Act now to implement RCS

Click to Start

Rich Communications

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GSMA Rich Communications

It's time to implement RCS!

The Opportunity

Rich Communications Services (RCS) is a driving force which will ensure your service retains relevance for your consumers – keeping them connected with your business and at the forefront of their minds. But it's more than that – it opens up a platform for future innovation and is the key to generating new revenue streams.

The Threat

The switch by consumers to using communication services from Internet service offerings applications is significant. Consumers who embrace Internet service offerings solutions quickly become part of a community that does not include your brand. You will lose them – and not get them back.

Other factors are impacting this drift away from using the conventional package of messaging services you offer. Smartphone penetration combined with the spread of Internet service offerings services pushes SMS usage into decline. Market data in Holland and Korea clearly shows the negative impact of Internet service offerings. And ultimately, the erosion of messaging revenues will spill into voice revenues, resulting in an inevitable decline of ARPUs.

Currently, the most popular rich communication applications are from Internet service offerings. Collaborative action by operators is vital to build a single global Rich Communications platform – across networks and devices – that will leverage the unique operator proposition of universality, QoS, service discovery, privacy and security and wrest the benefits of RCS away from Internet service offerings.

The GSMA has been working hard to establish an RCS ecosystem to facilitate this interoperability. Key to its development is the GSMA's Rich Communication Services (RCS) project, which comprises of experts in technical and commercial deployment, marketing, interoperability and specification evolution, all dedicated to ensuring the success of Rich Communications services based on RCS specifications.

This document sets out the resources that are on hand within the GSMA to help you with your RCS evaluation as well as a full contact list to enable you to take your discussions further.

What is joyn?

joyn is the consumer-facing brand to identify and promote the RCS services. joyn makes everyday, mobile to mobile communications more engaging.

joyn brings you closer to the people in your mobile address book by combining all the ways you want to be in touch – Contacts, Chat, File share and Video share.

joyn

http://www.joynus.com

"It's not about the services ... it's about how we are bringing them to market"

It's just there!

- **Natively integrated by mobile device manufacturers** in user interface communication flows
- **Maximum attainable service penetration** – like voice & SMS – including open market devices
- **Automatic service discovery** – customers discover new services in the right place, in the right context

It just works!

- **Dynamic capability discovery** – only relevant & available services offered
- **Interworking** across operators and device boundaries
- "Just like voice and SMS"

What is RCS?

The commercial specification for RCS was designed and specified by leading global operators based on clear market requirements and a deep understanding gathered from previous and service based trials about what works and doesn't work – in essence RCS is built by the industry for the industry. Native to the device – 'it's just there' – it gives users access to enriched services quickly and easily, simply by selecting from the multimedia capabilities in chat, file share or video share that are shown for each of their contacts – 'it just works'.

What is joyn?

joyn is the consumer brand for the range of RCS IP communications services being offered by many mobile network operators to their customers. The joyn feature set expands as additional functionality is brought into the corresponding RCS specification.

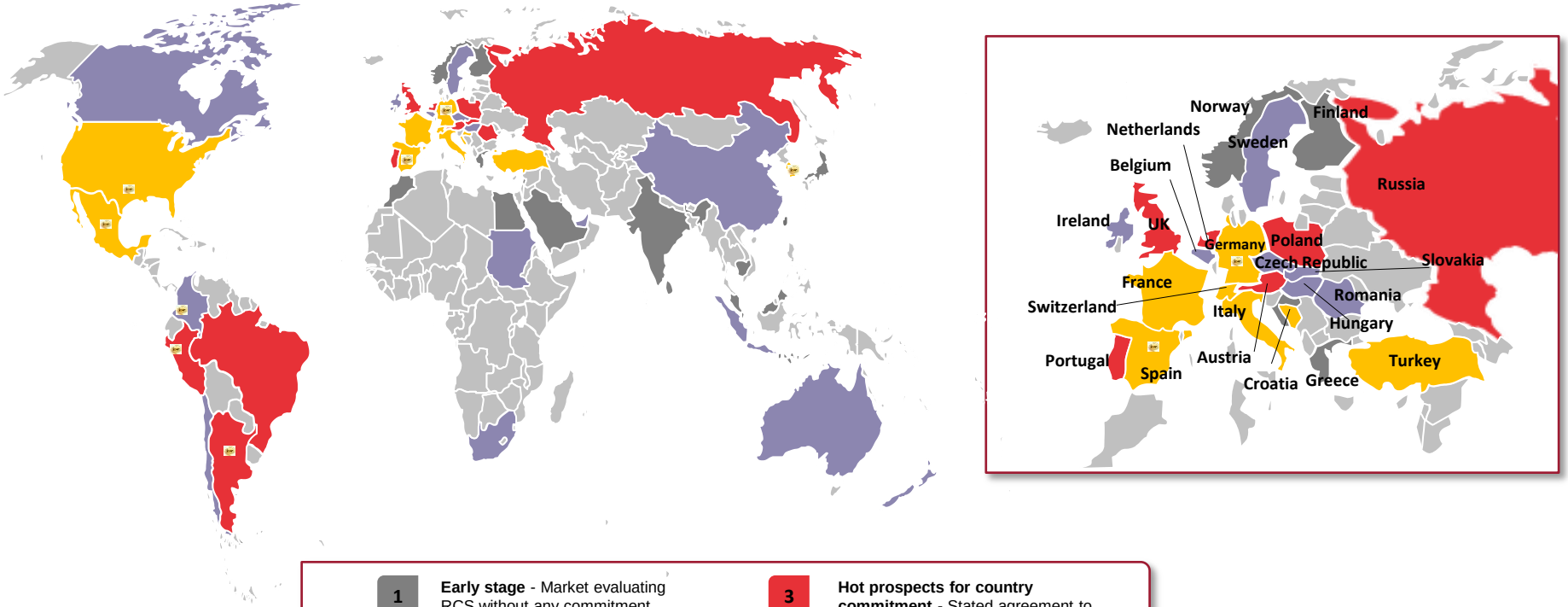
The first release of joyn is based on RCS specification V1.2.2 and is complemented by the joyn User Experience guidelines and includes one to one chat (instant messaging), group chat, file sharing and video sharing services. The second release of joyn, ("Blackbird" release) is an evolution which incorporates a selection of the features in the RCS 5.1V2.0 specification. The features and the user experience are defined in the joyn Blackbird Product Definition Document (PDD). The PDD includes guidance on user experience and technical implementation of RCS 5.1V2.0 for:

▪ Discovery and Activation	▪ Group Chat	▪ Integrated Messaging	▪ File Transfer	▪ Geo-location Push
▪ 1-2-1 Chat	▪ IP Voice call	▪ IP Video call	▪ Multi device support	

NB: The consumer brand is always 'joyn'. Release names such as 'Blackbird', 'Crane' etc. are industry names which are not presented to the customer.

For simplification purposes we have removed reference to RCS-e and RCS in front of the specification number. RCS-e V1.2.2 is now referred as V1.2.2 and RCS 5.0 and RCS 5.1 as 5.0 and 5.1

The GSMA's Rich Communication Services project is a global initiative



Countries live

1 **Early stage** - Market evaluating RCS without any commitment

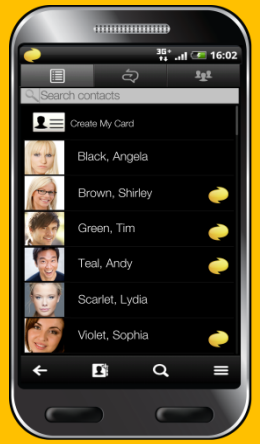
2 **Interested Markets** - Market with multi-MNO roundtables underway / MNOs evaluating technology / business case

3 **Hot prospects for country commitment** - Stated agreement to launch from reference local operator(s)

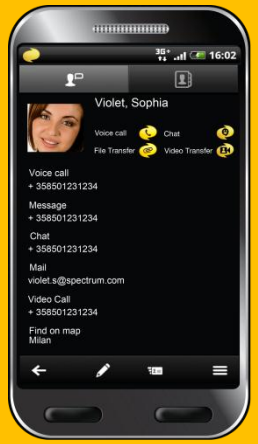
4 **Countries with committed launch dates** - RCS deployments on-going or agreed

GSMA Rich Communications

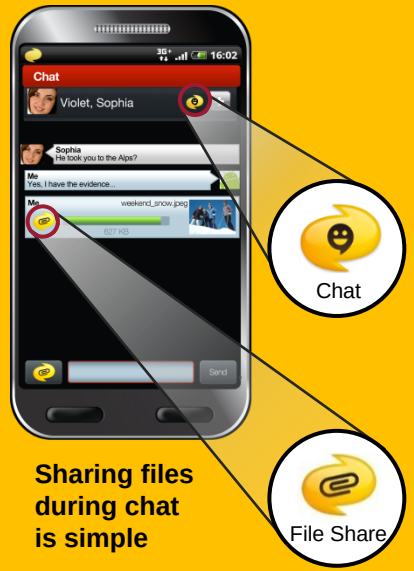
Core RCS features (1 of 2): contacts, chat and file share



Contacts who have joyn



My contact screen with joyn services available



Sharing files during chat is simple

joyn is mobile phone and network aware which means it automatically 'knows and shows' the ways you can share with any of your contacts – via chat, video, call or files – at any moment in time.

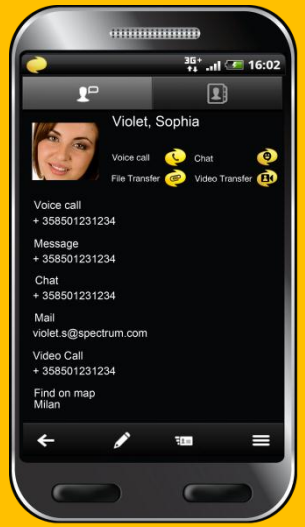
Here joyn knows and shows that Sofia Violet has all the joyn capabilities and this is shown on her contacts profile, where the icons are all present.

See these features as YouTube videos at

http://www.joynus.com/contacts

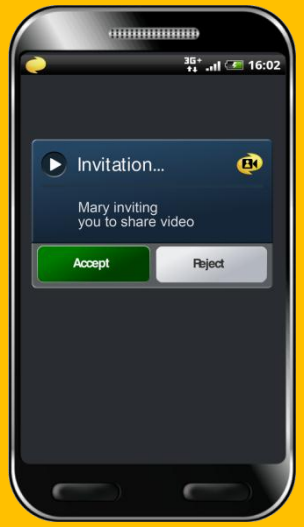
http://www.joynus.com/features/chat/

Core RCS features (2 of 2): video share within a regular call



I start a voice call with a joyn contact

…and decide to share a live video!



…my contact accepts

…and we see the same video

See these features as YouTube videos at

http://www.joynus.com/features/video-share/

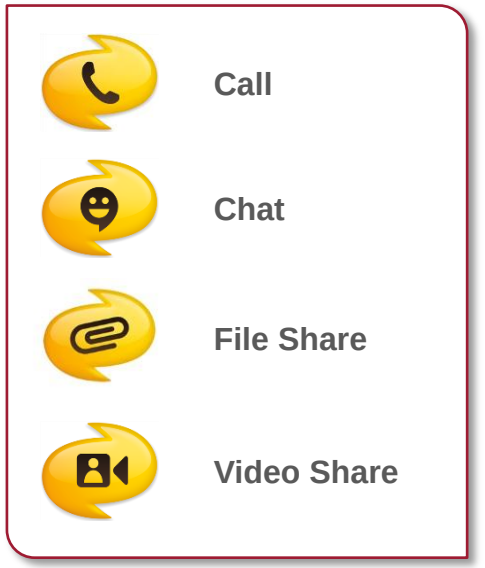
Rich Communications

Devices and network integration

Most handset vendors are engaged with the project and have developed devices with RCS native capability. A number have been made commercially available in some markets.

joyn/RCS 'just works' because of interworking across operators and device boundaries. The RCS project has developed an interoperability testing programme between devices and networks.

Two test fests took place in Madrid, Spain in 2012 organised by the GSMA with technical support from Orange, Telefonica and Vodafone. The first in July, focused on two main work streams: a technical stream to resolve issues that had been identified during testing and a product one to improve the user interface and experience. The technical work stream confirmed a high level of interoperability between different RCS devices and clients, as well as to the three Spanish networks. It also confirmed a high level of convergence between the different RCS networks. At the same time, each participant of the event gained useful insights in to possible improvements in the quality of the RCS implementation either on client side or network side. The second in October, focused on the hot fixes that were deemed essential for introduction prior to RCS devices and clients and networks being commercialised. Additionally verification of the User Experience was undertaken along with an additional Quality Check step which the RCS Operators introduced to assure the quality of implementations.



The GSMA team has concluded another Meta collaborative test event which took place in Madrid in early Spring 2013. The test event was dedicated to the verification of joyn hot fixes functionality prior to commercialisation for new devices. Similar to the previous GSMA test events, the current META helped to improve quality and stability of the joyn clients.

Contact us if your company would like to participate in future Test Fests.

Demonstrated OEM Commitment

9 of the Top 10 mobile device manufacturers

5 of the Top 5 infrastructure vendors

All of whom are …

- **Committed to RCS**
- **Currently testing or preparing to test with mobile operators**
- **Have developed RCS native handsets**

Market Opportunity

Differentiate your business

RCS enables operators to retain relevance amongst their customers, by offering them more flexible and innovative ways to communicate. It also provides the opportunity to re-invigorate and expand core product and service portfolios, creating potential new revenue streams. These new services will be built upon the core operator propositions of:

- Ubiquity
- Global interoperability
- QoS assurance
- Security and Privacy management

Gateway to innovation

The key to driving future RCS innovation lies in exposing its API's to third party web and applications developers in order to exploit all these opportunities and others as yet unimagined.

Developers and ISPs interoperating with RCS will highlight the benefits of universality that operators can offer and the ensuing developments will quickly embed and extend the use of RCS in new user segments.

Invest in the future

RCS is the future platform for operator-branded personal communication services in an "all-IP" world. Without the implementation of RCS, future interoperability will not be achievable.

Rich Communications is the service upgrade that will transition SMS and voice capabilities from Circuit Switched technology to an all-IP world, including VoLTE. Rich Communications and VoLTE share the same IMS investment because both are built using the same IMS technology, and leverage the same IMS capabilities.

For more detailed information on the business case for Rich Communications please see the "The Business Opportunity" section.

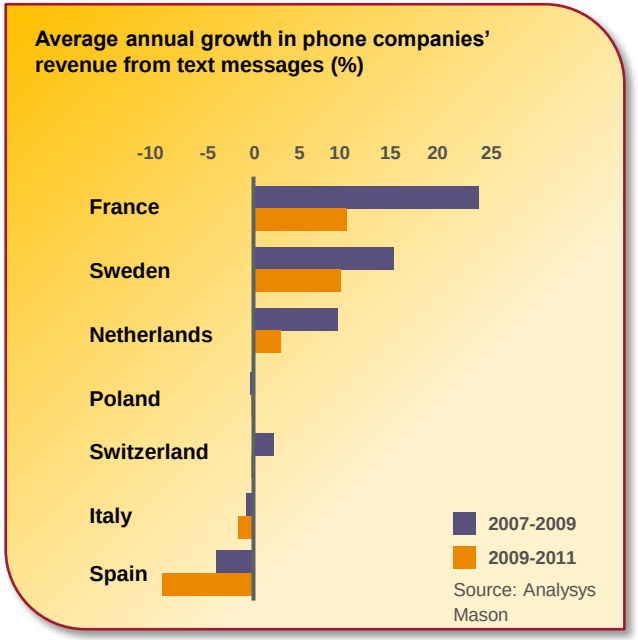
Strategic Rationale

The **Threat**

- Operators are already experiencing decline in SMS usage; without RCS, voice will follow
- Currently, the most popular Rich Communications applications are from Internet service offerings communication services
- Once your customers start using an Internet service offerings service it becomes, for them, the lead brand for communications services – not their operator

RCS presents an **opportunity** for operators to

- Re-invigorate their core product and service portfolios
- Provide more choice and innovative offerings that “synch” with how customers are communicating today
- Retain relevance as the communication provider in the eyes of their customer
- Continue providing robust services underpinned by ubiquity, reliability and reach



Taken together, these opportunities may help to reduce declines in revenue by increasing the value of their service offerings and setting up a strong alternative to narrower, community-based Internet service offerings solutions.

- New communication services natively within the device
- **Maximum reach** – potential to reach anyone on any network and any device
- Intuitive use, seamless integration and easy discoverability – just like voice & SMS
- No need to install or set up: **it's just there – it just works**

- Strengthens the Operator core communication competency
- The initial feature set delivers substantial customer value
- Provides a **sustainable operator positioning in IP communication** as it will become a universal, interoperable service

The power of 'It's just there'

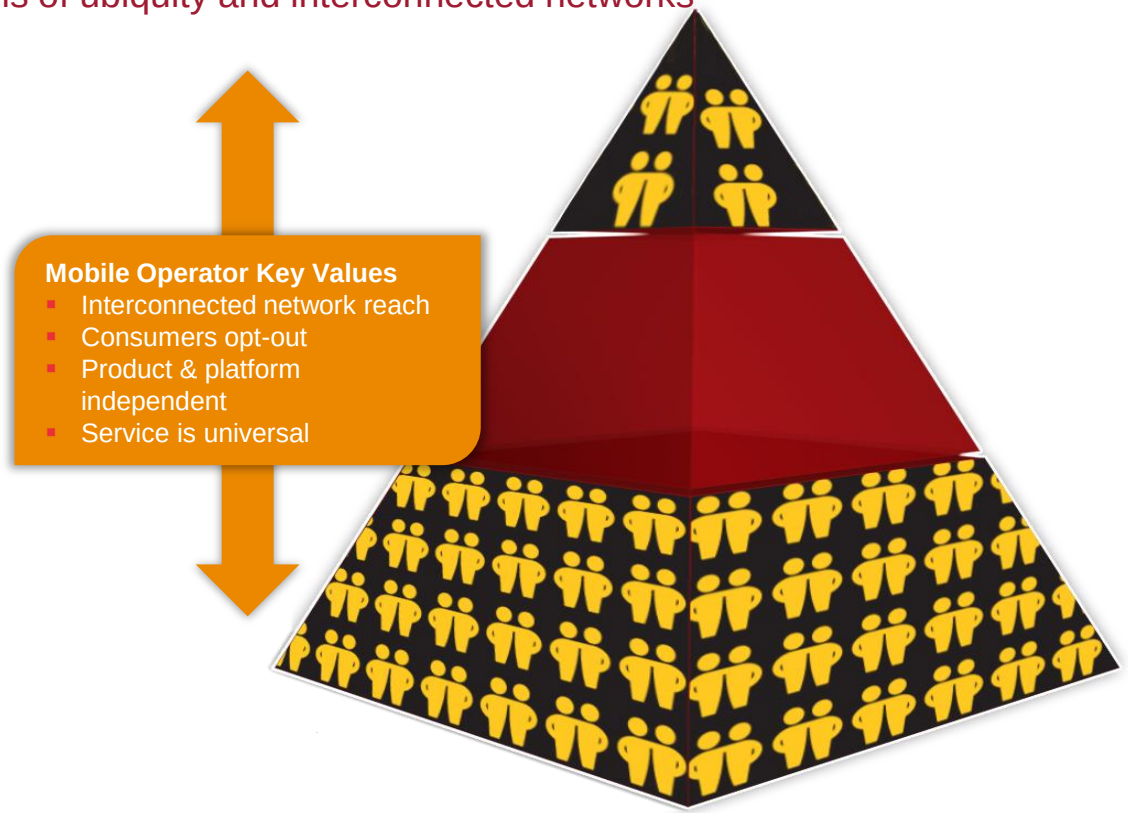
Multi-step Internet service offerings process vs. RCS intuitive placement and automatic service discovery.

In contrast Internet service offering apps require installation, sometimes payment, account sign-in, and scanning of your address book.

Here are your contacts for business case modelling advice

Name	Company	Email
Martin Soehn	Deutsche Telekom	martin.soehn@telekom.de
Alex Nourouzi	Orange	alex.nourouzi@orange-ftgroup.com
Antonella Napolitano	Telecom Italia	antonia.napolitano@telecomitalia.it
Javier Arenzana Arias	Telefonica	javier.arenzanaarias@telefonica.es
Enrique Marti	Vodafone	enrique.marti@vodafone.com

The opportunity for mobile operators is to penetrate both the high end and the mass market due to the unique strengths of ubiquity and interconnected networks



A key area for successful RCS deployment is interconnect

A practical framework for RCS Interworking has been developed on the basis of existing principles as defined in GSMA Interconnect templates.

- Existing GSMA contract templates have been reused for RCS service components (File Share, IM, Group IM, Video/Image Share); but, advanced/adapted where necessary to achieve the overall objective
- Creation of practical guidelines (template contract, RCS Interworking requirements, practical recommendations) will enable easy implementation of RCS Interworking by all interested operators
- In May 2012 IWG approved two new PRDs
  - IN.25 "proposed national and international RCS Interworking requirements“
  - AA.69 "Interworking template agreement for RCS"

These documents will be maintained and evolved by the GSMA’s Interconnect Solutions Working Group: IWG (SOLU) and are also available through the GSMA’s Infocentre2.

The table below shows the Service component within the current version of RCS and the principles on which charging is based

Service component	Charging principle	GSMA template
Capability Exchange	Mutual forgiveness; to be reviewed on demand	
One-to-One Chat (IM)	Incoming session invite charged; only for successful session setup	AA.69
Group chat (Group IM)	Incoming session invites charged; only for successful session setup	AA.69
Video Share	Incoming video session charged based on duration	AA.69
File Transfer	Incoming file transfer charged on total volume transferred	AA.69
Image Share	Incoming picture charged on total volume transferred	AA.69
Signalling	Mutual forgiveness; to be reviewed on demand	
ENUM query	Mutual forgiveness; to be reviewed on demand. ENUM look-up shall be strictly limited	

There will be no change in regard to interconnection for Voice, SMS, MMS; i.e. the respective existing Interconnect contracts remain in force without exception.

Please contact Hajo Kiefer (hajo.kiefer@telekom.de) for further information.

RCS can be deployed via one of three options

The cost elements of a business model will vary according to an operator's installed technology and levels of sensitivity over owning versus renting core network capabilities. A critical question is the cost of deploying an IMS; whilst this can only be fully answered by infrastructure vendors it is agreed that RCS can be deployed via one of three options:

- Sole ownership
- Shared ownership
- Third party hosting

Depending on the option, the profile of a programme can change from one of CAPEX return on investment to a lower risk market entry programme.

Please see the Technical Evaluation section for the various IMS implementation options.

Devices & Clients

All RCS project team operators have received solid commitments for devices that will allow them to launch with devices from multiple OEMs. The following list shows individuals within the partnering OEMs who will be able to open discussions regarding device availability / timing / device types.

Company Name	Single Point of Contact	Email
HTC	Mr. Olivier Bourdeau	olivier_bourdeau@htc.com
Huawei	Mr. Milan Patel and Mr. Cheng Juan	milan.patel@huawei.com and chengjuan123@huawei.com
LGE	Mr. Sean Chie	sean.chie@lge.com
Motorola	Mr. Gary Holmes	kptc64@motorola.com
Nokia	Mr. Santtu Ahohen	Santtu.Ahonen@nokia.com
Blackberry	Mr. Calum Tsang	catsang@rim.com
Samsung	Mr. Yeo-jeong Yoon	yeojeong.yoon@samsung.com
Sony Mobile Communications	Mr. Frank Herrmann	frank.herrmann@sonymobile.com
ZTE	Mr. She Kun	she.kun@zte.com.cn

There are many network, device and apps vendors exhibiting their products and solutions on the RCS Virtual Exhibition

For more details visit http://rcsvirtualexpo.gsma.com/

Unlock and exploit new revenue streams

RCS is the starting point for an evolving suite of communication services.

For consumers:

- P2P communication
- Gaming
- Social Media
- TV communication
- Geo-location
- Real-time info services

For business:

- Interactive IVR
- Self-service CRM
- Conference calls
- Advertising
- Enterprise solutions
- Service re-selling

Add chat capabilities to apps without having to maintain a communication service backend

Group collaboration

Add video to customer care calls

RCS enabled multiplayer gaming

Operators will be able to evolve services to exploit and differentiate their offering to reach more sophisticated segments via easy to use apps from 3rd party developers.

The RCS specification is continually evolving and developing as new opportunities and capabilities surface.
To read more about the latest specification visit http://www.gsma.com/rcs/specifications

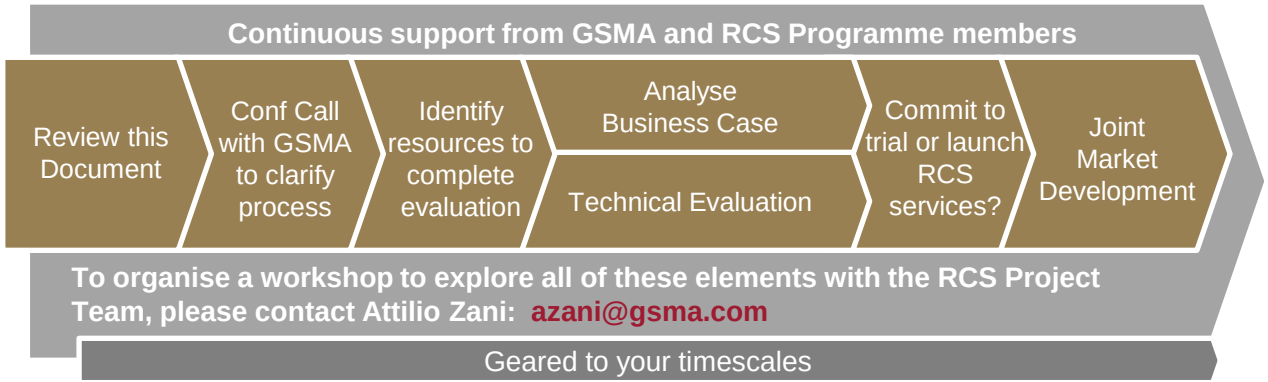
GSMA Rich Communications

How can the GSMA help your organisation?

The GSMA represents the interests of mobile operators worldwide. Spanning more than 220 countries, the GSMA unites nearly 800 of the world's mobile operators with more than 230 companies in the broader mobile ecosystem, including handset makers, software companies, equipment providers and Internet companies, as well as organisations in industry sectors such as financial services, healthcare, media, transport and utilities. It provides comprehensive resources and a wealth of expertise for operators to draw upon when considering the business opportunity and the technical implementation options for RCS.

As the host of the RCS community, GSMA has a leadership team and working groups comprising key players from operators across the industry. These teams offer considerable expertise – expertise in what it takes to deploy inter-operator services like RCS either nationally or internationally and from both commercial and technical perspectives. This expertise is accessible to you today with a rigorous evaluation process outlined below.

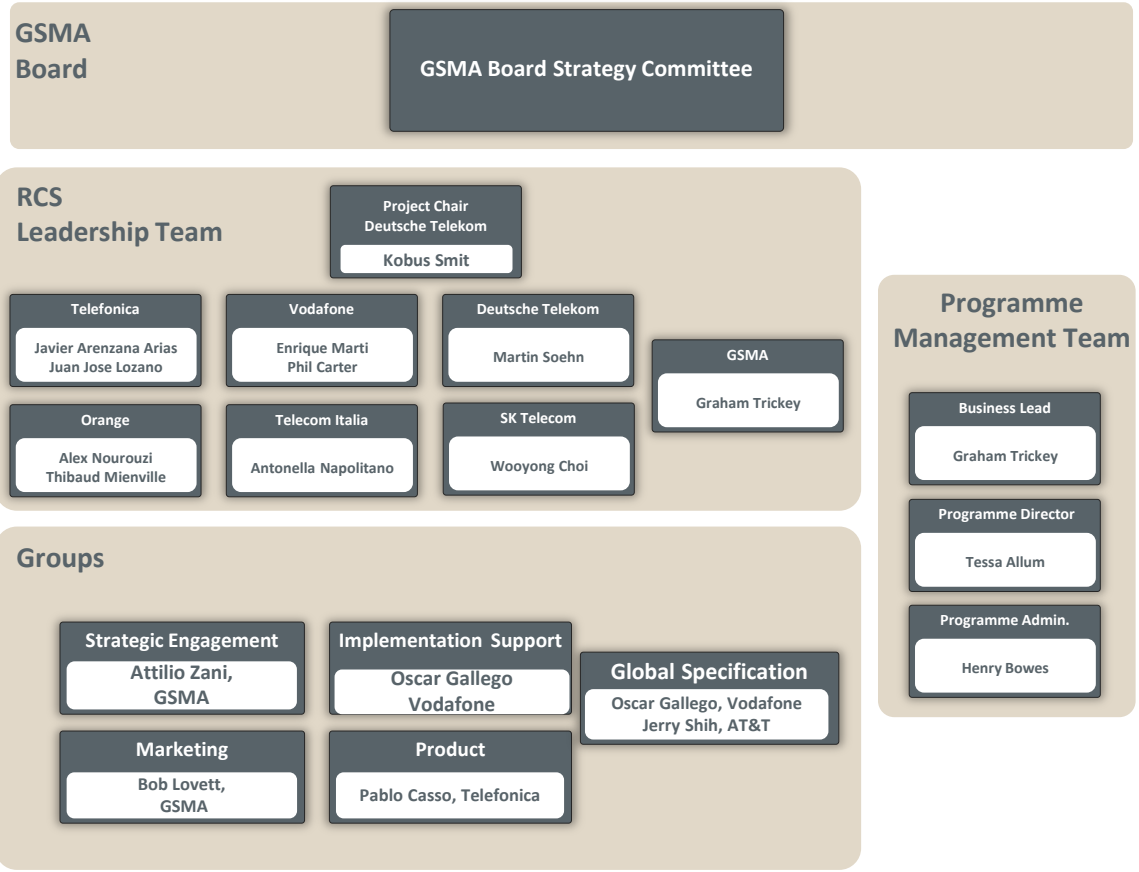
RCS Evaluation Process



Rich Communications

The RCS Project Structure

The Rich Communication Services project is set up by the industry with appropriate governance and structure to bring maximum power to bear in ensuring the success of RCS. It is part of the GSMA's Future Communications Programme



Groups

Groups	These groups play a central role in the RCS strategy. Each group has Subject Matter Experts from participating mobile operator s and a GSMA representative. The GSMA provides management and facilitation of the flow of information. The Implementation Support and Global Specification Group are open to appropriately qualified GSMA operator companies.	
	Mission and Output	**Subject Matter Expert**
Strategic Engagement	Strategic Engagement consists of GSMA resources who provide outreach to operators, working with them to support the launch of interoperable RCS services. The team supports mobile operators in their individual and collective decisions by means of strategic rationale and advice on regulatory, legal and business case issues. Once operators have made the decision to deploy RCS, the Strategic Engagement team will support implementation projects and help to drive interoperable market launches. They share best practice of RCS / VoLTE market deployments throughout the lifecyclehelp, and help to drive scales of RCS by encouraging the development of Enterprise and other applications, and developing monetisable commercial models with partners.	Attilio Zani (GSMA) azani@gsma.com
Product	The Product group consists of operator representatives and is managed by a Project Manager from GSMA. The role of the Product Group is to create and implement a roadmap of features and user experiences for Future Communications, with responsibility for creating and maintaining the feature roadmap, and for ensuring the best possible user experience of those features. Product works to ensure the availability of embedded Rich Communications clients across the whole range of devices available from operators and the open market, and oversees the RCS App project which introduced a common joyn client for all operators. It is also responsible for leveraging Rich Communications as a platform for innovative services based on APIs.	Pablo Casso (Telefonica) pablo.cassobasterrechea@telefonica.es
Marketing	The Marketing Group operates across all the projects with the Future Communication programme. The Marketing Team is responsible for energising communications and making all marketing related activities for RCS actually happen. They work actively within the Operator member community to raise awareness of RCS news and channel it through to all relevant audiences.	Bob Lovett (GSMA) blovett@gsma.com
Global Specification	The role of the Global Specification Group is to define the technology roadmap and agree the global technical specifications for Future Communication Services: RCS and VoLTE. The Group makes appropriate change requests to the global Standards Development organisations (SDOs) as needed to support Future Communications, represents the technical function of RCS in other industry and standardization bodies and provides technical support to the Product and Implementation Support Group.	Oscar Gallego (Vodafone) oscar.gallego@vodafone.com Jerry Shih (AT&T) js9053@att.com
Implementation Support	The Implementation Support Group consists of operator representatives and is managed by a Project Manager from GSMA. The Group's role is to provide a self-accreditation framework to the joyn trade mark, and technical support to operators, OEMs, client providers, hosted solution providers and other members of the RCS ecosystem. They manage test events and support and speed up operator implementation by defining interconnect and roaming frameworks for VoLTE and RCS and maintaining support of RCS and VoLTE implementation with industry bodies.	Oscar Gallego (Vodafone) oscar.gallego@vodafone.com

Strategic Engagement strategy

The GSMA provides comprehensive resources and a wealth of expertise for operators to draw upon when considering the business opportunity and the technical implementation options for Rich Communications. As the host of the RCS community, GSMA has set up expert teams and working parties comprising key players from operators across the industry. These experts will apply their considerable knowledge and insight to help you evaluate the case for RCS for your organisation, and highlight potential pitfalls.

From our collaborative working with international operators and device manufacturers we know that many perceive certain barriers to adoption that either don't exist or are already being addressed. The GSMA is keen to work with operators in each national market to launch RCS, at the same time ensuring a strong focus on interoperability in order to deliver the best experience to end-users.

To help achieve this we will ensure there are:

- Legal frameworks in place e.g. commercial interworking agreements for wholesale interconnect billing and roaming
- Technical interoperable solutions for each feature
- Joint marketing communications (where appropriate)

For further information on the RCS Strategic Engagement strategy, or if you would like the GSMA to facilitate inter-operator discussions in your market, please contact:

Attilio Zani
Strategic Engagement Director
azani@gsma.com

The GSMA's RCS Strategic Engagement team has established a process designed to facilitate national and international operability.

After preliminary calls or meetings have established sufficient interest between multiple operators meeting together, the GSMA arranges in-country roundtables:

Interoperable Launch Agreement Roundtable #1

Introductory meeting to combine understanding and share agreement of the value to launch Rich Communications.
Desired outcome is to have all operators in the meeting fully understand the overall business and strategic rationale for Rich Communications and agree that interoperability is the key to its success.

Interoperable Launch Agreement Roundtable #2

Following in-company discussions participants are to feed back to the group current perspectives on RCS and attempt to cover any outstanding questions. Country specific limitations or constraints will be identified here.
Desired outcome is to agree timetable to launch Rich Communications.

Interoperable Launch Alignment meetings

There will be multiple alignment meetings starting with a planning session in which a local country plan is put together for continued engagement through to launch.
Desired outcome includes technical / marketing / business / legal sessions to enable interoperability.

The GSMA's Strategic Engagement process for RCS

- Market research
- Identify appropriate contact(s)
- Intro email and invitation to conf call
- Provide access to technical and commercial documentation and experience sharing

- Conf calls and/or F2F meetings with each MNO
- If feedback is positive arrange Roundtable
- Further detailed market research in preparation for Roundtable
- MNOs begin technical and market evaluation

- Facilitate "Launch Agreement" Roundtable(s)
- Facilitate "Launch Alignment" meeting(s)
- MNOs set-up working groups
- GSM and MNOs Address technical, commercial or legal issues raised by working groups

- MNOs negotiate and sign LoI
- MNOs conduct internal reviews of product proposition
- MNOs consider implementation options and evaluate/select vendors
- MNOs agree implementation plan
- Monitor progress via Steering Group

- MNOs conduct interworking tests
- MNOs negotiate and sign interconnect agreements
- MNOs launch interoperable services
- Monitor progress via Steering Group
- Collect user/usage data and share with rest of industry

GSMA responsibility

Local MNO responsibility

Rich Communications

RCS Programme Leadership Team	Role, Organisation	Email
Kobus Smit	Chair RCS Project, Deutsche Telekom	kobus.smit@telekom.de
Martin Soehn	Deutsche Telekom	martin.soehn@telekom.de
Alex Nourouzi	Orange	alex.nourouzi@orange-ftgroup.com
Thibaud Mienville	Orange	thibaud.mienville@orange-ftgroup.com
Wooyong Choi	SK Telecom	wy.choi@sk.com
Antonella Napolitano	Telecom Italia	antonia.napolitano@telecomitalia.it
Javier Arenzana Arias	Telefonica	javier.arenzanaarias@telefonica.es
Juan Jose Lozano	Telefonica	juanjose.lozanolozano@telefonica.es
Phil Carter	Vodafone	phillip.carter@vodafone.com
Enrique Marti	Vodafone	enrique.marti@vodafone.com

RCS Programme Management Team	Role, Organisation	Email
Graham Trickey	Senior Director, GSMA	gtrickey@gsma.com
Attilio Zani	Strategic Engagement Director, GSMA	azani@gsma.com
Bob Lovett	Project Marketing Director, GSMA	blovett@gsma.com
Tessa Allum	Programme Director, GSMA	tallum@gsma.com
Henry Bowes	Programme Administrator, GSMA	hbowes@gsma.com

Contact with these key RCS experts during your own evaluation process is actively encouraged. Discover how they have championed the commercial and technical arguments for the deployment of Rich Communications within their own organisations. Why not take advantage of their experience, which they are keen to share with you.

RCS Specification

The RCS specification has been developed by the founding operators of the RCS project who have committed to launching the service, working together with leading infrastructure and device vendors.

V1.2.2

V1.2.2 specification was published as a maintenance release of Version 1.2 of the RCS specification, and includes only bug fixes/lessons-learnt based on recent V1.2.1 IOT efforts in preparation for commercial launches. The specification is supplemented by the RCS Implementation Guidelines. Click here to download V1.2.2

5.1 V1.0

5.1 V1.0 is completely backward compatible with the V1.2 specifications and 5.0 and introduces additional new features such as Group Chat Store & Forward, File Transfer in Group Chat, File Transfer Store & Forward, and Best Effort Voice Call, as well as lessons-learnt and bug fixes from the V1.2 interoperability testing efforts. Global interoperability is a key aspect of these specifications, and 5.1 supports both OMA CPM and OMA SIMPLE IM.

▪ Standalone Messaging	▪ Content Sharing	▪ Geo-location Exchange
▪ 1-2-1 Chat	▪ Network based blacklist	▪ Social Presence Information
▪ Group Chat	▪ IP Voice call	▪ Capability Exchange based on Presence or SIP options
▪ File Transfer	▪ Best Effort Video call	

5.1 V2.0

RCS 5.1 V2.0 introduced a number of incremental improvements and bug fixes to RCS 5.1 V1.0 that improve the user experience and resolve issues that were noticed in deployed RCS networks. These improvements include amongst others

- Resume procedures for interrupted File Transfer via HTTP upload and download operations
- Possibility to use Chat as Emergency Service
- A better management of the state of infrequently used RCS clients
- Improvements in the closing of a Group Chat to allow behaviour depending on why the chat is closed
- More efficient use of existing sessions for Geo-location PUSH
- More flexibility in the deployment and interconnection of RCS IP Voice and Video call services
- Improved NAT traversal for video streams
- Improved handling of the IMS APN
- Small improvements in the multi-device handling

For further help in analysing the RCS Technical Specifications and their implementation please contact **Oscar Gallego** oscar.gallego@vodafone.com

For simplification purposes we have removed reference to RCS-e and RCS in front of the specification number. RCS-e V1.2.2 is now referred as V1.2.2 and RCS 5.0 and RCS 5.1 as 5.0 and 5.1

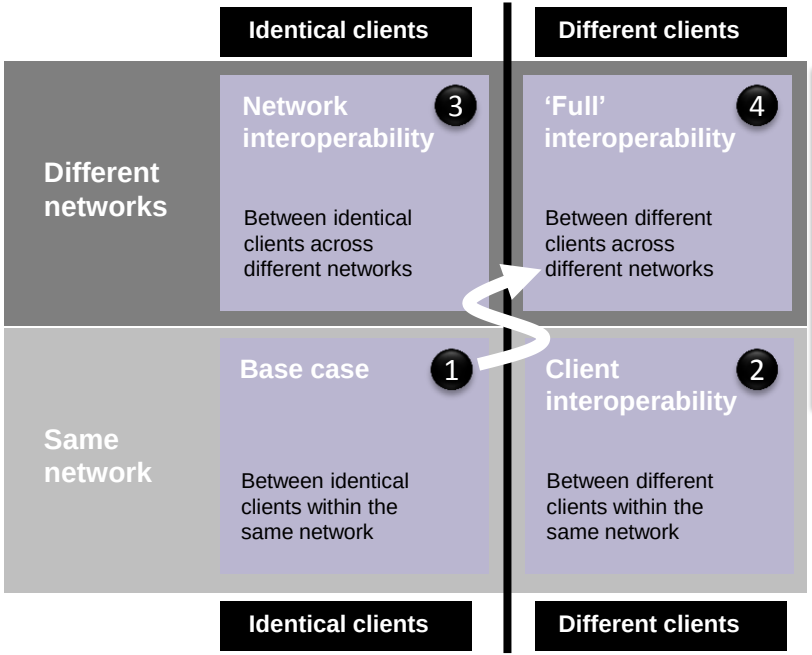
GSMA Rich Communications

Interoperability

The goal of interoperability testing is to ensure that devices or clients and networks interoperate seamlessly, providing a high quality, wide-ranging and trouble free rich communications service embodying the “it’s just there, it just works” proposition. Simply put, the group’s vision is that a user can insert a SIM into any “joyn” trade marked RCS device and it will just work.

The IOT Group ensures seamless interoperability by mandating the testing of clients and networks within a test harness in different configurations. In order to award “joyn” accreditation, test results must be to a very high standard.

0 **Pre-accreditation testing and test fest**



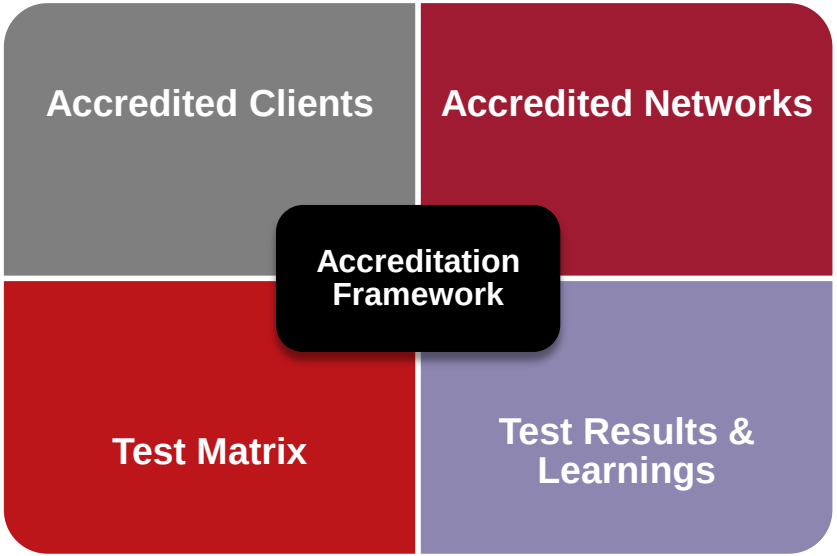
Full accreditation ensures that all the different use case scenarios have been executed to achieve a high quality and level of service interoperability by driving testing towards a 100% pass rate.

Interoperability

The heart of the IOT accreditation framework is the test harness.

The over-riding test concept is one of self-certification. Each RCS client, device and operator must establish their own self-accreditation and testing process in accordance with the approved test harness, the tool that defines both the IOT criteria and promotes an efficient way of verifying interoperability.

The Test Matrix is a configurable matrix of end-to-end (E2E) test cases which generates the set of tests required to be passed dependent upon the operator or test environment setup. Each test case has its own status: Mandatory, Recommended or Optional.



Interoperability

The IOT strategy was created in three phases towards the ultimate goal of achieving an effective test harness and transferring IOT responsibilities to a sustainable industry set up. We are presently transitioning from Phase 1 to Phase 2.

Phase 1

Set up

- Establish the “joyn” licensing and accreditation framework
- Ensure clients and networks are accredited
- IOT group track of key issues and verify that conflicts are consistently reducing in number

Phase 2

Driving convergence

- MNO Interoperability becomes the priority
- Accredited clients verified against more diverse setups and convergence driven industry wide

Phase 3

Transfer to sustainable industry setup

- Secure a set of test cases to be generated and hosted by GCF
- Operators no longer at the centre of accreditation; now driven by vendors and private companies specialized in GCF testing and conformance

Implementation Options

A number of implementation options exist for RCS including entry-level and variable cost options. The following slides describe the different options and provide examples of vendors who support each option.

Some definitions are necessary to explain the differences between ‘functional’ and ‘physical’ architectures:

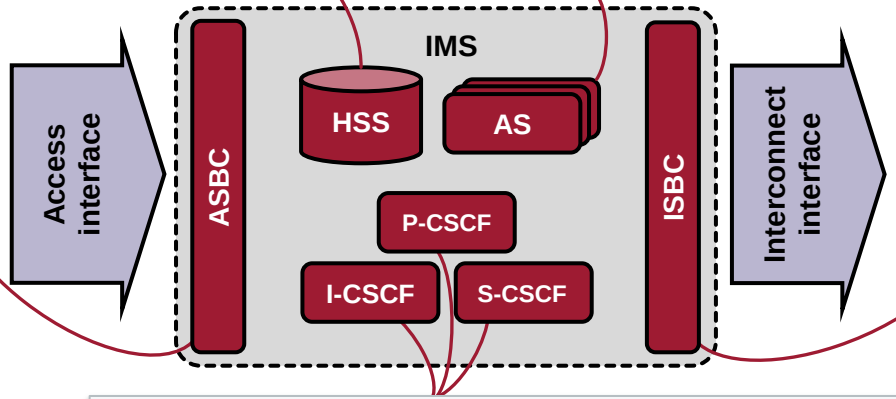
- ‘functional’ architectures – this means they define functional elements and the reference points that exist between them. However, in some implementations, some of these functional elements can be clustered together into a single box (or physical element) and the interfaces between those functions are realised internally.
- ‘physical’ architectures – the actual physical elements and the interfaces between those elements that are implemented in a network build.
- For IMS, it is widely acknowledged that the Functional architecture defined by 3GPP (3GPP TS 23.228) can be simplified in various ways when building a physical implementation.

IMS functional architecture - basics

Home Subscription Server (HSS)
- Database storing subscription profiles for customers. Profiles are download to S-CSCF after Authentication.

Application Servers (AS) – Application functionality associated with RCS specific applications
- IM-AS: Provides chat & file transfer intelligence and advanced billing
- Options-AS: Enables multi-device
- Handset notifications AS: Enables the handset asynchronous notification

Other AS's may also be included in the IMS domain e.g. VoLTE, Video Telephony.



Access Session Border Controller (ASBC)
- Controls the edge of the IMS network.

Interconnect Session Border Controller (ISBC)
- Manages in-coming and out-going traffic from and to the IMS domain, and protects IMS from external attack.

Call Session Control Functions (CSCF) – SIP servers responsible for the enforcement of subscription profiles and authentication of customers.
- Proxy CSCF – performs access control
- Interrogating CSCF – top level authentication of the customer
- Serving CSCF – service control and integration

Implementation Options - Cost Reduction

There are two approaches to cost reduction (not mutually exclusive!)

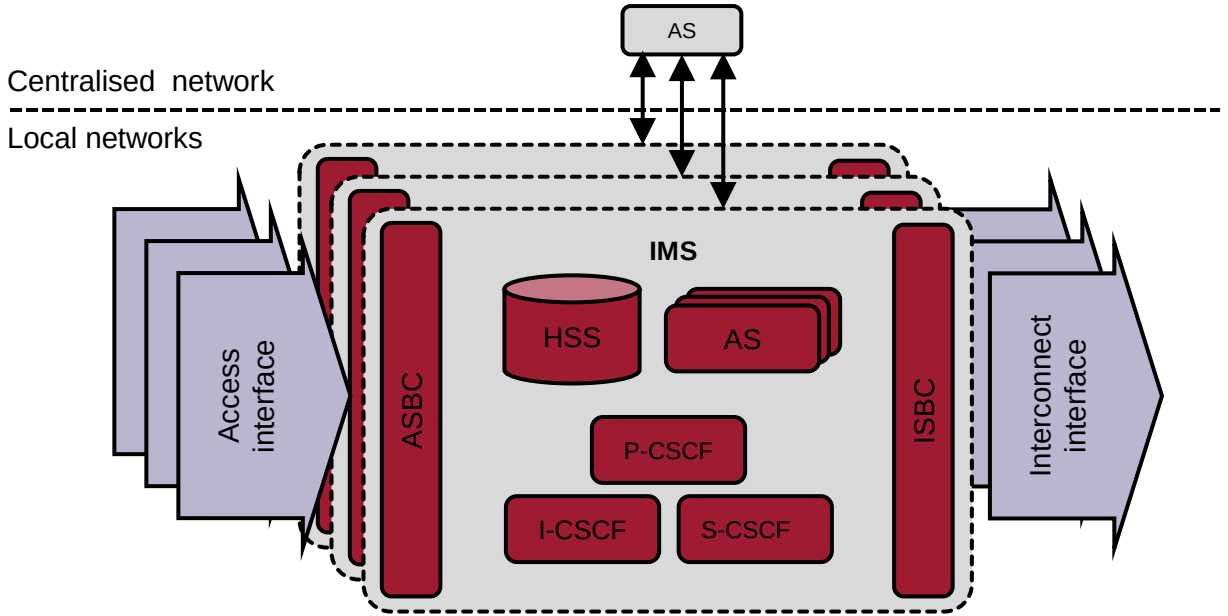
- Geographic centralisation – the sharing of some or all of the IMS functions between more than one operation. Options include:
  - AS centralisation
  - Multi-operation hub and spoke
  - Third party hosted IMS

- Physical consolidation – clustering together functional elements into different physical implemented boxes. Options include:
  - 'RCS in a box'
  - 'IMS in a box'
  - Edge-controlled IMS

Application Services Centralisation

Geographic centralisation options (deployment options)

Application Services are consolidated into a centralised location and accessed by each local IMS domain to deliver service. Offers greater economy of scale on AS and greater commonality in service implementation.

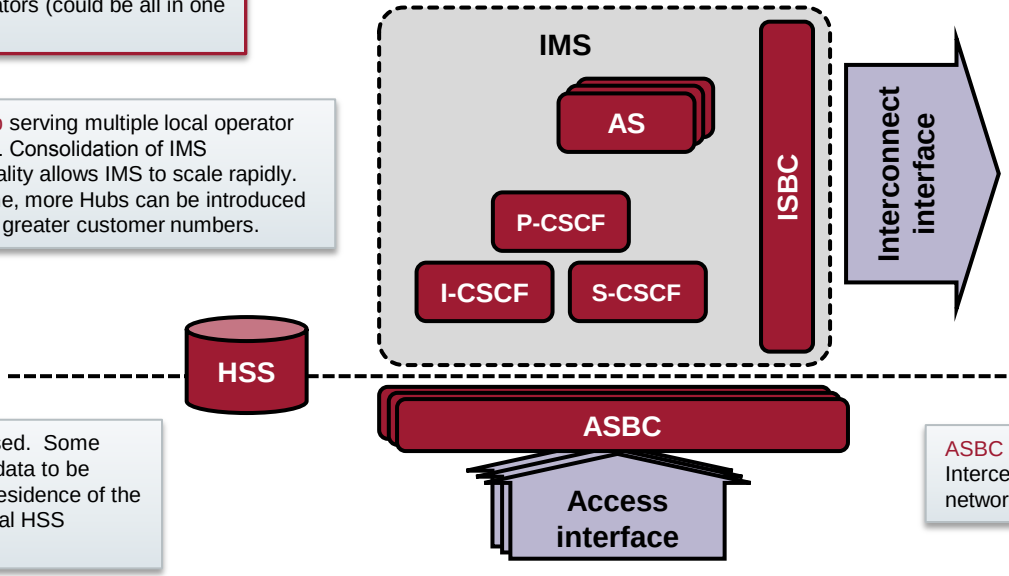


Hub and Spoke / 3rd party hosted

Geographic centralisation options (deployment options)

Hub and Spoke – all elements owned by one 'Group' Operator, Local Networks being national operations of the Group.
3rd Party Hosted – 3rd Party owns and operates centralised Hub; Local networks from different operators (could be all in one country or internationally diverse).

IMS Hub serving multiple local operator 'spokes'. Consolidation of IMS functionality allows IMS to scale rapidly. Over time, more Hubs can be introduced to serve greater customer numbers.



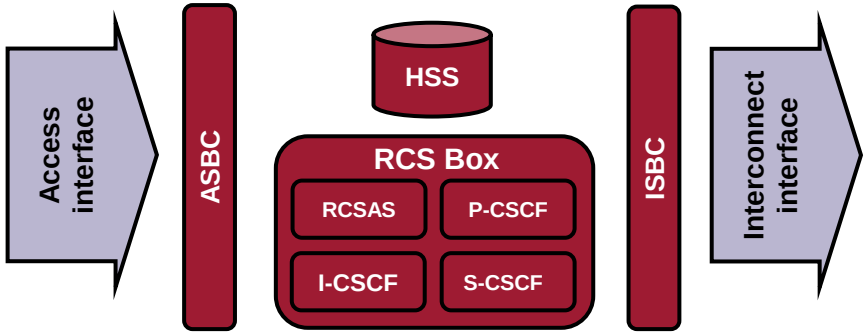
Common interconnect ensures consistent NNI. May have to route locally for regulatory reasons.

HSS can be local or centralised. Some regulators require customer data to be stored within the country of residence of the customer which implies a local HSS deployment.

ASBC deployed locally to enable Lawful Intercept requirements to be met – local network required to be SIP

Rich Communications

‘RCS in a box’



Physical consolidation options (solution options)

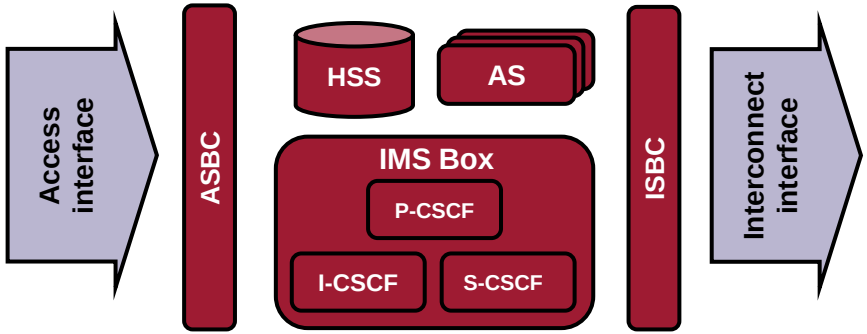
- RCS box contains P-, I-, and S-CSCF functions and the AS function for RCS
- Some vendors sell this as ‘IMS-less’ RCS, but reality is they have at least P- and I-CSCF functions included
- Can be fragmented into component parts if integrated into a full IMS implementation at a later date

Example suppliers of ‘RCS in a box’ solutions

Supplier Name	Contact	Email
Crocodile	John Parr	john.parr@crocodile-rcs.com
Interop Technologies	Bipin Patel	bipin.patel@interoptechnologies.com
Mavenir	Amir Mahmood	amir@mavenir.com
Nable Communications	Kang Seong Heon	sales@nablecomm.com
NewPace	Mike Flynn	mike.flynn@newpace.com
WIT Software	Paulo Glórias	paulo.glorias@wit-software.com

If you wish to appear featured in the example of suppliers upon the next update or wish to exhibit on the Rich Communications Virtual Exhibition please contact rcs@gsma.com. For the latest news on our Partner Ecosystem visit http://www.gsma.com/rcs/partner-ecosystem

'IMS in a box'



Physical consolidation options (solution options)

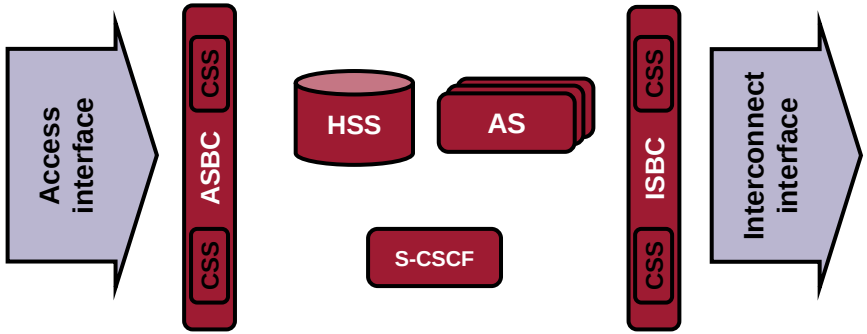
- IMS box contains P-, I-, and S-CSCF functions
- AS's separated – may be from other vendors or to offer diversification in service combinations to customers
- P-, I- and S-CSCF tend to be software-based but on common hardware, hence elements can scale independently and be fragmented as customer base grows
- Typical vendors – entry level offering from Tier 1 vendors (Alcatel-Lucent, Ericsson, Huawei, Nokia Siemens Networks…)

Example suppliers of 'IMS in a box' solutions

Supplier Name	Contact	Email
Alcatel-Lucent	Xavier Gros	xavier.gros@alcatel-lucent.com
Mavenir	Amir Mahmood	amir@mavenir.com

If you wish to appear featured in the example of suppliers upon the next update or wish to exhibit on the Rich Communications Virtual Exhibition please contact rcs@gsma.com. For the latest news on our Partner Ecosystem visit http://www.gsma.com/rcs/partner-ecosystem

Edge controlled IMS



Physical consolidation options (solution options)

- P- and I-CSCF functions reside in SBCs
  - SBC might also contain other IMS elements – Policy Control Enforcement, Media Resource Function, Media Gateway.
  - SBC vendors would argue they reside there anyway!
- S-CSCF is simply managing authentication credentials and Service brokering.
- Provides a 'shell' around any other vendor's core IMS elements

Example suppliers of Edge controlled IMS solutions

Supplier Name	Contact	Email
Acme Packet	Kevin Mitchel	kmitchell@acmepacket.com
GenBand	Micaela Giuhat	micaela.giuhat@genband.com
Nable Communications	Kang Seong Heon	sales@nablecomm.com

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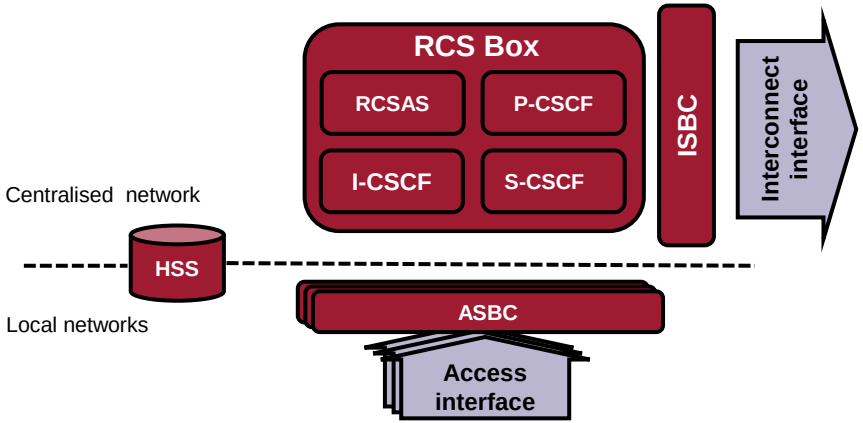
Rapid RCS starter – 3rd party hosted RCS in a box



Physical consolidation options (solution options)

- Requires 3rd Party to host RCS box; operators to acquire ASBCs
- ISBC vendors may be able to implement 'RCS Box' function on same hardware as ISBC.
- Guaranteed Interop if this is only option in market as starting point of service.

Example suppliers of 3rd party hosted RCS in a box solutions

Supplier Name	Contact	Email
Crocodile	John Parr	john.parr@crocodile-rcs.com
Interop Technologies	Bipin Patel	bipin.patel@interoptechnologies.com
NewPace	Mike Flynn	mike.flynn@newpace.com

If you wish to appear featured in the example of suppliers upon the next update or wish to exhibit on the Rich Communications Virtual Exhibition please contact rcs@gsma.com. For the latest news on Hosted Solutions visit http://www.gsma.com/rcs/hosted-solutions

RCS specification IOT & implementation contacts

To discuss the RCS specifications, interoperability and the architecture and implementation options speak to any of the following members of the RCS Programme Team* or the GSMA can arrange a workshop to explore these issues further.

Company Name	Primary Contact	Secondary Contact
Deutsche Telekom	Ruediger Jaensch ruediger.jaensch@telekom.de	Carlos A. Loaiza and Fazli Erbas carlos-andres.loaiza@telekom.de fazli.erbas@telekom.de
Orange	Vincent Trocme vincent.trocme@orange-ftgroup.com	Thibaud Mienville thibaud.mienville@orange-ftgroup.com
Telecom Italia	Antonella Napolitano antonia.napolitano@telecomitalia.it	Bruno Bottiero brunogabriele.bottiero@telecomitalia.it
Telefonica	José María Díaz josemaria.diazcarmona@telefonica.es	Juan José Lozano juanjose.lozanolozano@telefonica.es
Vodafone	Oscar Gallego (lead) oscar.gallego@vodafone.com	Rogelio Martinez rogelio.martinez@vodafone.com

* Other operators also form part of the RCS Project Team

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Example Lists of Supplier Contacts

Example suppliers of Standard decomposed IMS solution

Supplier Name	Contact	Email
Alcatel-Lucent	Thomas Picard	thomas.picard@alcatel-lucent.com
Ericsson	Hans Ovesen Lennart Landersten	hans.ovesen@ericsson.com lennart.landersten@ericsson.com
Huawei	Milan Patel	milan.patel@huawei.com
Nokia Siemens Networks	Jorma Jaakkola Christoph Aktas	moreabout.nsnrcs@nsn.com christoph.aktas@nsn.com
ZTE	She Kun	she.kun@zte.com.cn

Example suppliers of RCS application server

Supplier Name	Contact	Email
Acision	Marijn Kuijpers	marijn.kuijpers@acision.com
Interop Technologies	Bipin Patel	bipin.patel@interoptechnologies.com
Mavenir	Maryvonne Tubb	mtubb@mavenir.com
Nable Communications	Kang Seong Heon	shkang@nablecomm.com
NewPace	Mike Flynn	mike.flynn@newpace.com
WIT Software	Paulo Glórias	paulo.glorias@wit-software.com

Example suppliers of RCS Hosted Solutions

Supplier Name	Contact, Role	Email
Acision	Kees Wouters, Senior Product Manager	kees.wouters@acision.com
Acme Packet	Kevin Mitchell, Director, Service Provider Marketing	kmitchell@acmepacket.com
Broadsoft	Curtis Hartmann, Sr. Director Product Management	chartmann@broadsoft.com
Crocodile	John Parr, Managing Director	john.parr@crocodile-rcs.com
Ericsson	Scott Wales, Sales Director	scott.w.wales@ericsson.com
Exomi LLC	Jukka Vaisanen, Chief Technology Officer	jukka.vaisanen@exomi.com
Genband	Rick Gaulin, Sr. Account Executive	rick.gaulin@genband.com
Huawei	Qiang Xiao, Sr. Product Manager	shawn.xiaoqiang@huawei.com
Infinite Convergence	Tom Hart, Systems Engineer	tom.hart@infinite.com
Jibe	Jason Choy, SVP EMEA	jason@jibemobile.com
Mavenir	James Davey, Account Manager	jim.davey@mavenir.com
Neusoft	Jukka Marjomaa, Sales Director	jukka.marjomaa@neusoft.com
Newpace	Mike Flynn, Director Business Development	mike.flynn@newpace.com
Open Mind	Lorraine Fahy, Commercial Manager	lorraine.fahy@openmindnetworks.com
Solaiemes	Jose M Recio, Co-Founder	recio@solaiemes.com
Syniverse	Etienne Chassat, Account Manager	etienne.chassat@syniverse.com
Tata	John Landau, SVP Global Managed Services	john.landau@tatacommunications.com
Vodafone	Phillip Carter, Head of Smart Communications	phillip.carter@vodafone.com
WIT	Paulo Glórias, Director Business Development	paulo.glorias@wit-software.com
ZTE	Yang Jiaoping, Project Manager	yang.jiaoping@zte.com.cn

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Key Contacts

Contact	Role, Organisation	Email
Kobus Smit	Chair RCS Project, Deutsche Telekom	kobus.smit@telekom.de
Martin Soehn	Deutsche Telekom	martin.soehn@telekom.de
Alex Nourouzi	Orange	alex.nourouzi@orange-ftgroup.com
Thibaud Mienville	Orange	thibaud.mienville@orange-ftgroup.com
Antonella Napolitano	Telecom Italia	antonia.napolitano@telecomitalia.it
Javier Arenzana Arias	Telefonica	javier.arenzanaarias@telefonica.es
Juan Jose Lozano	Telefonica	juanjose.lozanolozano@telefonica.es
Phil Carter	Vodafone	phillip.carter@vodafone.com
Enrique Marti	Vodafone	enrique.marti@vodafone.com
Wooyong Choi	SK Telecom	wy.choi@sk.com
Graham Trickey	Senior Director, GSMA	gtrickey@gsma.com
Tessa Allum	Programme Director, GSMA	tallum@gsma.com
Henry Bowes	Programme Administrator, GSMA	hbowes@gsma.com
Oscar Gallego	Subject Matter Expert – Global Specification and Implementation , Vodafone	oscar.gallego@vodafone.com
Jerry Shih	Subject Matter Expert - Global Specification, AT&T	js9053@att.com
Pablo Casso	Subject Matter Expert - Product, Telefonica	pablo.cassobasterrechea@telefonica.es
Attilio Zani	Subject Matter Expert – Strategic Engagement, GSMA	azani@gsma.com
Bob Lovett	Subject Matter Expert - Marketing, GSMA	blovett@gsma.com