobAR Client and MobAR Server) functionalities:

- Responsible for the collection of user feedback from the MobAR Client related to the AR Content consumption

OMA MobAR Functionalities Details (2/2)

AR Content Retrieval (on the MobAR Client) functionalities:

- Responsible for the AR Content / AR Target retrieval from the MobAR Server
- Allows the MobAR Client to request AR Content / AR Target using both pull and push mechanisms

AR Content Rendering (on the MobAR Client) functionalities:

- Primarily responsible for providing the display mechanisms required by AR apps to the user based on the AR Contents, which are retrieved from the MobAR Server

User Interaction Support (on the MobAR Client) functionalities:

- Responsible for enabling user interactions with the AR Target and associated information such as AR Marker and AR Content on the device display

User / Device Data Handling (on the MobAR Client) functionalities:

- Responsible for the collection and management of information related to the user's service setting and current device status which is needed in the provision of client-side AR service



Conclusions and Next Steps

- To supply the mobile industry with mobile AR service standards, it is essential to accomplish the first release of technical specifications at the earliest possible date.
- OMA intends to collaborate with related and suitable standards bodies interested in MobAR including OGC, W3C, Khronos Group and others (to be identified as the work progresses).
- The following “AR content data format” activities conducted in OGC and W3C have been identified as areas of potential interest to the OMA:
 - W3C: A liaison activated with the Points Of Interest (POI) WG in accordance with their declared mission “to develop technical specifications for the representation of Points of Interest information”.
 - OGC: There is a potential relationship with Geography Markup Language (GML) and Keyhole Markup Language (KML) for grammar and models to express geographic data visualization.
 - Khronos Group: The potential for a possible relationship with regards to the rendering functionalities. A liaison request was sent in September 2011.
- Delegating the actual specification of extensions for industry standards by the responsible SDOs is currently under consideration. (There is the possibility that a request may be made to external SDOs to develop the actual specification of extensions required by OMA MobAR in coordination with OMA.)



More Information

- OMA Mobile Augmented Reality (MobAR):
 - Champion: Carmen Criminisi, Telecom Italia, carmen.criminisi@telecomitalia.it
 - Approved Work Item:

http://member.openmobilealliance.org/ftp/Public_documents/TP/Permanent_documents/OMA-WID_0203-MobAR-V1_0-20101109-A.zip

- OMA Communications Contact
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- 2011 Q2 OMA Quarterly Newsletter
http://www.openmobilealliance.org/comms/pages/OMA_quarterly_2011_vol_2.htm

OMA API Press Release, 21 September 2011
http://www.openmobilealliance.org/documents/OMA_Media_API_Press_Release.pdf

- Full list of OMA Mobile Service Enablers
<http://www.openmobilealliance.org/Technical/releaseprogram.aspx>