Content Management Interface Requirements

Candidate Version 1.0 – 01 December 2009

Open Mobile Alliance

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1. Scope (Informative)

This Requirement Document (RD) contains use cases and defines the requirements for the Content Management Interface Enabler. This covers the development of an API between Content Provider and Service Provider (e.g. Operator). The following areas will be covered in this RD:

- Purchase Content Activities

- Download/Upload Content

- Statistical Content Information

The scope includes the development of an API only.

The work will not cover the implementation of the API by the Service Providers and will not cover the Content Provider functionalities.

The Content Management Interface Enabler will reuse as much as possible existing technologies. Some requirements may be covered by other OMA Enablers. Potential candidate technologies to consider for partially or full re-use may include [3G 29.199-21] [OMA DCD] etc. Further candidates may be identified at architecture and/or interface specification stage.

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 2.7, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_7, URL:http://www.openmobilealliance.org/
[3G 29.199-21]	"3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Open Service Access (OSA); Parlay X Web Services; Part 21: Content management: (Release 8)", 3GPP TS 29.199-21 V8.0.0 (2008-06)
[OMA DCD]	"Dynamic Content Delivery Requirements", Version 1.0, Open Mobile Alliance™, OMA-RD-DCD -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.

3.2   Definitions

Content Provider	An entity that provides a source for the content to the end users or to the Service Provider.
Service Provider	Use definition from [OMADICT].
Network Operator	Use definition from [OMADICT]

3.3   Abbreviations

API	Application Programming Interface
CMI	Content Management Interface
CMR	Customized Multimedia Ringing
OMA	Open Mobile Alliance
SLA	Service Level Agreement

4. Introduction   (Informative)

Service Providers (e.g. Network Operators, Web Portal Service Providers, or other Value-Added Service Providers) offer many content-related services, e.g. Operator-provided services such as CMR (Customized Multimedia Ringing), Mobile Advertisement, etc. The Content Provider is an essential entity in the value chain that supplies the content to the user.

These services require multiple interactions between the Service Provider premises and the Content Provider — a variety of content management actions such as:

- Upload content, primarily from the Content Provider to the Service Provider.

- Manage the uploaded content, e.g. update, refresh, remove, change its attributes, etc..

- Purchasing actions: Purchase content, including selection of purchase terms, e.g content price, etc.

- Statistics and report information: Content usage information, etc.

There are different models on how to supply content to the user e.g. in the case of operator-provided services such as CMR:

- On-deck Model: (Also called "on-net"). Content comes from the operator. The user purchases content that is offered directly from the operator's portal. In this case, the operator is responsible for managing the content items. In this model, the user may not have a direct connection with and/or may not be aware of the Content Provider.

- Off-deck Model: (Also called "off-net"). Content comes from Content Providers, regardless of who the operator is. The user can purchase content directly from an "Off-Portal" Content Provider. The Content Provider has the responsibility for content management and initiating service fulfilment via the operator, while the successful activation and content delivery is under the operator's domain. Note that in this case, non-operator Service Providers may serve as a content aggregator/storefront provider for various Content Providers, but overall they have the same responsibility for initiating service fulfilment via the operator.

In other cases, the provider of the service or content to the end user may not be the Network Operator. To ensure that the interfaces defined in CMI are reusable for a variety of service deployments, the roles of Service Provider and operator are considered distinct. CMI will support this role distinction while also supporting operator-provided services, including those in which another Service Provider plays a role, e.g. as a content aggregator/distributor.

The current lack of an industry-wide standard interface causes operators, non-operator Service Providers, and Content Providers a number of problems, including multiple different integrations, complexity, time to market, and expense.

The goal is to create a well-defined API between the Service Provider and Content Provider to facilitate integrations and service deployments in order to advance the industry and benefit all parties in this eco-system.

4.1   CMI Enabler Actors and Their Roles

The following figure depicts CMI actors and their roles:
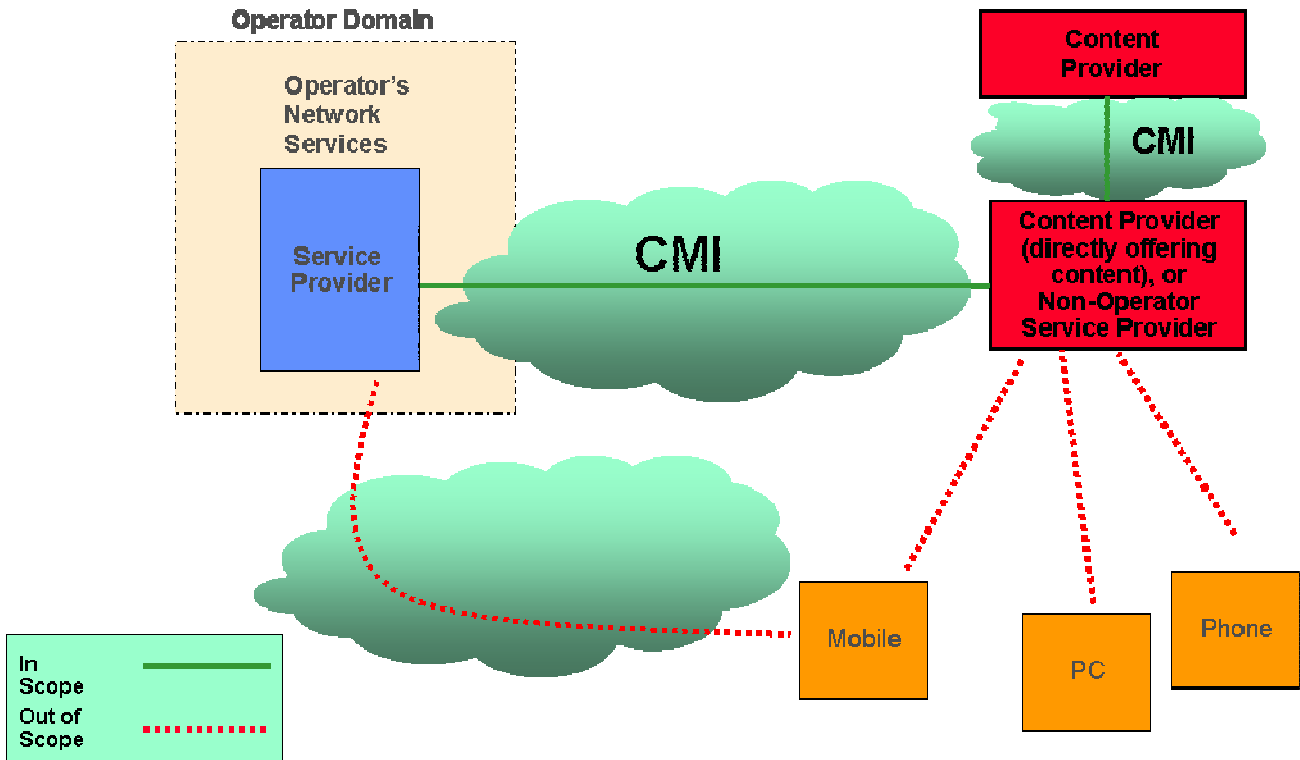
Figure 1: Actors and Roles

The figure above describes CMI in-scope and out-of-scope actors and their roles:

Service Provider: Enables network based content services to the Service Provider's subscribers. Service Provider can be a mobile or landline Network Operator.

Content Provider: The Content Provider that offers the content services directly to content users and upload the content directly to the Service Provider (e.g. operator) or a Content Provider that connect to a non-operator Service Provider (e.g. via a portal).

Content User: End-user who consumes content from the Content Provider and the Service Provider for enabled services, such as purchase of content. This actor is out of the CMI scope.

5. CMI release description   (Informative)

CMI is intended to create a well-defined API between the Service Provider and Content Provider to facilitate integrations and service deployments in order to advance the industry and benefit all parties.

The main objective of the first release of the CMI is to develop an API for CMR services as a baseline for a general use case that allows expansion of the API to be applicable for any service. The scope includes the API only. It does not include the well-defined services (such as the well-defined CMR).

CMI includes the following main functionalities:

Purchase Content Functionalities: Transferring information between the Content Provider and the Service Provider related to:

> o   Purchase of content by user(s)
>
> o   Making content available/unavailable to consume

Content Upload Functionalities: Creating a secure channel between Content Provider and Service Provider that:
- Allows downloading and/or updating of content and user-generated content between these parties.

Statistic and Report Functionalities: Allows receipt of authorized statistics and reports that elaborate and update the data collection, potentially increasing user purchases and content usage activities.

Management Functionalities: Allows creation, management and control of policies and SLA between Content Provider and Service Provider that will help monitor and facilitate the service.

5.1   Version 1.0

The functionalities of the Enabler, described in Section 5 listed in Release column, are included in CMI Version 1.0.

6. Requirements   (Normative)

6.1   Modularisation

This section depicts the whole release as a collection of different functional modules. This is NOT an architectural model or diagram but a collection of functional modules where each one is a group of requirements identified as related with the offering/delivering of a functionality.

The CMI Enabler consists of the following functional modules:

Content Management: mandatory module, the content management functional module defines capabilities including content upload from Content Provider to the Service Provider, content discovery (i.e. identification of the content available from Content Provider) and policy management.

Purchase & Activation: mandatory module, the purchase and activation functional module defines capabilities including delivery of purchase requests and confirmations.

Report & Statistics: mandatory module, the report and statistics functional module defines capabilities including delivery of various report types between CMI entities.

6.2   High-Level Functional Requirements

Label	Description	Release	Functional module
CMI-HLF-001	CMI SHALL support uploading content from the Content Provider to the Service Provider.	CMI 1.0	Content Management
CMI-HLF-002	CMI MAY support downloading content from the Content Provider to the Service Provider. **Informational Note**: Optional to keep the scope focused. This requirement to be mandatory in further releases.	Future Release	Content Management
CMI-HLF-003	CMI MAY support uploading content from the Service Provider to the Content Provider, e.g. such as user generated content **Informational Note**: Optional to keep the scope focused. This requirement to be mandatory in further releases.	Future Release	Content Management
CMI-HLF-004	CMI SHALL support uploading an extensible description of the content and its characteristics (e.g. information about the content item: name, type, content id, content categorization, service ID etc.)	CMI 1.0	Content Management
CMI-HLF-005	CMI SHALL support the association of content items to a Content Provider.	CMI 1.0	Content Management
CMI-HLF-006	CMI SHALL support compliance with SLA (i.e. policy enforcement) on the CMI interfaces, such as: - allowed content types per service - upload/storage limits - number of purchase requests for a specified period - frequency of purchase requests - etc.	Future Release	Content Management
CMI-HLF-007	CMI SHALL support requests from the Content Provider to Service Provider (or vice versa), to upload new content and to replace a previously uploaded content item(s).	CMI 1.0	Content Management

CMI-HLF-008	CMI SHALL support at least one of the following mechanisms a) service discovery of b) notification about available service features per content type (e.g. content types supported for new services, new content types supported for existing services etc).	Future Release	Content Management
CMI-HLF-009	CMI SHALL support SLA establishment between Content Provider and Service Provider (e.g. via automatic means via Portal)	Future Release	Content Management
CMI-HLF-010	CMI SHALL support SLA negotiation and enforcement (SLA values might be pre-set prior to enforcement).	Future Release	Content Management
CMI-HLF-011	CMI SHALL support ▪ bulk upload of content ▪ upload of single content items	CMI 1.0	Content Management
CMI-HLF-12a	CMI SHALL support updating previously uploaded content and its attributes by means of re-upload.	CMI 1.0	Content Management
CMI-HLF-012b	CMI SHALL support management of uploaded content and/or content attributes such as update, refresh, remove, change, replace, etc.	Future Release	Content Management
CMI-HLF-013	CMI SHALL support requests from the Content Provider to Service Provider, to make already uploaded content item available to consume.	CMI 1.0	Content Management /Purchase Management
CMI-HLF-014	CMI SHALL support requests from the Content Provider to Service Provider, to make already uploaded content item unavailable to consume.	CMI 1.0	Content Management /Purchase Management
CMI-HLF-015	CMI SHALL support sending purchase request from the Content Provider to the Service Provider and response transactions from the Service Provider to the Content Provider that indicate that the subscriber purchased a content item.	CMI 1.0	Purchase & Activation
CMI-HLF-016	CMI SHALL support the definition of the terms and conditions of the transaction, such as: ▪ Content expiration period ▪ Content ID	CMI 1.0	Purchase & Activation
CMI-HLF-017	CMI SHALL support delivery of extensible transaction metadata as purchase request and confirmation properties, such as: ▪ expiration period, ▪ extensions, ▪ subscriber ID ▪ anonymous ID (optional) ▪ purchaser ID and the ID of beneficiary of the purchaser (optional) ▪ Etc.	CMI 1.0	Purchase & Activation
CMI-HLF-018	CMI SHALL support purchase success/failure response to the Content Provider.	CMI 1.0	Purchase & Activation
CMI-HLF-019	CMI MAY support delivery of purchase responses from the Service Provider to the Content Provider, with indication that the user is a new subscriber to the service or purchaser of the content. **Informational Note**: Optional since business model depending on SLA between Service Provider and Content Provider	CMI 1.0	Purchase & Activation

CMI-HLF-020	CMI SHALL support sending purchase requests with extensible information, such as • an indication which content item(s) the user would like to purchase • an indication of the service(s) the user would like to use in conjunction with the content • an indication of the price of the content item(s). • etc.	CMI 1.0	Purchase & Activation
CMI-HLF-021	CMI SHALL support request for confirmation of information (e.g. content fee, subscription fee…) by the user prior to the actual purchase	Future Release	Purchase & Activation
CMI-HLF-022	CMI SHALL support a mechanism to trigger automatic subscription to a service by successful purchase transaction. (e.g. subscription requests)	CMI 1.0	Purchase & Activation
CMI-HLF-023	CMI SHALL support sending a success purchase response a) in case both the subscription to the service and the purchase of the content item(s) were successful. b) in case the user is already a subscriber of the requested service and the purchase of the content item(s) was successful.	CMI 1.0	Purchase & Activation
CMI-HLF-024	CMI SHALL support the upload of a single content item from the Content Provider to the Service Provider via a purchase request.	Future Release	Purchase & Activation
CMI-HLF-025	CMI SHALL support the upload of content bundles from the Content Provider to the Service Provider via a purchase request.	Future Release	Purchase & Activation
CMI-HLF-026	CMI SHALL support at least one of the following mechanisms a) delivery or b) enquiry of various report types between Content Provider and Service Provider, such as: • "upload related" reports (i.e. success/failure) • "usage" reports (i.e. penetration, purchase)	CMI 1.0	Report & Statistics
CMI-HLF-027	CMI SHALL support sending from the Service Provider to Content Providers periodic reports per each Content Provider connected to the Service Provider.	Future Release	Report & Statistics
CMI-HLF-028	CMI SHALL support sending from the Service Provider to Content Providers expiration reports for all the content items that are about to expire in a configurable time frame per each Content Provider connected to the Service Provider.	Future Release	Report & Statistics
CMI-HLF-029	CMI SHALL support content metadata's validity.	Future Release	Content Management /Purchase Management/ Report & Statistics

Table 1: High-Level Functional Requirements

6.2.1   Security

6.2.1.1   Authentication

Label	Description	Release	Functional module
CMI-SEC-001	CMI SHALL support mutual authentication between the Content Provider and the Service Provider.	CMI 1.0	Purchase & Activation/ Report & Statistics / Content Management
CMI-SEC-002	CMI SHALL support non-repudiation.	CMI 1.0	Purchase & Activation/ Report & Statistics / Content Management

Table 2: High-Level Functional Requirements – Authentication Items

6.2.1.2   Authorization

Label	Description	Release	Functional module
CMI-SEC-003	CMI SHALL allow only Authorized Principals to access CMI entities.	CMI 1.0	Purchase & Activation/ Report & Statistics / Content Management

Table 3: High-Level Functional Requirements – Authorization Items

6.2.1.3   Data Integrity

Label	Description	Release	Functional module
CMI-SEC-004	CMI SHALL support data integrity of the transportation between the Content Provider and the Service Provider.	CMI 1.0	Purchase & Activation/ Report & Statistics / Content Management

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

6.2.1.4   Confidentiality

Label	Description	Release	Functional module
CMI-SEC-005	CMI SHALL support data confidentiality of transmitted information between the Content Provider and the Service Provider.	CMI 1.0	Purchase & Activation/ Report & Statistics / Content Management

Table 5: High-Level Functional Requirements – Confidentiality Items

6.2.2   Charging

Label	Description	Release	Functional module
CMI-CHG-001a	CMI SHALL support Advice of Charge of the price for the content item(s) to the user.	CMI 1.0	Purchase &Activation
CMI-CHG-001b	CMI SHALL support Advice of Charge of all the charges (including the service subscription fee) to the user.	Future Release	Purchase &Activation

Table 6: High-Level Functional Requirements – Charging Items

Appendix A.   Change History   (Informative)

A.1   Approved Version History

Reference	Date	Description
n/a	n/a	No prior version –or- No previous version within OMA

A.2   Draft/Candidate Version 1.0 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-RD-CMI-V1_0	30 Jul 2008	all	initial RD skeleton created
	9 Sept 2008	2, 3 ,5, 6.2, 6.3, App B	Incorporated the following CRs: OMA-REQ-CMI-2008-0007R01-INP_CMI_Purchase_usa_case_requirements.doc, OMA-REQ-CMI-2008-0008R01-INP_CMI_Report_Statistics_usa_case_requirements.doc; Editorial updates –Heading 5.2 f, "dummy"/example requirements and some comments deleted
	24 Sep 2008	1, 4, 6.2, App B	Incorporated the following ICs: OMA-REQ-CMI-2008-0006R01-INP__CMI_Upload_content_use_case__requirements OMA-REQ-CMI-2008-0012-INP_CMI_RD_Scope OMA-REQ-CMI-2008-0013R01-INP_CMI_RD_Introduction
	16 Oct 2008	6.2,	Incorporated the following ICs: OMA-REQ-CMI-2008-0015R01-INP_CMI_Report_Statistics_requirements.zip OMA-REQ-CMI-2008-0016R02-INP_CMI_Purchase_requirements.zip OMA-REQ-CMI-2008-0017R01-INP_CMI_Upload_requirements.zip OMA-REQ-CMI-2008-0020-INP_CMI_RD_Modularisation.zip
	20 Oct 2008	3.2, 4. 6	Incorporated missing input from OMA-REQ-CMI-2008-0020-INP_CMI_RD_Modularisation.zip in section 4. Added Definitions from document: OMA-REQ-CMI-2008-0030R01-CR_CMI_Definitions.doc and related editorial changes to refer to them. Incorporated the CR in document: OMA-REQ-CMI-2008-0028R01-CR_to_CMI_HLF_003.doc Incorporated the IC's: OMA-REQ-CMI-2008-0011R03-INP_CMI_Actors.doc OMA-REQ-CMI-2008-0024R01-INP_CMI_requirements_to_content_management.doc OMA-REQ-CMI-2008-0025R01-INP_CMI_requirements_to_purchase.doc OMA-REQ-CMI-2008-0026R01-INP_CMI_requirements_to_report_and_statistics.doc Renumbered Requirements
	22 Oct 2008	4, 6.2	Invorporatedthe following CRs ICs: OMA-REQ-CMI-2008-0023R01-INP_CMI_general_requirements.doc OMA-REQ-CMI-2008-0027R01-INP_CMI_security_requirements.doc OMA-REQ-CMI-2008-0031R01-CR_CMI_Introduction.doc Corrected 2 lines in HLF 33
	25 Nov 2008	All	Incorporated the following CRs: OMA-REQ-CMI-2008-0039R01-CR_release_description OMA-REQ-CMI-2008-0040R01-CR_Editorial_corrections_to_CMI_RD OMA-REQ-CMI-2008-0041R01-CR_to_add_reference_to_dictionary_and_description OMA-REQ-CMI-2008-0042-CR_to_section_6_1 OMA-REQ-CMI-2008-0049R01-CR_Informative_references_for_reuse_candidates Added full reference OMA-REQ-CMI-2008-0050-CR_overall_changes_to_CMI_RD OMA-REQ-CMI-2008-0052-CR_to_CMI_RD_Authentication_section Deleted comments in each section where input was added

Document Identifier	Date	Sections	Description
	16 Dec 2008	3.3, 6.2	Incorporated the following CRs OMA-REQ-CMI-2008-0067-INP_RDRR_CMI_resolution_for_editorial comments OMA-REQ-CMI-2008-0068-CR_CMI_RDRR_Resolution_for_A002 OMA-REQ-CMI-2008-0069-CR_CMI_RDRR_Resolution_for_A003 OMA-REQ-CMI-2008-0070R01-CR_RDRR_A005_A0013_A005_A008_A009_A013_A015_A020_A021 OMA-REQ-CMI-2008-0070R01-CR_RDRR_A005_A0013_A005_A008_A009_A013_A015_A020_A021 Editorial cleanup incl. deletion of empty table rows and empty sections as well as deletion of comments. Requirements renumbered
Candidate Version OMA-RD-CMI-V1_0	27 Jan 2009	n/a	Status changed to Candidate by TP TP ref #OMA-TP-2009-0011-INP_CMI_V1_0_RD_for_Candidate_Approval.zip
Draft Version OMA-RD-CMI-V1_0	25 Aug 2009	6.2 3.2	Implemented Agreed Change: OMA-CD-CMI-2009-0089R01-CR_Closure Editorial fix: style applied
Candidate Version OMA-RD-CMI-V1_0	22 Sep 2009	All	Status changed to Candidate by TP TP ref # OMA-TP-2009-0428-INP_CMI_V1_0_RD_for_Candidate_Re_Approval
Draft Version OMA-RD-CMI-V1_0	21 Oct 2009	5 & 6	Implemented Agreed Changes: OMA-CD-CMI-2009-0123R01-CR_Address_RD_B001_B002_B006 OMA-CD-CMI-2009-0130R01-CR_Address_RD_B004
	22 Oct 2009	5	Minor editorial changes
Candidate Version OMA-RD-CMI-V1_0	01 Dec 2009	All	Status changed by TP: TP ref# OMA-TP-2009-0527-INP_CMI_V1_0_ERP_for_Candidate_Approval

Appendix B. Use Cases (Informative)

B.1 CMI Upload Content

This use case demonstrates the ability to support CMI upload content between the Content Provider and the Service Provider.

B.1.1 Short Description

The Content Provider uses the CMI to upload content to the Service Provider to enable the content to be added to the Service Provider's content-based network services. The content can be any type that the service provider would like to allow a Content Provider to sell as an independent (off-deck) channel.

The content should be uploaded to the Service Provider via the agreed-upon channel between Service Provider and the Content Provider. The Service Provider will inform the Content Provider of the success/failure of the uploading procedure.

B.1.2 Market Benefits

The main benefit of the CMI is creation of a content ecosystem, which allows Content Providers to offer subscribers network-based content services (such as ringback tones) from its off-deck storefronts.

The ecosystem will create an additional effective sales channel for network-based content services that will boost awareness, penetration and usage for these services and will allow the Service Provider to focus on new innovative and differentiating services.

B.2 CMI Purchase Content

This use case demonstrates the ability to support CMI purchase content between the Content Provider and the Service Provider.

B.2.1 Short Description

A subscriber access Content Provider in order to purchase a content item which has been already uploaded to the Service Provider (see B.1 CMI Upload Content use case).

The Content Provider uses the CMI to perform purchase content item transaction that describes the purchase/transaction properties (such as user identification, content item name, expiration date, Etc,.).

The Service Provider validates the transaction according to agreed policy (SLA) and other service provider's criteria (note: this action is CMI out of scope)., than, CMI will reply the purchase transaction result to the Content Provider.

B.2.2 Market benefits

The main benefit of the CMI is creation of a content ecosystem, which allows Content Providers to offer subscribers network-based content services (such as ringback tones) from its off-deck storefronts.

The ecosystem will create an additional effective sales channel for network-based content services that will boost awareness, penetration and usage for these services and will allow the service provider to focus on new innovative and differentiating services.

In addition to the above, the CMI activation shall enable a Content Provider to connect a service provider securely allowing submitting of end user purchase and profile management requests

B.3 CMI Content Reports & Statistics

This use case demonstrates the ability to support CMI report & statistics between the Service Provider and the Content Provider.

B.3.1   Short Description

Based on Service Provider polices and agreement with the Content Provider (e.g.: SLA) the CMI allow to support Service Provider CMI report & statistics trenaction to the Content Provider.

CMI can support the Content Provider to receive usage information on the content items such as: report on the content that will expired.

B.3.2   Market benefits

The main benefit of the CMI is creation of a content ecosystem, which allows Content Providers to offer subscribers network-based content services (such as ringback tones) from its off-deck storefronts.

The ecosystem will create an additional effective sales channel for network-based content services that will boost awareness, penetration and usage for these services and will allow the Service Provider to focus on new innovative and differentiating services.

In addition to the above, the reports & statistics CMI shall enable a Content Provider as well as a Service Provider to obtain usage and content based statistics

The reports & statistics CMI shall provide daily reports allowing Service Provider & Content Provider to receive snapshots on their content and subscriber base situation, and daily activity