Next Generation Service Interfaces Requirements

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Open Mobile Alliance

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1. Scope (Informative)

This document defines the requirements for the OMA Next Generation Service Interfaces (NGSI) v.1.0.

The aim of the OMA NGSI RD v1.0 is to address requirements for:

- Extensions of existing interfaces for personal communication services, including
    - Rich multimedia services support like advanced multimedia conferences, content sharing and content delivery, as well as conference member management and advanced call handling schemes like:
        - Extensions to third party call control and call notifications including Media enhancements (e.g. CMR), behavior which is based on configuration (e.g. simple forking, Find Me Service), control on display/restrict calling line identification,
        - Enhancement to the conference experience (including manipulation of group list, multimedia streaming control).
    - Access to Service Provider Media/data storages,
    - Federation and management of identities within/across domains,

    Sophisticated Media control (e.g. support for Media control scripts, providing multimedia guidance)
- Context and Personalization with focus on multimedia services:
    - Use of context and preference information to enrich user experience in Communication Services, Call handling and multimedia services,
    - User-driven manipulation of multimedia experience.

Applications/enablers which make use of network functionality offered through the NGSI interface are out of scope of this document.

Charging aspects (included in the NGSI Work Item) are addressed inside the OMA PSA v1.0 [OMA PSA], which is complementary with respect to NGSI.

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

[3GPP TS23.198]	Open Service Access (OSA); Stage 2 E.g. 3GPP TS 23.198 (Release 8) URL: http://www.3gpp.org/ftp/Specs/latest/Rel-8/23_series/
[IMF]	"Identity Management Framework Requirements", Version 1.0, Open Mobile Alliance™, URL:http://www.openmobilealliance.org/
[OMADICT]	"Dictionary for OMA Specifications", Version 2.7, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_7, URL:http://www.openmobilealliance.org/
[OMA PSA]	"Parlay Service Access", Open Mobile Alliance™, OMA-AD-Parlay_Service_Access-V1_0-20090519-C, URL:http://www.openmobilealliance.org/
[OWSER]	"OMA Web Services Enabler (OWSER): Core Specifications" Version 1.1, Open Mobile Alliance, August 2005
[RFC2828]	"Internet Security Glossary", R. Shirley, IETF RFC 2828, May 2000 http://www.ietf.org/rfc/rfc2828.txt

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

The definitions in the OMA Dictionary [OMADICT] are valid for this RD unless otherwise stated below.

Authorization	A right or permission that is granted to an entity to access a system resource, or the process of granting the right or permission [RFC 2828] (see [IMF])
Communication Service	A Service characterized by offering Call functionalities.
Context Access Language	A language used for accessing (discover, query, provide) Context Information.
Context Announcement	It is the function that announces that the Context Information of a given Context Entity is available and can be queried. It does not provide the information itself
Context Entity	Any Principal and object, which has a state. This state can be described using Context Information. Examples: Context Entities could be users, devices, places, buildings, and many other (including virtual objects).
Context Information	Any volatile or persistent information, which describes a state of a Context Entity. Context Information can be measured by sensors, manually set by humans, derived from operations on handset s or terminals, inferred from other information, or requested from databases.
	Note: the context model may include information such as: location, presence, profile, subscriptions.
Context Information Model	An abstract model defining the structure of the Context Information.
Converged Address Book	A set of Contact Entries, stored by a CAB User, and commonly available to any of the CAB User's registered clients.
Find Me Service	The Service which forwards Calls in sequence or simultaneously to different entities relevant to the callee (e.g., between user's office, cell and home phone, remote sales agents or stores in unique locations) as specified by configuration based on e.g., user's schedule or presence status.
Framework	See explanation in section 5.1 in [3GPP TS 23.198]
Group Identifier	A reference that uniquely maps to a given set of Identifiers, and/or Group Identifiers. Note that from the perspective of the interface, the Group Identifiers are not distinguishable from other Identifiers.
Identifier	A reference that uniquely maps to an Identity. One or more Identifiers are among the characteristics that define an Identity (as defined [IMF]). In a broader context, it includes Pseudonyms.
Identity Federation	Same as "Federation" (see [OMADICT])
Multimedia List	A list composed of Media identifiers (e.g. URI)
Personal Contact Card	The collection of personal contact information that a CAB User defines about him/herself.
PSA Framework	See explanation in [OMA PSA]
Pseudonym	An arbitrary name used as an Identifier to refer to an Identity. A Pseudonym is usually known in the context of a specific relationship to the Identity to a given entity only.
Service Description	Information used to describe services available to applications via meta data description. The information shall contain data like: ▪ Textual description of the service ▪ the type of service provided (e.g. conferencing, voice mail box)

- specification of their functional features of offered interfaces
- associated Policies

Service Recommendation   Offer to use a new service to the end-user. The service recommendation defines at least the following items:

- A representation of the service recommendation to the user (e.g. icon, voice or textual announcement)
- A service entry pointing to the service in the network (e.g. URI)
- A textual informal description of the service to be presented to the user
- An invocation tag (e.g. to state if the service should be invoked automatically or manually by the receiving user)

3.3 Abbreviations

3GPP	3rd Generation Partnership Project
API	Application Programming Interface
CAB	Converged Address Book
CMR	Customized Multimedia Ringing
CT5	Core Network and Terminals Working Group 5
GSSM	General Service Subscription Management
NGSI	Next Generation Service Interfaces
OMA	Open Mobile Alliance
PEEM	Policy Evaluation, Enforcement and Management
PSA	Parlay Service Access
REST	Representational State Transfer
SIP	Session Initiation Protocol
UE	User Equipment
URI	Uniform Resource Identifier
URL	Uniform Resource Locator

4. Introduction   (Informative)

Today's telecommunications service providers face strong competition to deliver new revenue-generating services. Creating value in future service domains is strongly linked to the convergence of new services across various domains. The objective of Next Generation Service Interface (NGSI) enabler is to define a set of new service APIs in order to stimulate the usage of various service enablers to foster the development of new services and applications. NGSI will both define extensions beyond today's Parlay X APIs (latest version: 3GPP Release 8 Parlay/Parlay X APIs) and define several new APIs as needed. Considering the evolution of the network in the day-to-day life, shaping the future of the digital life is driven by information sources, social communities, e-commerce, as well as network access and network infrastructure variety up to integrated services.

While the industry is currently focussing on deployment of major, large-scale services like messaging, voice or ringtones over new service infrastructures, an important aspect for service revenue generation will also be played by the so-called long-tail market based on smaller segmented markets. Besides content, procedures and portals, programmability of network services as well as a widely accepted standard are the key enablers for open service creation in this emerging long-tail market.

Up to now, the only recognized and used standard APIs have been developed previously in the Parlay Group, which have been successfully inherited as PSA enabler by OMA. Those interfaces are based on requirements specified by 3GPP CT5, addressing so-called large-scale services, which target for large volume usage with a broad user base. APIs focussing on these services stimulate the integration of these service enablers into a variety of applications and end-user services, creating a big potential but mainly for the short-tail market. When considering the long-tail market, personalization and context-aware service offerings are gaining on value to drive the market.
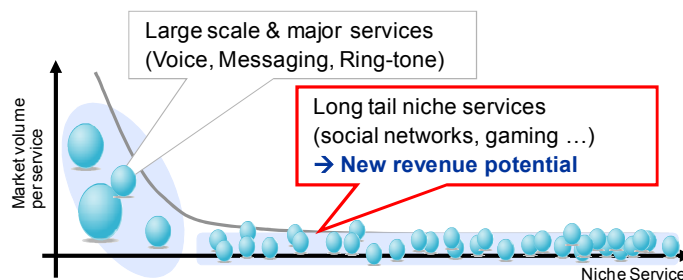
Figure 1: Representation of revenue volume distribution along the changing service market

The market differentiation through innovative personalization in the service delivery chain is a key factor for the strong competition to deliver new revenue-generating services. It is crucial to address the user expectations for enhanced service value respecting device capabilities, service subscriptions, context, user profiles, privacy as well as their dynamic collaboration. Thus, the NGSI enabler addresses a crucial field of open service creation by providing APIs which allow the collaboration of various stakeholders from communication carriers over device manufacturers up to content and application providers towards "converged" digital value chain. It will not only allow OMA service enablers to reach their market easier and faster, but also trigger service creation in advanced applications.
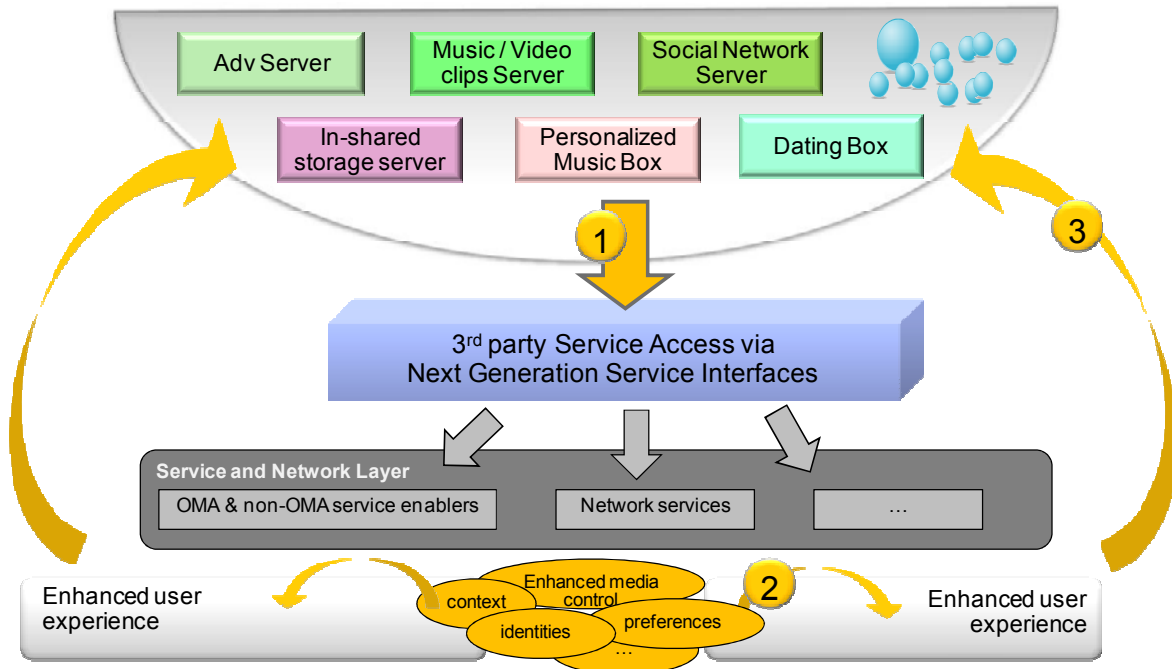
Figure 2: High-level view of NGSI enabler scope

Fig. *2* is providing the high-level view of the NGSI enabler scope as well as the value ecosystem. This ecosystem can be described as following:

1. NGSI enabler interfaces offer a way to applications to access network capabilities as well as to enhance existing communications with features offered via these applications.

2. Respecting device capabilities, service subscriptions, context, user profiles, privacy as well as their dynamic collaboration, the user experience can be enhanced with additional service value offered by the applications. These mechanisms are controlled and enabled via the NGSI interfaces (see 1.).

3. Leverage the enforced service capabilities from the applications, enhanced user experience and service consumption is provided. This step involves collaboration of network capabilities with features from the application environment.

Service APIs are provided as part of the exposure layer of service delivery platforms to applications. While those APIs are offered via the service exposure layer, the service delivery platforms indeed provide the necessary means to manage and govern the access of applications to network services. Thus, the set of APIs supports developers to implement their applications reusing offered network services while at the same time taking over the control and execution towards the underlying service and network layer.

In OMA PSA v1.0, the PSA Framework [OMA PSA] is identified and can be implemented as a collection of 3GPP and OMA functionalities (e.g. PEEM can manage and enforce policies on the access and usage of APIs); a detailed specification of the PSA Framework is not in the scope of OMA PSA v1.0 but kept for further study. The same approach applies also for NGSI v1.0.

5. NGSI V1.0 release description   (Informative)

The focus of the NGSI v1.0 is the standardization of new functional APIs essential for applications to extend personalized communication services. In order to allow for advanced service creation based on multiple services/enablers, interface functionalities for identity federation as well as registration and discovery of services are included. The focus is not limited to mobile networks only.

The NGSI v1.0 functionalities are designed as independent of a specific framework architecture or application domain. Respecting the OMA PSA v1.0 enabler, the NGSI v1.0 enabler aims to be compatible with the PSA Framework [OMA PSA] identified in PSA v1.0.

While NGSI RD provides complementary requirements to OMA PSA v1.0, in the technical specification development phase NGSI v1.0 will respect the existing work and provide the backward compatibility as much as possible when appropriate. NGSI APIs will be defined as abstract APIs, but will allow the different types of bindings, in the same way as the current OMA ParlayREST 1.0 enabler will provide an additional binding to API defined in OMA PSA v1.0.

The API functionalities as proposed in the NGSI v1.0 combined with the OMA PSA v1.0 could create a new set of OMA service interfaces.

5.1   Version 1.0

This document defines the requirements for NGSI Version 1.0 extending the functionalities of service APIs to 3rd party applications:

- Call enhancements,

- Identity control and federation,

- Preference handling,

- Enhanced conferencing,

- Multimedia list handling,

- Service data handling, especially for contact information and group information

- Service recommendation management,

- Context management,

- Group list management, and

- Registration and Discovery of services.

Examples of functions described in annex section B.1 "Use cases" and detailed requirements in section "Requirements".

6. Requirements   (Normative)

6.1 Modularisation

The NGSI Enabler consists of the following functional modules:

- **Call enhancements**: This module defines the capabilities of NGSI Enabler facilitating Call control enhancement by adding application-defined Media, e.g. for certain events during Call, or during Call setup on participant basis, by extensions of Call handling methods, as well as by respecting preferences and context of users, device and network capabilities for defining the Call experience.

- **Identity Control:** This module defines the capabilities of NGSI Enabler facilitating the management of pseudonyms related to a user, of identifiers related to groups, and the federation of identities between services.

- **Preference Handling:** This module defines the capabilities of NGSI Enabler facilitating the management and enforcement of preference settings and obligations for service usage of applications.

- **Enhanced Conferencing:** This module defines the capabilities of NGSI Enabler facilitating functionalities for participant control, for secure access to its conference facilities by application-specific authentications, and for adding application-specific privilege control.

- **Multimedia List Handling:** This module defines the capabilities of NGSI Enabler facilitating management of list of Media of different types provided by multiple content providers and different modes of the list usage in applications.

- **Service data handling**: This module defines the capabilities of NGSI Enabler facilitating the management of the data relevant to applications.

- **Service recommendation**: This module defines the capabilities of NGSI Enabler enabling the management of service offerings (i.e. recommendations) to be easily published to the user's UE, including their invocation preferences to the Service Providers.

- **Context management**: This module defines the capabilities of NGSI Enabler facilitating functionalities for enabling and controlling the handling of Context Information about Context Entities.

- **Service Registration and Discovery:** This module defines the capabilities of NGSI Enabler facilitating the registration of services and their discoveryby applications.

- **Group List management:** This module defines the capabilities of NGSI Enabler facilitating group's address list modifications.

6.2 High-Level Functional Requirements

This section identifies the high level functional requirements for the NGSI enabler. The detail requirements are further identified in the following sections according to detailed functions identified. The relationship between high level requirements and detail requirements are described in the 'Informational Note' of the individual requirements in this section.

Label	Description	Release	Functional module
NGSI-HLF-001	The NGSI Enabler SHALL provide interfaces to allow applications to offer Media enhancement functions to Call establishment and modifications. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-CSF-001 to NGSI-CSF-004 and NGSI-CSF-012 to NGSI-CSF-014 listed in section 6.3.	1.0	Call control

NGSI-HLF-002	The NGSI Enabler SHALL provide interfaces to allow applications to offer personalized Call handling. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-CSF-005 to NGSI-CSF-011 listed in section 6.3.	1.0	Call control
NGSI-HLF-003	The NGSI Enabler SHALL provide interfaces to allow an application to federate Identities among/between applications and other entities in the network. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-IDC-005 to NGSI-IDC-008 listed in section 6.4.	1.0	Identity control
NGSI-HLF-004	The NGSI Enabler SHALL provide interfaces to access services utilizing the Identifier established during Federation. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-IDC-003, NGSI-IDC-004 and NGSI-IDC-013 listed in section 6.4.	1.0	Identity control
NGSI-HLF-005	The NGSI Enabler SHALL support arbitrary Identifiers (e.g., individual Identifiers, Pseudonyms, Group Identifiers) if appropriate. **Informational Note:** It might not be appropriate in all cases to apply the case of Group Identifiers (e.g. call control to individual versus multi parties). The required functionality of this requirement is as specified in requirements NGSI-IDC-003 and NGSI-IDC-004 with their dependencies on NGSI-IDC-005 to NGSI-IDC-012 listed in section 6.4.	1.0	Identity control
NGSI-HLF-006	The NGSI Enabler SHALL provide interfaces to allow applications to manage the Policies of a given Identity. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-PREF-005 and NGSI-PREF-006 listed in section 6.5.	1.0	Identity control
NGSI-HLF-007	The NGSI Enabler SHALL provide interfaces to allow applications to manage the Policies of a given Group Identifier.	1.0	Identity control
NGSI-HLF-008	The NGSI Enabler SHALL provide interfaces to allow applications or services to request feedback about the requested access to functionalities from the underlying network. This feedback may include e.g. service capability access rejection, limitations, and confirmations based on Service Provider policies.	1.0	All
NGSI-HLF-009	The NGSI Enabler SHALL provide interfaces to allow applications to offer Media enhancement for a conference session (e.g. adding Media at conference call setup when joining a conference call). **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-ECE-001 to NGSI-ECE-004 listed in section 6.6.	1.0	Enhanced Conferencing
NGSI-HLF-010	The NGSI Enabler SHALL provide interfaces to allow applications to control the participants of the conference. **Informational Note:** The required functionality of this requirement is as specified in requirement NGSI-ECE-005 in section 6.6.	1.0	Enhanced Conferencing

NGSI-HLF-011	The NGSI Enabler SHALL provide interfaces to allow an application to specify and configure a multimedia list to be utilized (e.g. Media in the list to be streamed) by the applications in the network in order to provide a multimedia service. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-MLH-001 to NGSI-MLH-009 listed in section 6.7.	1.0	Media List Handling
NGSI-HLF-012	The NGSI Enabler SHALL provide interfaces to allow an application to create/utilize/delete a pre-defined multimedia list. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-MLH-001 to NGSI-MLH-009 listed in section 6.7.	1.0	Media List Handling
NGSI-HLF-013	The NGSI Enabler SHALL provide interfaces to allow applications to manage contact information (e.g. Converged Address Book and Personal Contact Card) and published communication means. **Informational Note:** The required functionality of this requirement is as specified in requirement NGSI-ADN-003 and NGSI-ADN-004 in section 6.8.	1.0	Service data handling
NGSI-HLF-014	The NGSI Enabler SHALL provide interfaces for application configuration functionalities in order to give a Service Provider the ability to include service recommendations from application providers to end-users. **Informational Note:** The required functionality of this requirement relates to requirements NGSI-SR-001 to NGSI-SR-003 listed in section 6.9.	1.0	Service Recommendation
NGSI-HLF-015	The NGSI Enabler SHALL provide interfaces to allow applications to manage and access context information. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-CTX-001 to NGSI-CTX-015 listed in section 6.10.	1.0	Context Management
NGSI-HLF-016	The API to manage Context Information SHALL be generic and not depending on the Context Information Model. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-CTX-016 to NGSI-CTX-022 listed in section 6.10.	1.0	Context Management
NGSI-HLF-017	The NGSI Enabler SHALL provide interfaces to allow applications to register/configure services which are available to applications via their Service Description.. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-SRD-001 to NGSI-SRD-003 listed in section 6.11.	1.0	Service Registration and Discovery
NGSI-HLF-018	The NGSI Enabler SHALL provide interfaces to allow an application to specify and configure notification for a change in membership in a group. **Informational Note:** The required functionality of this requirement is as specified in requirements NGSI-GLM-001 to NGSI-GLM-005 listed in section 6.12.	1.0	Group List Management
NGSI-HLF-019	The NGSI Enabler SHALL be structured in a way that supports profiling of the feature set of the Enabler, e.g. to cater for different market needs.	1.0	All

Table 1: High-Level Functional Requirements

6.2.1   Security

This section identifies the high-level security needs for the NGSI enabler.

Label	Description	Release	Functional module
NGSI–SEC-001	The NGSI Enabler SHALL protect against potential security threats and provide secure access to the network capabilities through the underlying Framework.	1.0	Overall System
NGSI–SEC-002	The NGSI Enabler SHALL provide interfaces to manage security policies for controlling the access to Context Information.	1.0	Context Management
NGSI–SEC-003	The NGSI Enabler SHALL provide interfaces to manage security policies for controlling the Identity management.	1.0	Identity Control

Table 2: High-Level Functional Requirements – Security Items

6.2.1.1   Authorization

This section identifies the high-level authorization needs for the NGSI enabler.

Label	Description	Release	Functional module
NGSI-AUZ-001	The NGSI Enabler SHALL be able to support the authorization of a 3rd party application for submitting requests or accessing information on behalf of the User using Identifiers associated to that 3rd party application.	1.0	Identity Control
NGSI-AUZ-002	The NGSI Enabler SHALL be able to support to authorize an application to use a set of services prior to the execution of any feature of these services. For example, an application can make it sure that all the relevant services to its end user service are accessible in order to avoid any roll backs which may be caused by the rejection of the usage of one of the services.	1.0	Service Registration and Discovery
NGSI-AUZ-003	The NGSI Enabler SHALL be able to authorize an application on the user's behalf in accordance to the user's preferences.	1.0	Identity Control, Context Management
NGSI-AUZ-004	Any NGSI Enabler functionality exposed through its interfaces SHALL be subject to Service Provider authorization policies, and SHALL only be exercisable by authorized applications.	1.0	Overall System

Table 3: High-Level Functional Requirements – Authorization Items

6.2.2   Administration and Configuration

The following requirements are related to the management of configuration related to the use of NGSI Enabler functionalities.

Label	Description	Release	Functional module
NGSI-ADM-001	The NGSI Enabler SHALL provide interfaces to allow an application to configure preferences related to Communication Services. **Informational Note:** This requirement is related to the requirements NGSI-PREF-001 to NGSI-PREF-006 listed in section 6.5.	1.0	Preference Handling

NGSI-ADM-002	The NGSI Enabler SHALL provide interfaces to allow an application to configure authorization related to Communication Services. **Informational Note**: It is FFS if it can be realized via some of the exiting Enablers such as GSSM.	DELETED	Preference Handling
NGSI-ADM-003	The NGSI Enabler SHALL provide interfaces to allow an application to define and configure Policies related to Communication Services (examples are: (i) simple authorization policy based on the Identity, (ii) the communication service is only available during the business hours; (iii) the communication service is only available if the user is within a given location; (iv) the communication service is only available up to a predefined number of calls, etc.). **Informational Note:** This requirement is related to the requirements NGSI-PREF-001 to NGSI-PREF-006 listed in section 6.5. **Informational Note**: It is FFS if it can be realized via some of the exiting Enablers such as GSSM.	1.0	Preference Handling

Table 4: High-Level Functional Requirements – Administration and Configuration Items

6.2.3   Privacy

This section identifies the high-level privacy needs for the NGSI enabler.

Label	Description	Release	Functional module
NGSI-PRV-001	The NGSI Enabler SHALL provide interfaces to control the privacy of Identity information.	1.0	Identity Control
NGSI- PRV-002	The NGSI Enabler SHALL provide interfaces to control the privacy of Context Information.	1.0	Context Management
NGSI-PRV-003	The NGSI Enabler SHALL provide interfaces in order to support several levels of granularity for controlling the access to Context Information (e.g. for each application, for each requesting user, for each Context Information …).	1.0	Context Management

Table 5: High-Level Functional Requirements – Privacy Items

6.3   Functional Requirements for Call enhancements

The Call enhancements features allow applications to enhance call experiences by adding application-defined Media, e.g. for certain events during call, or during call setup on participant basis. For example, users can be entertained with the music they have chosen, or with the music offered by the others during the idle time of the call. Additionally, the new features allow applications to add a level of control to the Media/content delivery (e.g. link or streaming). Another important aspect given by the new features is the extensions of Call handling methods (e.g. forwarding/forking). For example, important calls may reach the user even during the meeting, urgent calls may be forwarded to a delegated person, and non-urgent calls may be forwarded to the answering machine. Further, applications have the possibility to take preferences and context of users, device and network capabilities into consideration.

Label	Description	Release	Functional module
NGSI-CSF-001	The NGSI Enabler SHALL provide interfaces to allow an application to add a specific Media or a specific Media address (e.g. SIP-URI, TEL-URI, URL) when it is establishing a Call in order to personalize the call experience (e.g. customized ring back tone). This SHALL include, but not limit to: - customized ringing signal (e.g. 3GPP CRS) - customized alerting tone (e.g. 3GPP CAT)	1.0	Call control

NGSI-CSF-002	The NGSI Enabler SHALL provide interfaces to allow an application to provide the caller with a specific Media or Media address upon notification of an event (e.g. Call setup request of a subscriber) to entertain during the waiting period of the Call establishment.	1.0	Call control
NGSI-CSF-003	The NGSI Enabler SHALL provide interfaces to allow an application to specify the Media or Media address on participant basis if multiple participants are considered.	1.0	Call control
NGSI-CSF-004	The NGSI Enabler SHALL provide interfaces to allow an application to indicate the delivery method of the specified Media (e.g. provide the link, stream the Media).	1.0	Call control
NGSI-CSF-005	The NGSI Enabler SHALL provide interfaces to allow an application to specify an application-defined Call handling method when establishing a Call in order to allow successful Call setup based on the user's context, e.g. original callee is not available. This SHALL include, but not limit to: • Chained forwarding order • Simultaneous forwarding	1.0	Call control
NGSI-CSF-006	The NGSI Enabler SHALL provide interfaces to allow an application to specify an application-defined Call handling method in order to allow successful Call setup based on the user's context, e.g. the callee is busy, upon notification of an event (e.g. Call setup request of a subscriber). This SHALL include, but not limit to: • Chained forwarding order • Simultaneous forwarding	1.0	Call control
NGSI-CSF-007	The NGSI Enabler SHALL provide interfaces to invoke a chained Call establishment based on an application-defined target address order (e.g. FindMe function trying a special order of targeted devices).	1.0	Call control
NGSI-CSF-008	The NGSI Enabler SHALL provide interfaces to invoke simultaneous Call establishments to several application-defined target addresses.	1.0	Call control
NGSI-CSF-009	The NGSI Enabler SHALL provide interfaces to allow an application to configure the Call handling rule by providing one or multiple alternative target addresses in addition to the original address of the participant. **Informational Note:** The requirements CSF-007 and CSF-008 provide the specific requirements to support chained and simultaneous call establishment respectively.	1.0	Call control
NGSI-CSF-010	The NGSI Enabler SHALL provide interfaces to allow an application to configure the Call handling rule based on the Call status (e.g. busy or not reachable).	1.0	Call control
NGSI-CSF-011	The NGSI Enabler SHALL provide interfaces to allow an application to configure the Call handling rule based on the caller's context (e.g. presence status).	1.0	Call control
NGSI-CSF-012	The NGSI Enabler SHALL provide interfaces to allow an application to add any Media (image/video/music) based on personal preference in addition to the default Media (subject to an Service Provider's policy) to be used during a Call. Example Use Cases are: Adding of advertisement to a voice call to offer the call for a reduce price; Picture application adds a frame/banner to the images used in the call.	1.0	Call control

NGSI-CSF-013	The NGSI enabler SHALL provide interfaces to allow an application to record and/or to retrieve one or more Media of a call.	1.0	Call control

<p align="center">Table 6: Functional Requirements for Call enhancements</p>

6.4 Functional Requirements for Identity control

This section identifies the requirements for interfaces related to the Identity control and federation. The information related to the user's identity needs to be controlled in order to preserve the user's privacy. The requirements for interface functionalities cover the management of pseudonyms related to a user, of identifiers related to groups, and the federation of identities between services. Through the required functionalities the user is kept in control which information are available to a specific service, while enabling to protect its privacy with respect to his or her identity. Additionally, federation allows a secure transition of user information across different services.

It is up to the Service Provider how the functionalities regarding the management of identifiers are provided to the user.

Label	Description	Release	Functional module
NGSI-IDC-001	The NGSI Enabler SHALL provide interfaces to allow an application to indicate that the Identity of a user shall be hidden (e.g. for anonymous calls)	1.0	Identity control
NGSI-IDC-002	The NGSI Enabler SHALL provide interfaces to allow an application to indicate that the Identity of a user shall be hidden (e.g. for anonymous Calls) upon notification of an event (e.g. Call setup request of a subscriber).	1.0	Identity control
NGSI-IDC-003	The NGSI Enabler SHALL provide interfaces to allow an application to indicate that the Identity of a user shall be hidden behind an assigned Pseudonym.	1.0	Identity control
NGSI-IDC-004	The NGSI Enabler SHALL provide interfaces to allow an application to indicate that the Identity of a user shall be hidden behind an assigned Pseudonym upon notification of an event (e.g. Call setup request of a subscriber).	1.0	Identity control
NGSI-IDC-005	The NGSI Enabler SHALL provide interfaces to allow resolving a given Identifier established during Federation into one or more Identifier known at the requesting entity. **Informational Note:** With respect to NGSI-SEC-003, NGSI-AUZ-004 and NGSI-PRV-002 this resolution has to be done in such a way that it does not break the privacy of the user.	1.0	Identity control
NGSI-IDC-006	The NGSI Enabler SHALL provide interfaces to allow resolving a given Identifier used at a requesting entity into the Identifier established during Federation with the other given entity in the network. **Informational Note:** With respect to NGSI-SEC-003, NGSI-AUZ-004 and NGSI-PRV-002 this resolution has to be done in such a way that it does not break the privacy of the user.	1.0	Identity control
NGSI-IDC-007	The NGSI Enabler SHALL provide interfaces to allow registering a new Identifier for a given Identity in order to establish a new Federation.	1.0	Identity control
NGSI-IDC-008	The NGSI Enabler SHALL provide interfaces to allow revoking an Identifier for a given Identity in order to stop the Federation for this Identifier.	1.0	Identity control
NGSI-IDC-009	The NGSI Enabler SHALL provide interfaces to allow registering a new Group Identifier for a given set of Identities which is known at the requesting entity.	1.0	Identity control

NGSI-IDC-010	The NGSI Enabler SHALL provide interfaces to allow inserting a set of Identifiers at a given Group Identifier which are known at the requesting entity.	1.0	Identity control
NGSI-IDC-011	The NGSI Enabler SHALL provide interfaces to allow revoking a Group Identifier which is known at the requesting entity.	1.0	Identity control
NGSI-IDC-012	The NGSI Enabler SHALL provide interfaces to allow revoking a set of Identifiers from a given Group Identifier which are known at the requesting entity.	1.0	Identity control
NGSI-IDC-013	The NGSI Enabler SHALL provide interfaces to allow access to services only with the Identifier established during the Federation.	1.0	Identity control

Table 7: Functional Requirements for Identity control

6.5   Functional Requirements for Preferences

This section identifies the requirements for configuring the preferences related to Communication Services. In order to offer communication service usage for applications in privacy protected, secured, fair and lawful ways, the configuration of preferences defined as policy for authorization and obligation for the use of communication services based on the condition of relevant information such as time of the day, location, other context information is provided to 3rd parties. A typical example is given, if a Call establishment is controlled by certain conditions. For example, the application requests to establish a Call between two users. Based on the given conditions (e.g. presence) for the users, the communication services used are obligated to permit or deny such Call establishment. Such an example is shown in the Use Case description for enforcing working policies of a call centre as given in section B.1, which controls the authorization of agent to customer calls by considering if the agent is on duty or not. Another example is the obligation to authorize a certain service invocation. Based on a certain context, the application wants to invoke a new service. The Framework will control over the conditions, if and how the application can issue a new service (e.g. usage of an advertised coupon is permitted only once).

Label	Description	Release	Functional module
NGSI-PREF-001	The NGSI Enabler SHALL provide interfaces to allow the management (for example: create, read, update, delete) of preferences defined by Policies related to Communication Services.	1.0	Preference Handling
NGSI-PREF-002	The NGSI Enabler SHALL provide interfaces to allow the management (for example: create, read, update, delete) of obligations requested by Communication Services.	DELETED	Preference Handling
NGSI-PREF-003	The NGSI Enabler SHALL provide interfaces to allow setting the conditions for Policies when establishing/modifying Communication Services (e.g. maximum number of calls, apply if in certain location).	1.0	Preference Handling
NGSI-PREF-004	The NGSI Enabler SHALL provide interfaces to allow setting the conditions for Policies when establishing/modifying Communication Services (e.g. maximum number of calls, apply if in certain location) based on Identifiers.	1.0	Preference Handling
NGSI-PREF-005	The NGSI Enabler SHALL provide interfaces to allow reading the Policies stored for a given Identity.	1.0	Preference Handling
NGSI-PREF-006	The NGSI Enabler SHALL provide interfaces to allow modifying the Policies stored for a given Identity.	1.0	Preference Handling

Table 8: Functional Requirements for Preferences

6.6   Functional Requirements for Enhanced Conference Experience

The enhanced conference experience features offers services to enhance the conferencing experience by adding several new control functions. One of the offered functionalities is the participant control. The application can specify Media to be

performed according to the conference progress, such as one of the participants has joined/left the conference, in order to provide better guidance to the service or to simply entertain the conference participants. Additionally, the application has the possibility to secure the access to its conference facilities by application-specific authentications. Further, the application gets support to better organize a conference by adding privilege control, for example coaching in child conferences with external users. The presentation preference functionality is offering applications a way to customize its conferencing experience such as how participants to be shown on the user equipment.

Label	Description	Release	Functional module
NGSI-ECE-001	The NGSI Enabler SHALL provide interfaces to allow an application to add a specific Media address (e.g. SIP-URI, TEL-URI, URL) which is used when a participant joins or leaves the conference call (e.g. audio resource with an application specific announcement).	1.0	Enhanced Conferencing
NGSI-ECE-002	The NGSI Enabler SHALL provide interfaces to allow an application to add a specific Media address (e.g. SIP-URI, TEL-URI, URL) which is used when a participant joined a conference call and is waiting for the start of the conference (examples are: (i) the music until the moderator joins, (ii) guidance to a service usage until a certain number of participants join, etc.).	1.0	Enhanced Conferencing
NGSI-ECE-003	The NGSI Enabler SHALL provide interfaces to allow an application to specify the Media address on participant basis (e.g. depending on the role).	1.0	Enhanced Conferencing
NGSI-ECE-004	The NGSI Enabler MAY provide interfaces to allow an application to configure conference presentation preferences available through network side configuration (examples are: (i) the moderator is always shown in the left upper corner, (ii) only a picture of speaker is shown, (iii) branding of a multimedia conference) **Informational Note:** This is a requirement for a network-side feature. The communication between the network-side entities and the client on the UE in order to achieve the actual presentation control is considered as an application specific feature and thus out of scope.	1.0	Enhanced Conferencing
NGSI-ECE-005	The NGSI Enabler SHALL provide interfaces to allow an application to provide an application-specific authentication (e.g. conference id and password) which is used when a participant joins the conference call.	1.0	Enhanced Conferencing
NGSI-ECE-006	The NGSI Enabler SHALL provide interfaces to allow an application to add and control side/child conference which is additional to main conference. The side /child conference participants can be the members of main conference or external users. The side /child conference can use any Media such as video, audio, text, file, etc.	1.0	Enhanced Conferencing
NGSI-ECE-007	The NGSI Enabler SHALL provide interfaces to allow an application to record and/or retrieve one or more Media of a conference which is used when the participants want to record the content of conference and conference's attendees list. **Informational Note:** Attendees list may include not only attendees' identifiers but also their name, role in the conference (e.g. chairman, minutes taker, etc) and other associated information.	1.0	Enhanced Conferencing

| NGSI-ECE-008 | The NGSI Enabler SHALL provide interfaces to allow an application to observe and coach during the conference.

Informational Note: For example, in call center solution, a supervisor can observe the conversation between operator and customer invisible for customer quality purpose. The supervisor also can coach and guide a participant regarding his conversation with another member (e.g. a company's customer). The coaching can be realized using any Media type (audio, video, text, file, etc). | 1.0 | Enhanced Conferencing |
| NGSI-ECE-009 | The NGSI Enabler SHALL provide interfaces to allow an application to control the conference (e.g. chairman privilege switch, conference mode change, give/cancel the participant's data/control privilege, and allow/forbid function).

Informational Note: For example

▪ chairman privilege switch: the chair want to leave the conference and transfer his/her privilege to another participant.
▪ conference mode: audio, video, text, file, etc
▪ participant's data/control privilege: mute/unmute, send/receive data presentation, application sharing, video stream , etc | 1.0 | Enhanced Conferencing |

Table 9: Functional Requirements for Enhanced Conference Experience

6.7 Functional Requirements for Multimedia List Handling

This section provides functional requirements for multimedia list management, and different modes of the list usage in applications. One of the new functionalities is for the management of list of Media of different types provided by multiple content providers. Another functionality is to configure the applications to use a multimedia list, which can be either application specific or user / user group specific. Additionally, it allows the configuration of usage order and mode. Multimedia list can be used for providing the multimedia enhanced application in an easy way. One of such applications is a jukebox type of application. Another example is a free Media streaming with advertisement embedded in.

Label	Description	Release	Functional module
NGSI-MLH-001	The NGSI Enabler SHALL provide interfaces to allow an application to manage (for example: create, read, update, delete) a multimedia list composed of Media identifiers (e.g. URI).	1.0	Media List Handling
NGSI-MLH-002	The NGSI Enabler interfaces SHALL support the configuration by Principals of the multimedia list to be composed of Media identifiers referencing to content stored at different content providers.	1.0	Media List Handling
NGSI-MLH-003	The NGSI Enabler SHALL provide interfaces to allow the configuration of the multimedia list to contain any Media type or combination of Media types.	1.0	Media List Handling
NGSI-MLH-004	The NGSI Enabler SHALL provide interfaces to specify a multimedia list to be utilized by the applications in the network (e.g. Media in the list to be streamed) in order to provide a multimedia service specific to an application (e.g. jukebox application).	1.0	Media List Handling
NGSI-MLH-005	The NGSI Enabler SHALL provide interfaces to specify a multimedia list to be utilizable by different applications and services (e.g. usage in jukebox, but also in waiting service for call centers).	1.0	Media List Handling
NGSI-MLH-006	The NGSI Enabler SHALL provide interfaces to specify a multimedia list specific to selected users/ user groups (e.g. premium radio service personalized to specific user group).	1.0	Media List Handling

NGSI-MLH-007	The NGSI Enabler SHALL provide interfaces to specify a multimedia list to be utilized based on the user's context (e.g. presence status, location).	1.0	Media List Handling
NGSI-MLH-008	The NGSI Enabler SHALL provide interfaces to allow an application to configure the multimedia list to define the usage order (e.g. in sorted order, random, simultaneous).	1.0	Media List Handling
NGSI-MLH-009	The NGSI Enabler SHALL provide interfaces to allow an application to configure the multimedia list to customize the usage mode (e.g. pre-view mode, ticker mode, show image for 5 min).	1.0	Media List Handling

Table 10: Functional Requirements for Multimedia List Handling

6.8   Functional Requirements for Access to Service Provider Data

This section identifies the requirements for accessing to data owned by the Service Provider in order to allow the management of the data relevant to applications. The data includes generic XML data like group information, preferences and communication policies. Especially, it includes the communication data stored in a network entity such as a network address book. For example, applications can be enriched by accessing the Presence buddy-list of a user, or by triggering and adapting communication based on the communication data such as contact information, communication means, or preferences in order to trigger and adapt communication, and to offer enrichment to communication services. For example, an application can take the benefit of the network based communication data and can provide the user with a service based on a list of his/her friends who are available at certain time. The application may simply show the list to the user to let him/her select with whom he/she would contact, or automatically select one of the friends, or even sending messages simultaneously to all the available users.

Label	Description	Release	Functional module
NGSI-ADN-001	The NGSI Enabler SHALL provide interfaces in order to allow the management (e.g. create, read, update, delete) of XML documents.	1.0	Service data handling
NGSI-ADN-002	If an XML document, which is accessed via the NGSI Enabler, contains references to other XML documents owned by the Service Provider, these references SHALL be addressable through the NGSI Enabler. **Informational Note**: This requirement ensures that XML documents accessed via the NGSI Enabler contain only references to hosts that are visible to the application which is using the NGSI interface, rather than references to hosts that may only be visible from inside the Service Provider network.	1.0	Service data handling
NGSI-ADN-003	The NGSI Enabler SHALL provide interfaces to allow applications to read contact information (e.g. Converged Address Book and Personal Contact Card) and published communication means.	1.0	Service data handling
NGSI-ADN-004	The NGSI Enabler SHALL provide interfaces to allow applications to write and update contact information (e.g. Converged Address Book and Personal Contact Card) and published communication means.	1.0	Service data handling
NGSI-ADN-005	The NGSI Enabler SHALL provide interfaces in order to allow an application to subscribe to and receive notifications regarding updates to an XML document.	1.0	Service data handling

Table 11: Functional Requirements for Access to Service Provider Data

6.9   Functional Requirements for Service Recommendations

The service recommendation feature allows the configuration of service offerings to be easily published to the user's UE. The feature is presented as a special representation (e.g. icon, link) for an additional service to the user that can be invoked upon

decision of the user, upon automatic request of the Service Providers or not at all. The NGSI enabler shall provide interface functionalities in order to support applications to provide the configuration of their service recommendation descriptions including their invocation preferences to the Service Providers. However, it is up to the Service Provider to enforce how and when a service recommendation is issued to a certain user or a group of users. The Service Operator is able to enrich in this way ongoing communications with additional interesting services. The definition of the process to decide that a service recommendation is issued is up to the Service Provider's choice. It has to be noted that also the selection of the service that is actually offered to the user is up to Service Provider differentiation or user's choice, and is not be considered part of the NGSI enabler itself.

Label	Description	Release	Functional module
NGSI-SR-001	The NGSI Enabler SHALL provide interfaces to allow an application to configure how to recommend content or services in order to enhance the user experience of multimedia communications.	1.0	Service Recommendation

NGSI-SR-002	The NGSI Enabler SHALL provide interfaces to allow an application to configure its service recommendations with regard to:
	• *when* to push service recommendation to the UEs (e.g.
	  o on Call setup or on registration,
	  o on availability of the user,
	  o on basis of ongoing communication only,
	  o on basis of meta data),
	• *what kind of* content/services he wants to recommend (e.g. content links or plug-in),
	• *to whom* the service recommendations are issued (e.g. same for all users, personalized, group-specific, on user basis),
	• *under certain conditions* the service recommendations are issued (e.g. specific context),
	• *how* to invoke the service recommendations (e.g. presented on the user's choice to use (manually), or to be invoked automatically (e.g. dynamic advertisement driven by service provider's policies)) and
	• *how to involve a user choice* to seek user's consent, when invoking automatically
	when the Service Provider is offering the ability to recommend services to end-users.
		1.0	Service Recommendation

NGSI-SR-003	The NGSI Enabler SHALL provide interfaces in order to allow an application to define in the configuration the minimum technical requirements of the service the application wants to recommend in order to allow the Service Provider to optimize the service recommendations to the user's device capabilities.	1.0	Service Recommendation

Table 12: Functional Requirements for Service Recommendations

6.10 Functional Requirements for Context Management

This section identifies the requirements for the management of Context Information.

Context management is the set of processes and technologies enabling and controlling the handling of Context Information about Context Entities. The requirements for context management cover

- provisioning of context information: e.g. through providing access to sensor information, through manual input or through automatic processing of data

- discovery of Context Entities and available Context Information

- querying for Context Information whereas the query can be a one-time query or a continuous subscription to deliver information

- storing and processing of Context Information

By capturing and using Context Information, multimedia services can provide a better user experience, react dynamically to changes in the user's environment, adapt the service delivery and the used capabilities to the user's situation, and can use context information for tagging, indexing, and retrieving of useful information during multimedia sessions.

Label	Description	Release	Functional module
NGSI-CTX-001	The NGSI Enabler SHALL provide interfaces to allow an application to manage the access to available Context Information about Context Entities.	1.0	Context Management
Context Discovery			
NGSI-CTX-002	The NGSI Enabler SHALL provide interfaces to allow an application to discover the Context Entities, of a defined type, for which Context Information is available. **Informational Note:** according to NGSI-CTX-016, each Context Entity has a type that classifies it.	1.0	Context Management
NGSI-CTX-003	The NGSI Enabler SHALL provide interfaces to allow an application to restrict the discovery of Context Entities using different criteria, such as: ▪ in a defined scope, e.g. specific location areas, specific network areas, or other ▪ through filters on the Context Information and its attributes	1.0	Context Management
Context Query			
NGSI-CTX-004	The NGSI Enabler SHALL provide interfaces to allow an application to query for Context Information about Context Entities.	1.0	Context Management
NGSI-CTX-005	The NGSI Enabler SHALL provide interfaces to allow an application to restrict the query for Context Information about Context Entities using different criteria, such as: ▪ in a defined scope, e.g. specific location areas, specific network areas, or other through filters on the Context Information and its attributes **Informational Note**: For added efficiency, the NGSI Enabler could combine the discovery of Context Entities and querying for Context Information into one operation, provided by a single interface.	1.0	Context Management
Context Information Announcement			
NGSI-CTX-006	The NGSI Enabler SHALL provide interfaces to allow an application to provide the Context Announcements about the availability of Context Information about Context Entities.	1.0	Context Management
NGSI-CTX-007	The NGSI Enabler SHALL provide interfaces to allow an application to change an existing Context Announcement if this service/application is the originator of the Context Announcement.	1.0	Context Management
Context Storage			
NGSI-CTX-008	The NGSI Enabler MAY provide interfaces to allow an application to store Context Information in accordance to a specified Context Information Model.	1.0	Context Management
Context Processing			
NGSI-CTX-009	The NGSI Enabler MAY be able to support to allow an application to install and manage a context processing functionality.	1.0	Context Management

NGSI-CTX-010	The NGSI Enabler MAY be able to support to allow an application to register a context processing functionality to which to delegate the receiving of Context Information.	1.0	Context Management
NGSI-CTX-011	The NGSI Enabler MAY be able to support enabling an application to send the result of a query to a registered context processing functionality.	1.0	Context Management
Mode of Operations			
NGSI-CTX-012	The NGSI Enabler SHALL support synchronous operation for context discovery, query and provisioning operation, e.g. on-demand request for Context Information.	1.0	Context Management
NGSI-CTX-013	The NGSI Enabler SHALL support asynchronous operation for context discovery, query and provisioning operation, e.g. for subscription of Context Information from a Context Entity.	1.0	Context Management
Context Information Model			
NGSI-CTX-014	The NGSI Enabler SHALL support a Context Information Model for representing Context Information about Context Entity containing information such as: ▪ one or more entity id, each of them uniquely identifying one Context Entity ▪ an entity type, ▪ a set of attributes, ▪ a set of meta-information, e.g. quality-of-context information. **Informational Note:** Quality-of-context defines the quality of the Context Information, e.g. how accurate, reliable, fresh it is.	1.0	Context Management
Context Access Language			
NGSI-CTX-015	The NGSI Enabler SHALL provide interfaces that use a Context Access Language for declarative access to Context Information.	1.0	Context Management
NGSI-CTX-016	The NGSI Enabler SHALL provide interfaces supporting an extensible set of operations, covering at least discovery, query, subscription, and provisioning.	1.0	Context Management

Table 13: Functional Requirements for Context Management

6.11 Functional Requirements for Service Registration and Discovery

A service oriented architecture (such as [OWSER]) allows the creation of advanced applications in a dynamic way offering a potential differentiator for the operator. An application might use only a single specific service, or compose multiple services to fulfil its requirements. Each service is defined by a Service Description, including its interfaces, bindings as well as related Policies..

The requirements provide interface functionalities to allow the registration and discovery of services. Thus, an application could easily retrieve which services are currently available and registered. Further, interfaces to retrieve the relevant Service Descriptionsare given.

Label	Description	Release	Functional module
NGSI-SRD-001	The NGSI Enabler SHALL provide interfaces to allow the registration of the Service Description of a service (including functionalities and Policies).	1.0	Service Registration and Discovery
NGSI-SRD-002	The NGSI Enabler SHALL provide interfaces to allow the modification of the Service Description (including functionalities and Policies) of a service.	1.0	Service Registration and Discovery

NGSI-SRD-003	The NGSI Enabler SHALL provide interfaces to allow the deregistration of a Service Description of a service.	1.0	Service Registration and Discovery
NGSI-SRD-004	The NGSI Enabler SHALL provide interfaces to allow retrieving the Service Description of all services matching some given information in the Service Description (e.g. providing a specific functionality, requirements in Policies)..	1.0	Service Registration and Discovery
NGSI-COS-005	The NGSI Enabler SHALL provide interfaces to allow an application to retrieve all those service identifiers of the services based on specific Composition Profile information.	DELETED	
NGSI-COS-006	The NGSI Enabler SHALL provide interfaces to retrieve the lists of potential obligations per service identifier given in the Composition Profile.	DELETED	

Table 14: Functional Requirements for Service Registration and Discovery

6.12 Functional Requirements for Group List Management

This section provides functional requirements for group's address list modifications. The new functionality allows an application to provide notification service about a change in a group's address list. Applications can specify sending a notification to an appropriate entity for the change of members, or groups themselves. Application can also subscribe to receiving a notification of the change in a certain member or group. Such a notification can be used, for example, to enhance the conference experience.

Label	Description	Release	Functional module
NGSI-GLM-001	The NGSI Enabler SHALL provide interfaces to allow an application to start/stop notification related to member (e.g. member added, member deleted, member attribute updated) to a specific destination.	1.0	Group List Management
NGSI-GLM-002	The NGSI Enabler SHALL provide interfaces to allow an application to start/stop notification related to group (e.g. group deleted) to a specific destination.	1.0	Group List Management
NGSI-GLM-003	The NGSI Enabler SHALL provide interfaces to allow an application to receive the notification of a specific member or group when the update occurs (e.g. member added, member deleted, member attribute updated, group deleted).	1.0	Group List Management
NGSI-GLM-004	The NGSI Enabler SHALL provide interfaces to allow an application to specify and configure notifications related to groups.	1.0	Group List Management
NGSI-GLM-005	The NGSI Enabler SHALL provide interfaces to allow an application to receive the notification of a specified member or group.	1.0	Group List Management
NGSI-GLM-006	The NGSI Enabler SHALL provide interfaces to allow an application to specify the criteria (e.g. Context, preferences, properties of the Identities …) to create a group.	1.0	Group List Management

Table 15: Functional Requirements for Group List Management

6.13 Overall System Requirements

Label	Description	Release	Functional module
NGSI-SYS-001	The NGSI Enabler SHOULD support the mechanisms exposed by the underlying service Framework.	1.0	

Table 16: Overall System Requirements

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-NGSI-V1_0	20 Apr 09		Generation of the baseline document
	21 Apr 09	Scope, 6; 2.2	Incorporated the following CR's: OMA-REQ-NGSI-2009-0003-INP_CR_Scope_section OMA-REQ-NGSI-2009-0004R01-INP_CR_Call_Establishment_Functions_req OMA-REQ-NGSI-2009-0005R01-CR_Context-Call-Method-req OMADICT Changed reference to latest approved version
	05 May 09	6.3, 6.4 (new)	Corrections to section 6.3 (CR in 4R01 prev. not correctly implemented) Incorporated CR in: OMA-REQ-NGSI-2009-0006R01-INP_CR_Caller_ID_Control_req
	15 May 09	2.2, 3.2, 4,6.2, 6.4	Incorporated following CRs: OMA-REQ-NGSI-2009-0013R01-CR_Introduction OMA-REQ-NGSI-2009-0014-CR_Idenitty_Federation OMA-REQ-NGSI-2009-0015-CR_Underlying_Network_Conditions Added Editor's Note to 6.2 on terminology of framework
	19 May 09	6.4, 6.2.1,	Incorporated following CRs: OMA-REQ-NGSI-2009-0019R01-CR_Identity_Introduction OMA-REQ-NGSI-2009-0021-CR_Security
	26 May 09	2.2, 3.2, 6.2.1, 6.2.3, 6.5 (new)	Editorial corrections Incorporated following CR: OMA-REQ-NGSI-2009-0018R02-CR_Preference_and_Obligation
	02 June 09	6.2, 6.6 (new)	Incorporated following CR: OMA-REQ-NGSI-2009-0023R01-CR_Enhanced_Conferencce_Experience
	09 June 09	6.2; 6.7 (new)	Incorporated following CR: OMA-REQ-NGSI-2009-0026R01-CR_Sophisticated_Multimedia_list
	24 June 09	3.2, 3.3, 6.2, 6.2.1, 6.2.6, 6.3, 6.4, 6.6, New: 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, App B	Incorporated following CRs: OMA-REQ-NGSI-2009-0031-CR_Preference_and_Obligation_Use_Case OMA-REQ-NGSI-2009-0032R03-CR_Enhanced_Conferencce_Experience OMA-REQ-NGSI-2009-0033R04-CR_CAB OMA-REQ-NGSI-2009-0034-CR_Access_to_XML_docs OMA-REQ-NGSI-2009-0035R01-CR_3rd_Party_App_Identifier.doc OMA-REQ-NGSI-2009-0036-CR_Service_Recommendations OMA-REQ-NGSI-2009-0037R01-CR_Context_Management OMA-REQ-NGSI-2009-0038-CR_Context_Information OMA-REQ-NGSI-2009-0039R01-CR_Context_Management_Security OMA-REQ-NGSI-2009-0040R01-CR_Service_Composition (followed up action item NGSI-2009-A005 for reqs in 40R01) OMA-REQ-NGSI-2009-0042-CR_fix inconsistency on the wording value-added services vs applications OMA-REQ-NGSI-2009-0043-CR_add abbreviations OMA-REQ-NGSI-2009-0045-CR_Group_List_Notifications OMA-REQ-NGSI-2009-0046R01-CR_Context_call methods OMA-REQ-NGSI-2009-0047R01-CR_Composition_Profile removed all comment boxes

Document Identifier	Date	Sections	Description
	14 July 09	2, 3.2, 4, 5, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.14 App B	Incorporated the following CRs: OMA-REQ-NGSI-2009-0049R01-CR_Annex_UC_figure_correction OMA-REQ-NGSI-2009-0050R01-CR_Call_Enhancements_Introduction OMA-REQ-NGSI-2009-0051-CR_Enhanced_Conference_Experience_Introduction OMA-REQ-NGSI-2009-0052-CR_Call_Enhancements_correction OMA-REQ-NGSI-2009-0053R01-CR_Preference_Introduction OMA-REQ-NGSI-2009-0055R02-CR_Requirements_for_Service_Recommendations_-_Add_on OMA-REQ-NGSI-2009-0056-CR_Another_CR_to_fix_inconsistency_on_the_wording_value_added_services_vs._applications OMA-REQ-NGSI-2009-0057R01-CR_CR_on_Context_Entities_discovery_and_query OMA-REQ-NGSI-2009-0058R01-CR_Identity_Intro OMA-REQ-NGSI-2009-0059R01-CR_Composed_Services_Intro OMA-REQ-NGSI-2009-0060-CR_Editorial_to_section_6.12 OMA-REQ-NGSI-2009-0061-CR_Authorization_functionalities OMA-REQ-NGSI-2009-0062-CR_Preferences_functionalities OMA-REQ-NGSI-2009-0064R01-CR_NGSI_Framework_Positioning OMA-REQ-NGSI-2009-0066-CR_Context_Management_Introduction OMA-REQ-NGSI-2009-0067-CR_Group_List_Management_Introduction OMA-REQ-NGSI-2009-0068R02-CR_Group_List_Management_correction OMA-REQ-NGSI-2009-0069R02-CR_Merge_6.8_and_6.9 OMA-REQ-NGSI-2009-0070-CR_Multimedia_List_Handling_Introduction
	21 July 09	All	Incorporated the following CRs: OMA-REQ-NGSI-2009-0072R01-CR_XML_Access_Addressability OMA-REQ-NGSI-2009-0073-CR_XML_Access_Subscription_to_Changes OMA-REQ-NGSI-2009-0074R02-CR__NGSI_RD_editorial_cleanup OMA-REQ-NGSI-2009-0077-CR_RD_Modularization OMA-REQ-NGSI-2009-0082-CR_Security_and_Privacy OMA-REQ-NGSI-2009-0083-CR_ServiceComposition_correction OMA-REQ-NGSI-2009-0084-CR_Preferences_correction OMA-REQ-NGSI-2009-0085-CR_HLF_updates OMA-REQ-NGSI-2009-0086-CR_RD_Scope_Section OMA-REQ-NGSI-2009-0087-CR_Editorial_CR_to_Introduction_Section OMA-REQ-NGSI-2009-0088R01-CR_Changes_to_HLF_Section OMA-REQ-NGSI-2009-0091R01-CR_Profiling_Support

Document Identifier	Date	Sections	Description
	26 Aug 09	All	Incorporated the following CRs (Formal Review comment resolution): OMA-REQ-NGSI-2009-0095-CR_NGSI1_0_RDRR_A016.doc OMA-REQ-NGSI-2009-0096-CR_NGSI1_0_RDRR_A207.doc OMA-REQ-NGSI-2009-0097R02-CR_NGSI1_0_RDRR_several_comments OMA-REQ-NGSI-2009-0098R02-CR_Resolution_to_3.2 OMA-REQ-NGSI-2009-0101-CR_NGSI1_0_RDRR_A089 OMA-REQ-NGSI-2009-0102R03-CR_NGSI1_0_RDRR_A091_A092 OMA-REQ-NGSI-2009-0103R02-CR_NGSI1_0_RDRR_A005_A015 OMA-REQ-NGSI-2009-0104-CR_NGSI1_0_RDRR_A070 OMA-REQ-NGSI-2009-0105-CR_NGSI1_0_RDRR_Resolution_to_HLF_018_019_020 OMA-REQ-NGSI-2009-0106R01-CR_NGSI1_0_RDRR_A094 OMA-REQ-NGSI-2009-0109R01-CR_NGSI1.0_RDRR_A193_A194 OMA-REQ-NGSI-2009-0110R01-CR_CR_NGSI1_0_RDRR_A214_A215 OMA-REQ-NGSI-2009-0111-CR_NGSI1_0_RDRR_Sec5_A052_A054_2_A056 OMA-REQ-NGSI-2009-0112R01-CR_NGSI1_0_RDRR_A074_A075 OMA-REQ-NGSI-2009-0114R01-CR__NGSI1_0_RDRR_A085 OMA-REQ-NGSI-2009-0115R01-CR_NGSI1_0_RDRR_A125_A127 OMA-REQ-NGSI-2009-0116R01-CR_NGSI1_0_RDRR_A128_131 OMA-REQ-NGSI-2009-0117-CR_NGSI1_0_RDRR_Resolution_to_IDC OMA-REQ-NGSI-2009-0118-CR_Resolution_on_A273_comment OMA-REQ-NGSI-2009-0119R01-CR_Resolution_on_A135_comment OMA-REQ-NGSI-2009-0120R02-CR_NGSI1_0_RDRR_A142_A155 OMA-REQ-NGSI-2009-0123R01-CR_NGSI1_0_RDRR_A124_to_127 OMA-REQ-NGSI-2009-0124R02-CR_Resolution_on_context_comments OMA-REQ-NGSI-2009-0125-CR_NGSI1_0_RDRR_A144_and_related_comments OMA-REQ-NGSI-2009-0127R01-CR_NGSI1_0_RDRR_A178 OMA-REQ-NGSI-2009-0128-CR_NGSI1_0_RDRR_A014 OMA-REQ-NGSI-2009-0129-CR_NGSI1_0_RDRR_A218_A222 OMA-REQ-NGSI-2009-0130-CR_NGSI1_0_RDRR_A275_A276 OMA-REQ-NGSI-2009-0131R01-CR_NGSI1_0_RDRR_A259_A272 OMA-REQ-NGSI-2009-0132-CR_Charging_not_addressed_in_RD OMA-REQ-NGSI-2009-0133-CR_NGSI1_0_RDRR_A115_A116_A118 OMA-REQ-NGSI-2009-0136R01-CR_NGSI1_0_RDRR_editorial_commentsOMA-REQ-NGSI-2009-0137R02-CR_NGSI1_0_RDRR_A077 OMA-REQ-NGSI-2009-0138-CR_NGSI1_0_RDRR_A019_Policy_Management OMA-REQ-NGSI-2009-0139R01-CR_NGSI1_0_RDRR_A183 corrected numbering of requirements editorial corrections
	02 Sep 2009	6.2.1.1	Incorporated the following CRs OMA-REQ-NGSI-2009-0122R01-CR_NGSI1_0_RDRR_A065
Candidate Version OMA-RD-NGSI-V1_0	18 Sep 2009	N/A	Status changed to Candidate by TP ref # OMA-TP-2009-0407R01-INP_NGSI_V1_0_RD_for_Candidate_Approval
Draft Versions OMA-RD-NGSI-V1_0	09 Oct 2009	2.2, 3.2, 5, 5.1, 6.1, 6.2, 6.5, 6.11	Incorporated following class 2 CRs OMA-REQ-NGSI-2009-0140R01-CR_Service_Registration_Discovery OMA-REQ-NGSI-2009-0141-CR_Preference_Updates
	20 Oct 2009	3.2, 6.2	Incorporated following class 2 CRs: OMA-REQ-NGSI-2009-0142-CR_Reference_Fix OMA-REQ-NGSI-2009-0144-CR_Policy_Definition
Candidate Version OMA-RD-NGSI-V1_0	18 Nov 2009	All	Notified to TP: OMA-TP-2009-0531-INP_NGSI_V1_0_RD_for_Notification

Appendix B.   Use Cases   (Informative)

B.1   Applying preference in certain time slot

Call centre agents on duty are allowed to communicate with customers during working hours. In contrast, off duty agents are unable to communicate with customers.

B.1.1   Short Description

The flow for this use case is:

1.)   For establishing communication between agents and the customers when agents are on duty, an application (call center agent manager) sets preferences according predefined agents working shift.

2.)   Alice who is one of the agents tries to call her customer (Bob) by using her mobile phone.

3.)   Via the Framework the policies according to the configured preferences set by the application determine whether Alice is allowed to call Bob. The call is permitted, because Alice is on duty.

4.)   Communication between the agent and the user is established.

5.)   After working hours, Alice tries to call Bob by using her mobile phone.

Via the Framework the policies according to the configured preferences set by the application determine whether Alice is allowed to call Bob. The call is denied, because Alice is off duty.
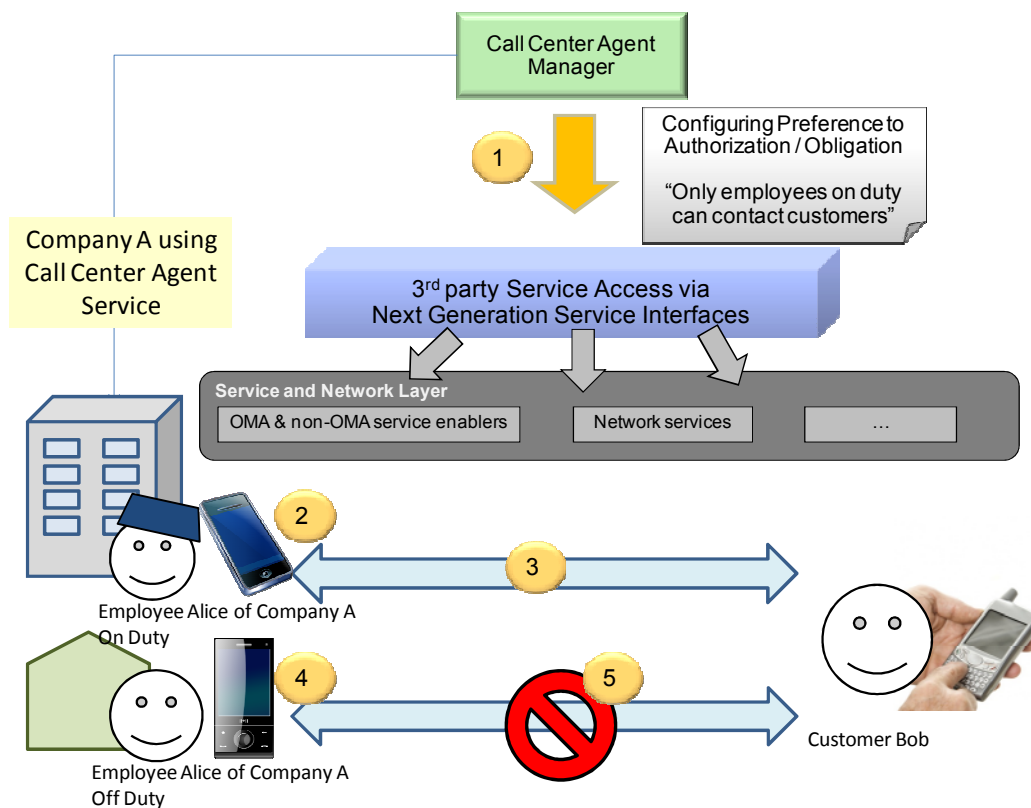

Figure 3 : Flow of applying preference in certain time slot

B.1.2   Market benefits

Benefits of this use case are as follows.

- Avoiding malicious calls from agents to customers.

- Avoiding that personal information about customers is used for purpose other than the original intent (for example; internal fraud).

- Avoiding that call center operator is claimed against abusing personal information about customers by the agent.