



Mobile Advertising Requirements

Candidate Version 1.0 – 26 Jan 2010

Open Mobile Alliance
OMA-RD-Mobile-Advertising-V1_0-20100126-C

Use of this document is subject to all of the terms and conditions of the Use Agreement located at <http://www.openmobilealliance.org/UseAgreement.html>.

Unless this document is clearly designated as an approved specification, this document is a work in process, is not an approved Open Mobile Alliance™ specification, and is subject to revision or removal without notice.

You may use this document or any part of the document for internal or educational purposes only, provided you do not modify, edit or take out of context the information in this document in any manner. Information contained in this document may be used, at your sole risk, for any purposes. You may not use this document in any other manner without the prior written permission of the Open Mobile Alliance. The Open Mobile Alliance authorizes you to copy this document, provided that you retain all copyright and other proprietary notices contained in the original materials on any copies of the materials and that you comply strictly with these terms. This copyright permission does not constitute an endorsement of the products or services. The Open Mobile Alliance assumes no responsibility for errors or omissions in this document.

Each Open Mobile Alliance member has agreed to use reasonable endeavors to inform the Open Mobile Alliance in a timely manner of Essential IPR as it becomes aware that the Essential IPR is related to the prepared or published specification. However, the members do not have an obligation to conduct IPR searches. The declared Essential IPR is publicly available to members and non-members of the Open Mobile Alliance and may be found on the “OMA IPR Declarations” list at <http://www.openmobilealliance.org/ipr.html>. The Open Mobile Alliance has not conducted an independent IPR review of this document and the information contained herein, and makes no representations or warranties regarding third party IPR, including without limitation patents, copyrights or trade secret rights. This document may contain inventions for which you must obtain licenses from third parties before making, using or selling the inventions. Defined terms above are set forth in the schedule to the Open Mobile Alliance Application Form.

NO REPRESENTATIONS OR WARRANTIES (WHETHER EXPRESS OR IMPLIED) ARE MADE BY THE OPEN MOBILE ALLIANCE OR ANY OPEN MOBILE ALLIANCE MEMBER OR ITS AFFILIATES REGARDING ANY OF THE IPR'S REPRESENTED ON THE “OMA IPR DECLARATIONS” LIST, INCLUDING, BUT NOT LIMITED TO THE ACCURACY, COMPLETENESS, VALIDITY OR RELEVANCE OF THE INFORMATION OR WHETHER OR NOT SUCH RIGHTS ARE ESSENTIAL OR NON-ESSENTIAL.

THE OPEN MOBILE ALLIANCE IS NOT LIABLE FOR AND HEREBY DISCLAIMS ANY DIRECT, INDIRECT, PUNITIVE, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE OF DOCUMENTS AND THE INFORMATION CONTAINED IN THE DOCUMENTS.

© 2010 Open Mobile Alliance Ltd. All Rights Reserved.

Used with the permission of the Open Mobile Alliance Ltd. under the terms set forth above.

Contents

1. SCOPE (INFORMATIVE)	6
2. REFERENCES	7
2.1 NORMATIVE REFERENCES	7
2.2 INFORMATIVE REFERENCES	7
3. TERMINOLOGY AND CONVENTIONS	8
3.1 CONVENTIONS	8
3.2 DEFINITIONS	8
3.3 ABBREVIATIONS	10
4. INTRODUCTION (INFORMATIVE)	11
4.1 ACTORS IN THE CONTEXT OF MOBILE ADVERTISING	11
4.2 INFORMATION RELATED TO MOBAD	13
5. USE CASES (INFORMATIVE)	15
5.1 GENERAL AD ENGINE-RELATED USE CASE	15
5.1.1 Short Description	15
5.1.2 Actors	15
5.1.3 Pre-conditions	15
5.1.4 Post-conditions	15
5.1.5 Normal Flow	16
5.1.6 Alternative Flow 1 (Prefetched advertisements)	16
5.2 SERVICE PROVIDER AD SELECTION USE CASE	16
5.2.1 Short Description	16
5.2.2 Actors	16
5.2.3 Pre-conditions	17
5.2.4 Post-conditions	17
5.2.5 Normal Flow	17
5.3 ADVERTISEMENT SELECTION IN A POINT TO POINT MOBILE ADVERTISING SERVICE	17
5.3.1 Short Description	17
5.3.2 Actors	17
5.3.3 Pre-conditions	18
5.3.4 Post-conditions	19
5.3.5 Normal Flow	19
5.3.6 Alternative Flow 1 (Ad Selector (Ad Server) advertisement blocking)	19
5.3.7 Operational and Quality of Experience Requirements	20
5.4 USER GROUP SELECTION IN MOBILE ADVERTISING SERVICE	20
5.4.1 Short Description	20
5.4.2 Actors	20
5.4.3 Pre-conditions	21
5.4.4 Post-conditions	21
5.4.5 Normal Flow	21
5.5 PERSONALIZING ADVERTISEMENT USING CONTENT SCANNING	21
5.5.1 Short description	21
5.5.2 Actors	21
5.5.3 Pre-conditions	22
5.5.4 Post conditions	22
5.5.5 Normal Flow 1	22
5.5.6 Normal flow 2	23
5.5.7 Normal flow 3	23
5.6 AD METADATA AND CONTENT METADATA EMBEDDED IN THE APPLICATION CONTENT	23
5.6.1 Short description	23
5.6.2 Actors	23
5.6.3 Pre-conditions	24

- 5.6.4 Normal Flow24
- 5.6.5 Alternative flow 124
- 5.6.6 Alternative flow 224
- 5.7 BROADCAST DELIVERY OF PERSONALIZED ADVERTISEMENTS25**
 - 5.7.1 Short Description25
 - 5.7.2 Actors.....25
 - 5.7.3 Pre-conditions26
 - 5.7.4 Post-conditions.....26
 - 5.7.5 Normal Flow 126
 - 5.7.6 Alternative Flow 127
 - 5.7.7 Normal Flow 227
- 5.8 USER WILLINGNESS TO RECEIVE ADVERTISEMENTS USING CONTEXT INFORMATION.....27**
 - 5.8.1 Short Description27
 - 5.8.2 Actors.....28
 - 5.8.3 Pre-conditions28
 - 5.8.4 Post-conditions.....28
 - 5.8.5 Normal Flow29
 - 5.8.6 Alternative Flow 1 (user not willing).....29
 - 5.8.7 Alternative Flow 2 (no match advertisements-user context).....29
- 5.9 INTERACTIVE ADVERTISEMENT30**
 - 5.9.1 Short Description30
 - 5.9.2 Actors.....30
 - 5.9.3 Pre-conditions31
 - 5.9.4 Post-conditions.....31
 - 5.9.5 Normal Flow31
 - 5.9.6 Alternative Flow31
- 5.10 RECORDING AND COLLECTION OF ADVERTISING METRICS DATA31**
 - 5.10.1 Short Description31
 - 5.10.2 Actors.....32
 - 5.10.3 Pre-conditions33
 - 5.10.4 Post-conditions.....33
 - 5.10.5 Normal Flow-Server Centric.....33
 - 5.10.6 Normal Flow – Device centric.....34
 - 5.10.7 Alternative Flow – Device centric34
- 6. REQUIREMENTS (NORMATIVE).....35**
 - 6.1 HIGH-LEVEL FUNCTIONAL REQUIREMENTS35**
 - 6.1.1 General: High level functional requirements35
 - 6.1.2 Personalisation and Contextualisation39
 - 6.1.3 Metrics40
 - 6.1.4 Delivery42
 - 6.1.5 Scanning.....42
 - 6.1.6 Security43
 - 6.1.7 Charging.....43
 - 6.1.8 Administration and Configuration44
 - 6.1.9 Usability.....44
 - 6.1.10 Privacy44
 - 6.2 OVERALL SYSTEM REQUIREMENTS44**
- APPENDIX A. CHANGE HISTORY (INFORMATIVE).....45**
 - A.1 APPROVED VERSION HISTORY45**
 - A.2 DRAFT/CANDIDATE VERSION <CURRENT VERSION> HISTORY.....45**

Figures

- Figure 1: Actors Diagram13**

Figure 2: An example of how generic MobAd Enabler Rules and MobAd User Preferences may relate with other types of data 14

Tables

Table 1: High-Level Functional Requirements – General Items.....	39
Table 2: High-Level Functional Requirements – Personalisation Items.....	40
Table 3: High-Level Functional Requirements – Metrics Items.....	42
Table 4: High-Level Functional Requirements – Delivery Items	42
Table 5: High-Level Functional Requirements – Scanning Items	43
Table 6: High-Level Functional Requirements – Security Items	43
Table 8: High-Level Functional Requirements – Charging Items	43
Table 9: High-Level Functional Requirements – Administration and Configuration Items	44
Table 10: High-Level Functional Requirements – Usability Items	44
Table 12: High-Level Functional Requirements – Privacy Items.....	44
Table 13: High-Level System Requirements	44

1. Scope (Informative)

This Requirement Document (RD) contains use cases and defines the requirements for the Mobile Advertisement Enabler. The following areas will be covered in this RD:

- Personalisation of the Advertisements
- Interactivity of Advertisements
- Advertising Metrics

The Mobile Advertisement Enabler will reuse as much as possible existing technologies. Some requirements may be covered by other OMA Enablers.

2. References

2.1 Normative References

- [RFC2119] “Key words for use in RFCs to Indicate Requirement Levels”, S. Bradner, March 1997,
URL:<http://www.ietf.org/rfc/rfc2119.txt>

2.2 Informative References

- [OMADICT] “Dictionary for OMA Specifications”, Version x.y, Open Mobile Alliance™,
OMA-ORG-Dictionary-Vx_y, URL:<http://www.openmobilealliance.org/>
- [OMA-BCAST] “Mobile Broadcast Services”, Open Mobile Alliance™, OMA-TS-BCAST_Services-V1_0,
URL: <http://www.openmobilealliance.org/>
- [OMA-DCD] “Dynamic Content Delivery”, Open Mobile Alliance™, OMA-TS-DCD_Semantics-V1_0, OMA-TS-
DCD_BCAST_Adaptation-V1_0,
URL: <http://www.openmobilealliance.org/>

3. Terminology and Conventions

3.1 Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

This is an informative document, which is not intended to provide testable requirements to implementations.

3.2 Definitions

Ad App	A device-resident application which interacts with the MobAd Enabler Entities on the Device in order to present advertisement(s) to the user.
Ad Campaign	See Campaign.
Ad Channel	A set of advertisement items logically correlated according to some criteria (e.g.: topic)
Ad Engine	The Ad Engine refers to the MobAd Enabler Entities on the Device. It is a device-resident group of functionalities potentially organized in logical modules. It interacts with different Ad Apps and performs functions such as: obtaining appropriate ads from MobAd entities in the network, selecting ads from a local storage, providing metrics related feedback to MobAd entities in the network, filtering and matching information as well as potentially scanning content.
Ad Filtering	In this document, “Ad Filtering” is equivalent to the “Ad Selection”.
Ad Landing URI	A URI pointing to an Advertiser resource to be used following an Ad interaction (e.g.: Pizza order info or click to call)
Ad Metadata	Metadata that specifies advertisement characteristics and usage (e.g. category, type of ads, ad expiration times, associated keywords) embedded in or associated with the advertisement.
Ad Metrics	Set of parameters and procedures that quantitatively and qualitatively measure the effectiveness of mobile advertising (e.g.: impact, delivery, interactivity, etc.).
Metrics Collector	A function of the MobAd Enabler responsible for collecting metrics related information from different sources such as SP App, and Ad Engine.
Ad Selection	The MobAd functionality of choosing one or several ads, based on a set of specified criteria (such as user preferences, ad campaign targeting etc.), for the purpose of showing the selected ads to the User.
Ad Selector	A function of the MobAd Enabler that selects the most appropriate Ad(s), based on a series of criteria and parameters (e.g. advertisement metadata, user information, Personalisation and context data, metrics data).
Advertisement	Content (text-based, image-based, etc), provided by an identified advertiser in an effort to influence and persuade individuals/consumers to take some action (buy, try, talk about, etc) in relation to the advertiser’s products, services.
Advertiser	An entity providing the advertisements and/or Advertisements campaign and able to associate metadata to it in order to characterize the targeted content and the targeted audience. The advertiser owns the advertisement campaign and transfers advertisement and campaign information to the MobAd Enabler. The advertiser can also be an advertising agency.
Campaign	One or more advertisements that share a single idea and theme of a given advertiser targeting a given audience
Capping	Action of restricting the total number or frequency of advertisements delivered based on different categories such as per campaign, per user or per advertiser (e.g.: three times a day per user or a campaign presented once to a user).
Content Metadata	Metadata embedded in or associated with the application content, characterising Ads that could be associated with this particular content/application. (e.g.: webpage meta tags, keywords, targeting criteria, display rules, Ad provider URL, etc.) Note: Content Metadata are not Metadata associated with Ads as described in this document.
Content Provider	An actor providing the content and potential associated metadata for a given application or service upon

which the mobile advertising service can be provided by the Service Provider.

Contextualisation	Tailoring and matching an advertising campaign to User's Context. In practical terms, this can include statically or dynamically associating a given User context (e.g.: "around Marble Arch in London, after 6pm, if using a streaming-capable Device"), to a varying degree of detail, with an advertising campaign. The above can imply using any data known and/or assumed about the User Context, e.g.: location, device capabilities, etc.
Default Ad content	Ad data which may not be time sensitive and relates to advertisements of an advertiser. For example it can be a generic advertisement for the brand stores (e.g.: Sport brand Stores). Default, dynamic and static Ad content could be combined to deliver a complete Ad.
Dynamic Ad content	Ad data which are time sensitive and contain information related to advertisements of an advertiser. For example, it could be an advertisement for a new product (e.g.: the latest running shoes of a sport Brand). Default, dynamic and static Ad content could be combined to deliver a complete Ad.
Filler	Content (e.g. image, etc.) that replaces the Ad Content at a given Ad placeholder.
Impression	Presentation of an advertisement to a user (e.g.: displayed by an Ad App).
Interstitial Ad	An Advertisement that loads following User interaction until the requested content is presented.
MobAd compliant device	A mobile device on which the MobAd Entities on the Device are deployed and it is capable of running Ad App(s).
MobAd Enabler Entities on the Device	Device resident functions specified by the MobAd Enabler
MobAd Enabler Entities on the Network	Network resident functions specified by the MobAd Enabler, Also refers to Ad Server. It takes the role of the AdSelector, Metrics Collector
MobAd User Preferences	User preferences associated to the User Profile (see "User Profile" definition in [OMADICT]) related to MobAd enabler from which the mobile advertising services can be personalised.
Personalisation	Tailoring and matching an advertising campaign to a set of User(s)' characteristics, such as demographics, tastes, preferences, etc. In practical terms, this can include statically or dynamically allocating a group of users which are to be participants in a given campaign, based on targeting criteria associated with a campaign. It can imply using static and dynamic data known and/or assumed about the User, which may be distributed in e.g.: User Profile, subscriber profiles, preferences and similar. This process can be self-improving throughout the campaign.
Principal	See [OMADICT].
Scanning Utility	A function of the MobAd Enabler that scans the content consumed or produced by the user.
Service Provider	An actor offering the mobile advertising service. The Service Provider uses the Ad Server, Ad Engine and SP App toas well as the rest of its infrastructure to enablethe following functions: manage the user or group of users information (profile context, location, presence, etc) provide Ads to a given user or group of users or for a given application/service, report metrics data, configure the mobile advertising service, select and manage a user or a group of users.
SP App	An Ad enabled network Application that is executing within the Service Provider environment (e.g.: MMSC or SP-portal) and interacts with the MobAd Enabler for providing Ads as part of its service (e.g. requesting Ads, providing metrics data). SP App is not one of the MobAd Enabler Entities on the Network, but an external actor which interacts with them.
Static Ad Content	Ad data related to the identity of an advertiser and which do not change often (e.g.: logo). Default, dynamic and static Ad content could be combined to deliver a complete Ad.
User	See [OMADICT]. In the MobAd Enabler context, the User consumes mobile advertisements along with any other services, such as MMS, IM, DCD, BCAST, Browsing etc., on his/her terminal and interacts with it (e.g.: view, delete, forward, store ads).
User Context	A set of dynamic information that describes the current general status of the user and his/her nearby environment. This set of information can be retrieved from a variety of sources including OMA enablers
User Profile	See [OMADICT].

3.3 Abbreviations

Ad	Advertisement
BCAST	The OMA Mobile Broadcast Services Enabler
CPA	Cost per Action
CPC	Cost per Click
CPM	Converged IP Messaging
DCD	Dynamic Content Delivery, refers to the OMA DCD Enabler [DCD]
DPE	Device Profile Evolution
IM	Instant Messaging
MLS	Mobile Location Service
MMS(C)	Multimedia Messaging Service (Center)
MobAd	Mobile Advertisement
OMA	Open Mobile Alliance
PoC	Push to talk over Cellular
SLA	Service Level Agreement
SMS	Short Message Service
SP	Service Provider
SUPL	Secure User Plane Location
UAPROF	User Agent Profile
URI	Universal Resource Identifier
URL	Universal Resource Locator

4. Introduction (Informative)

This document illustrates use cases relevant for Mobile Advertising, and specifies the requirements derived from these use cases.

Mobile Advertising takes advantage of information available about mobile device users and how they use their devices to provide the users with advertisements that are closely targeted to their interests, leading to high advertisement response rates. The MobAd Enabler will support the successful deployment of Mobile Advertising services by providing an interoperable framework for ad personalisation, delivery and metrics data collection. The MobAd Enabler allows ad personalisation by defining metadata about the target audience for an ad or ad campaign; this information can be matched against user profile and preference information so that the user only receives ads that are of interest to them. The MobAd Enabler can make use of a variety of advertisement delivery methods, (e.g. pull, push and broadcast delivery). The MobAd Enabler also specifies a standard set of advertisement metrics data that are recorded (as users view ads and interact with them) and then collected to enable the measurement of the response to ads and ad campaigns.

The MobAd Enabler will offer significant benefits to all actors in the Mobile Advertising value chain:

- Advertisers will benefit by being able to create a single characterization of their Ad Campaigns and Ad Inventory that can be used across multiple Service Provider networks, and by having a common set of advertisement metrics data to assess the performance of ad campaigns in all these deployments.
- Service Providers will benefit from uniform mechanisms for enabling their device and network applications to present advertisements to users, and for billing Advertisers for user viewing of and interaction with the advertisements. The information that Service Providers possess about their users is a key component of effective ad personalisation.
- Content Providers will derive additional revenue by including advertisements along with the content they provide to users. The MobAd Enabler will specify metadata that Content Providers can use to characterize their content so that suitable ads can be appropriately presented together with the content.
- Users will benefit by receiving advertisements for products and services that match their interests, possibly in combination with new pricing models for the applications and services they use on their mobile devices.

This Requirements Document will provide requirements in the following areas:

Personalisation of the Advertisements: one of the key performance indicators for the Mobile Advertising services is the degree of the advertisement's Personalisation. The more targeted the advertisements are to a particular user, the more acceptance will be achieved.

Interactivity of Advertisements: when the first advertising services started using new technologies for delivery of advertisements (i.e. Internet), various pricing models have been defined. The first innovative one was the CPC (Cost per Click), in which the cost of the advertisement for a brand depends on the number of times the user clicks to an Ad (e.g.: goes to the brand site). While this model is still valid for mobile advertising, new types of models such as the CPA (Cost per Action) have continued to emerge, and interactivity is a key point to achieve this new model and others.

Technology to Facilitate Advertising Metrics: One of the most important parts of an advertising campaign is the metering of the advertisement's impact and user behaviour. Using these metrics data, the advertisers are able to market their products and services effectively to mobile subscribers through the use of Ads that are targeted to interested recipients and matched with the services that the recipients use most often. Collecting data related to mobile advertisements reach and reaction to them, and correlating such data across large groups/audiences, can provide additional feedback to the mobile advertising value chain. The Service Providers may offer a better service and create additional revenue, or may consider charging for a certified statistics report, or use them as a tool to attract more advertisers.

4.1 Actors in the context of Mobile Advertising

The Advertiser supplies advertisement(s) characterised with information related to the targeted audience, campaign etc.

The Advertiser may receive metrics data about their campaign based on an agreement with the Service Provider.

The Content Provider provides content to a user and in general is willing to reinforce the value of its content by allowing advertisement to be sent along with the content.

The Service Provider offers the mobile advertising service to Users via the MobAd Enabler.

The Service Provider manages the MobAd Enabler User Profile data, based on information such as user related, context related, interest and advertising preferences.

The Service Provider may deliver the advertising by the use of SP Apps (network based applications such as the streaming media service, MMS service, SP-portal or other applications) as well as Ad Apps (device resident applications such as on-device portal, games or other applications). Both types of applications can interact with the MobAd enabler for providing Ads as part of their service (e.g.: requesting Ads, providing metrics data). The SP Apps may provide Ads to users using any device (including non MobAd compliant devices).

The Service Provider manages the MobAd Enabler Advertisements Metadata that will be used for the mobile advertising service.

The Service Provider uses the metrics data provided by the MobAd enabler to improve the service and may share these metrics data with other actors such as the Content Provider or the Advertiser.

The Service Provider configures and maintains the MobAd Enabler.

The Service Provider may have some other roles such as providing billing service, subscription etc.

The User consumes personalized interactive mobile advertising content.

The User exposes, modifies his/her MobAd user information, interest, context and preferences.

The User may have the option to opt-in and opt-out from the mobile advertising Service.

The Ad App receives the advertisements through MobAd Enabler, and presents them to the User.

The Ad App may communicate information about Users' actions to the MobAd Enabler.

The SP App resides in the Network. It interacts with the MobAd Enabler.

The SP App can embed the advertisements in content that it provides to the User.

The SP App may communicate information about Users' actions to the MobAd Enabler.

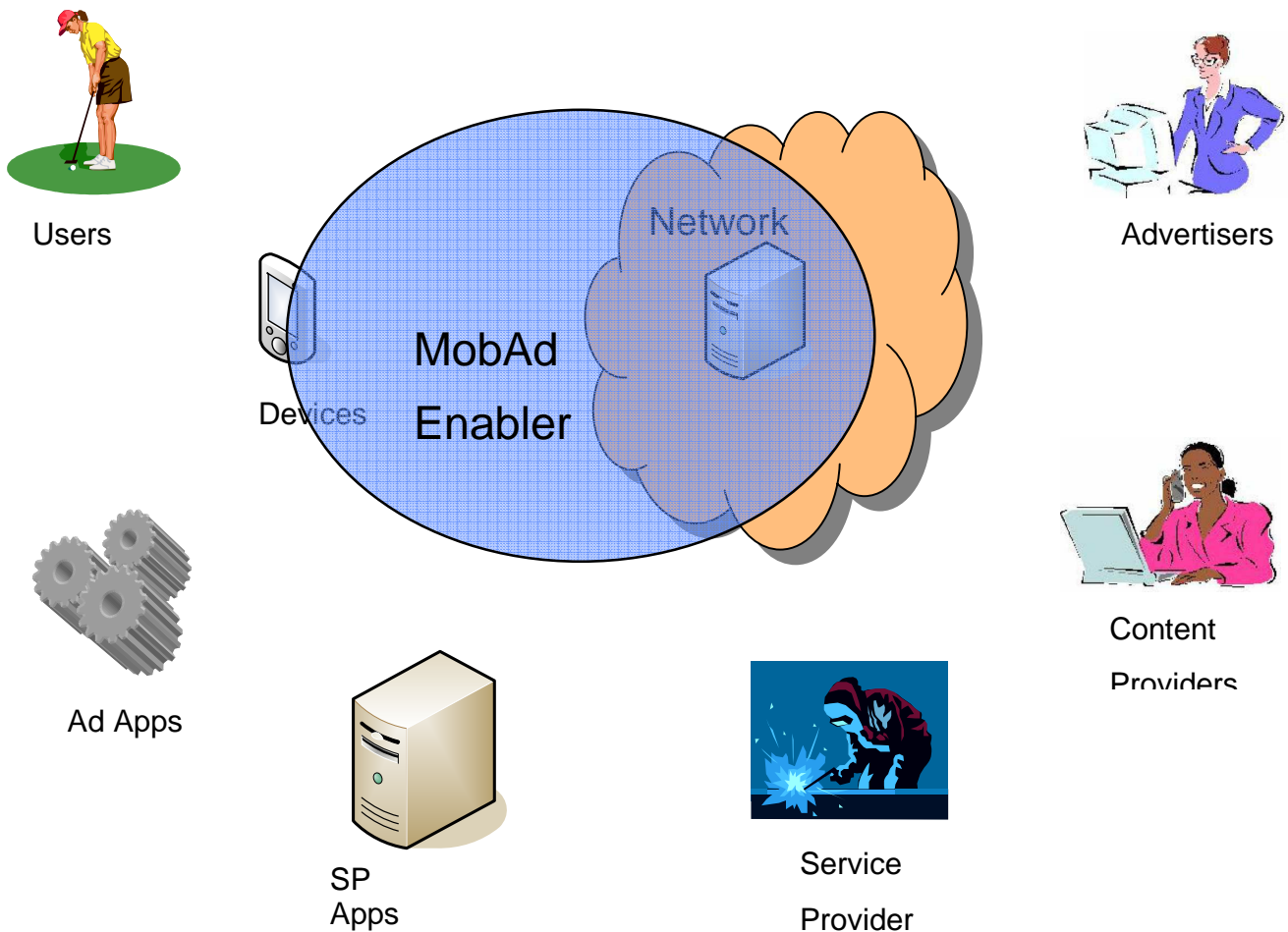


Figure 1: Actors Diagram

4.2 Information related to MobAd

Figure 1 outlines how User Information relates with the MobAd services. User Data (or User Information) can be considered as formed by two sets of data: User Profile (data that can be considered static) and User Context (data that can be considered dynamic). User Context data describe the current general status of the user and his nearby environment, and include Location information, Presence status information and other data. The possible relevant OMA enablers to retrieve User Context data could be (not exhaustive) (SIMPLE) Presence (such as presence status, type of place, activity, mood), MLS and SUPL (current location), UAProf (device capabilities), DPE (device capabilities, phone profile). A subset of User Profile data are the user preferences related to the services that the User is subscribed to: MobAd User Preferences are the subset of user preferences related to MobAd enabler from which the mobile advertising services can be personalised. MobAd User Preferences are linked to dynamic information in the User Context and to Advertisements Metadata (e.g. if a User Context parameter has a predefined value, then allow some type of advertising).

In some cases, Service Providers may have additional information that characterizes how advertisements should be delivered within a particular delivery mechanism, for instance rules relating to the type of ads subject to be sent in an MMS Service or a number of ads that the user can receive by MMS, and similar. This particular information that characterizes delivery mechanisms rather than particular advertisements or users, is presented in Figure 2 as Generic MobAd Enabler Rules.

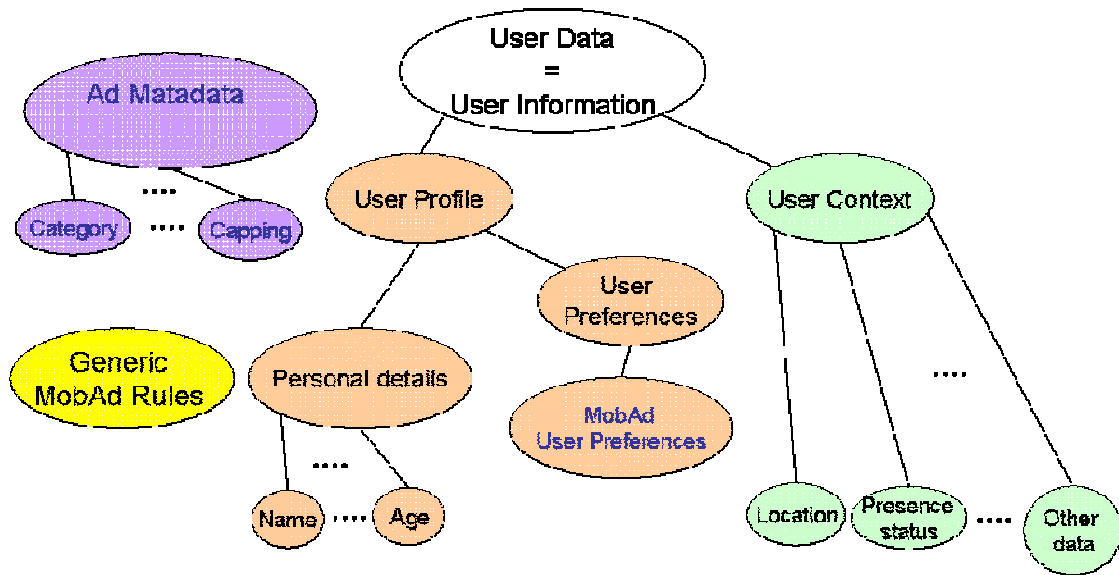


Figure 2: An example of how generic MobAd Enabler Rules and MobAd User Preferences may relate with other types of data

5. Use Cases (Informative)

5.1 General Ad Engine-related use case

5.1.1 Short Description

The Ad Engine (pre)fetches relevant advertisements when required, feeds Ad Apps with them, and facilitates metrics of shown advertisements.

5.1.2 Actors

- User: A user with a mobile device, who is to be shown an advertisement.
- Ad App1...n: See definition section
- Ad Engine: See definition section
- Ad Selector (Ad Server): See definition section

5.1.2.1 Actor Specific Issues

n/a

5.1.2.2 Actor Specific Benefits

- User: Can be shown relevant, fresh advertisements when either online or offline.
- Ad App1...n: Can show relevant and fresh Ads regardless of whether online or offline, while most of the complexity is hidden from it.
- Ad Engine: Can successfully manage Ads regardless of whether online or offline and provide crucial metrics data accurately and timely.
- Ad Selector (Ad Server): Can successfully select and serve Ads regardless of whether online or offline and potentially benefiting from relevant context information and crucial metrics data accurately and timely.

5.1.3 Pre-conditions

- The Ad Engine, Ad App1 and Ad App2 are already installed and configured.
- Either of the above actors may have some relevant context information (e.g. type of the game is a football simulation).

5.1.4 Post-conditions

- The Ad App1 and Ad App2 have presented their respective advertisement to the User during their execution.

- The Ad Engine has used a couple of Ads and can report about it, as well, as potentially pre-fetch the next batch.

5.1.5 Normal Flow

1. The User starts Ad App1.
2. Upon its initiation and at some point during its execution, the Ad App1 requests an Ad to present from the Ad Engine, by potentially also passing relevant context information.
3. Assuming the Ad Engine has not already pre-fetched a (potentially generic) ad, it contacts the Ad Selector requesting an appropriate Ad and potentially passing relevant information.
4. The Ad Selector (Ad Server) delivers one or several Ads to the Ad Engine.
5. The Ad Engine delivers one or several Ads to the Ad App 1.
6. Ad App1 presents the Ad to the User.
7. The User starts Ad App2 and steps 2-6 are repeated for Ad App2.

5.1.6 Alternative Flow 1 (Prefetched advertisements)

In case Ads have already been pre-fetched at any previous point of time and relevant Ads are available to the Ad Engine, there will be no step 3.) and 4.)

5.2 Service Provider Ad Selection use case

5.2.1 Short Description

The Service Provider wants to perform a campaign for its users watching a soccer match at a stadium using the MobAd enabler.

The Service Provider is using its application (SP App) to combine the Ad with the Goal Alert clip into one message (e.g. video clip) and send this message to the relevant users.

5.2.2 Actors

- User: A user that opts-in to receive Ads provided by the Service Provider.
- Service Provider: The Service Provider wants to have a sports campaign to its customers watching a soccer match. The Service Provider uses a SP App running in its environment to interact with the MobAd enabler and to provide the mobile advertising service to the end user.
- SP App: The SP App provides advertisement with the Goal alert clip.

5.2.2.1 Actor Specific Issues

- User: is able to express his/her preferences and behavior as what advertises and content interests the user.
- Service Provider: Wishes to provide a good experience to the users of their services, satisfying their needs and preferences.

5.2.2.2 Actor Specific Benefits

- User: Enjoys personalized services at a potentially reduced price, and receives advertisements for products and services that interest him/her.
- Service Provider: Obtains additional revenue from presented Ads.

5.2.3 Pre-conditions

- User agrees to receive advertising (which implies also reporting of metrics data).

5.2.4 Post-conditions

- User has received Advertisements along with an interesting part of a soccer match.
- User's Service Provider (using the Ad Server) has presented the Ad and has reported metrics data.

5.2.5 Normal Flow

1. The Service Provider wants to perform a campaign for its users watching a soccer match at a stadium. The SP uses its SP App to request an Ad from the MobAd Enabler, with the following targeting "parameters": [Rome, soccer, age 20-50].
2. The SP App receives a Branded sport Ad and related metadata.
3. Once the SP App receives the advertisement and associated metadata, it combines the Ads and the Goal Alert clip into one video clip and sends the Ad video clip to the user or the aforementioned group of users using a location service, e.g. by a CPM/MMS/IM
4. The SP App determines that it has sent 2.000 messages (e.g. CPM/MMS/IM) and reports metrics data to the Metric Collector function of the MobAd Enabler so that it is collected along with other metrics data reported from other campaigns.

5.3 Advertisement selection in a Point to Point Mobile Advertising Service

5.3.1 Short Description

Based on an external event (out of the scope of the use case), the Service Provider decides to send an advertisement to a particular user, then it leverages an Ad Selector (Ad Server) capabilities to select the most suitable advertisement for this user based on different sources of information (e.g. user profile, user context, etc).

5.3.2 Actors

- User: The one consuming the mobile advertising service.
- Advertiser: See definition section
- Service Provider: Provides the mobile advertising service and might be able to supply the Ad Selector (Ad Server) with user information (e.g.: user profile to filter ads) and its context (e.g.: part of the service the user is accessing).

- Ad Selector (Ad Server): Actor which, based on a series of criteria (user profile, browsing / transacting records, ID3 tags from MP3 stored on the device, etc.) selects the most appropriate advertisement content to be delivered to the user. This role could be assumed by the same entity that has the role of the Service Provider and / or Operator, or an independent one.

5.3.2.1 Actor Specific Issues

- User: is able to create a profile specifying, among other information, what kind of Ads he's accepting / wanting to receive; avoiding thus to receive unwanted content.
- Advertiser: doesn't need to take into account the final target of its ads, since there is another entity performing this task.
- Service Provider: Wishes to provide a good experience to the users of their services, satisfying their needs and preferences. With that purpose, is able to access the user profile and other information that helps to improve such profile, as well as information about the user context.
- Ad Selector (Ad Server): Gathers data from the rest of actors (Advertiser, Service Provider) and makes a final decision on the content to be delivered.

5.3.2.2 Actor Specific Benefits

- User: The user might receive services/content with some discounts by allowing the reception of the ads. These Ads match its profile and are adapted to user's context; so they are more profitable. The advertisements have the format & look-and-feel that make them consistent with the brand that the user may be familiar with, or may begin to familiarize with.
- Advertiser: Leverages its level of penetration and knowledge sending its Ads to the user more likely taking advantage of its products. The MobAd framework ensures that the advertisement is presented in a format following the original design and consistent with the expectations of the advertiser and the user, in order to have the desired impact.
- Service Provider: Offers a targeted and adopted mobile advertising service to its clients; obtaining a high level of trust and interest and could attract new clients.
- Ad Selector (Ad Server): Target the advertisements appropriately providing an attractive service to the advertisers.

5.3.3 Pre-conditions

- User: Has exposed to the Service Provider its profile with the most significant data about his /her preferences to receive advertisements.
- Service Provider: Needs to be coordinated with the Ad Selector; and have an agreement with the advertiser.
- Advertiser: Has an agreement with the Service Provider. This agreement is needed so the advertiser could leave to the Service Provider the decision about the content to be sent to the user. The advertisement is available in one or

more pre-agreed formats (preferable), or the advertiser has pre-agreed that it can be appropriately transcoded on-the-fly without the need for the advertiser to review it before delivery.

- Ad Selector (Ad Server): has an agreement with the Service Provider to be able to access or receive the information needed to target the advertisements, and has advertisements provisioned in its database.

5.3.4 Post-conditions

- User: has received the advertisement, following his/her preferences, browsing records, etc.
- Advertiser: knows that its advertisements have been sent to the best targets (through the Ad Selector); to maximize the penetration and knowledge of the brand. The advertiser is ensured that the format & look-and-feel of the advertisement are consistent with its original design and with the SLA they have in that sense with the Service Provider or Ad Selector.
- Service Provider: has provided the mobile advertising service to the user.
- Ad Selector (Ad Server): has selected the most adequate advertisement to the user.

5.3.5 Normal Flow

1. The Service Provider decides to send an advertisement to the user (based on an external trigger).
2. The Service Provider obtains information from external sources that might be useful to target the advertisement: user profile (including some advertisement policies set by the user), location, presence, device information, etc.
3. The Ad Server interprets this contextual and personal information and determines which advertisement(s) suit better user preferences.
4. The Ad Selector (Ad Server) compares the properties that classify the advertisement and the info provided by the Service Provider about the user and its context.
5. The Ad Selector (Ad Server) decides which advertisement is the most suitable to be sent to the user (based on e.g.: device capabilities, profile information, location, presence, etc).
6. The Service Provider sends the advertisement to the user through any means it uses (e.g. SP App, Ad Engine).

5.3.6 Alternative Flow 1 (Ad Selector (Ad Server) advertisement blocking)

1. The Service Provider decides to send an advertisement to the user (based on an external trigger).
2. The Ad Server or other elements in the SP infrastructure obtains information from external sources that might be useful to target the advertisement: user profile (including some advertisement policies set by the user), location, presence, device information, etc.

3. The Ad Selector (Ad Server) compares the properties and decides that the user is not subject to receive advertisements in such context, and response to the Service Provider accordingly.

5.3.7 Operational and Quality of Experience Requirements

- The service must follow the agreed Security and Privacy global requirements.
- The user profile must categorize to the maximum extent the kind of advertisements that the user wants to receive.
- The Ad Selector (Ad Server) intelligence must make the most of the information received from the advertisements and the user data.
- The roundtrip time experienced by the user during the reception of the advertisement, and the additional information or service, shall remain acceptable.
- The user should be able to request further information about the product and/or service promoted by the advertisement.

5.4 User Group Selection in Mobile Advertising Service

5.4.1 Short Description

The Advertiser (e.g.: Music Store) releases a new music service named as Music Zone, which deliver the latest music download service. According to the result of market survey, the people who are from 16 to 26 years old and subscribe to the Ringtone service would be the most likely users to subscribe to Music Zone.

The Advertiser finds that Service Provider can help to deliver the advertisement of Music Zone to the users who exactly need it according to above features without any disturbance.

5.4.2 Actors

- User: A mobile user, whose phone could receive advertisement from Service Provider.
- Advertiser: See definition section
- Service Provider: See definition section
- Metrics Collector: See definition section

5.4.2.1 Actor Specific Benefits

- User: Receives advertisements for products and services that interest him/her.
- Advertiser: Are able to market their products and services effectively to mobile subscribers through the use of advertisements that are matched with their preference and targeted to interested recipients.
- Service Provider: Offers a targeted and adopted user group selection for particular advertisement; obtaining a high level of benefit and interest and could attract new advertisers.
- Metrics Collector: Helps the Service Provider to get the most appropriate audience and as such increases the efficiency of the advertising.

5.4.3 Pre-conditions

- User sets his/her preference and interest of advertising.
- Advertiser wants to release advertisements to mobile users of the Service Provider.
- Advertiser knows features of the users who the advertisements should be delivered to.
- For the purpose of e.g.: group creation, Service Provider marks all of the users with different criteria, such as age range, services subscribed, location information, etc.

5.4.4 Post-conditions

- User receives advertisements according to her preference and profiles.
- Advertiser gets the advertisements delivered to the appropriated target users at the right context.

5.4.5 Normal Flow

1. Advertiser submits the advertisement for Music Zone service to Service Provider and sets two targeting criteria for this advertisement. One criterion is that the user age should be between 16 and 26, and the other is that the user should subscribe the Ringtone service.
2. Service Provider creates a group of users whose age is between 16 and 26 and who subscribes the Ringtone Service, also who has opted in to receive advertisements.
3. SP App requests an ad to the Ad Server which provides it with the the Music Zone Advertisement
4. The SP App sends the Music Zone Advertisement to each user of the group.
5. The SP App reports Music Zone Advertisement related metrics data to Metrics Collector (Ad Server).

5.5 Personalizing advertisement using content scanning

5.5.1 Short description

Clara will receive advertisements to her device as she has opted-in to this service. The Service Provider wants to send to Clara relevant advertisement, which means that the advertising content is correlated with the content Clara is viewing/reading or creating/sending on her device. Some content scanning program analyses the content produced or consumed by Clara and provides the results of scanning (e.g.: meta-tags from the HTML pages, frequent keywords, etc.) to the Service Provider. The Service Provider uses the results of the scan to deliver targeted advertising to Clara.

5.5.2 Actors

- User: Clara who has opted-in to receive advertisements to her mobile and is producing or consuming application content. Clara's device has content scanning enabled. The Scanning Utility can be a function or a logical module of the Ad Engine installed on Clara's device.
- Ad Server: enables the mobile advertising service and performs the advertisement selection operations based on the results of content scanning.

5.5.2.1 Actors-Specific issues

- User: Clara wants to receive an advertisement that is correlated with her current interests i.e. the advertisement should be adapted to the changes in her interests (e.g.: she may be interested in car related advertisement when she wants to buy a car, but she is usually not interested in cars at all and she won't appreciate receiving car related advertisements once she has bought the car.).
- Ad Server: Wants to have the automated process of tracking Clara's interests, otherwise it will be wasting bandwidth on useless advertisement or will burden Clara with requests to constantly update her user preferences.

5.5.2.2 Actors-Specific benefits

- User: advertisements sent to Clara are correlated with her current interests and she will be more inclined to view and interact with such advertisements.
- Ad Server: Can select Ads based on Clara's dynamic "interest profile" and get a better usage ratio on advertisement.

5.5.3 Pre-conditions

- User: Clara has opted-in to receive advertisements.
- The Scanning Utility is installed on a device and/or on a network entity.
- Ad Server is setup to receive and the results from the Scanning Utility and to select the Ads accordingly.

5.5.4 Post conditions

- User: Clara received targeted advertisements according to her current interests and may interact with them.
- Ad Server: is able to follow the modification of Clara's interests and adjust the service accordingly.

5.5.5 Normal Flow 1

1. Clara opts-in for content scanning option for all relevant device applications.
2. Clara is using IM to chat with her friend about getting some tickets for the next concert of ArcEtPic band which will happen in one month at the Olympia Hall in Paris.
3. The Scanning Utility scans the content of the IM exchange and detects some words and combination of words that appear frequently as part of the content consumed by Clara. (e.g.: ArcEtPic, concert, Olympia).
4. The Scanning Utility sends to the Ad Server an Ad trigger message that contains the most frequently used words and combinations of words.
5. The Ad Server processes the message, performs the advertisement selection actions, and delivers Clara an advertisement correlated with Clara's current interest. (e.g.: ticket brokers for this concert, ArcEtPic merchandising site; other concert at the Olympia Hall).

5.5.6 Normal flow 2

1. Clara has opted-in to receive advertisement.
2. Clara registers her browser application with the content Scanning Utility.
3. The Ad Server sends to the Scanning Utility some keywords and rules provided by advertisers.
4. As Clara is browsing the web, the Scanning Utility matches the content (e.g.: meta-tags) with keywords, and sends an alert to the Ad Server.
5. Clara receives advertisements correlated with her current interests.
6. Clara clicks on the advertisements.

5.5.7 Normal flow 3

1. The Service Provider registers email application with mobile advertising service including content scanning feature.
2. Clara has opted-in to receive advertisement and opted-out for content scanning, so her emails will not be scanned.
3. Clara uses email and receives default advertisements.

5.6 Ad Metadata and Content Metadata embedded in the application content

5.6.1 Short description

The Content Provider (e.g.: application provider), inserts metadata related to advertisement (e.g.: webpage Meta tags, keywords, targeting criteria, display rules, Ad provider URL, etc.) within the application content (or provided along with this content). It is assumed that the metadata is contextually correlated with the content.

Metadata are extracted from the application content by the Ad Engine and used to retrieve matching advertisement(s).

5.6.2 Actors

- User: opted-in to receive advertisements to her/his mobile device and use applications that receive server side content.
- Advertiser: See definition section
- Content Provider: provides application content with Ad related metadata embedded in (or associated with) the content.
- Service Provider: provides the advertising service.
- Ad Server: provides the advertisement selection function.

- Ad Engine: provides the advertisement selection function.
- Ad App: displays both the ad and the content. In that use case it is a news application

5.6.2.1 Actors specific issues

- User: wants to receive appropriate Ads only (subject to his commitment to receive advertisement).
- Content Provider: does not want to include static advertisement within its application but wants to allow advertisement to be associated with provided content (e.g.: due to business association with advertisers, agreements with Service Providers or vendors, etc.) Similarly to existing internet commerce model, the mobile advertiser may share revenues with the Content Provider and/or application provider.

5.6.3 Pre-conditions

- User: The user opted-in to the advertisement option.
- Ad Engine is installed and operational.
- Content Provider provides an “Ad aware” application also called Ad App (i.e. allows metadata to be embedded in or associated with the content).

5.6.4 Normal Flow

1. User subscribes to a generic news application.
2. The Ad App news application contains Content Metadata.
3. When user connects to the news application, the Ad Engine retrieves Content Metadata.
4. The Ad Engine detects keywords in the Content Metadata and sends a request to the Ad Server containing such keywords.
5. The Ad Selector (Ad Server) responds with advertisements corresponding to the request to Ad Engine, if available.
6. Additionally during step 4, if the Content Metadata contains rules related to the display of ads, the retrieved advertisement will be selected and/or displayed according to these rules (e.g.: as a pop-up, marquee, etc.).
7. Alternatively to step 4 if a URL is embedded into the Content Metadata, the Ad Engine will retrieve the advertisement from the specified URL e.g.: Ad Selector (Ad Server), repository, where advertisements could have been frequently updated.

5.6.5 Alternative flow 1

Steps 1 to 3 are the same as in the normal flow.

4a-The Ad Engine parses the Content Metadata, detects keywords and matches them to the keywords provided by the Ad Selector (Ad Server) (e.g.: representing topics of available advertisement).

5a. If matching keywords exist and as a corresponding Ad is available at the device, the Ad Engine provides ads to the Ad App.

5.6.6 Alternative flow 2

Step 0: Service Provider sends keywords to the Content Provider that integrate them as Content Metadata inside the content of the application.

Steps 1 to 3 are the same as in the normal flow.

4b- Alternative to 4a is:

The Ad Engine filters the keywords relevant to the user's interests or preferences from the set of Ad related keywords embedded in the application content.

Steps 5a or 5, 6, 7 can then happen based on those filtered keywords.

5.7 Broadcast Delivery of Personalized Advertisements

5.7.1 Short Description

User is a subscriber with a mobile device that is capable of receiving broadcast content. User is willing to receive personalized advertisements along with the services and applications he uses on his device, but he does not want any of his personal information released to unauthorized parties.

User's Service Provider reserves a portion of the broadcast channel for the distribution of advertisements that are labeled with metadata indicating the types of subscribers who would like to see each ad. User's device uses information about his ad-related interests and preferences to select Ads from the broadcast advertisement stream that match User's interests. These matching Ads are cached on User's device and displayed during Ad presentation opportunities while User is enjoying the services and applications on his device.

Broadcast delivery of advertisements provides an efficient means for User's Service Provider to distribute Ads to large numbers of subscribers. Because the personal information used to select the Ads stays on User's device, the privacy of this information is reasonably maintained.

5.7.2 Actors

- User: Subscriber to mobile services who owns a mobile device that can receive broadcast content.
- Service Provider: The entity providing the mobile advertising service, which includes Ad distribution over a broadcast channel (e.g.: MBMS, DVB-H, BCMCS).
- Ad Engine: See definition section. The Ad Engine also identifies and caches Ads received over the broadcast channel that match User's interests.
- Ad Apps: See definition section.

5.7.2.1 Actor Specific Issues

- User: Likes the idea of receiving personalized Ads in exchange for reduced service subscription rates and application costs, but is concerned that the personal data needed to target Ads to his interests may fall into the wrong hands and result in spam and other unwanted contacts.
- Service Provider: Wants to minimize the bandwidth and overhead needed to provide personalized Ads to its large subscriber base and enable advertisers to target their Ads to obtain a high rate of response.

5.7.2.2 Actor Specific Benefits

- **User:** Receives Ads for products and services that he would like to purchase, while keeping his personal information private on his device.

- **Service Provider:** Offers an appealing mobile advertising service that achieves efficient Ad delivery, high subscriber opt-in rates, and high Ad response rates.

5.7.3 Pre-conditions

- **User:** Has a mobile device with broadcast reception capability. The Ad Engine on User's device has been configured by the Service Provider with a set of rules and policies that will be used to match User's personal information with Ad metadata to determine the Ads that User will be interested in viewing.
- **Ad Server:** Provides a stream of advertisements labeled with metadata that are sent in a portion of the broadcast channel.

5.7.4 Post-conditions

- **User:** Has received advertisements matched to his interests.
- **Ad Server:** Receives information about the advertisements that User has viewed and interacted with, and uses this information to bill the advertisers and measure the effectiveness of the Ad Campaigns.

5.7.5 Normal Flow 1

1. The Service Provider reserves space in the broadcast channel for the advertisement(s) delivery.
2. The Ad Server obtains information about a user, User in this case, or a group of users that is useful to target the advertisement(s) (e.g.: interests, current context, device capability, etc).
3. The Ad Server selects the advertisement(s) and associates it/them with the received information that characterize(s) a user or a group of users.
4. The Ad server provides the advertisement(s) along with the video content.
5. The Ad Engine on User's device monitors the advertisement(s) transmission along with the video content over a broadcast channel.
6. Using user profile and Ad metadata, the Ad Engine filters the advertisement(s) and caches only those advertisement(s) which match User's interests.
7. User begins watching the video content.
8. The Ad Engine selects one or more advertisements from the cache.
9. While watching the video content User is exposed to the targeted advertisement(s).
10. The Ad Engine on User's device records Ad metrics data that capture User's viewing of and interaction with the ads, and forwards this information to the Metrics Collector (Ad Server).

5.7.6 Alternative Flow 1

1. Same as Normal Flow 1, except that in Step 4, the Ad Server sends the Ads separately from the broadcast video content (e.g.: in a different portion of the broadcast channel, or over a point-to-point connection).

5.7.7 Normal Flow 2

1. User has an e-mail conversation with his friend Cody about an exciting golf tournament User attended that was won by Tiger Woods.
2. A Scanning Utility on User's mobile device examines the text of the conversation and identifies the keywords 'golf' and 'Tiger Woods'. The Scanning Utility provides these keywords to the Ad Engine on User's device, which includes them in the set of user context and profile information that will be used to select Ads for User to view.
3. At a later time, the Ad Engine receives the broadcast Ad transmission and detects an Ad for a Tiger Woods golf game. As a result of the keywords provided by the Scanning Utility, the Ad Engine determines that this Ad is a match with User's interests, so it stores the Ad in the device's Ad cache.
4. User starts playing the FIFA Football game (an Ad App) on his device. This Ad App displays interactive Ads a few times each hour while the game is being played.
5. When the game reaches the next Ad display opportunity, it requests an Ad from the Ad Engine.
6. The Ad Engine chooses the Ad for the Tiger Woods golf game, since it is an Ad for a sports-related game (like the FIFA Football game he is playing) and is suitable for display during that game.
7. User interacts with the Ad to purchase the Tiger Woods golf game.
8. The FIFA Football game communicates metrics data regarding User's Ad impression and interaction to the Ad Engine, which in turn forwards these metrics data to the Metrics Collector.

5.8 User willingness to receive advertisements using context information

5.8.1 Short Description

User has the possibility to set in a dynamic way his willingness to receive specific advertisements (e.g.: pertaining to a specific category). The concept of user willingness might be related to opt-in/opt-out as both reflect the user's explicit action to receive or not advertisements.

The User has the possibility to associate such preferences with specific context information.

Therefore the user will receive advertisements or not depending on his/her willingness, his/her context (presence, location, etc.) and/or profile information. Advertisements to be consumed might be related to this context information.

It is expected that this use case may be used also in the scenario of content pull, for example when the user explicit requests a specific content. This request can be considered as an external trigger that induces the Service Provider to send an advertisement.

5.8.2 Actors

- **User:** of mobile services and consumer of the advertisements. He can choose to allow or reject all advertisements or the selected ones related to a specific context (or any context).
- **Service Provider:** See definition section
- **Ad Selector (Ad Server):** See definition section.

5.8.2.1 Actor Specific Issues

- **User:** wishes to decide in which context he's willing to receive advertisements (or a specific subset or category), by avoiding thus to receive undesired content.
- **Service Provider:** wishes to avoid having users receive undesired content and to provide a good experience to the users of their services, satisfying their needs and preferences in any situation.
- **Ad Selector (Ad Server):** wants to select the most suitable advertisement for the user on the basis of information received from Service Provider and on its database of advertisements.

5.8.2.2 Actor Specific Benefits

- **User:** Advertisements sent to the user optimize his experience since advertising service is targeted on the basis of his specific willingness and context. The user receives personalized or general promotions and rich bonus content increasing his entertainment and in accordance with his preferences in receiving advertisements.
- **Service Provider:** Offers an attractive context-aware advertising service to its customers by avoiding spam and undesired content. It charges the advertiser of the advertisement.
- **Ad Selector (Ad Server):** Targets the advertisements appropriately providing an attractive service to the advertisers and the right content to be delivered to the user.

5.8.3 Pre-conditions

- **User:** Has the possibility to make the Service Provider aware of its profile with the most significant data about his preferences to receive advertisements and is able to configure at any time his willingness to receive advertisements, depending on his context.
- **Service Provider:** Can detect user willingness to receive advertisements at any time and is able to behave accordingly.
- **Ad Selector (Ad Server):** has an agreement with the Service Provider to be able to access or receive the information needed to target the advertisements, and has advertisements provisioned in its database.

5.8.4 Post-conditions

- **User:** has received (or not) the advertisement, following his preferences to receive advertisements in his current context.

- **Service Provider:** has provided (or not) the mobile advertising service to the user if he was willing (or not) for the service in his context.
- **Ad Selector (Ad Server):** has selected the most adequate advertisement to the user.

5.8.5 Normal Flow

1. Bob sets his preferences for receiving advertisements of his interest (also specifying the categories of his interests) while in a specific – target – context. In this case, he is willing to receive any type of advertisements from shops (category) only when in a shopping area with “outdoor” phone profile (target context).
2. Bobs enters his favourite mall to do some shopping.
3. Based on an external trigger (for example an incoming message from a friend of Bob’s), a SP App decides to send an advertisement to him and so requests it to the Ad Server
4. The Ad Server retrieves Bob’s willingness to know whether he can accept advertisements.
5. The Ad Server interprets this information, decides that Bob is willing to receive advertisements related to shops in a specific target context. It retrieves current Bob’s context and checks if this context matches with this target context.
6. The Ad Server selects advertisements matching Bob’s preferences and context based on the meta-information associated to them.
7. The SP App sends them to Bob (in this case together with the message to be delivered).

5.8.6 Alternative Flow 1 (user not willing)

1. On Monday morning, Bob changes phones and inserts his SIM in his business smartphone. His new phone starts with "outdoor free time" as current profile setting. Bob decides to change to “general work” mode.
2. Based on an external trigger (for example the change of phone profile settings), the SP App decides to send an advertisement to him and makes that request to the Ad Server.
3. The Ad Server retrieves Bob’s willingness to know whether he can accept advertisements.
4. The Ad Server interprets this information, and decides that Bob is not willing to receive advertisements in any context. The SP App does not send any advertisement to Bob.

5.8.7 Alternative Flow 2 (no match advertisements-user context)

1. Bobs enters his favourite mall to do some shopping.
2. Based on an external trigger (for example a request for a content from Bob), the SP App (or Ad App) decides to provide an advertisement to him and makes that request to the Ad Selector (Ad Server or Ad Engine).
3. The Ad Server retrieves Bob’s willingness to know whether he can accept advertisements.

4. The Ad Server interprets this information, and decides that Bob is willing to receive advertisements related to shops in a specific target context. It retrieves Bob's current context and checks if this context matches with this target context.
5. The Ad Selector (Ad Engine or Ad Server) selects a list of advertisements for the "shops" category. It checks if the advertisements match Bob's preferences and context based on the meta-information associated to them.
6. The Ad Selector (Ad Server or Ad Engine) interprets this information, and decides that Bob is not subject to receive the selected advertisements in such context. SP App or Ad App are not provided with Ad.

5.9 Interactive Advertisement

5.9.1 Short Description

While the user is consuming a content (e.g.: music video), some advertisement appears sharing the screen. The user is able to interact with the advertisement by means of selecting some products (e.g.: tickets for a concert).

This use case might apply either to broadcast or point to point advertisements, but a return channel (user to advertiser) is needed in both cases.

5.9.2 Actors

- **User:** of mobile services and consumer of the advertisements.
- **Service Provider:** See definition section
- **Advertiser:** See definition section

5.9.2.1 Actor Specific Issues

- **User:** has a direct channel to interact with the advertiser.
- **Service Provider:** wishes to provide a good experience for users of their services, satisfying user's necessities at every moment and his/her preferences when possible.
- **Advertiser:** is able to provide interactive advertisements.

5.9.2.2 Actor Specific Benefits

- **User:** has a better mobile experience, and is able to satisfy their needs in the moment (e.g.: get more information about the advertised product, reserve or purchase it, etc).
- **Advertiser:** may cause a big impact to the user, and then obtain an important redemption.
- **Service Provider:** offers new attractive services to their clients.

5.9.3 Pre-conditions

- **User:** has a client that supports interactive content.

5.9.4 Post-conditions

- **User:** has received a message and interacts with it.
- **Service Provider:** has provided the desired service.
- **Advertiser:** has reached the user directly, and has offered his products or services with a high level of impact.

5.9.5 Normal Flow

1. The user is watching a music video of a concert in the Vienna Opera. An interactive advertisement appears sharing the screen with the video: it presents the free spaces of the theatre for the next concert with a text: “to book one ticket, click on the theatre’s area that you like”.
2. The user interacts with the advertisement by clicking the second floor area of the theatre and entering their mail address to receive the tickets.
3. The advertiser receives the requests and books the ticket.
4. The Service Provider charges the advertiser by CPA.
5. The advertisement disappears from the user’s screen and the video fits into the whole screen.

5.9.6 Alternative Flow

1. Same as normal flow.
2. The user doesn’t interact with the advertisement.
3. Some predetermined seconds later, the advertisement disappears from the user’s screen.
4. The advertiser isn’t charged by the services provider as no action has been performed by the user regarding the advertisement received.

5.10 Recording and Collection of Advertising Metrics data

5.10.1 Short Description

Sarah agrees to receive advertisements on her mobile as part of a number of services, such as MMS, IM, PoC etc., she subscribes to. In order to be able to determine the effectiveness of these advertisements, charge the advertisers, and tailor the advertisements content to Sarah’s interests, Sarah’s Service Provider would like to gather information about which adverts Sarah actually views, which of those adverts she actually clicks on, etc.

Sarah's Service Provider would also like to obtain information about which services and applications Sarah uses most often so that the right numbers of adverts targeted for each service can be sent to Sarah's device (e.g.: she might receive an Ad from a nearby currency exchange while she is using her currency converter application).

5.10.2 Actors

- User: A user who subscribes to different services, such as MMS, IM, DCD, Music Download and PoC services.
- Advertiser: Merchants who would like to advertise their products and services to mobile users who are subscribed to different services.
- Service Provider: See definition section.
- Ad Selector (Ad Server): See definition section.
- Metrics Collector (Ad Server): See definition section.

5.10.2.1 Actor Specific Issues

- User: is able to express his/her preferences and behaviour as to what adverts and content interests the user.
- Advertiser: targets the users in a more effective way and avoids sending unnecessary adverts to the user when known what the user prefers.
- Service Provider: Wishes to provide a good experience to the users of their services, satisfying their needs and preferences.
- Ad Selector (Ad Server): is able to select the most appropriate advertisement content to be delivered to the user.
- Metrics Collector (Ad Server): It is able to collect the advertising metrics data of a user and best addresses user advertising needs and requirements.

5.10.2.2 Actor Specific Benefits

- User: Enjoys services at a reduced price, and receives advertisements for products and services that interest her.
- Service Provider: Obtains additional revenue from its MMS, IM, DCD and PoC services through the billing of advertisers. May offer a better service and additional revenue, because of the use of metering capabilities. May consider charging for certified statistics reports, or use them as a tool to attract more advertisers.
- Advertisers: Are able to market their products and services effectively to mobile subscribers through the use of adverts that are targeted to interested recipients and matched with the services that the recipients use most often. May use certified statistics reports to refine Ad Campaign.
- Ad Selector (Ad Server): targets the most appropriate audience and increases the efficiency of the advertising.

- Metrics Collector (Ad Server): Helps the Ad Selector to target the most appropriate audience and as such increases the efficiency of the advertising.

5.10.3 Pre-conditions

- User subscribes to a number of services, including MMS, PoC, DCD, music download and IM.
- User agrees to receive advertising in exchange for lower service subscription rates.
- User agrees to allow the device to report advertising metric and application usage information to the Service Provider, and the Service Provider agrees to keep this information private.

5.10.4 Post-conditions

- User receives advertisements along with the subscribed MMS, IM, Music Download and PoC services.
- Ad Server receives data on user's Ad viewing, Ad responses, and application usage and uses this information for advertiser billing and better targeting of the Ad Campaigns.

5.10.5 Normal Flow-Server Centric

1. Sarah receives an MMS message from her friend Michael. Attached to the message is an Ad for a new seafood restaurant with a link that allows the recipient to obtain a discount coupon. Since Sarah does not like seafood, she chooses not to click on the link. The Service Provider records an Ad impression for the seafood restaurant Ad for Sarah.
2. Sarah starts an IM conversation with her friend Michelle. During the conversation, she is presented with an Ad for an upcoming U2 concert in her city. Sarah is a big U2 fan, so she clicks on a link in the Ad and purchases tickets for the concert. Sarah's click and purchase actions is caught by the Service Provider.
3. Service Provider will contact the Metrics Collector (Ad Server) to obtain metrics data about Sarah's viewing and consumption of advertisements, including the seafood restaurant and U2 concert ads. Her Service Provider uses this data to charge the advertisers of the seafood restaurant and the U2 concert.
4. From these Ad metrics data and others, the Ad Server determines that Sarah uses her Music Download application much more frequently than her other applications and that she often responds to entertainment-related adverts. The Ad Server adjusts the mix of adverts sent to Sarah accordingly.
5. While using her Music Download application, Sarah receives adverts for new MP3 songs that she might like to purchase. Because she receives these adverts while she is already browsing for new music, it is very convenient for Sarah to respond to the adverts.
6. In combining Sarah's Ad metric data with that from other subscribers, the Ad Server notices that the seafood restaurant Ad is not generating many responses. The Ad Campaign is modified so that the Ads are sent around dinnertime and are targeted to users who are in close proximity to the restaurant. These changes produce a much greater response rate to the Ad.
7. Sarah's Ad metric data is combined in different ways with data from other subscribers also to achieve statistics about the size of audience for the Ad, while preserving the subscribers' anonymity. Such statistics reports can be certified and published and therefore serve as a valuable metric for all actors in the value chain (e.g.: advertiser, Service Provider/operator).

5.10.6 Normal Flow – Device centric

1. Sarah's device records the Ad impression for the seafood restaurant together with any other metrics data.
2. Sarah's device is contacted by the Metrics Collector (Ad Server).
3. From these Ad metrics data and others collected from Sarah's device, her Ad Selector (Ad Server) determines that Sarah uses her Music Download application much more frequently than her other applications, and that she often responds to entertainment-related adverts.
4. The rest of the flow is the same as in Normal Flow.

5.10.7 Alternative Flow – Device centric

1. The same as in normal flow for device centric.
2. Sarah's device automatically contacts Metrics Collector (Ad Server) or on a periodic basis.
3. The rest of the flow is the same as in Normal Flow.

6. Requirements (Normative)

6.1 High-Level Functional Requirements

The following subsections 6.1.x group the requirements in functional areas for the sake of document's readability. There are no architecture implications derived from the requirements grouping.

6.1.1 General: High level functional requirements

Label	Description	Enabler Release
MobAd-FUNC-001	The MobAd Enabler SHALL provide means to facilitate opt-in and opt-out by Principals for receiving Ads (including per application or service).	Future Releases.
MobAd-FUNC-002	The MobAd Enabler SHALL have a mechanism to block Ads based on defined restrictions such as capping,	MobAd 1.0
MobAd-FUNC-003	The MobAd Enabler SHALL support the request from an authorized Principal for a specific Ad (e.g.: request a specific Ad for a push campaign).	Future releases.
MobAd-FUNC-004	The MobAd Enabler SHOULD provide means for the MobAd Enabler Entities on the Device to filter Ads depending on a number of criteria (including but not limited to.: number of times each Ad has already been played, time since last play, Ad expiration times, user current context).	MobAd 1.0
MobAd-FUNC-005	The MobAd Enabler Entities on the Device SHALL provide either of the following to the Ad App after Ad selection has taken place: <ul style="list-style-type: none"> -An Ad (including a 'filler') -A reference to an Ad (e.g.: URL) -An indicator for no Ad. 	MobAd 1.0
MobAd-FUNC-006	The MobAd Enabler Entities on the Network SHALL provide either of the following to the SP App after Ad selection has taken place: <ul style="list-style-type: none"> - An Ad (including a 'filler') - A reference to an Ad (e.g.: URL) - An indicator for no Ad. 	MobAd 1.0
MobAd-FUNC-007	The MobAd Enabler SHALL enable the MobAd Enabler Entities on the Device to receive rules, instructions and metadata related to usage of Ads, as well as manage and execute them.	MobAd 1.0
MobAd-FUNC-007a	The MobAd Enabler SHALL support rules, instructions and metadata related to usage of Ads, as well as manage and execute them	MobAd 1.0

MobAd-FUNC-008	<p>The MobAd Enabler Entities on the Network SHALL provide means to communicate to the MobAd Enabler Entities on the Device rules, instructions and metadata related to usage of Ads, such as:</p> <ul style="list-style-type: none"> a. Frequency capping related – how many times to be shown b. Storyboarding order – first show one Ad then another c. Context based (e.g.: Sport branded Ads in sport games) d. Location (e.g.: Coffee branded Ad only when nearby) e. Time of day (e.g.: serve beer Ads only after 9pm). f. Ad customisation rules and metadata (e.g.: don't resize or shorten a clip) g. Ad expiry date and time 	MobAd 1.0
MobAd-FUNC-009	<p>The MobAd Enabler Entities on the Network SHALL provide means to communicate to an SP App rules, instructions and metadata related to usage of Ads (e.g.: in order to embed the data with Ad in broadcast use case), such as:</p> <ul style="list-style-type: none"> a. Frequency capping related – how many times to be shown b. Storyboarding order – first show one Ad then another c. Context based (e.g.: Sport Branded Ads in sport games) d. Location (e.g.: Coffee Branded Ad only when nearby) e. Time of day (e.g.: serve beer Ads only after 9pm). f. Ad customisation rules and metadata (e.g.: don't resize or shorten a clip) g. Ad expiry date and time, and similar h. Info required to enable filtering of Ads based on extracted metadata. 	MobAd 1.0
MobAd-FUNC-010	<p>The MobAd Enabler SHALL be able to select Ads based on Campaign metadata (e.g.: use Campaign metadata when selecting Ads or stop providing Ads when campaign reaches its goals).</p>	MobAd 1.0
MobAd-FUNC-011	<p>The MobAd Enabler SHALL provide means for the MobAd Enabler Entities on the Device to filter Ads based on extracted Content Metadata and/or associated Ad metadata.</p>	MobAd 1.0
MobAd-FUNC-012	<p>The MobAd Enabler Entities on the Device SHALL be able to extract Content Metadata, embedded in or associated with the application content if available.</p>	MobAd 1.0
MobAd-FUNC-013	<p>To support MobAd Enabler Entities on the Device and/or SP Apps, MobAd entities in the Network SHOULD be able to extract and process Content Metadata, embedded in or associated with given content.</p>	MobAd 1.0
MobAd-FUNC-014	<p>When Content Metadata contains display rules (e.g.: Ad placeholder in the content, pop-up, marquee, format, etc) the MobAd Enabler Entities on the Device SHALL be able to retrieve Ads, if available, according to these display rules, using the MobAd Enabler.</p>	MobAd 1.0
MobAd-FUNC-015	<p>To support MobAd Enabler Entities on the Device and/or SP Apps, MobAd entities in the Network SHOULD be able to select Ads, based on display rules detected in Content Metadata.</p>	MobAd 1.0
MobAd-FUNC-016	<p>When Content Metadata contains an URL to the SP App or to MobAd Enabler Entities in the Network, the MobAd Enabler Entities on the Device or on the Network SHALL be able to contact that URL and retrieve appropriate Ads, if available.</p>	MobAd 1.0

MobAd-FUNC-017	To support MobAd Entities on the Device and/or SP Apps, MobAd Enabler Entities on the Network SHOULD be able to match and filter keywords embedded in the Content Metadata with keywords provided by other entities.	MobAd 1.0
MobAd-FUNC-018	The MobAd Enabler Entities on the Device SHALL be able to match and filter keywords embedded in the Content Metadata with keywords provided by other entities. (e.g.: keywords associated with Ads).	MobAd 1.0
MobAd-FUNC-019	The MobAd Enabler Entities on the Device SHALL be able to retrieve Ads, if available, according to filtered keywords, from the Service Provider, MobAd Enabler Entities on the Network, or from the Device itself.	MobAd 1.0
MobAd-FUNC-020	The MobAd Enabler MAY provide means to designate Ad content as either Static Ad Content or Dynamic Ad Content .	MobAd 1.0
MobAd-FUNC-020a	The MobAd Enabler MAY support or provide means to designate Ad content as Default Ad Content.	MobAd 1.0
MobAd-FUNC-021	If MobAd-FUNC-020 and MobAd-FUNC-020a are supported, then the MobAd Enabler SHALL be able to combine Ad contents from different content categories (i.e.: static, or dynamic) before providing a complete Ad for impression.	MobAd 1.0
MobAd-FUNC-022	If MobAd-FUNC-020 and MobAd-FUNC-020a are supported, then the MobAd Enabler SHALL be able to substitute a Dynamic Ad Content with Default Ad Content, when a Dynamic Ad Content is requested but is not available on the device.	MobAd 1.0
MobAd-FUNC-022a	If MobAd-FUNC-020 and MobAd-FUNC-020a are supported, then the MobAd Enabler Entities on the Network SHALL be able to substitute a Dynamic Ad Content with Default Ad Content, when a Dynamic Ad Content is requested, but is not available.	MobAd 1.0
MobAd-FUNC-023	The MobAd Enabler SHALL provide means to create Ad channels based on different criteria.	MobAd 1.0 BCAST and DCD adaptation specifications
MobAd-FUNC-024	The MobAd Enabler SHALL be able to format Ad data for a particular Ad Channel according to user or service provider preferences	BCAST and DCD adaptation specifications Future Release
MobAd-FUNC-025	The MobAd Enabler SHALL be able to select Ad content for a particular Ad Channel (e.g.: on schedule).	MobAd 1.0 BCAST and DCD adaptation specifications
MobAd-FUNC-026	The MobAd Enabler SHALL be able to update Ad Channel content stored on the device.	MobAd 1.0 DCD adaptation specifications
MobAd-FUNC-027	The MobAd Enabler SHALL support mechanisms to handle Interstitial Ad(s) (e.g.: when browsing between two URIs).	Deleted.
MobAd-FUNC-028	The MobAd Enabler SHALL support labeling Ads as interstitial.	Deleted
MobAd-FUNC-029	The MobAd Enabler SHALL be able to uniquely identify Ads.	MobAd 1.0
MobAd-FUNC-030	The MobAd Enabler SHALL support or provide mechanisms to manage (e.g.: create and select) static and/or dynamic groups using targeting criteria matched against data such as Personalisation and Contextualisation information in order to provide the advertisement service.	Future Releases
MobAd-FUNC-031	The MobAd Enabler SHALL provide means for the SP App to request an Ad for a particular user.	MobAd 1.0

MobAd-FUNC-032	<p>The MobAd Enabler SHALL support interactivity models. Those models could be selected from the following non exhaustive list:</p> <ol style="list-style-type: none"> a. Click to contact (e.g.: make calls, send MMS, SMS, Email etc.) b. Click to ask to be contacted (e.g.: receive calls, MMS, SMS, Email etc.). c. Click to locate: the User obtains more information about the ad related content based on the location (e.g.: shops nearby). d. Click to enter branded Mobile Web site: the User is redirected to the Advertiser's web-site (e.g.: to fill out some forms, to get more information, etc). e. Click to receive coupon: the User receives a discount coupon that might be stored in their device. f. Click-to-buy: the User buys the Advertiser products. g. Click to download content: the User receives Advertiser's related content (e.g.: ringtone, brochure, video, etc). h. Click to forward content advertisements: the User forwards the ad directly or through Service Provider to another User <ul style="list-style-type: none"> • Forwarding Ad or • Sending notification. i. Click to request: the User takes additional action (e.g.: opt in for winning prizes, order brochure by supplying postal or email addresses, etc) j. Click-to-discard: the User indicates that the advertisement is not of his/her interest (e.g.: he/she refuses a discount coupon) k. Click to save or bookmark an ad. 	MobAd 1.0
MobAd-FUNC-033	The MobAd Enabler SHALL provide means to associate timeout interval information to interactive advertisements during which interval the User can interact with them.	MobAd 1.0
MobAd-FUNC-034	The MobAd Enabler SHOULD support specifying preferred interaction mechanisms as part of User MobAd preferences.	Future Release
MobAd-FUNC-035	The MobAd Enabler SHALL support complementing the Ad Metadata with information specific to the applications rendering the Ads (e.g.: capping, advertisement URL, banner format, etc).	MobAd 1.0
MobAd-FUNC-036	The MobAd Enabler SHALL provide mechanism for the caching of Ads on the Device for future impression (e.g.: during advertisement break).	MobAd 1.0
MobAd-FUNC-037	The MobAd Enabler entities in the Network SHALL enable the pre-fetching capability from the device and/or SP Apps.	MobAd 1.0
MobAd-FUNC-038	The MobAd Enabler SHALL provide a mechanism for the SP App to be informed of the cancelation of Ads pre-fetched by it.	MobAd 1.0
MobAd-FUNC-039	The MobAd Enabler SHALL support the deletion of pre-fetched Ads managed by the MobAd Enabler Entities on the Device.	MobAd 1.0
MobAd-FUNC-040	<p>The MobAd Enabler entities on the Device SHALL support the capability of pre-fetching Ads at a given point of time, such as:</p> <ol style="list-style-type: none"> a. At SP-defined times, allowing for device-side execution of SP-defined and dynamically updateable Ad pre-fetching and and caching policies. b. When some criteria are met, e.g. when the repository is empty 	MobAd 1.0
MobAd-FUNC-041	The MobAd Enabler SHALL provide means to initiate clearing or pre-fetching its Ads inventory by the MobAd Enabler Entities on the Device.	MobAd 1.0

Table 1: High-Level Functional Requirements – General Items

6.1.2 Personalisation and Contextualisation

Label	Description	Enabler Release
MobAd-PECO-001	The MobAd Enabler SHALL provide means for the user to specify Ad categories that are of his/her interest.	Future Release
MobAd-PECO-002	The MobAd enabler SHALL support the labeling of ad with Ad Metadata for the Ad selection process.	MobAd 1.0
MobAd-PECO-003	The MobAd Enabler SHALL support specifying and retrieval of Ad Metadata such as: <ol style="list-style-type: none"> Targeting category Type of advertisements Context in which this Ad should be delivered Capping information. 	MobAd 1.0
MobAd-PECO-004	The MobAd Enabler SHALL provide or support means to apply generic MobAd Enabler Rules to MobAd Enabler functions.	MobAd 1.0
MobAd-PECO-005	The MobAd Enabler Entities on the Device SHALL be able to: <ul style="list-style-type: none"> Filter an incoming Ad Channel (e.g.: broadcast stream) for Ads matching Personalization and Contextualization information according to specified matching criteria, Cache matching Ads on the Device And discard Ads that are not a match for the subscriber. 	MobAd 1.0
MobAd-PECO-006	The MobAd Enabler SHALL make possible for the configuration of the criteria used by the MobAd Enabler Entities on the Device to match Ad metadata against Personalisation and Contextualisation information.	Future Releases.
MobAd-PECO-007	The MobAd Enabler Entities on the Device SHALL be able to access Personalisation and Contextualisation information if available (if the subscriber has opted in to allow access to this information), for use in determining Ads that are of interest to the subscriber.	MobAd 1.0
MobAd-PECO-008	To facilitate the advertisement selection, the MobAd Enabler SHALL be able to use location information if available and accessible by the Enabler.	Future Releases
MobAd-PECO-009	To facilitate the advertisement selection, the MobAd Enabler SHALL be able to use presence information if available and accessible by the Enabler.	Future Releases
MobAd-PECO-010	The MobAd Enabler SHALL be able to use User's Profile and User Context information in order to personalise and contextualise the mobile advertising service.	Future Releases
MobAd-PECO-011	The MobAd Enabler SHOULD provide means (directly or indirectly, e.g.: via other OMA enablers) to obtain/receive information about the user device's capabilities in order to facilitate the Ad selection.	MobAd 1.0
MobAd-PECO-012	The MobAd Enabler SHALL provide means to associate available information (e.g. location, presence, user profile, scanning results, etc) to a request for Ad.	MobAd 1.0
MobAd-PECO-013	The MobAd Enabler SHALL support or provide mechanisms to select appropriate targeted users according to targeting criteria and available personalisation and contextualisation information.	Future Releases

MobAd-PECO-014	The MobAd Enabler SHALL be able to support Ad selection based on Ads Metadata (e.g.: targeting category, type of ad, context in which this Ad should be delivered, capping information etc).	MobAd 1.0
MobAd-PECO-015	The MobAd Enabler SHALL provide a mechanism to match information within or associated with the request for Ad with Ads Metadata and/or service associated data.	MobAd 1.0
MobAd-PECO-016	The MobAd Enabler SHALL provide means for the user to express MobAd User Preferences by associating User Context information with Ad categories.	Future Releases
MobAd-PECO-017	The MobAd Enabler Entities on the Network SHALL expose a mechanism through which the SP App can pass data relevant for Ad selections (e.g.: Personalisation, contextualisation data, filtered keywords), and in return obtain one or more ads from the MobAd Enabler Entities on the Network.	MobAd 1.0
MobAd-PECO-018	The MobAd Enabler Entities on the Device SHALL expose a mechanism through which Ad Apps can pass data relevant for Ad selections (e.g.: Personalisation, contextualisation data etc), and in return obtain one or more Ads from the MobAd Enabler Entities on the Device.	MobAd 1.0
MobAd-PECO-019	The MobAd Enabler Entities on the Network SHALL expose a mechanism through which MobAd Entities on the Device can pass data relevant for Ad selection (e.g.: Personalisation, contextualisation data etc) and in return obtain one or more Ads from the MobAd Enabler Entities on the Network.	MobAd 1.0

Table 2:High-Level Functional Requirements – Personalisation Items

6.1.3 Metrics

Label	Description	Enabler Release
MobAd-METR-001	The MobAd Enabler SHALL support the collecting of user's response, such as clicking and viewing, to a received Ad.	MobAd 1.0
MobAd-METR-002	The MobAd Enabler SHALL be able to use the collected metrics data in the Ad selection process (e.g.: prioritize Ads that are not meeting the desired time line to reach their goals or capping).	MobAd 1.0
MobAd-METR-003	If the "Click to forward content advertisements" interactive method is supported (see requirement MobAd-FUNC-033), the MobAd Enabler SHALL enable the collection and reporting of metrics data about ad shared between different users.	Future Releases
MobAd-METR-004	The MobAd Enabler SHALL provide means for receiving reported information about the Ad App and / or SP App used for a specific Ad.	MobAd 1.0
MobAd-METR-005	The MobAd Enabler metrics related functions SHALL be able to handle Ad unique identifiers.	MobAd 1.0
MobAd-METR-006	The MobAd Enabler Entities on Network SHOULD provide means to collect metrics data from the MobAd Enabler Entities on Device, e.g. after sending an Ad to a user or to a group of users or on a periodic basis.	MobAd 1.0

MobAd-METR-007	<p>The MobAd Enabler Entities on the Network SHALL be able to obtain available metrics data from the SP App such as:</p> <ul style="list-style-type: none"> a. SP App identifier/name/description/ communication medium (e.g.: SMS/ browser) by which the Ad was presented to the user b. Context it was presented in c. Customer interactions with the Ads (e.g.: did the customer click to call...) d. How long was the video clip served. 	MobAd 1.0
MobAd-METR-008	<p>The MobAd Enabler Entities on the Device SHALL be able to obtain metrics data from Ad Apps on the Device, such as:</p> <ul style="list-style-type: none"> a. Ad App identifier/name/description by which the Ad was presented to the user b. Context it was presented in c. Customer interactions with the Ads (e.g.: did the customer click to call?) d. How long was the video clip served. 	MobAd 1.0
MobAd-METR-009	<p>The MobAd Enabler Entities on the Device SHALL be able to report metrics data, such as:</p> <ul style="list-style-type: none"> a. Ad App identifier/name/description by which the Ad was presented to the user b. Context it was presented in c. How many times it was served d. Customer interactions with the Ads (e.g.: did the customer click to call?) e. How long was the banner served f. Time of day g. Location (if available). 	MobAd 1.0
MobAd-METR-010	<p>The MobAd Enabler SHALL provide means for the MobAd Enabler Entities on the Device and SP Apps to report Ad Metrics, e.g. after sending an Ad to a user or to a group of users, after a user interaction with an Ad, or on a periodic basis.</p>	MobAd 1.0
MobAd-METR-011	<p>The MobAd Enabler SHALL support network centralized collection of reported metrics data such as</p> <ul style="list-style-type: none"> a. SP App identifier/name/description by which the Ad was presented to the user b. Context it was presented in c. How many times it was served d. Customer interactions with the Ads (e.g.: did the customer click to call?) e. How long was the banner served f. Time of day g. Location (if available) h. User Profile/ context that received the Ads. 	MobAd 1.0

MobAd-METR-012	The MobAd Enabler SHALL be able to associate metrics data collected for an Advertisement with the Campaign it belongs to.	Future Releases
MobAd-METR-013	MobAd entities in the Network SHALL be able to correlate metrics data received from multiple sources and provide a consolidated report (e.g.: to avoid double accounting for the same interaction).	MobAd 1.0
MobAd-METR-014	The MobAd Enabler SHALL support handling “Ad Landing URI” in order to count User interactions / impressions.	Future Releases

Table 3: High-Level Functional Requirements – Metrics Items

6.1.4 Delivery

Label	Description	Enabler Release
MobAd-DELV-001	The MobAd Enabler SHALL enable the Service Provider to choose the delivery service (e.g.: based on metadata, received/collected metrics data etc.).	MobAd 1.0
MobAd-DELV-002	The MobAd Enabler Entities on the Network SHALL support the delivery of Advertisement Content and related metadata to MobAd Enabler Entities on the Device and to SP Apps	MobAd 1.0
MobAd-DELV-003	The MobAd Enabler MAY support use of the DCD Enabler and its necessary functions for delivery of advertisements and associated metadata.	MobAd 1.0
MobAd-DELV-004	The MobAd Enabler MAY support the delivery of Ads to the MobAd Enabler Entities on the Device over broadcast.	MobAd 1.0
MobAd-DELV-005	The MobAd Enabler MAY support the delivery of Ad Metadata to the MobAd Enabler Entities on the Device over broadcast.	MobAd 1.0
MobAd-DELV-006	The MobAd Enabler MAY support the use of OMA BCAST Enabler for delivery of Ads and associated metadata.	MobAd 1.0
MobAd-DELV-007	The MobAd Enabler SHALL be able to support a push Ad Campaign.	Deleted

Table 4: High-Level Functional Requirements – Delivery Items

6.1.5 Scanning

Label	Description	Enabler Release
MobAd-SCAN-001	The MobAd Enabler SHOULD support content scanning.	Future Release
MobAd-SCAN-002	The MobAd Enabler SHALL support content scanning.	Future Release
MobAd-SCAN-003	If MobAd-SCAN-001 is supported, the MobAd Enabler SHALL provide means required to facilitate successful user opt-in and and opt-out from content scanning (incl. per application or service).	Future Release
MobAd-SCAN-004	If MobAd-SCAN-001 is supported, the MobAd Enabler SHALL provide means to enable and disable content scanning on a per User Device basis (e.g.: based on subscription preferences.).	Future Release
MobAd-SCAN-005	If MobAd-SCAN-001 is supported, the MobAd Enabler SHALL provide means to suspend and resume content scanning (e.g.: following user request to opt-out/opt-in from the content scanning or/and from receiving advertisement.).	Future Release
MobAd-SCAN-006	MobAd-SCAN-001 is supported, the content consumed or produced by the user SHALL be accessible by the MobAd Enabler for content scanning.	Future Release

MobAd-SCAN-007	If MobAd-SCAN-001 is supported, the MobAd Enabler SHALL provide the means required to specify and update keywords and rules used for content scanning.	Future Release
MobAd-SCAN-008	If MobAd-SCAN-001 is supported, the MobAd Enabler SHALL support alert corresponding to detection of match between the content scanned and advertisement related keywords/rules.	Future Release
MobAd-SCAN-009	If MobAd-SCAN-001 is supported, the MobAd enabler SHALL support dynamically generating keywords upon results of content scanning.	Future Release
MobAd-SCAN-010	If MobAd-SCAN-001 is supported, the MobAd Enabler SHALL provide means to enable and disable the dynamic keyword generation mode of content scanning.	Future Release
MobAd-SCAN-011	If MobAd-SCAN-001 is supported, the MobAd Enabler SHALL be able to receive or use keywords and other information resulting from content Scanning to determining Ads that are of interest to the subscriber.	Future Release

Table 5: High-Level Functional Requirements – Scanning Items

6.1.6 Security

Label	Description	Enabler Release
MobAd-SEC-001	If MobAd-SCAN-001 is supported, Ad-triggered messages between the Scanning Utility and the Service Provider and/or Ad Selector SHOULD be encrypted.	Future Release
MobAd-SEC-002	The MobAd Enabler SHALL support protecting data collected from the user for the purpose of Advertisement (e.g.: by using encryption, non repudiation, etc).	MobAd 1.0
MobAd-SEC-003	The MobAd Enabler SHOULD be able to perform its functions also on Ads that are protected by DRM technology. Note: This requirement does not require DRM implementation.	MobAd 1.0
MobAd-SEC-004	The MobAd Enabler SHALL support means to identify fraudulent metrics.	MobAd 1.0

Table 6: High-Level Functional Requirements – Security Items

6.1.7 Charging

Label	Description	Enabler Release
MobAd-CHAR-001	MobAd Enabler SHALL support the Service Provider to charge advertisers based on the collected metrics data.	MobAd 1.0
MobAd-CHAR-002	The MobAd Enabler SHOULD support different charging mechanism for the advertising service.	Future Releases
MobAd-CHAR-003	The MobAd Enabler MUST allow the charging to the Advertiser based on the Cost Per Action (CPA) model.	MobAd 1.0
MobAd-CHAR-004	The MobAd Enabler MAY allow the User to receive an Advice of Charge (AoC) in case the interactivity has some associated costs for it (e.g.: in a click-2-buy scenario).	Future Releases

Table 7: High-Level Functional Requirements – Charging Items

6.1.8 Administration and Configuration

Label	Description	Enabler Release
MobAd-ADM-001	If MobAd-SCAN-001 is supported, the Scanning Utility SHALL support scanning characteristics, rules, such as number of characters scanned, timeframe, etc.	Future Release
MobAd-ADM-002	The MobAd Enabler Entities on the Device MAY support available mechanisms required to notify the MobAd Enabler Entities on the Network when critical device resources (e.g.: battery level, storage capacity etc) reach predefined configuration thresholds.	Future Releases
MobAd-ADM-003	The MobAd Enabler SHALL provide means required to specify thresholds for critical device resources and rules associated with these thresholds (e.g.: postpone metric reporting when battery level is less than 10%).	MobAd 1.0

Table 8: High-Level Functional Requirements – Administration and Configuration Items

6.1.9 Usability

Label	Description	Enabler Release
MobAd-USA-001	The interactivity of the MobAdEnabler MUST NOT reduce the usability of the initial application that is rendering the advertisement.	deleted

Table 9: High-Level Functional Requirements – Usability Items

6.1.10 Privacy

Label	Description	Enabler Release
MobAd-PRIV-001	The MobAd Enabler SHALL provide or support means for the user to select information from his/her profile to be available for advertisement selection in order to protect his/her privacy.	Future Releases
MobAd-PRIV-002	Privacy protection of advertising metrics SHALL be ensured.	MobAd 1.0
MobAd-PRIV-003	Privacy protection of User information SHALL be ensured.	MobAd 1.0
MobAd-PRIV-004	If MobAd-SCAN-001 is supported, the MobAd Enabler SHALL provide the Service Provider with means to maintain user privacy of information collected by the scanning process (e.g. encrypt or anonymize).	Future Release
MobAd-PRIV-005	If MobAd-SCAN-001 is supported, the MobAd Enabler SHALL exclude content scanning rules from information provided to external parties.	Future Release
MobAd-PRIV-006	The MobAd Enabler SHALL provide means required to keep user identity secret outside of the MobAd Enabler /Service Provider.	MobAd 1.0
MobAd-PRIV-007	Privacy protection of Campaigns and related information SHALL be ensured (e.g.: the campaign goals).	Deleted

Table 10: High-Level Functional Requirements – Privacy Items

6.2 Overall System Requirements

Label	Description	Enabler Release
MobAd-SYS-001	The MobAd Enabler SHALL be able to deliver personalized and contextualized advertisements to roaming user.	Future Releases

Table 11: High-Level System Requirements

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version

A.2 Draft/Candidate Version <current version> History

Document Identifier	Date	Sections	Description
Draft Versions OMA-RD-Mobile_Advertising-V1_0	1 June 2007	All	Initial Mobile Advertising RD based on RD Template
	19 July 2007	1 5.1, 6	Incorporation of OMA-REQ-MobAd-2007-0003R01-CR_RD_Scope Incorporation of OMA-REQ-MobAd-2007-0001R03-INP_ad_selection_use_case
	29 Aug 2007	4 5.2, 6	Incorporation of OMA-REQ-MobAd-2007-0007R02-CR_RD_Introduction Incorporation of OMA-REQ-MobAd-2007-0031-INP_General_Ad_Engine_related_use_case_and_requirements
	6 Sep 2007	5.3	Incorporation of OMA-REQ-MobAd-2007-0008R04-CR_Use_case_for_collection_of_advertising_metrics
	4 Oct 2007	5.4, 5.5, 5.6, 3.2 and 6	Incorporation of OMA-REQ-MobAd-2007-0016R04-INP_Use_Case_for_User_Group_Selection_in_Advertisement_Service OMA-REQ-MobAd-2007-0019R03-INP_Interactive_Advertisement_Use_Case OMA-REQ-MobAd-2007-0025R03-INP_Personalizing_advertising_content_using_a_scanning_utility OMA-REQ-MobAd-2007-0033R01-INP_Prefetched_Ad_Deletion_Requirement
	23 Oct 2007	2,3,4, 5.7 and 6	Incorporation of OMA-REQ-MobAd-2007-0029R02-INP_Personalized_ad_in_a_Video_Service OMA-REQ-MobAd-2007-0038R03-CR_Capping_CR.doc OMA-REQ-MobAd-2007-0046R02-CR_general_review_of_requirements OMA-REQ-MobAd-2007-0049R01-CR_MobAd_Content_Classification OMA-REQ-MobAd-2007-0052R03-CR_Ad_Interaction_Event_and_Metrics OMA-REQ-MobAd-2007-0057R01-CR_Interactive_Advertisement OMA-REQ-MobAd-2007-0068R01-CR_MobAd_Actors_definition OMA-REQ-MobAd-2007-0069R01-CR_MobAd_DCD_requirements
	03 Nov 2007	5.8, 6	Incorporation of OMA-REQ-MobAd-2007-0039R02-INP_Ad_related_metadata_in_the_application_content
	13 Nov 2007	2.2, 5.9, 6	Incorporation of OMA-REQ-MobAd-2007-0060R04-CR_Personalized_Ad_in_a_Video_Service_for_Broadcast
	22 Nov 2007	3.2, 4.2	Incorporation of OMA-REQ-MobAd-2007-0080-CR_Add_User_Profile_definition OMA-REQ-MobAd-2007-0081R01-CR_Add_User_Context_definition OMA-REQ-MobAd-2007-0082R01-CR_Add_MobAd_User_Preferences_definition OMA-REQ-MobAd-2007-0083R01-CR_Add_diagram_and_some_text_into_the_RD_Introduction

Document Identifier	Date	Sections	Description
	29 Nov 2007	3.2, 5.10 and 6.1	Incorporation of OMA-REQ-MobAd-2007-0023R04-INP_Ad_Willingness_use_case.zip OMA-REQ-MobAd-2007-0050R02-CR_MobAd_Channels.zip OMA-REQ-MobAd-2007-0056R02-INP_Browsing_Use_Case.zip OMA-REQ-MobAd-2007-0075R01- CR_MobAd_Sec_Configuration_and_privacy_REQ.zip OMA-REQ-MobAd-2007-0090R01- CR_Campaign_Definitions_and_Req.zip OMA-REQ-MobAd-2007-0096R01- INP_Requirements_Actors_Rewording.zip OMA-REQ-MobAd-2007-0097R01- CR_MobAd_Enabler_REQ_Rewording
	5 Dec 2007	6	OMA-REQ-MobAd-2007-0097R02- CR_MobAd_Enabler_REQ_Rewording OMA-REQ-MobAd-2007-0110-CR-MobAd-scanning
	12 Dec 2007	3.1	OMA-REQ-MobAd-2007-0108R04-INP-Definitions
	28 Jan 2008	4 , 5, 6	OMA-REQ-MobAd-2007-0103R04-CR_Use_Cases_Reorder OMA-REQ-MobAd-2007-0120R04-CR_CR_Network_Side_Requirements OMA-REQ-MobAd-2007-0125R02-CR_Requirements_Classification OMA-REQ-MobAd-2007-0093R02 (figure of section 4.1)
	29 Jan 2008	4	OMA-REQ-MobAd-2007-0126R02- CR_MobAd_Enabler_Actors_and_Roles_Text
	1 Feb 2008	6	OMA-REQ-MobAd-2008-0005R04- CR_Support_broader_category_of_devices_by_AdEngine_definition.zip OMA-REQ-MobAd-2008-0011R01-CR_Prefetching_CR.zip
	6-Feb-2008	4, 6	OMA-REQ-MobAd-2008-0007R01-CR_MobAd_Metrics OMA-REQ-MobAd-2008-0010R02-CR_Device_Capability_Requirements OMA-REQ-MobAd-2007-0106R02- CR_Collecting_and_Reporting_Metrics OMA-REQ-MobAd-2008-0015R01- CR_MobAd_Channel_continuation_of_50R04 OMA-REQ-MobAd-2007-0107R03-CR_No_Restriction_by_OMA_DRM OMA-REQ-MobAd-2007-0122R02-INP_Definition_of_Personalisation OMA-REQ-MobAd-2007-0123R02-INP_Definition_of_Contextualisation OMA-REQ-MobAd-2008-0018R02-CR_Section_4.1_SP_Application OMA-REQ-MobAd-2007-0133R02- CR_OMA_REQ_MobAd_2007_1213_CR_Typo_Correction OMA-REQ-MobAd-2008-0002R05- INP_Use_case_for_support_of_multiple_categories_of_devices.zip Editorial changes: - Text added to section 6.1 as per OMA-REQ-MobAd-2008-0020- MINUTES_05Feb2008_RDDEV_MobAd_CC - Empty sections removed
	8-Feb-2008	1,2,3,4,5,6	Typo errors corrected Informative Reference to DCD added
	26-Mar-2008	All	Integration of resolutions of RDRR comments according to RDRR document: OMA-RDRR-MobAd_RD_RR_draft-V0_0_0-20080324 Integration of contributions: OMA-REQ-MobAd-2008-0039R02-CR_SP_Application_Text OMA-REQ-MobAd-2008-0037R01-CR_Sec_4_Introduction_A130_A234 OMA-REQ-MobAd-2008-0035R01- CR_UC_5_4_SP_Role_Comment_A241
	27-Mar-2008	6.1, 6.2	OMA-REQ-MobAd-2007-0101R01- CR_Personalized_Local_Advertisement, OMA-REQ-MobAd-2007-0050R04-CR_MobAd_Channels
	28-Mar-2008	6.1, 6.2, 6.11	OMA-RDRR-MobAd_RD_RR_draft-V0_0_0-20080327
	10-Apr-2008	3, 6.1, 6.2	OMA-RDRR-MobAd_RD_RR_draft-V0_0_0-20080410
	23 Apr 2008	3, 4, 6	OMA-RDRR-MobAd_RD_RR_draft-V0_0_0-20080421
	26 Apr 2008	4, 6	OMA-RDRR-MobAd_RD_RR_draft-V0_0_0-20080421

Document Identifier	Date	Sections	Description
	28 Apr 2008	All	Complete editorial review + update according to remaining comments from OMA-RDRR-MobAd_RD_RR_draft-V0_0_20080421 meeting minutes and reflector comments.
	13 May 2008	All	OMA-REQ-MobAd-2008-0058-CR_completing_the_abbreviation_table and remove "refer to...." OMA-REQ-MobAd-2008-0059-CR_Completion_of_AP_MobAd_2008_A011 OMA-REQ-MobAd-2008-0060R01-CR_Completion_of_AP_on_Optionality Editorial changes: <ul style="list-style-type: none"> - FUNC 025 is only partially corrected and should refer to 023 and not 003 - FUNC 25a is missing a version (I added the question marks) - DELV 003 is partially yellow - requirements FUNC-008, FUNC-016 and FUNC-027 were supposed to be moved together (these requirements have the numbers FUNC-011, FUNC-011a, FUNC-013 and FUNC-031 in the 20080428 RD version)
	5 June 2008	6.1	OMA-REQ-MobAd-2008-0061R03-CR_Delivery_Mechanism_Requirements OMA-REQ-MobAd-2008-0062R01-CR_Consistency_review_of_scanning_requirements OMA-REQ-MobAd-2008-0063R01-CR_Consistency_review_of_FUNC_033
	11 June 2008	All	OMA-REQ-MobAd-2008-0068R02-CR_Clarification_of_PECO_036 OMA-REQ-MobAd-2008-0067R01-CR_CR_RD_proofreading_changes Editorial changes: <ul style="list-style-type: none"> - RDRR Editorial Action: A236: section 4.2 - "Change "Advertisements information" to "Ad Metadata" in both text and diagram." - change from 'Enabler Rules' as proposed in 2008-0067R01 to 'Enabler rules' across the RD. - rename the requirements labels when applicable and reorder in sequence and keep the consistence and relation with the requirements. This means, if a requirement refers to a specific requirement or has some dependencies on a specific requirement this has to be kept.
	13 June 2008	4.2 6.1.3	OMA-REQ-MobAd-2008-0070R02-CR_Consistency_Review_of_Metrics_Requirements Editorial changes: RDRR Editorial Action: A236: section 4.2 - "Change "Advertisements information" to "Ad Metadata" in diagram."
	16 June 2008	4.2	Editorial changes: <ul style="list-style-type: none"> - "Service information" ellipse should be renamed "Generic MobAd Rules", and correspondingly its child-ellipses are all removed.
Candidate Version OMA-RD-Mobile_Advertising-V1_0	05 Aug 2008	n/a	Status changed to Candidate by TP TP Ref # OMA-TP-2008-0282R01- INP_MobAd_V1.0_RD_for_Candidate_Approval
Draft Version. OMA-RD-Mobile_Advertising-V1_0	1 st Dec 2009	All	Updated according to CONRR comments resolutions
	05 Jan 2010	All	Editorial Clean up Updated to 2010 template
Candidate Version OMA-RD-Mobile_Advertising-V1_0	26 Jan 2010	All	Status changed to Candidate by TP OMA-TP-2010-0007-INP_MobAd_V1_0_ERP_for_Candidate_Approval