Rich Communication Suite
Release 2

Service Definition
1.1
February 25, 2010

This is a non-binding permanent reference document of the GSM Association.

Security Classification – NON-CONFIDENTIAL GSMA Material		

Table of Contents

1 FOREWORD

This document outlines the Service Definition for Rich Communication Suite (RCS) Release 2. The Service Definition of Rich Communication Release (RCS) 1 is described in [1].

In this document the RCS Release 2 service and the associated service use cases are explained.
It is the top level description of RCS Release 2 and clearly describes the fundamentals of the RCS service Release 2. Within the use case chapter every end-user service is explained and the related network architecture is shown without going into details.

The content of this document and the detail level is aligned with the other documents of RCS release 2. The goal is to avoid overlap with these documents, to have a well structured documentation set for RCS release 2.

For more details this document must be read in conjunction with the Functional Description [2] and Technical Realisation Document [3] of RCS Release 2 describing in detail the functional and technical solution and use cases. In these documents all the references to the used specifications from GSMA, 3GPP & OMA can be found.

The intended audience of this document is the GSMA Working Groups and operators intending to deploy RCS services.

1.1 References

Reference	Description
1	RCS 1 Service Definition https://infocentre.gsm.org/cgi-bin/docindex.cgi?33476
2	RCS 2 Functional description https://infocentre.gsm.org/cgi-bin/docindex.cgi?33477
3	RCS 2 Technical Realisation https://infocentre.gsm.org/cgi-bin/docindex.cgi?33477

2 BACKGROUND

RCS is a suite of rich communication services that can be launched from a capability enhanced phonebook. The awareness of the supported capabilities together with availability and other presence information will improve the user experience and will promote the usage of the rich communication services. The RCS Initiative has chosen for an approach where no new services are defined, but through efficient bundling and profiling of existing standardized services a balanced offering can be made. The main components of the RCS services are the enhanced phonebook, enriched call and enhanced messaging. In the enhanced phonebook the contact information is extended with capability and presence information. The enriched call features allow sharing information during an ongoing voice call, and the enhanced messaging offers conversation experience.

The goal of the RCS service is to provide a common framework for a service that is interoperable among mobile operators and devices.

This Service Definition document in conjunction with the Functional Description [2] and Technical Realisation document [3] describe the RCS service concept in sufficient detail to enable the various GSMA expert groups to provide necessary support to the project.

This Service Definition document will be reviewed and approved by the GSMA Service Review Group (SRG) to ensure the RCS Service is in line with the Services Review Group 8 Principles:

- Common solution across operators
- Clear operator role to provide added value
- Inter-operator charging principles
- Appropriate customer charging model
- End-2-End service
- Third party management
- Open access option
- Secure and trustworthy services

This Service Definition document will be reviewed by the Working Groups responsible for Interoperability and Interworking, to identify what if any changes are to be made to their PRDs to ensure commercial interoperability.

This Service Definition will be reviewed by Working Groups responsible for Fraud (Fraud Forum) and Security (Security Group) to identify any possible security and fraud issues and resolve them.

This Service Definition will be reviewed by Working Groups responsible for Devices (DG, SCaG) to identify and estimate any impact on devices or SIM cards.

3 OVERVIEW OF THE SERVICE

3.1 Project Information

Reference:	343
Project Sponsor:	Orange
Project Leader:	Aude Pichelin, Orange
Project Manager:	Mark Hogan, GSM Association
Supporting Companies:	see www.gsmworld.com/rcs

3.2 Fundamentals of RCS Release 2 service

RCS has not defined own specifications but is profiling existing standardized specifications, for example from 3GPP, OMA and documents from the GSMA. See [2] and [3] for more details.

The RCS Release 2 service is build around the capability enhanced phonebook as defined in RCS release 1, but the same service is now made possible from a client using broadband access.

Introducing a broadband access also results in the possibility of a user having multiple clients.

RCS Release 2 has defined that the mobile device remains the primary device. Broadband access RCS clients are always deployed in conjunction with a mobile device that provides the user identity via its MSISDN.

The different features with RCS Release 2 can be grouped as follows:

- Broadband access to RCS services
- Multi-device environment
- Network Address Book

3.2.1 Broadband Access to RCS services

In Release 2 the RCS services become accessible via broadband access. RCS Release 1 has defined the RCS service for mobile devices. For Release 1 the usage is based on the authentication of the mobile user via his SIM card and CS voice service is used.
RCS Release 2 extends the usage of rich communication services to other devices with broadband access. This could be, for example, a PC connected via a WLAN access point.
Some RCS use cases will be experienced in a more convenient way, for example on a bigger screen for multimedia, or through easier handling via a keyboard, for example for chat.

The supported RCS services via broadband access are identical to the already defined services in RCS Release 1. For legacy messaging though RCS clients connected via broadband access can only send SMS messages. They are not able to receive SMS messages or to send/receive MMS messages.

Details on the different use cases can be found in the Functional Description [2] and Technical Realisation Document [3]

3.2.2 Multiple device environment

In RCS Release 2 RCS clients via broadband access are supported. This will be used in combination with a primary mobile device. This brings a new user experience where it becomes possible to use RCS services via multiple devices.

As an example it is possible to have a voice call via the mobile device and watch a shared video on a device with broadband access, like a PC.

RCS Release 2 delivers the different communication services, voice and the richer communication services to all active devices, for example mobile and PC.
The user is able to choose on which device he accepts the communication.
Furthermore via control of service delivery the user can decide which communication service is allowed on which broadband device. For example if he does not want to receive voice calls on his broadband client, this can be disabled. In that case the voice calls can only be accepted on the mobile device.

In case a user has multiple devices, the network will present a combined view of his capabilities to his contacts. For example in case the broadband client supports sharing services and the mobile device does not, the sharing capability will still be shown to his contacts.

Also when a social presence relationship with a contact is set up from one device (for example, broadband client on PC), it will also be visible on the other device (in this example on the mobile device).

RCS has defined a chat experience in RCS Release 1 where the first message is shown via auto-accept. In RCS Release 2 the same user experience with multiple devices is kept. This first message is delivered to all devices and the user will decide on which terminal the chat is continued. Subsequent messages are only delivered to that terminal.

In case an SMS/MMS is sent to a user that has multiple devices, it is only delivered to the primary device.

Details on the different use cases can be found in the Functional Description [2] and Technical Realisation Document [3].

3.2.3 Network Address Book

In RCS Release 1 the NAB was already introduced to allow a backup/restore service with the EAB.

This solution is further used in RCS release 2 to keep the address book synchronized in case of multiple devices.

The NAB is the network based storage that contains all contacts on one central place. This allows that changes made from one device also become available on the other devices.

3.3 RCS specifications

RCS has not defined own specifications but is profiling existing standardized specifications, for example from 3GPP, OMA and documents from the GSMA. See [2] and [3] for more details.

The RCS Initiative has agreed on the underlying specifications and is organizing structured IOT event to do early end to end verifications of terminals and network infrastructure.
RCS has given priority to interoperability both between terminals but also between networks from the beginning. Only through such an approach full interoperability among networks can be assured. Deployment of interoperable RCS services on a country and between countries is a key factor for service take-off. Only then can the full consumer benefits of the rich communication services can be realized. A consistent service definition of these services will create a global market for RCS terminals.

The RCS services use the standardized IMS Core infrastructure to transmit the signalling and media traffic. IP Packet Exchange (IPX) proxies may be part of this infrastructure to allow interconnection between operators and to provide a collection point for session accounting records used for inter-operator traffic charging. Equally operators may use other inter-connection networks.

The support for broadband access is creating a new user-network-interface (UNI) which is defined in the technical realisation [3].

These new services are completely handled within the network of the operator offering broadband access and multiple devices. The only change on the network-network-interface (NNI) between operators introduced with RCS Release 2 is the usage of the subject header in the INVITE to get the first message through for multi device user experience. More details can be found in the technical realisation [3]

The RCS project builds on the technical work done within the GSMA Sharing services and on the OMA work for Presence, XDM and Messaging.

Details can be found in the RCS Functional description: [2]

3.4 RCS service target

This service will likely be targeted at all mobile market segments and include various charging models, such as pay-per-use, pre-pay, and subscription-based. Operators may deploy this service to enhance 3G sign-up rates, to drive voice-call revenue or to add to bottom line revenue figures as a service in its own right.

3.5 RCS next phase

In a next phase improved interworking for messaging with non RCS (legacy) devices will be considered. Also it is expected that additional services on top of the Rich Communication Suite will be introduced, for example content adaptation such as picture processing or translation services. Possibly Broadband devices can become primary devices.

4 SERVICE DESCRIPTION

4.1 Use Cases

The use cases are explained on a visual presentation showing the different actors, involved network entities and indicate the logical flows between the different actors.
The different steps in the use cases are described in the figures.

In the Functional Description document [2], these use cases are worked out more in detail.

With RCS Release 2 the RCS use cases are not changed compared to Release 1.
The Rich Communication Services remain the same for Release 2.

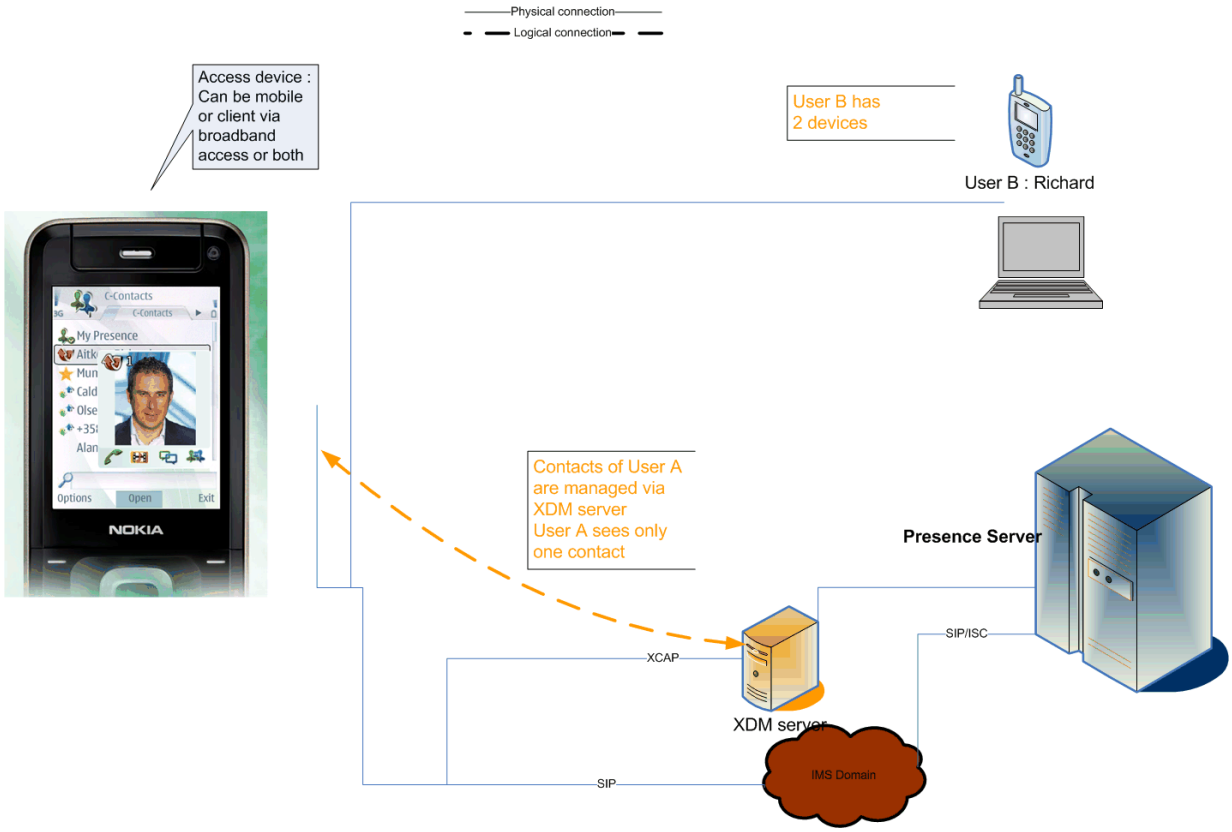
For a user with a broadband access the service experience is new, but the same as for a mobile device. Having a larger screen and keyboard can make some use cases more convenient via a broadband access client.

Therefore in the figures the User A is now “access” agnostic, can be mobile, can be broadband or both.

In the examples the user B has 2 devices (mobile and a PC client) to explain the new Release 2 user experience.

4.1.1 Enhanced Phonebook

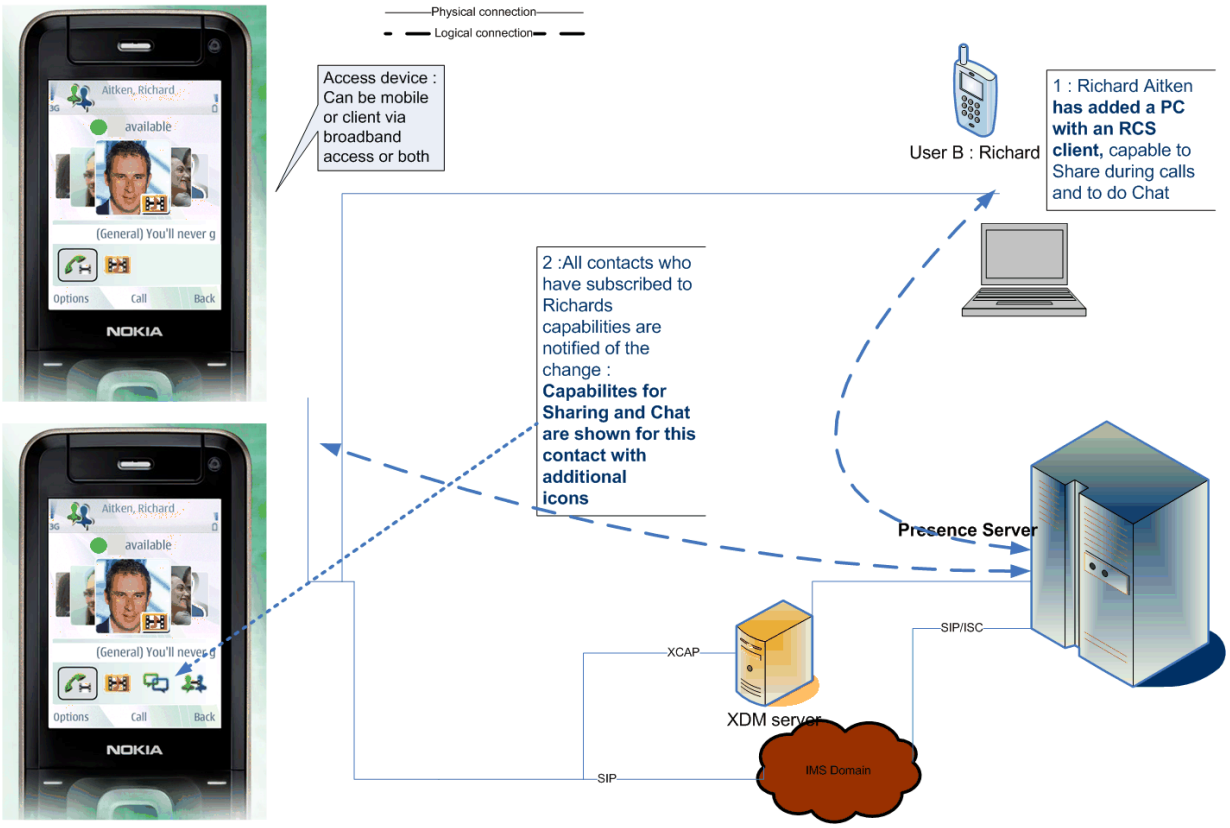
4.1.1.1 Invite contacts to share social Presence



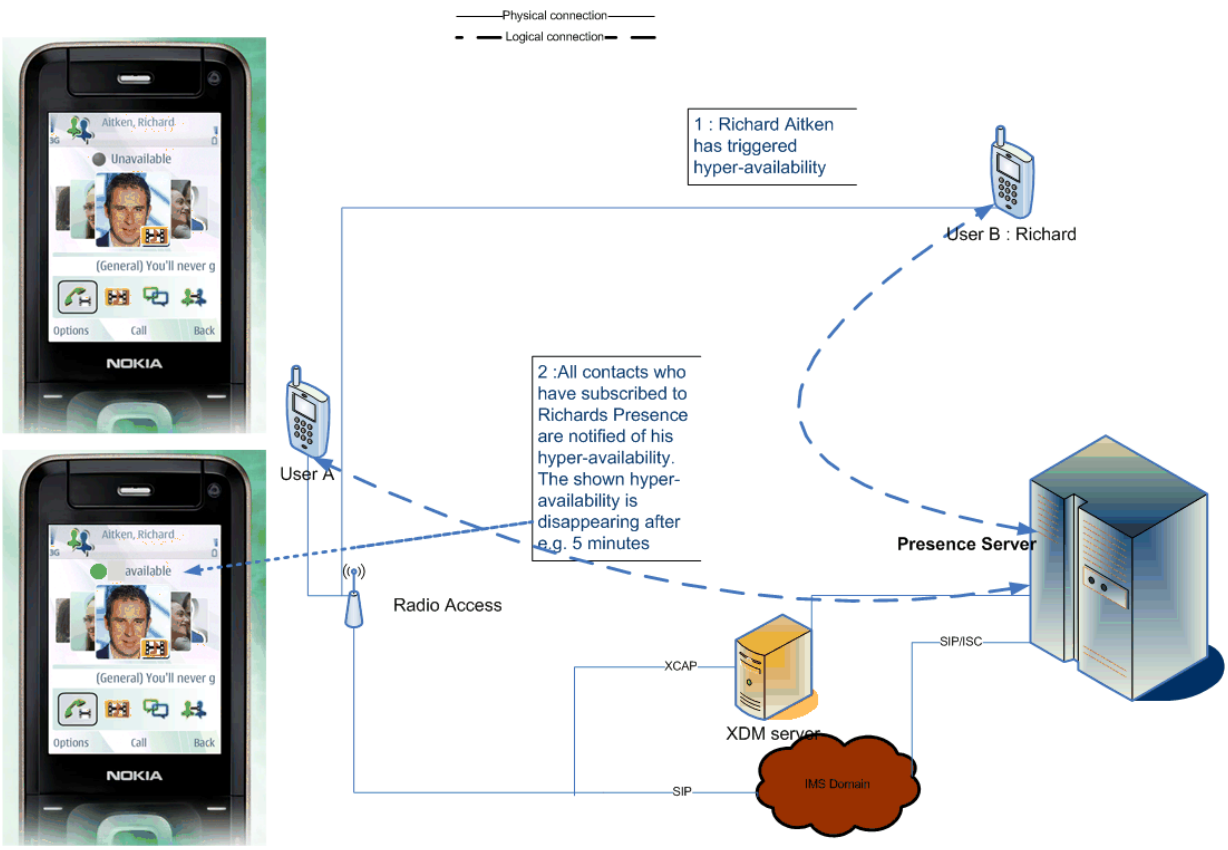
Authorization to share social presence is based on the symmetry principle.

If sharing of social presence is accepted after invitation, both parties will see each others Presence attributes. If social presence sharing is terminated by one of both parties, both parties will end seeing each others social Presence attributes.

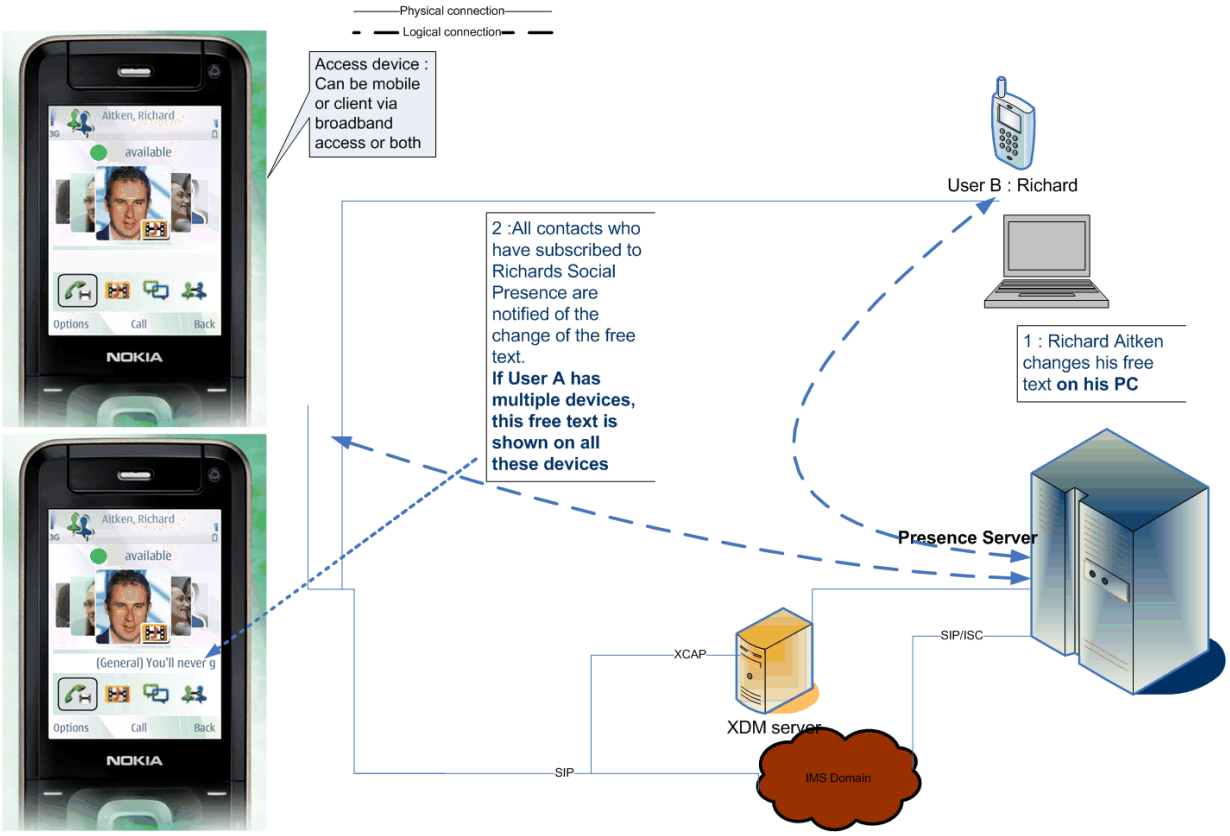
4.1.1.2 Capability Exchange



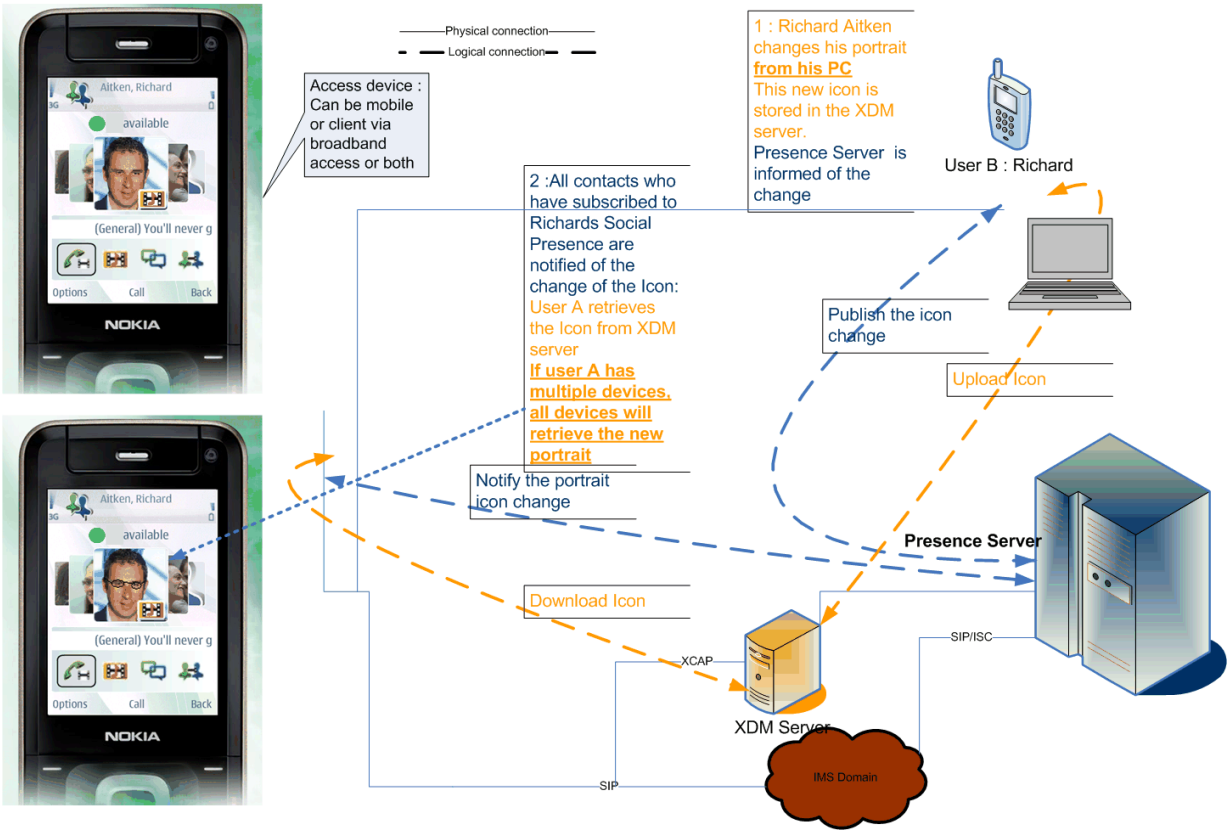
4.1.1.3 Hyper Availability



4.1.1.4 Free text



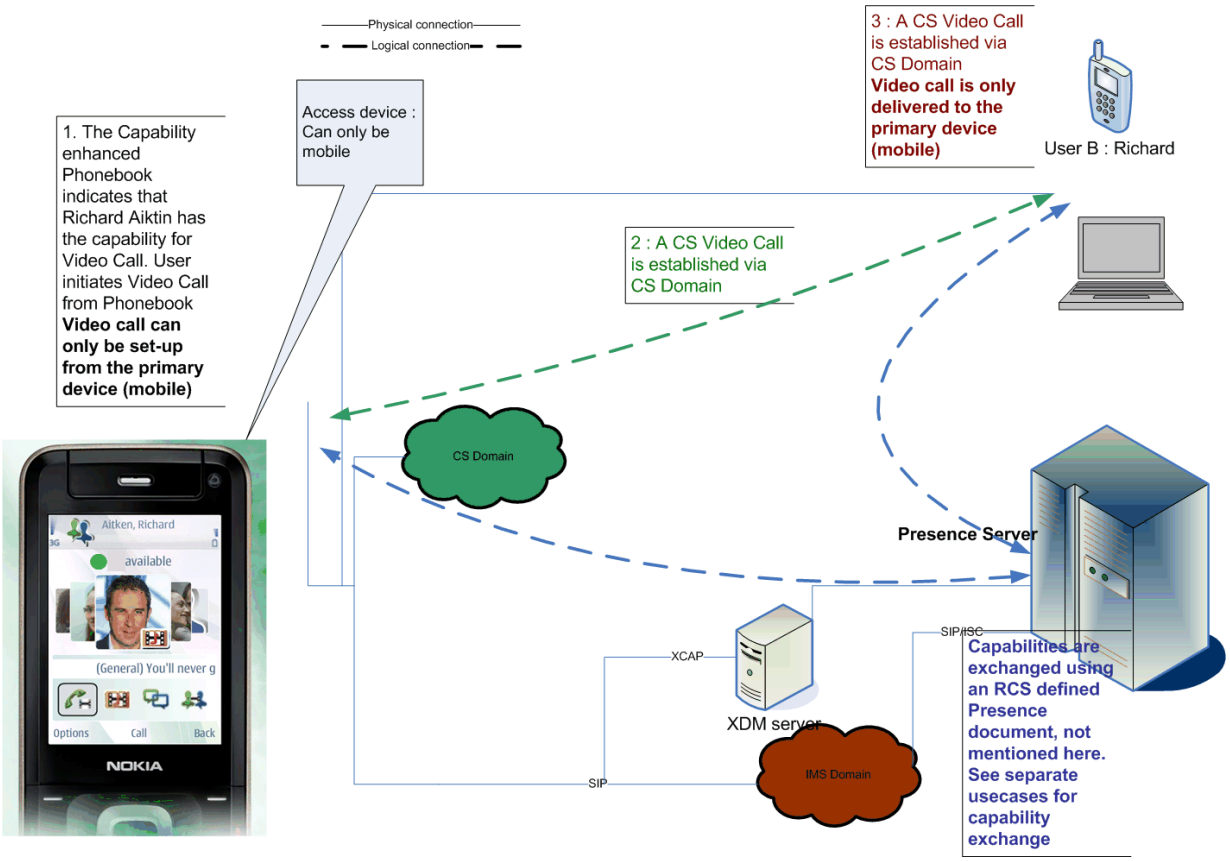
4.1.1.5 Portrait Icon exchange



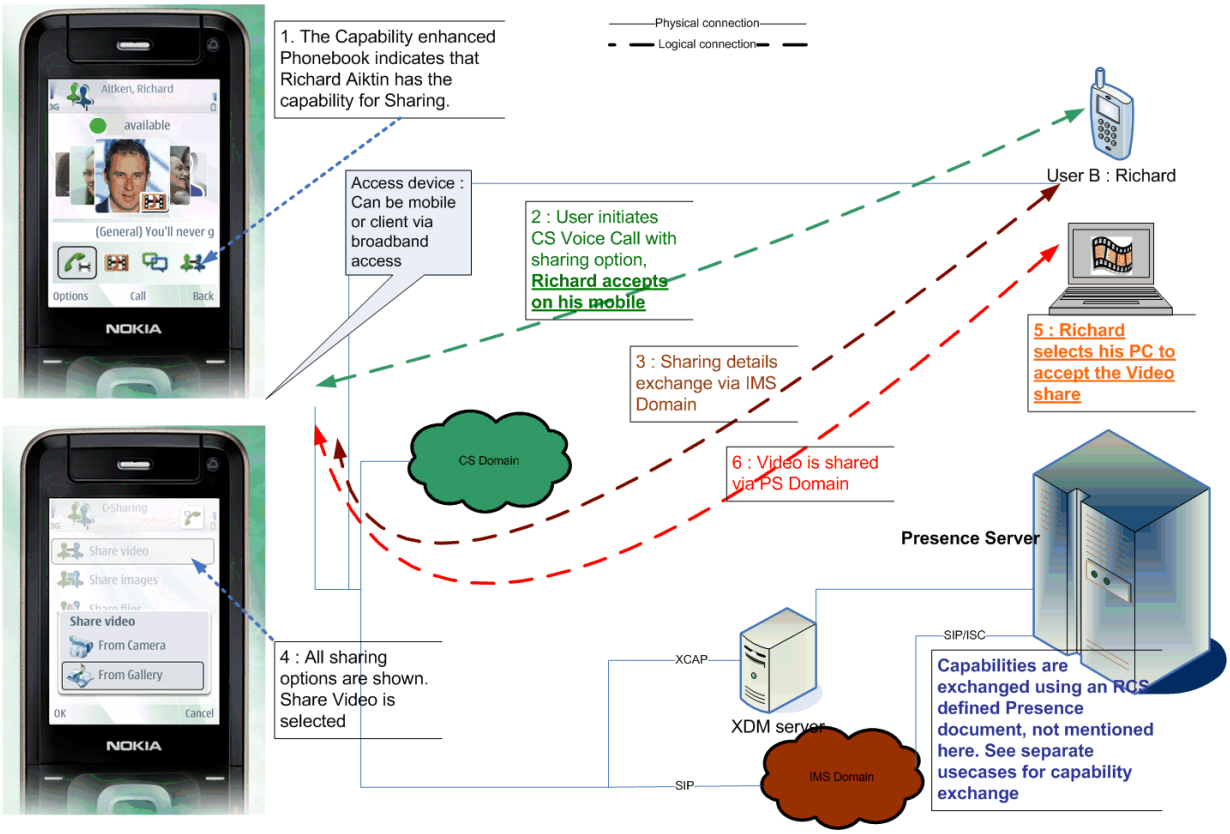
4.1.2 Enriched Call

4.1.2.1 Video Call

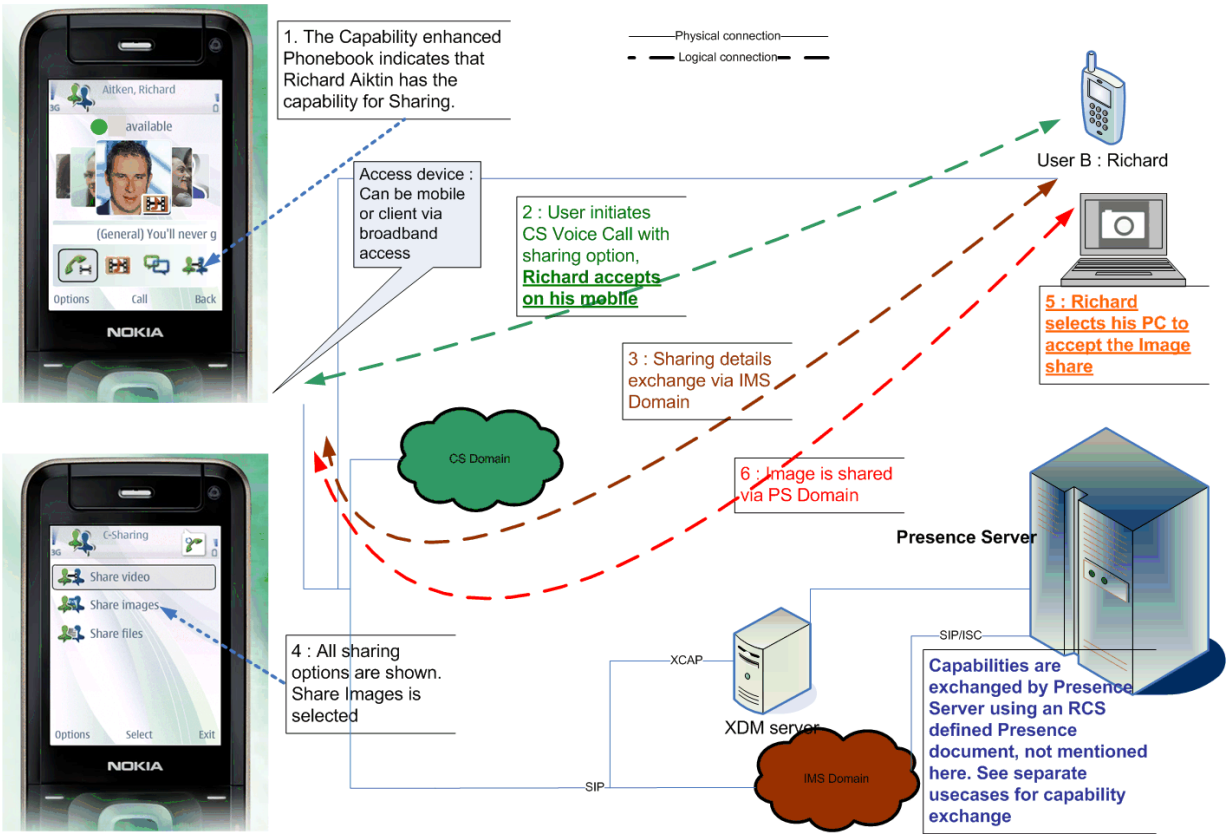
Use case does not change. Video call is only possible between 2 mobile devices.



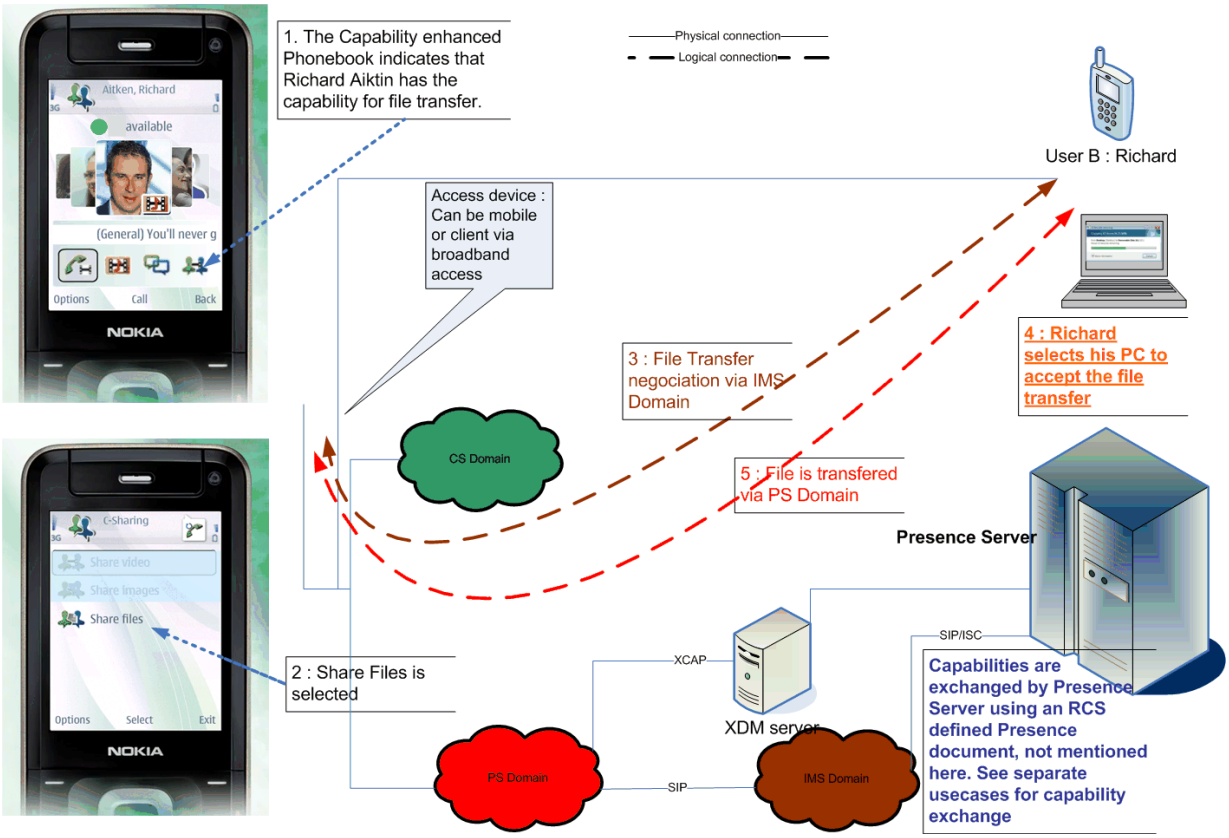
4.1.2.2 Share Video



4.1.2.3 Share Image



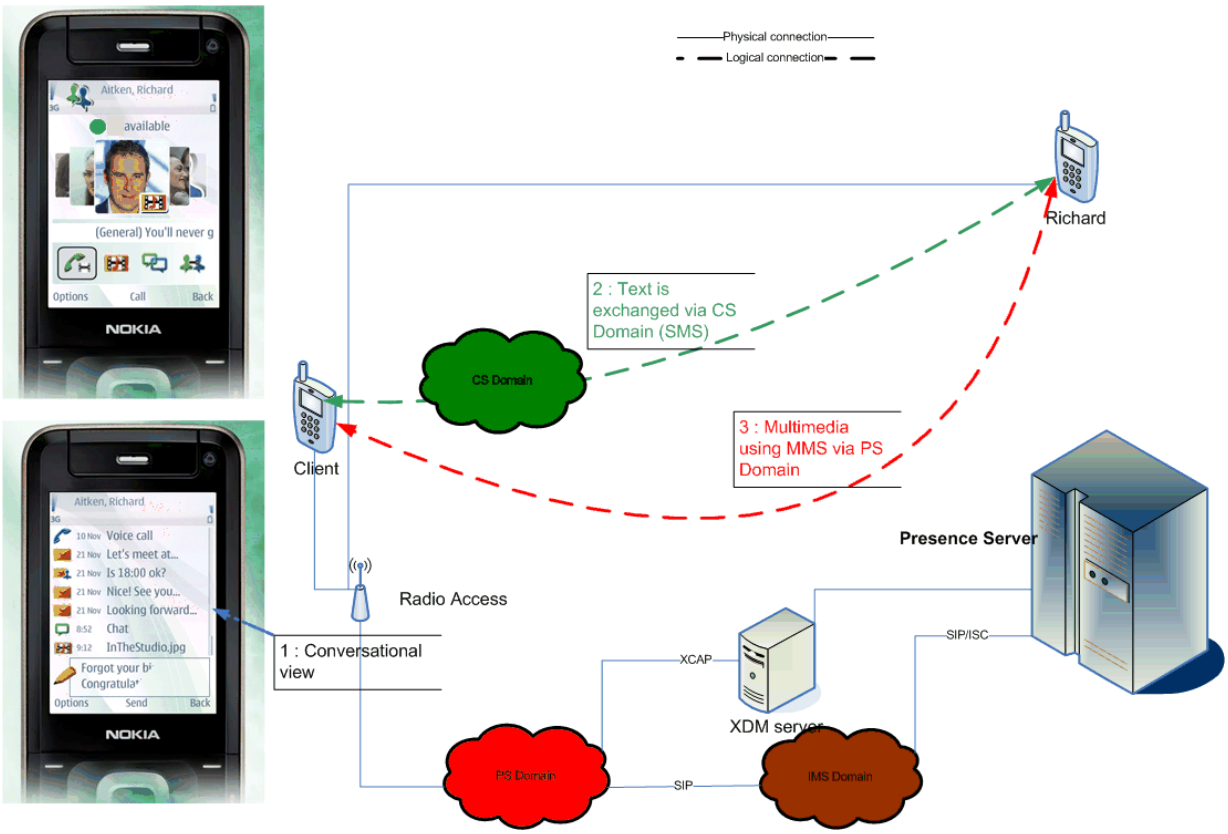
4.1.2.4 File Transfer



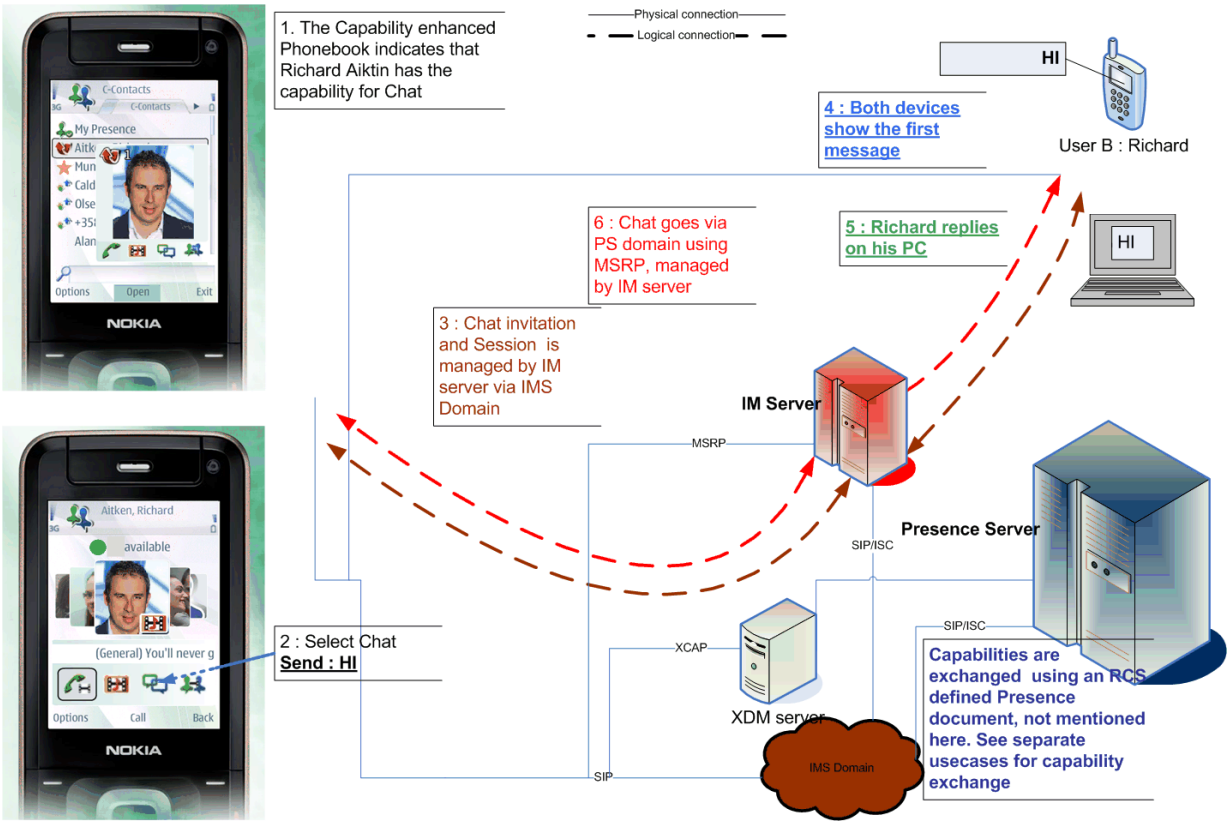
4.1.3 Enhanced Messaging

4.1.3.1 Enhanced SMS/MMS with Conversational view

Use case does not change. SMS/MMS send-receive will always be done between the primary devices. One exception: **via broadband access clients SMS can be sent**.



4.1.3.2 One-to-One chat



This chat session is started with 2 participants, but can be extended with additional participants.

4.2 Roaming:

No changes for Release 2.

4.3 Service Interworking

The only change on the network-network-interface (NNI) between operators introduced with RCS Release 2 is the usage of the subject header in the INVITE to get the first message through for multi device user experience. More details can be found in the technical realisation [3]

4.4 Usability Studies

No RCS usability studies have been executed by the GSM Association.

5 SERVICE REQUIREMENTS AND ENABLERS

5.1 Goals/Requirements

RCS is not defining new QoS requirements.

5.2 Enablers

The RCS service is envisaged to work in Wideband CDMA networks with IMS core infrastructure. IMS authentication will be assumed, using either the early IMS Security, IMS AKA using ISIM or USIM, or HTTP Digest.
With RCS Release 2 also broadband access is supported. Details of the authentication method can be found in [3].

PDP *Always-On* has to be used to make the capability exchange possible*. Always-On* also decreases the set-up time of different sessions needed for sharing, file transfer or chatting. The shorter the session set-up time, the better the end-users rate the service.

The GPRS Exchange (GRX) architecture will be used as the interconnect network. The service is envisaged to be deployed via bilateral interconnect until such time as IPX becomes available. This service definition and supporting documents are written with transfer to IPX in mind

RCS enabling services are reusing existing standards and specifications. No RCS specific services requirements are defined for the used enablers.

5.3 Service and Application Inter-dependencies

The individual services like Presence, content sharing, File Transfer and chatting do not depend on other services. The capability enhanced phonebook based on capability exchange is the driving element for service promotion and usage.

IMS is seen as Infrastructure and not as service interdependency.

6 DEVICE REQUIREMENTS

Authentication and authorization for the RCS service is implicit in IMS authentication. Thus it is assumed that RCS-compliant mobile devices contain an ISIM/USIM properly provisioned with public and private identities and access credentials. A user's subscription has to be bound to their smart card (ISIM/USIM) such that the RCS service is portable in the sense that the user may be able to use the service on any capable handset. To be discussed with Device group if this applies for RCS?

The device needs to be 3G or EDGE compliant, and in the case of EDGE the device needs to support DTM.

For broadband access authentication and authorization with xSIM and without xSIM (username/password) is supported.

6.1 Recommendations for Functional Requirements

6.1.1 Usability

- Usability of the underlying services applies.
- Additionally RCS has specified its own User Experience requirements. The main requirements have been included in the RCS Release 1.
- For Release 2 the Functional Description [2] covers the user experience requirements.

7 SYSTEM REQUIREMENTS SPECIFICATIONS

No special SIM/USIM provisioning (Assumes ISIM or derivation of public identity from IMSI).

From a User perspective when the RCS application is available on the device, there should be no provisioning operation done by the customer. The service should be available without any specific end user action.

Infrastructure assumptions are:

- IMS core
- Envisaged to work via bilateral interconnect, bilateral IPX interconnect and/or multi-lateral IPX interconnect.
- 3G network
- SIP stack/client in phone
- Broadband access

8 OTHER CONSIDERATIONS

8.1 International Lawful Interception and Privacy

No changes for Release 2.

8.2 Security Review of Service Requirements

RCS welcomes specific feedback from SG.

8.3 Fraud Considerations and requirements

Identify Theft / Abuse

It is recommended for Broadband Access that a secure authentication mechanism be used. This is especially important given the computing power available via a PC client platform to attack the RCS authentication mechanism compared to a mobile device.

It is essential that an operator is able to trust the MSIDSN to identify the subscriber, as this significantly reduces risks that are traditionally associated with internet-based social networking applications that lack true authentication, such as:

- Impersonation, possibly leading to incrimination.
- Slander and incitement, typically by persons who remain anonymous.
- Virus attacks and ‘419-type’ fraud attacks.
- Avoidance of lawful intercept.

Increased Spam Volumes

If flat-rate charging principles are adopted for RCS Release 2, the cost barrier for generating spam via instant messaging (IM) may be lowered, and may lead to an increased volume of spam being sent via the application. The introduction of broadband access to RCS services and a multi-device environment may further facilitate an attacker who wishes to generate spam. It is recommended to provide the ability to a user to block receipt of instant messages from an unwanted source.

9 GAP ANALYSIS TO EXISTING STANDARDS

RCS is reusing existing standards and specifications. Specific RCS requirements have been included in the standards. This is done by using the appropriate processes in the standardization bodies to request changes.

DOCUMENT MANAGEMENT

Document History

Version	Date	Brief Description
0.1	18 May 2009	First Version
0.2	26 May 2009	Updated version
0.3	02 June 2009	Updated version after SDS review
0.4	22 June 2009	Consistency Review R2 Review report : SPEC DOC RCS SPEC R2_007 https://infocentre.gsm.org/cgi-bin/docindex.cgi?33477 Page 2 Added, needed for DAG approval
0.5	25 June 2009	Accept changes front pages & grammar/spelling check
1.0	31 August 2009	DAG & EMC approved and version updated to 1.0
1.01	18 November 2009	Update figure 4.1.3.1 figure, conv view not part of capabilities exchange Change title 4.1.1.1 contact management → Inviting Contacts to share Social Presence ch 4.1.1.3: Remove the "PS Domain" cloud (not in any other figure). Added BA in chapter 7
1.02	28 November 2009	RCS2-BF0013 FF considerations
1.03	11 December 2009	Update 1.02 (Approved at Plenary 3/12/09) with front pages for DAG approval. No review comments received during consistency review See SPEC DOC RCS SPEC R2_017 in https://infocentre.gsm.org/cgi-bin/docindex.cgi?33477
1.1	25 February 2010	Approved by DAG/EMC, removal DAG review sheet
Changes Since Last Version The clarifications contained in this revision enable implementers to better understand the documentation.		

Other Information

Type	Description
Document Owner	RCS
Revision Control	Annual
Document editor/company	D. Raeymaekers/NSN

End of Document