Customized Multimedia Ringing Requirements

Approved Version 1.0 – 20 Mar 2012

Open Mobile Alliance

OMA-RD-CMR-V1_0-20120320-A

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1. Scope (Informative)

This Requirements Document (RD) contains use cases and defines the requirements for the Customized Multimedia Ringing Enabler. The functional areas covered in this RD are described in section 6.1-Modularisation.

The Customized Multimedia Ringing Enabler will reuse as much as possible existing technologies and define the new reusable building blocks to be able to create Customized Multimedia Ringing based/enabled services.

2. References

2.1 Normative References

[LOCREQ] "Secure User Plane Location Requirements", Open Mobile Alliance™, OMA-RD-SUPL-V2_0, Version 2.0, http://www.openmobilealliance.org/

[PRESENCEREQ] "Presence SIMPLE Requirements", Open Mobile Alliance™, OMA-RD-Presence_SIMPLE-V2_0, Version 2.0, http://www.openmobilealliance.org/

[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 2.8, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_8, URL:http://www.openmobilealliance.org/

[3GPP CAT] "Customized Alerting Tone", 3GPP TS 22.182 http://www.3gpp.org/FTP/Specs/html-info/22182.htm

[3GPP CRS] "Customized Ringing Signal", 3GPP TS 22.183 http://www.3gpp.org/FTP/Specs/html-info/22183.htm

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.

3.2 Definitions

CMR End User	A CMR End User is an individual who experiences the CMR service. A CMR End User could be any end user, including CMR Subscriber.
CMR Portal	Any application such as web, voice, SMS, etc. provided to the user/CP/SP for service management related to CMR services. It resides outside the CMR enabler, and it implements the service management (e.g. service publishing, service configuration, content management) by cooperating with CMR enabler.
Preference Settings	Set of rules that specify which (e.g. different CMR Resources for different calling party groups), when (e.g. under a particular event) and how (e.g. playing sequence of CMR Resources) CMR Resource should be presented in the CMR services.
CMR Resource	The multimedia ringing that is subscribed by the CMR end user and set to be played or presented when the CMR service is invoked. From the perspective of users, the media type could be any multimedia content such as audio, video, text, picture, VCard or their combination.
CMR Resource Box	A logical resource package which represents multiple CMR Resources with the same media type and with the associated predefined rule of selecting a CMR Resource from the box to present. A Resource Box is equivalent to a single CMR Resource for purchasing/copying/deleting/modifying.
CMR Resource Metadata	Information used to characterize a particular CMR Resource, which may include media type, resource code, CP/SP code, resource name, resource copyright owner, user code, etc.
Content Provider	See [OMADICT]
CMR Subscriber	A CMR Subscriber is an individual who has subscribed CMR services. A CMR Subscriber can manage his/her service data e.g. Personal Resource Library and Preference Settings.
Personal Resource Library	Set of CMR Resources available for a particular CMR Subscriber which are subject to be used in the service. This library could contain the list of resources and associated information, e.g. expire time. This library could be managed by the CMR Subscriber (e.g. purchase a new resource; delete an old one, etc).
Offline Charging	See [OMADICT]
Online Charging	See [OMADICT]
Service Provider	See [OMADICT]

3.3 Abbreviations

API	Application Programming Interface
CDR	Call Detail Record
CMR	Customized Multimedia Ringing
CMRBT	Customized Multimedia RingBack Tone
CMRT	Customized Multimedia Ringtone
CP	Content Provider
OMA	Open Mobile Alliance
OSE	OMA Service Environment
SP	Service Provider

4. Introduction (Informative)

The devices are becoming more powerful with the capabilities to support many kinds of multimedia resources. Also the IP-based network can supply enough bandwidth to transfer multimedia resources rapidly and reliably. Along with these evolutions, people are more and more interested in multimedia services which they can customize in some way to show their personalities.

One of the emerged services is that a multimedia ringing could be played or presented to an end user during the establishment of a call, upon the arrival of a message or mail and so on. For example, the terminating party sends a specified video to the originating party, instead of the alert ringing that is played by the network with no difference for individuals.

As CMR can be a common and reusable function for session service, this function can be extracted as "CMR Enabler" as a separate enabler that could be used to build a complicated service combined with other enablers defined in OSE.

4.1 Actors and their Roles for the CMR Enabler

The following figure shows the actors and their roles for the CMR Enabler.

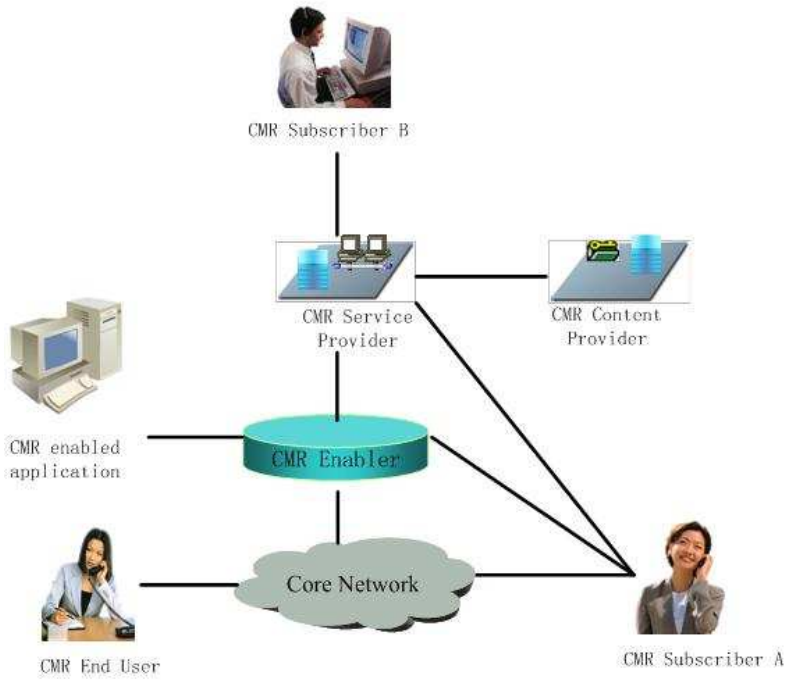

Figure 1: The CMR Enabler – Actors and Roles

As shown in the figure above, there are five types of actors in the CMR Enabler's framework:

- Service Provider — offering CMR services to its subscribers. Service Providers allow CMR Subscriber to access the CMR service related information (e.g. to allow CMR Subscriber to manage his/her preference information).
- Content Provider — offering CMR Resources..
- CMR enabled application — using CMR enabler's capabilities over open interface. CMR enabled application could use CMR Resources (e.g. as a prompt music or a background music) or query CMR Resource information (e.g. inquiring the CMR resource base on the CMR Subscriber's Preference Settings) during the application or service is executed.
- CMR Subscriber — has subscribed CMR enabled services. A CMR Subscriber can manage his/her service data e.g. Personal Resource Library and Preference Settings.

- CMR End User — using CMR services. A CMR End User could enjoy the CMR Resource set by other CMR Subscribers. A CMR End User could be any end user, including CMR Subscriber.

5. CMR release description (Informative)

Customized Multimedia Ringing (CMR) is an enabler that can present multimedia resources to an end user according to a specified event, e.g. the establishment of a call, the arrival of a message or mail. A typical example of the CMR service is that the traditional ring back tone or ringing tone during call establishment can be replaced by the multimedia resources customized by the subscriber. The CMR enabler will provide following main functionalities.

- CMR service management: CMR services are provided based on the preferences customized by the CMR Subscriber/SP which consists of presentation rules, priority, filer settings and so on. The service management also include CMR Subscriber's personal resource library management, system setting management and so on.
- CMR Resource management: CMR Resource management includes the management of the CMR Resource metadata and CMR Resource Box (e.g. changing the name of the CMR Resource and defining the CMR Resource Box).
- CMR Resource delivery and presentation control
  - Present the appropriate CMR resource according to the presentation rules.
  - Presentation control before or during the presentation (e.g. filter CMR Resource or stop CMR Resource presentation)
- The other basic functions of CMR Enabler include:
  - Charging: When CMR Subscriber manages the CMR Resources and CMR service or when the CMR service is delivered, CMR Enabler interacts with Charging Enabler when charging events occur.
  - Security: CMR Enabler supports the mechanisms to ensure the secure CMR Resource delivery and CMR service/CMR Resource management (e.g. authentication/authorization of CP/SP/CMR Subscriber).
  - Privacy: CMR Enabler has the mechanisms to defend the privacy of CMR Subscribers.
  - Open APIs: other OMA/non-OMA enablers or the third party applications can invoke the open APIs of CMR Enabler to implement the CMR services.

The CMR Enabler will reuse as much as possible the work made by other organizations in similar areas (e.g. [3GPP CAT], [3GPP CRS]).

5.1 Version 1.0

The functionalities of the Enabler, described in section 6 listed in Release column with indication of CMR 1.0, are included in CMR Version 1.0.

6. Requirements (Normative)

6.1 High-Level Functional Requirements

Label	Description	Release
CMR-HLF-001	The CMR Enabler SHALL support to present appropriate CMR Resources to replace the original resource in a specified event. (e.g. the establishment of a call, the arrival of a message or mail)	CMR 1.0
CMR-HLF-002	The CMR Enabler SHALL support to select an appropriate CMR Resource based on Preference Settings of the CMR Subscribers who are involved on the communication and SP's policy (e.g. default CMR Resource defined by SP).	CMR 1.0
CMR-HLF-003	The CMR Enabler SHALL allow more than one CMR Resource to be composed in order to present to the CMR End User when the CMR service is invoked.	CMR 1.0
CMR-HLF-004	The CMR Enabler SHALL support selecting or generating a CMR Resource based on the CMR Subscriber's or CMR End User's presence/location information (e.g. convert the location textual information into an audio dynamically).	CMR 1.0
CMR-HLF-005	The CMR Enabler SHALL supply service subscription management functions including: - Subscription or Unsubscription - Subscription suspension/resumption/renewal - Subscription query	CMR 1.0
CMR-HLF-006	The CMR Enabler SHALL allow a CMR enabled application to use CMR Resources, e.g. as a prompt music or a background music during the application or service is executed.	CMR 1.0
CMR-HLF-007	The CMR Enabler SHALL support a CMR Resource Box to be handled equivalent to a single CMR Resource.	CMR 1.0
CMR-HLF-008a	The CMR Enabler SHALL allow a CMR Subscriber to maintain his/her CMR Resources library, including: - Upload CMR Resources - Add new CMR Resources - Delete CMR Resources	CMR 1.0
CMR-HLF-008b	The CMR Enabler SHALL allow a CMR Content Provider to upload, modify and delete its CMR Resources (including CMR Resource Boxes) in order to maintain CMR Resource catalogue.	CMR 1.0
CMR-HLF-009	The CMR Enabler SHALL provide an API that supports SPs/CMR Subscribers to manage the CMR Subscriber profile data (e.g. the CMR Subscriber subscription information).	CMR 1.0

Table 1: High-Level Functional Requirements

6.1.1 Security

6.1.1.1 Authentication

Label	Description	Release
CMR-AUTHE-01	The CMR Enabler SHALL support a mechanism to allow authentication between the CMR Enabler and a Principal such as CMR Subscribers or 3rd Party CMR services.	CMR 1.0

CMR-AUTHE-02	The CMR Enabler SHALL support to authenticate a third party's service.	CMR 1.0

Table 2: High-Level Functional Requirements – Authentication Items

6.1.1.2 Authorization

Label	Description	Release
CMR-AUTH-001	The CMR Enabler SHALL only allow an authorized Principal such as a CMR Subscriber /CP to manage the CMR Resources (metadata) and CMR Resource Boxes.	CMR 1.0
CMR-AUTH-002	CMR Enabler SHALL only allow an authorized Principal such as a CMR Subscriber/SP to manage the CMR service related data including CMR Subscriber's Preference Settings, Personal Resource Library and System settings etc.	CMR 1.0
CMR-AUTH-003	CMR Enabler SHALL only allow an authorized Principal such as a CMR enabled application to request the CMR service.	CMR 1.0

Table 3: High-Level Functional Requirements – Authorization Items

6.1.1.3 Data Integrity

Label	Description	Release
CMR-INT-001	CMR Enabler SHOULD be able to provide data integrity protection for CMR Resource.	CMR 1.0

Table 4: High-Level Functional Requirements –Data Integrity Items

6.1.2 Charging

Label	Description	Release
CMR-CHG-001	In order to support all kinds of charging policies, the CMR Enabler SHALL be able to generate CDR information.	Deleted
CMR-CHG-002	The CMR Enabler SHALL define a set of charging events usable in various business models (e.g. purchasing events, library configuration events, service use events, etc).	Future Releases
CMR-CHG-003	The CMR Enabler SHALL support Online Charging and Offline Charging.	Future Releases

Table 5: High-Level Functional Requirements – Charging Items

6.2 CMR Resource Management Requirements

Label	Description	Release
CMR-RESM-001	The CMR Enabler SHOULD support a CMR Subscriber to subscribe CMR Resource for others (i.e. add the resource to the other CMR Subscriber's Personal Resource Library).	CMR 1.0
CMR-RESM-002	The CMR Enabler SHALL support to store CMR Resource Metadata within the CMR Enabler.	CMR 1.0
CMR-RESM-003	When the CMR Resources are added, deleted or modified, the CMR Enabler SHALL be informed to update the related CMR Resource Metadata stored in the CMR Enabler.	CMR 1.0

CMR-RESM-004	The CMR Enabler SHALL support the download of media resources from CMR Portal to the repository residing in the CMR Enabler.	Deleted
CMR-RESM-005	The CMR Enabler SHALL support to associate a CMR Resource with CMR Resource Metadata.	CMR 1.0
CMR-RESM-006a	The CMR Enabler SHALL allow a CMR Subscriber (A) to copy the specified CMR Resources from other CMR Subscribers (B) Personal Resource Library subject to CMR Subscriber B's privacy policies (see CMR-RESM-009 and CMR-RESM-010) and SP's policy.	CMR 1.0
CMR-RESM-006b	When the communication has ended, the CMR Subscriber MAY have the ability to copy the CMR Resource which he/she has experienced in this communication based on SP's policies. (Informational Note: This requirement is optional since in some cases systems may require a lot of resources to store information about ended communications)	CMR 1.0
CMR-RESM-007a	CMR Enabler SHALL support a CMR Subscriber to copy (i.e. subscribe) the CMR Resource which he/she is experiencing.	CMR 1.0
CMR-RESM-007b	CMR Enabler MAY support a CMR End User (not a CMR Subscriber) to copy (i.e. subscribe) the CMR Resource which he/she is experiencing and automatically trigger the subscription function subject to SP's policy. (Informational Note: This requirement is optional since the system needs to wait for the subscription result before executing the copying.)	CMR 1.0
CMR-RESM-008a	The CMR Enabler SHALL allow a SP to receive reports about resource management or service management, such as: the information about resource management activities taken by the CMR Subscriber/CP.	CMR 1.0
CMR-RESM-008b	The CMR Enabler SHALL allow a SP to receive information about which application has been used to manage the CMR Resources and/or preferences through the reports specified in CMR-RESM-008a.	Deleted
CMR-RESM-009	The CMR Enabler SHALL allow a CMR Subscriber to hide the CMR Resource in his/her Personal Resource Library from other CMR Subscribers.	CMR 1.0
CMR-RESM-010	The CMR Enabler SHALL allow a CMR Subscriber to share the CMR Resource in his/her Personal Resource Library with other CMR End Users (e.g. allowing other CMR Subscriber to see or copy his resources.)	CMR 1.0
CMR-RESM-011	The resource management functionalities defined in CMR-HLF-008a SHALL be accessible for SPs/CPs/CMR Subscribers via an Open API.	CMR 1.0
CMR-RESM-012	CMR resource subscriptions SHALL have an expiration time.	CMR 1.0
CMR-RESM-013	CMR Enabler SHALL provide notification (e.g. to CMR Subscribers) when his/her CMR resource is close to expiration or has expired.	CMR 1.0
CMR-RESM-014	It SHALL be supported for CMR Subscriber to renew a subscription to CMR resources before these subscriptions expire.	CMR 1.0

Table 6: CMR Resource Management Requirements

6.3 CMR Preference Management Requirements

Label	Description	Release
CMR-PREM-001	The CMR Enabler SHALL allow CMR enabled application to query/synchronize/update the CMR Subscriber's Preferences Settings subject to the CMR Subscriber/SP's policy.	CMR 1.0
CMR-PREM-002	The CMR Enabler SHALL support a CMR Subscriber to query his/her Preference Settings.	CMR 1.0
CMR-PREM-003	The CMR Enabler SHALL allow a CMR Subscriber to set in his/her Preference Settings to stop or continue playing or presenting the CMR Resource upon a particular event (e.g. when a call is answered).	CMR 1.0
CMR-PREM-004	The CMR Enabler SHALL support CMR Subscriber to indicate in his/her Preference Settings if the volume of CMR Resource can be adjusted.	Deleted
CMR-PREM-005	The CMR Enabler SHALL allow a CMR Subscriber to set one or more CMR Resources as default (e.g. to be presented when the CMR Resource being presented is stopped).	CMR 1.0
CMR-PREM-006	The CMR Enabler SHALL support a CMR Subscriber to set one or more default CMR Resources (e.g. for the users not fall in any specified calling/called groups, any time period etc.)	CMR 1.0
CMR-PREM-007	The CMR Enabler SHALL be able to interact with the XDM Enabler to get information of contact lists or group as defined in [XDMREQ].	Deleted
CMR-PREM-008	The CMR Enabler SHALL be able to interact with Presence Enabler (defined in [PRESENCEREQ]) to get user's presence information.	CMR 1.0
CMR-PREM-009	The CMR Enabler SHALL be able to interact with Location Enabler (defined in [LOCREQ]) to get user's Location information.	CMR 1.0
CMR-PREM-010	The CMR Enabler SHALL support CMR Subscriber to set his/her Preference Settings such that more than one CMR Resource is presented sequentially/simultaneously.	CMR 1.0
CMR-PREM-011	CMR Subscriber SHALL have the ability to define CMR filter rules that will determine if future CMR Resources are presented or not (e.g. caller can set a certain time period in which he/she would not like to experience the CMR Resource).	CMR 1.0
CMR-PREM-012	It SHALL be possible for a CMR Subscriber to set a rule such that the CMRT (e.g. MMS ring tone or call ring tone) is always kept the same as CMRBT.	CMR 1.0
CMR-PREM-013	The CMR Enabler SHALL hide the CMR Subscriber's Preference Settings, e.g. user groups or presence information, from all of the other CMR End Users.	Deleted
CMR-PREM-014	The CMR Enabler SHALL support SP to define default CMR resource which is presented when no CMR resource has been specified by CMR Subscriber.	CMR 1.0
CMR-PREM-015	The CMR Enabler SHALL allow CMR Subscriber to set the playing sequence (e.g. randomly playing or circularly playing) of the CMR resources in a CMR Resource Box.	CMR 1.0
CMR-PREM-016	The CMR Enabler SHALL allow CMR Subscribers to define their own CMR Resource Boxes or to purchase them from the CP.	CMR 1.0

CMR-PREM-017	The CMR Enabler SHALL support a CMR Subscriber to configure his/her Preference Settings that a CMR Resource shall be presented based on the following criteria or combinations of them: - Associated to a particular end user or a group of end users. - Associated to his particular location information - Associated to his particular presence information (e.g. busy, absent, etc) - Associated to particular time and/or date periods (e.g. slots of the day, days of the week)	CMR 1.0
CMR-PREM-018	CMR Subscriber/SP SHALL have the ability to define CMR priority rules indicating which call party's CMR Resource will be presented in the case both calling and called party are CMR Subscribers.	CMR 1.0

Table 7: CMR Preference Management Requirements

6.4 CMR Open APIs Requirements

Label	Description	Release
CMR-OAPI-001	The CMR Enabler SHALL allow other Principals such as Enablers, applications or services to use the CMR Resources and Preferences management functionalities through an Open API, based on SP's policy.	CMR 1.0

Table 8: CMR Open APIs Requirements

6.5 CMR Presentation Control Requirements

Label	Description	Release
CMR-PREC-001	The CMR Enabler SHALL support a CMR Subscriber to dynamically select which one of his CMR Resource to be presented regardless of the Preference Settings when initiating the communication.	Future Releases
CMR-PREC-002	The CMR Enabler SHALL support a CMR End User (A) to dynamically select which one of the CMR Subscriber (B)'s CMR Resource he/she wants to experience, subject to CMR Subscriber (B)'s preferences.	Deleted
CMR-PREC-003	The CMR Enabler SHALL support a CMR Subscriber (A) to dynamically select his/her or CMR Subscriber (B)'s Preference Settings to decide the CMR Resource he/she will experience when initiating the communication.	Future Releases
CMR-PREC-004	The CMR Enabler SHALL support to receive the presentation controlling instructions from a CMR End User directly. These instructions include stop, change the CMR Resource being presented, and etc.	CMR 1.0
CMR-PREC-005	After receiving stop instructions, the CMR Enabler SHALL support stopping the current CMR Resource and presenting the default CMR Resource to an end user.	CMR 1.0
CMR-PREC-006	After receiving change instructions, the CMR Enabler SHALL support changing the current CMR Resource to the CMR End User preferred CMR Resource.	CMR 1.0
CMR-PREC-007	The CMR Enabler SHALL support to stop or continue presenting the CMR Resource upon a particular event (e.g. the called party answers the call).	CMR 1.0

CMR-PREC-008	The CMR Enabler SHALL support to present an appropriate CMR Resource customized by CMR Subscribers to replace the original resource.	Deleted
CMR-PREC-009	The CMR Enabler SHALL support a CMR End User to filter the CMR Resources dynamically if he/she would not like to experience the CMR Resources when initiating a communication.	CMR 1.0

Table 9: CMR Presentation Control Requirements

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
Approved Version OMA-RD-CMR-V1_0	20 Mar 2012	Status changed to Approved by TP: TP ref# OMA-TP-2012-0113-INP_CMR_V1.0_ERP_for_final_Approval

Appendix B. Use Cases (Informative)

B.1 CMR Services

B.1.1 Short Description

The CMR services may use the CMR Enabler's capabilities as it is described in the following examples:

1. Message service: when a message arrives to the called party, the receiver experiences a CMR Resource specified by the calling party which replaces the original terminal ring tone. Whereas the calling party will experience a CMR Resource specified by himself when the message has reached the destination.
2. End-to-end call service:
    a. The CMR Subscriber has subscribed to the CMR service and defined his/her CMBRT as a short video clip;
    b. When the calling party calls the CMR Subscriber, the calling party will experience the video clip set by the called party (the CMR Subscriber) when the called party is idle.
    c. When the called party answers the call, the video playing is stopped and the call goes as normal.
3. Conference service:
    a. When a conference is being created: the conference host can set the CMR Resource as the conference background and another CMR Resource as the conference theme.
    b. When the conference is being held: each participant can obtain the background CMR of the conference;
    c. When the conference host invites the conference participants, the invited participants will experience the special CMRT to learn the theme of the conference during the process of invitation.
    d. When the participants join the conference initiatively, they will experience the special CMRBT to learn the theme of conference.

B.1.2 Market benefits

The CMR services can attract more users by using the capabilities of the CMR Enabler. The contributed benefits to CMR Subscribers are:

- Present the customized CMR Resources as defined by the CMR Subscriber
- Configure their Preference Settings flexibly and user-friendly

B.2 Preference Management

The CMR Enabler allows the subscribers to modify and customize their CMR preference such as priority, network storage, the ringing box, the CMR presentation rules etc.

B.2.1 Short Description

CMRT or CMRBT can be performed in accordance with the preference rules (e.g. the time and date, the position information of the user, the specific ringing group, etc). These set of preferences can be set by the CMR Subscriber and modified by the CMR Subscriber through a call, a short message, access to a web portal or CMR client.

B.2.2 Market benefits

The preference management enables CMR Subscriber to personalize his preferences setting. This service may cause a greater attraction to the users generating thus an increase of the subscription to that CMR service and a rise of the CMR operator revenues.

B.3 Presence Related CMR

This use case of CMR utilizes another existing OMA Enablers.

B.3.1 Short Description

The CMR Resource can be generated or selected based on the calling/called party's presence information. This calling/called party's presence information can be set as a CMR Resource or as a part of CMR Resource directly in the CMR service. For example:

a) The calling party will listen a "RingingTone = CompanyAdvertizement" and a related text if the called party set his presence status as "in conference", and

b) The calling party will get the related indication when the calling/called party set his presence status as "driving".

The CMR Server can obtain the presence information in several ways such as through related services (e.g. Presence Enabler) through network etc. In the use case specified above, the presence information is taken from the Presence Enabler.

B.3.2 Market benefits

The presence related CMR market benefits are the following:

- CMR End User can experience CMR Resource generated or selected based on the presence information.
- The Service Provider may rise to its revenues by offering more attractive CMR services.

B.4 Resource Management

B.4.1 Short Description

The aim of integrating the content resources and making the maximum use of the resources may be fulfilled by the operator through the deployment of a content management platform to deal with the creation, publishing and management within the whole operator's network of the CMR Resources. This platform will be enabled by the CMR Enabler resource management functionalities.

B.4.2 Market benefits

The CMR Enabler can obtain the CMR Resources from external entities (e.g. content management platform) and manage a centralized CMR Resources to provide them to the CMR enabled applications. Thereby the operator can make more use of the resources through the CMR Enabler.