



P2A Messaging in RCS

The Role of Chatbot Directories

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1. Introduction

RCS Business Messaging (RBM) is revolutionizing business-to-consumer communication by providing a richer and interactive user-experience. Brands are getting the opportunity to engage with their customers within the native messaging client, using chatbots (also called RBM Agents).

Some of the key challenges faced by brands are: How do customers discover and connect with their RBM agents? How does a brand acquire new customers through the agents they have invested in? Similarly, from the consumer's perspective, how do they know which RBM agents are available? How do they chat with the agents?

This is where "discovery" comes into play. Discovery allows consumers to explore, browse and connect with the relevant RBM agents they are looking for. For RBM agents to grow their user base, they must be discoverable via discovery platforms that are easily accessible by consumers.

Apple's App Store and Google's Play Store have played a key role in helping people discover and download apps. RCS directories are the equivalent of app stores for chatbots. Directories facilitate discovery and deep linking, enabling brands to attain greater visibility for their RBM agents, and eventually, witness significant increase in user engagement. Directories may also incorporate user reviews and ratings, providing valuable information to users as they decide to use the RBM agents. Directories will help position RCS as the preferred channel for one-to-one business messaging.

The objective of this whitepaper is to provide a detailed understanding of how RCS directories work, the current landscape of directory offerings and launches in the market, and how directories should evolve to turbo-charge the adoption of P2A messaging. We hope this information will be valuable to (a) MNOs looking to deploy and grow their RCS offerings; (b) industry organizations and vendors looking to grow the ecosystem; and (c) brands looking to engage with customers using business messaging.

We would like to thank Orange, Vodafone, Synchronoss, IMI Mobile, and several other industry experts for their valuable insights and contributions to this whitepaper.

2. RCS: Its origin and significance

SMS messaging has become a ubiquitous part of our daily lives, and has been one of the most preferred means of communication since its inception in 1992. A plain text message has evolved and revolutionized the way we communicate. During the last decade, P2P Messaging has been fragmented because of the emergence of popular OTT messaging apps, such as Line, iMessage, Telegram, Viber, WeChat, and WhatsApp, leading to a sharp decline in P2P SMS messaging.

As SMS became popular for P2P messaging, brands also adopted SMS to reach out to existing and potential customers, leading to rise of A2P messaging, and in some markets, also to P2A messaging. While A2P messaging flourished over SMS, there was limited support for interactive responses and P2A messaging over SMS.

Despite the limitations of SMS, and the growth of OTT apps, SMS has continued to be a preferred medium for brands to reach out to customers due to its universal reach and reliability of service. However, many popular OTT messaging apps have recently introduced their own business messaging solutions, creating new use cases for business messaging, and also moving existing use cases from SMS to OTT apps.

Figure 1 traces a timeline of the paradigm shift from SMS to OTT apps for consumer and business messaging.

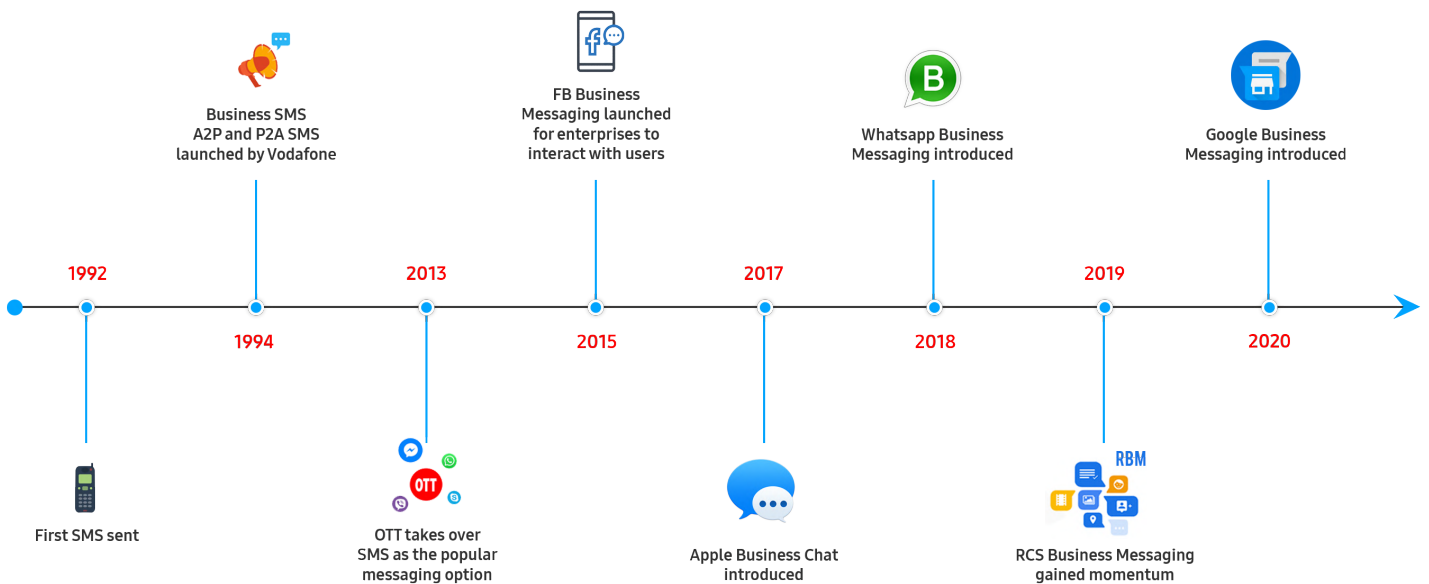


Figure 1: Paradigm shift in messaging

RCS is an upgrade to SMS, and is sometimes referred to as SMS 2.0. A form of IP messaging, RCS offers enhanced messaging features, such as high-resolution photo and video sharing, location sharing, group chats, read receipts, and suggested replies, that are not available with SMS. Further RCS provides advanced form of business messaging that is not available with SMS. As a result, RCS is gaining popularity and revolutionizing all forms of messaging - P2P, A2P, and P2A.

For individuals, RCS opens up the possibility of rich media interactions with other mobile subscribers using the native messaging app on the phone, all over the data channel without incurring an additional cost. For brands, RCS enables two-way conversations with features such as verified sender ids, branding images, carousels, rich cards, suggested actions, and read receipts. With RBM Agents, brands can deliver improved customer experience leading to higher engagement rates, and an increased user base.

Almost 100 mobile operators, including Airtel, America Moviles, AT&T, China Mobile, Docomo, Jio, Orange, T-Mobile, Telefonica, SK Telecom, Verizon, and Vodafone; as well as several infrastructure providers, including Dotgo, Google, Mavenir, Samsung, Synchronoss, and WIT Software, have been playing a significant role in the adoption of RCS across the globe by more than 500MM users. At the same time, the lack of adoption of RCS by Apple has been disappointing.

3. A2P and P2A messaging support in RCS

Brands are constantly on the lookout for effective ways to communicate with their customers. Similarly, consumers desire convenient, fast and secure ways to reach out to brands. The rich media features, instant two-way communications, and enhanced reporting capabilities make RCS a perfect channel for personalized and enriching A2P and P2A conversations.

P2A messaging is when a user initiates a conversation with a brand. If a user has previously received a message from the brand, then the user can look up the past chat, and send a message to the brand from inside the prior chat. In case there is no prior interaction with the brand, the user needs a trigger to initiate a chat.

Different trigger options for users to connect with the RBM agents

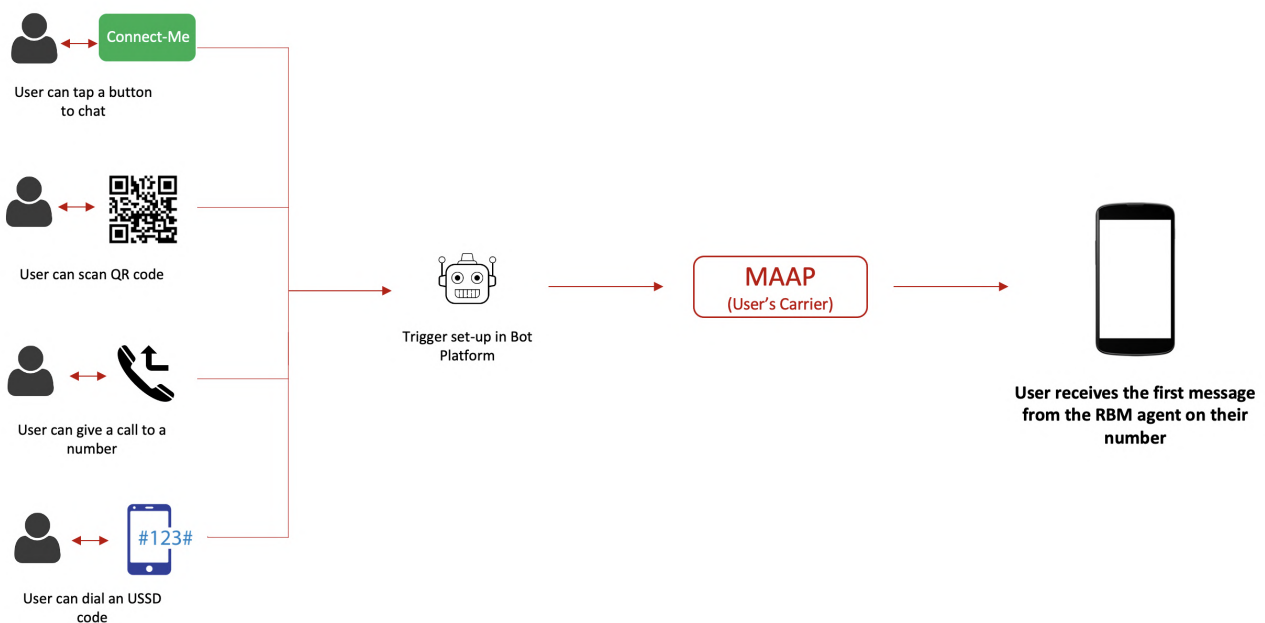


Figure 2: Different trigger options to connect to an RBM Agent

Figure 2 illustrates various triggers that can be made available to a user to initiate a conversation with a brand using RCS. A "Connect Me" button can be provided on a website, in another chatbot, or in emailers. When a user clicks on the "Connect Me" button, the bot sends a first A2P message to the user, who can then respond to begin a chat. Similarly, a QR code can be displayed in a flyer, poster, or in another medium. A user can scan the QR code to get an RCS message from the bot. Similarly, the user can call a number or dial a USSD code to initiate a chat with the bot. In each case, the bot must provide a callback URL to respond to the trigger. A bot can also provide multiple callbacks in order to support customized first messages in response to different triggers.

The number of use cases for using RCS chatbots, such as making appointments, handling information requests, booking reservations, chatting with a live agent etc., are on the rise. [Mobilesquared](#) estimates that P2A traffic will reach 300 billion messages and constitute 22% of the total RBM spend by 2023. Therefore, there is a compelling need to streamline the P2A discovery mechanism for RBM agents that will allow consumers to discover bots, and directly and easily connect with them using triggers, with deep linking options.

Along with RCS, another platform that is gaining adoption for business messaging is WhatsApp. [Mobilesquared](#) predicts the majority of the business messaging traffic generated over WhatsApp will be P2A traffic, making WhatsApp Business the favored messaging channel for customer care. WhatsApp is being preferred by a lot of brands for communicating with their customers because of the popularity of WhatsApp, the reach it offers, and its rich media features. WhatsApp further encourages the P2A use cases with a free pricing model for P2A conversations, and an easy and uniform way for users to initiate a chat, using "Connect Me" buttons and QR Codes. The [Dotgo Bot Store™](#) is an open directory of WhatsApp bots, wherein users can search and chat with brands over WhatsApp.

[Telemedia](#) projects that, in the coming years, outbound A2P traffic will be driven over the SMS and RCS channels, whereas the P2A traffic will be split between WhatsApp, ABC, and RCS.

4. How do directories help brands?

RCS directories have the potential to create enormous opportunities for enterprises to drive customer acquisition, as well as enhance brand loyalty and retention. Directories can play a role similar to an app store where customers can actively search for chatbots, read and provide reviews, and interact with their favorite brands based on their needs, at a time of their choosing. Here are some of the ways directories help brands get new customers and engage with existing customers:



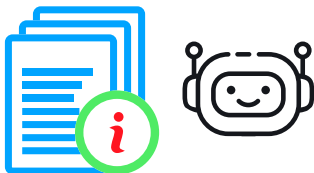
1. Bot discovery

Users can discover RCS chatbots from brands by either using the web, or from within the messaging client they are already using, such as the Google Messages app, the Samsung Messages app, or the WIT Software RCS Client. They can discover bots with a convenient search capability based on several parameters, such as name, brand, country, carrier, and category (such as Travel, Education, Banking, etc).



2. Reviews

Users can submit reviews, and also read user and editorial reviews. Review help build credibility for the RCS bots. Brands can increase user engagement rates by gaining positive reviews.



3. Detailed Bot information

The directory provides information about the chatbots, their description, updates, offers, reviews, ratings, and triggers, thereby helping users decide whether the bot meets their needs or not.

Example:

As an example of how brands can increase visibility for their bots and help users easily connect with them, let's consider a situation where a user wants to purchase groceries.



4. Triggers

The directory provides triggers, enabling users to connect with the chatbots through deep linking. Users can simply click on the 'Connect Me' button, make a call, or scan a QR code to start chatting with the brand.

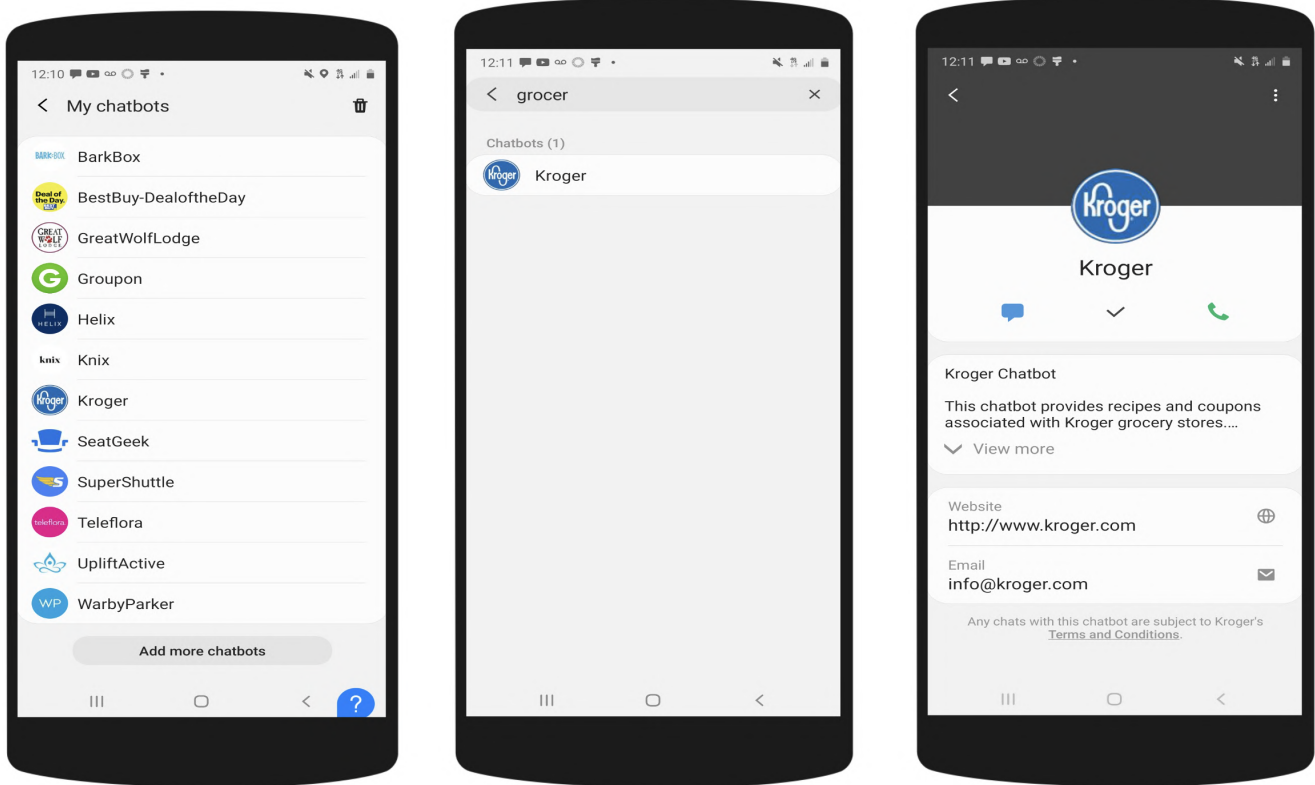


Figure 3: Client Directory and a bot info card in the messages app (on T-Mobile USA)

The user first views a directory of available bots, as seen in Figure 3. The list of available bots can be further refined by entering a keyword in the search box that helps identify his/her intent, in this case, groceries. This is the search phase wherein a directory informs users of all the bots that are available, and returns relevant bots based on user interest. There may also be multiple bots available to buy groceries – and the directory can rank them based on quality, location, and other relevant criteria.

Once the user finds their desired bot, (s)he can then select a trigger for the desired bot, such as a Connect-Me button (The messages icon in Figure 3), or a QR code, to start interacting with the Kroger bot to get coupons.

5. How does a directory work?

The principal purpose of an RCS directory is to provide a single source for users to discover chatbots that are available on the RCS channel. Directories can be owned and managed by either MNOs or independent entities. The directories managed by MNOs cater to their subscribers, and usually only list those bots that are launched in that operator's MaaP. On the other hand, the independent directories tend to have bots from all over the world, and also include other business messaging channels.

To allow users to discover and connect to the bots, these directories need to be populated with accurate and quality information on the RBM agents being offered by the brands, such as bot descriptions, screenshots showing the conversations that are possible in the bot, and trigger options to start chatting with the bot. Directories can offer various triggers to initiate a P2A interaction - such as clicking on a link, a "Connect Me" button, scanning QR codes, sending SMS, dialing USSD codes, dialing into an IVR, or making missed calls, to help users easily connect to the listed bots. Some of these have been illustrated in Figure 2.

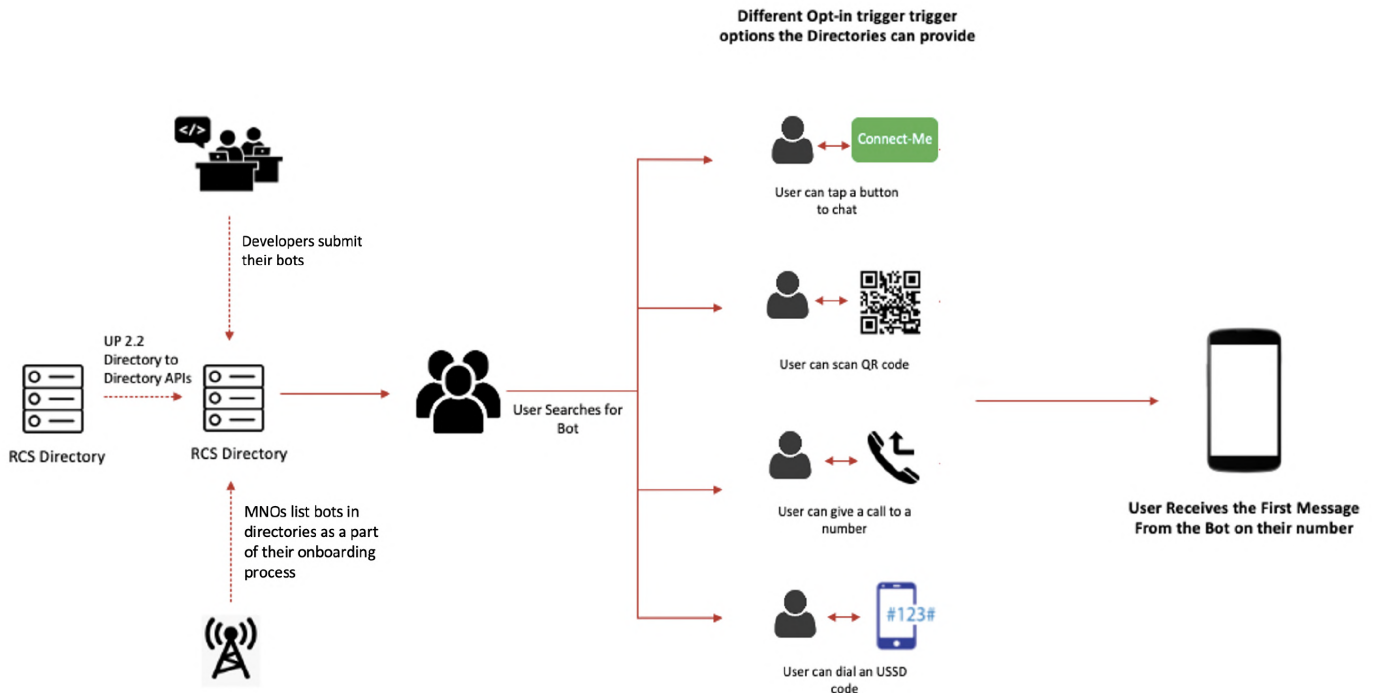


Figure 4: End-to-end functioning of a directory

Figure 4 further illustrates how a directory is populated, how users search the directory, and how they trigger a chat with a brand.

If a directory is managed by an MNO, or is used as its default directory, then all the RBM Agents launched on the MNO can be listed in the directory as part of the onboarding process of the RBM Agents. Information needed for directory listing can be obtained during onboarding process, and policies can be checked, and the bot verified, during the onboarding process.

Directories can also permit developers to submit RBM Agents to the directory, even if the MNO does not provide its own directory or uses a different directory. Developers can also be given access to their RBM Agent listings in the directory, so as to provide and enhance information that may not have been provided during the onboarding process, as well as to manage the user reviews.

For example, the Dotgo directory provides the ability to both, (a) list the RBM Agents during onboarding process for MNOs that use Dotgo as its default directory, and (b) let developers submit the RBM Agents directly.

Finally, directories can also be populated using Directory-Directory exchange, as provided for in UP 2.2. This is particularly useful to help populate directories with bots available across MNOs.

6. Challenges for enabling discovery

Even though P2A messaging holds the promise for brands to see significant increase in customer engagement and satisfaction, the RCS discovery ecosystem is not yet matured for end users and brands. Users often do not have a clear way to identify all the available bots, and to evaluate the ones that are best suited for their needs.

Here are few of the challenges for discovery and growth in P2A messaging:

There are different stakeholders in the RCS ecosystem – MNOs, RCS and MaaP platform providers, RCS client providers, Verification Authorities, directory providers, aggregators, developers, and brands, all of whom have a common interest in growing RCS. For P2A messaging to take off, all parts of the ecosystem need to support P2A, and the following challenges in the ecosystem need to be addressed:

- The full specification for Chatbot Directory was added only in UP2.2, and support for UP2.2 is not yet uniform in the industry.
- Each MNO deploying RCS has to make its own decision about whether or not to offer a discovery platform, and it can be quite expensive for an MNO to build a discovery platform for P2A.
- Samsung Messages client, which can support native chatbot search, is not enabled to do so for all MNOs and devices, requiring separate updates, one MNO and one device at a time.
- There is no standard way for bots to provide a callback URL to send the first message in response to a trigger, much less to provide multiple call backs for deep linking.

As a result, in the past, the various players in the ecosystem focused on A2P business messaging, and P2A messaging as the “next thing” that is now gaining attention.

The above challenges can be overcome by having an open directory that is independent of the specific MaaP platforms and specific MNOs, and can inter-operate with all the major MaaP platforms and RCS Messaging Clients. Alignment amongst the various stakeholders on the issues below can help build and adopt open directories as a P2A discovery mechanism.

Directory APIs

An open directory built outside the MNO's MaaP needs to recognize the bots that are live in the MaaP, and for that the bot information needs to be populated via APIs. The availability of APIs in the MaaP platforms to export and sync bot information can make it possible to have high quality information in a directory. As more MaaPs add such APIs, it will allow third party directories to flourish.

Policies

Directories need to establish policies for submission and listing of chatbots in the directory. What type of content should be permitted? To be valuable, the chatbot information needs to be accurate, and the content listed needs to conform to well defined policies. Should user reviews be permitted? User reviews can provide valuable information and assistance to users deciding whether or not to use a bot, but also require a mechanism to moderate the content, and remove objectionable content. As the number of bots increases, one would expect there would be multiple bots meeting the search criteria, and the directories would need to decide on how to rank the bots when showing the results.

Who would set the policies? Several of these questions have been addressed in the context of the Apple App Store and Google Play Store for smartphone apps. Should directories borrow and build on these concepts, functioning as a Bot Store?

Monetization for directories- who pays?

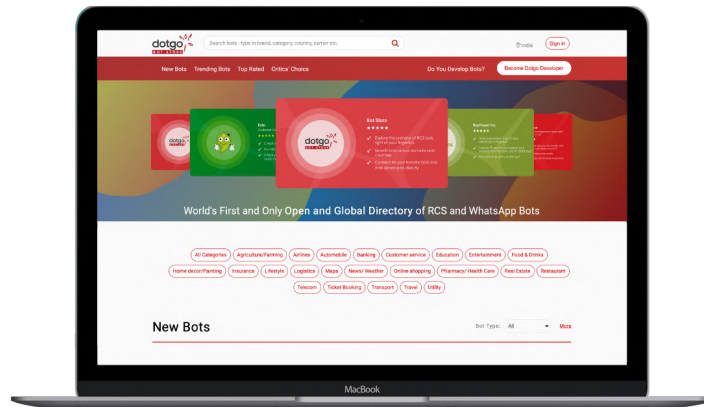
There is lack of a consistent model for monetizing the directories. Should the enterprises pay for their position and visibility within the directory, or the end users pay to gain access to a bot, or should both pay? Directories could also use the digital marketing models such as Pay Per Click (PPC) or Pay Per Impression (PPM)? In the whitepaper "[RCS Business Messaging Opportunity for Mobile Operators](#)", 3CInteractive states, "by giving enterprises and brands a discoverable property to acquire and engage customers, mobile operators not only create an enhanced value proposition for RCS Business Messaging adoption, but they also create a path to monetization of the directory leveraging similar principles to Apple and Google App Stores."

7. Searching RCS directories

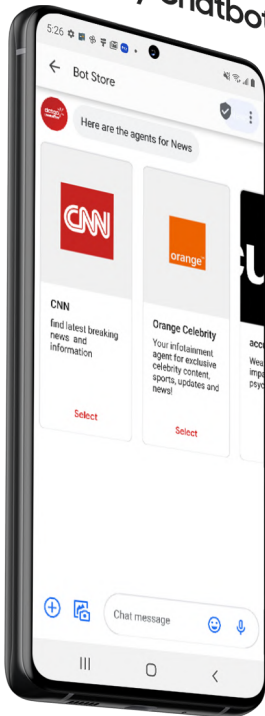
There are three ways to search an RCS Directory:

- a) Search from a web portal.
- b) Search from a Directory Chatbot (a chatbot of chatbots) from inside the RCS client.
- c) Search using the built-in search feature in some of the RCS clients (Client Directory).

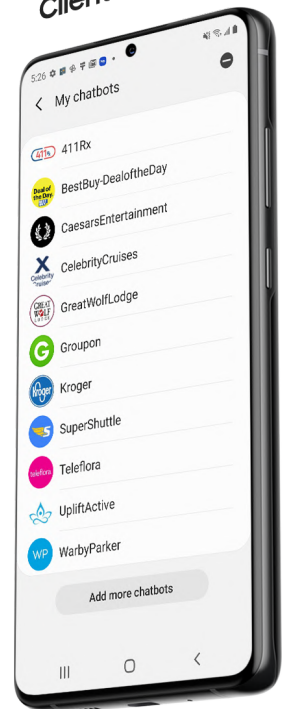
Web Search



Directory Chatbot



Client Directory



Directory

Figure 5: Three ways to search for a bot

These three search interfaces are illustrated in Figure 5.

Searching from a web portal occurs over a web browser, and thus has no dependencies on the specific RCS platform, MaaP, or the RCS client being used by the user or the MNO. Searching from a directory chatbot simply requires that the MaaP and the RCS Client support A2P and P2A messaging, or UP 2.0 compliance, as the search is carried out using a directory chatbot, that works with normal A2P and P2A messages, just like any other chatbot. For the built-in search using the Client Directory, it is mandatory for both the MaaP and the RCS client to be compliant with UP 2.2 or higher.

In subsequent sections, we will consider how the choice of the MaaP by an MNO, and the RCS Messaging Client in the handset, impact the discovery options available to users.

While there are several RCS Messaging Clients available in the market, we will consider the following three¹:

- a)** Google Messages, made by Google, available as the default messaging app on Android devices from several manufacturers.
- b)** Samsung Messages, made by Samsung, available as the default messaging app on Android devices from Samsung.
- c)** The RCS Client made by WIT Software, available as the white labeled messaging client from Docomo, KDDI, and Softbank in Japan (+Message), Jio in India (JioCall), and several others. [Based on press reports](#), it is also expected to be available from CCMI, the Cross-Carrier Messaging Initiative from AT&T, T-Mobile, and Verizon in USA.

We will consider the following MaaPs:

- a)** Google Jibe, made by Google, is used across the world, including the Americas, Europe, Africa, and Asia.
- b)** Mavenir MaaP, made by Mavenir, is used across the world, including the Americas, Europe, and Asia.
- c)** Orange BotHub, made by Orange upon Google Jibe, is used by Orange operating companies in Africa, Asia, and Europe.
- d)** Samsung MaaP, made by Samsung, is used by AT&T in USA.
- e)** Synchronoss Messaging Marketplace MaaP, made by Synchronoss, is used in Americas and Europe.
- f)** Vodafone MaaP, made by Vodafone, is used by Vodafone operating companies in Africa, Asia, and Europe.
- g)** WIT Software MaaP, made by WIT Software, is used in Americas, Asia, and Europe.

¹ As stated in the Limitations (Section 17), we are not evaluating the RCS Clients from Unieke, Huawei, and Juphoon. We believe the three RCS clients considered represent the overwhelming majority of the market outside China.

7.1. Search from a web portal

Users can browse or search for bots from a web portal. After discovering a desired bot, users can also connect to the bot, and start chatting with the brand.

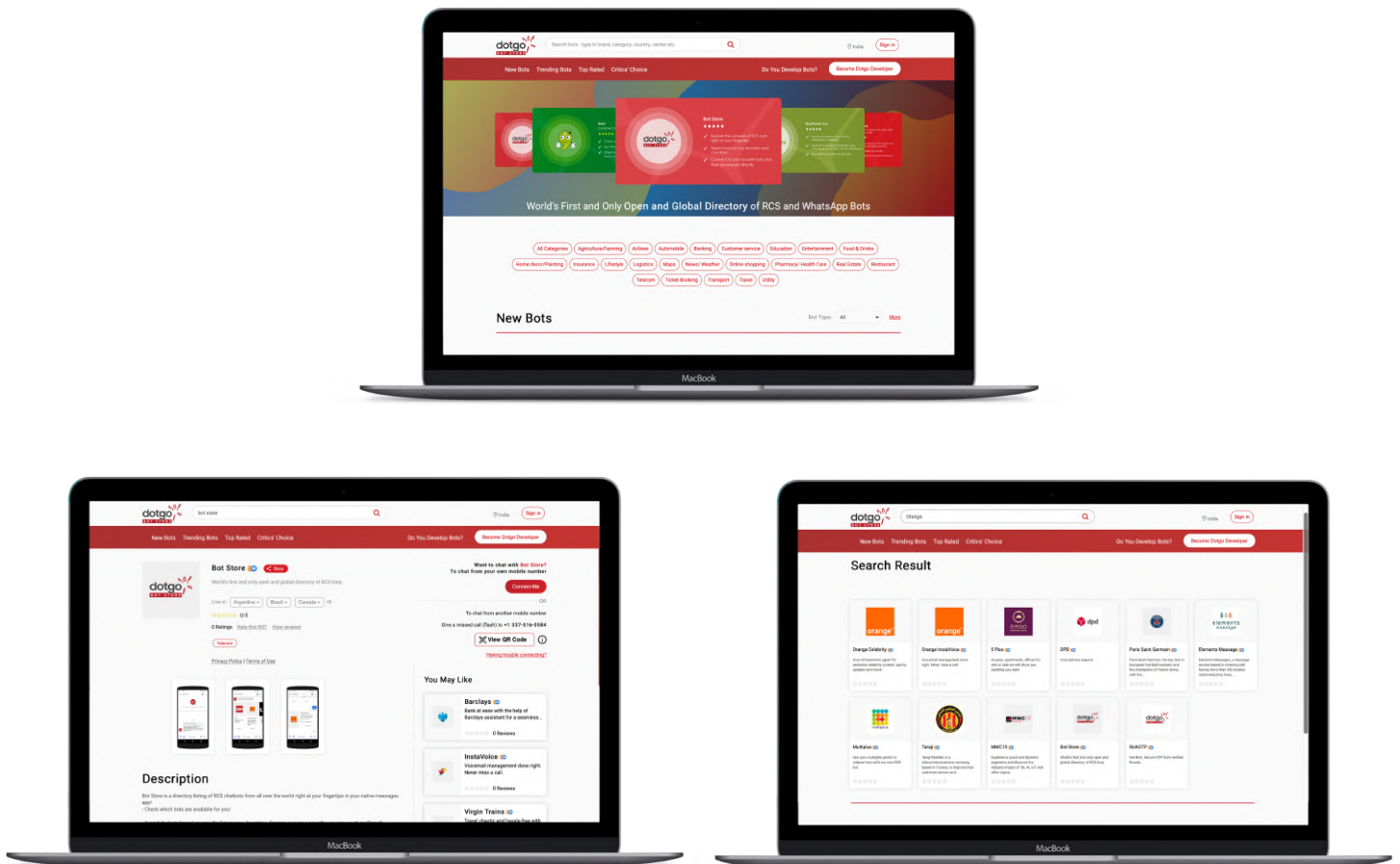


Figure 6: Search from a Web Portal

Figure 6 illustrates a web portal for discovering chatbots. The web portal highlights some of the bots, and organizes bots into multiple categories such as shopping, travel, telecom etc., enabling users to browse bots by category. Users can also search using any keyword, and see the results of the search in the browser. User can see details of a bot, including availability, description, and screenshots.

Web portal search can work on all browsers on all devices – mobiles, tablets, laptops, and desktops. Web portal directories will play an important role for search engines like Google and Bing to be able to show bots in their search results.

Beyond the generic support for business messaging, web portal search does not require any additional support from the RCS Clients, or from the MaaP. The chatbot information needs to be made available for search over the web, and the chatbot must be able to trigger a message to the RCS Client.

Figure 7 illustrates that directory search over a web portal is available to all users, regardless of the RCS Messaging Client, and regardless of the MaaP being used by their MNO. For example, if an MNO is using Google Jibe MaaP, and a user has the Google Messages app, the user can go to a web portal to discover and connect to bots, provided the MNO or the brand lists the bots on the web portal. Similarly, a user with Samsung Messages app, on an MNO with the Mavenir MaaP, can discover and connect to bots from a web portal.

MaaP	RCS Client	Google Messages	Samsung Messages	WIT Software RCS Client ²
		✓	✓	✓
		✓	✓	✓
		✓	✓	Not Applicable
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓
		✓	✓	✓

Figure 7: Availability of Web Portal Search with various MaaP Platforms and RCS Clients

7.2. Directory chatbots

A directory chatbot is a "chatbot of chatbots", that works just like any other chatbot inside the RCS Messages Client. Using a directory chatbot, a user can discover and connect to the bots of the brands they are interested in from within the RCS Messaging Client. They can browse chatbots by categories, see featured chatbots, or search for chatbots. For example, a user can discover the Tobi customer care bot on Vodafone, or the Enin customer care bot on 9mobile, by searching for "customer care", or by directly searching for the bot name, or by clicking on the "Telecom" category. A directory chatbot can be designed using carousels, rich cards, and suggested responses.

²WIT Software Client is offered as a white-labeled client, and is not offered by Orange.

After selecting a chatbot of interest, a user can read about what the bot offers, see the screenshots, and chat with the brand by clicking on the triggers that can be provided inside the directory chatbot. The entire experience of browsing and searching using a directory chatbot can happen inside the Google Messages app, Samsung Messages app, or the WIT Software's RCS Client.

Figure 8 shows an example of a directory chatbot, called "Bot Store", running inside the Google Messages app. The user can browse bots using a carousel. In the example shown, when selecting the Orange bot, the user has an option to click on "Connect Me", and initiating a chat with the Orange bot.

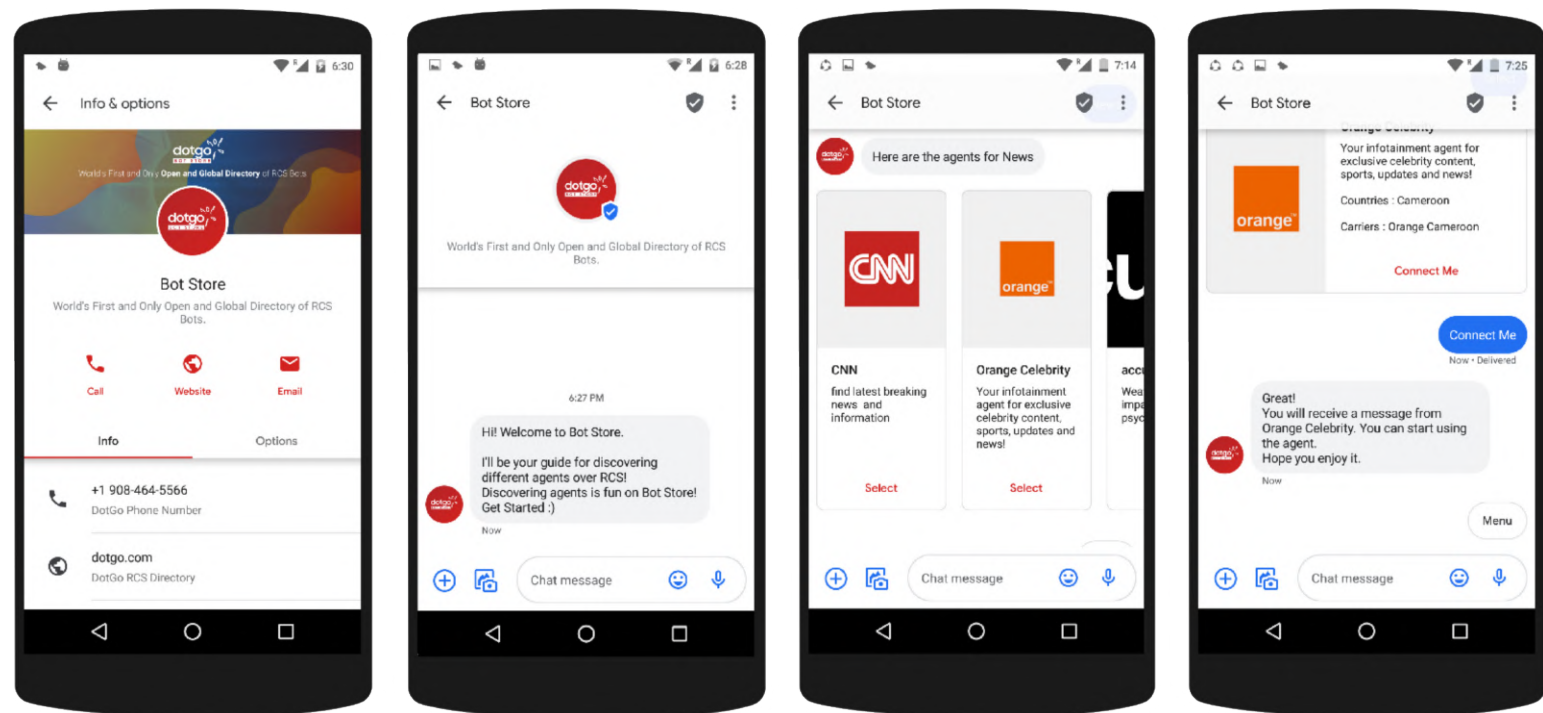


Figure 8: Bot Store – A Directory Chatbot

Directory Chatbots can be made to work on all RCS Messaging Clients that are UP 2.0 compliant, and therefore, have the potential to drive quick adoption of P2A messaging. All one needs is the ability to send and receive business messages to the client using RCS APIs of the MaaP platform.

A Directory Chatbot needs to be integrated with each MaaP, using the RCS APIs of that platform, and to leverage any specialized capabilities of that MaaP, such as the functionality for triggers. The Directory Chatbot also needs to be integrated with the server containing information about the chatbots available on the MaaP.

Figure 9 illustrates which MaaPs currently have Directory Chatbots available. For example, Directory Chatbots are available on the Google Jibe MaaP, but not yet available on the Vodafone, Mavenir, and Synchronoss MaaPs. The availability for Orange BotHub remains to be confirmed.

MaaP	RCS Client	Google Messages	Samsung Messages	WIT Software RCS Client
		✓	✓	✓
		✗	✗	✗
		To be confirmed	To be confirmed	Not Applicable
		✗	✗	✗
		✗	✗	✗
		✗	✗	✗
		✗	✓	✓

Figure 9: Availability of Directory Chatbot with various MaaP Platforms

Note that if a MaaP has a Directory Chatbot available, it will work on all the RCS clients that are integrated with the MaaP. On the other hand, if a Directory Chatbot is not available on a MaaP selected by an MNO, it will not be available on any of the RCS Clients for the subscribers of the MNO.

One of the key challenges for discovery using a Directory Chatbot is that a user needs to first discover the Directory Chatbot, and users may not be aware that one even exists. Thus, it is important for an MNO to push the Directory Chatbot to all users as part of welcoming them to the RCS service, similar to how MNOs would welcome them to their smartphone apps. Once the Directory Chatbot is available in the RCS Client, it is easy for the user to access whenever they are looking for a bot.

7.3. Client Directories

Some of the RCS Messaging Clients have a built-in feature to display and search for available bots from inside the RCS Messaging Clients. We refer to such a listing inside the RCS Messaging Client as the Client Directory.

Figure 3 shows the Client Directory in the Samsung Messages app. The app has a "Chatbots" tab, that lists the available chatbots. The user can browse through the list of available chatbots or can search for the brand they are looking to interact with in the search bar. The built-in search capability sends the search terms to the MaaP, and displays the search results returned from the MaaP. Once a user finds a relevant bot, the user can initiate a conversation with the desired brand by clicking on the bot from within the Samsung Messages app.

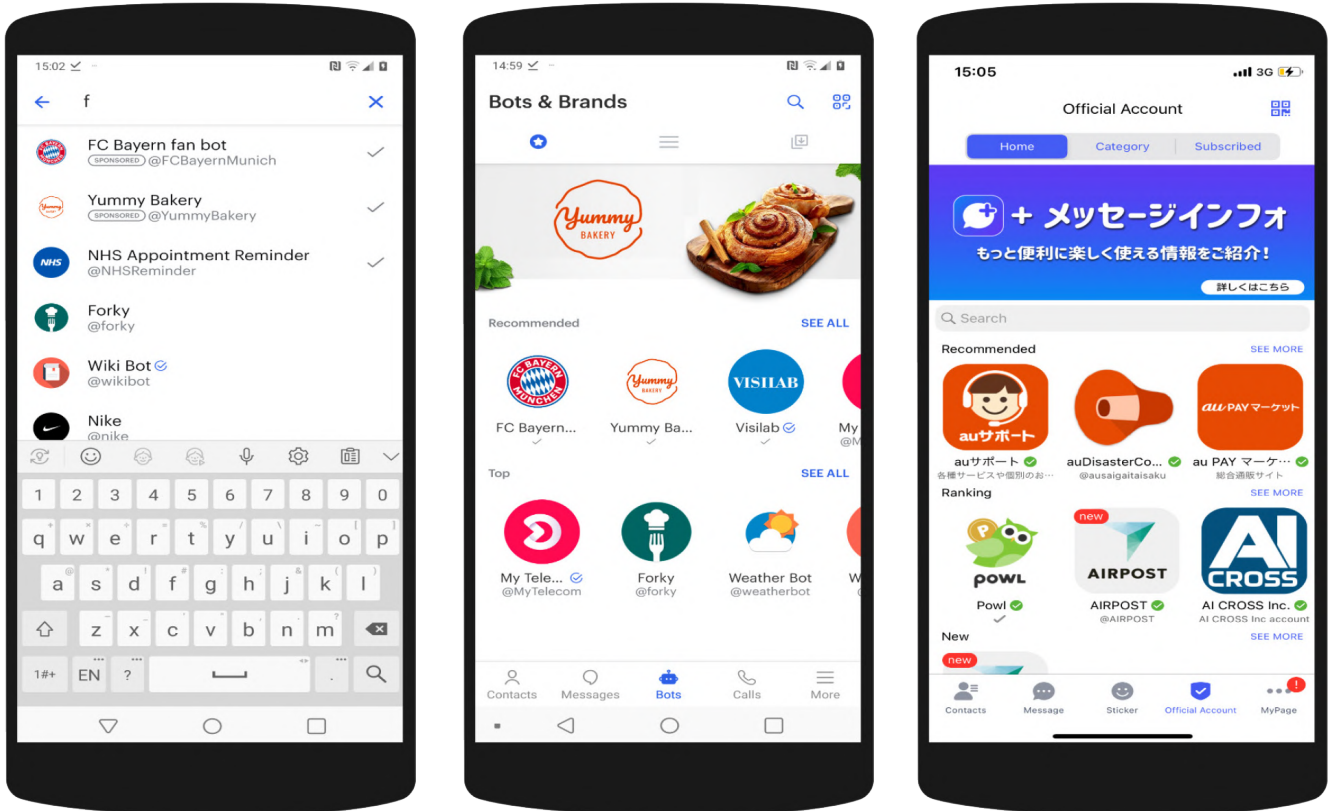


Figure 10: Client Directory in the WIT Software Client (Source: WIT Software)

Figure 10 also shows a similar Client Directory in the WIT Software client, including as launched in Japan. It works similar to the Samsung Client Directory shown in Figure 3.

Support for Client Directories was introduced by GSMA in the RCS UP 2.2 standard. As per UP 2.2, the MaaP has to implement the Chatbot Directory Function (CDF), populate the chatbots in the CDF, and configure the directory module in the RCS Client to point to the CDF. The RCS Client can then discover and access the directory, and make it available to the user.

As illustrated in Figure 3 and Figure 10, the Samsung Messages app and the WIT Software client support Client Directories. While Client Directory is available in the Samsung Messages app on several (but not all) Samsung devices, it is not activated by default. MNOs have to explicitly request Samsung to enable the Client Directory, following which Samsung has to push a software update to the subscribers of the MNO, incorporating a link to the CDF of the MNO. While the process itself is straightforward, the calendar time to get it working on Samsung devices can sometimes be long.

Figure 11 highlights, for each RCS Client, whether it can populate the Client Directory from each of the listed MaaPs, and if the capability is already launched or can be expected to launch shortly. For example, Figure 11 shows that the Samsung Messages app is able to populate the Client Directory using the Mavenir, Orange, Samsung, Synchronoss, Vodafone, and WIT MaaPs, but not from the Google Jibe MaaP. The Google Messages app does not have a Client Directory, so it cannot support a Client Directory regardless of the MaaP used by the MNO.

MaaP	RCS Client	Google Messages ³	Samsung Messages	WIT Software RCS Client ⁴
		⊗	⊗	⊗
		⊗	✓	⊗
		⊗	Expected Soon	Not Applicable
		⊗	✓	⊗
		⊗	✓	✓
		⊗	✓	⊗
		⊗	✓	✓

Figure 11: Availability of the Client Directory with various MaaP Platforms and RCS Clients

8. Directory to directory exchange

As multiple directories are built by several players in the ecosystem, directory to directory exchange will play a critical role in enabling users to discover bots from their favorite directory, and to have access to relevant bots while roaming.

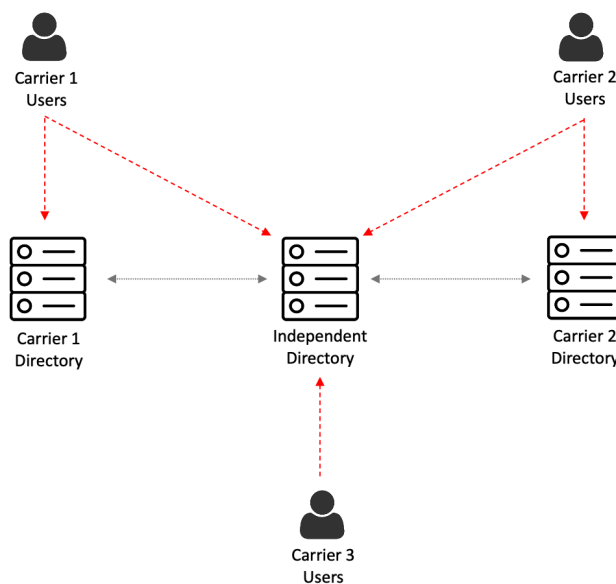


Figure 12: Directory to Directory Exchange

³ Google Messages does not support Client Directory, so no MaaP is able to provide Client Directory with Google Messages

⁴ WIT Software RCS Client is UP2.2 compliant and can be made available on request on MaaPs that implement UP2.2 and pass interoperability testing.

⁵ Mavenir's MaaP is UP2.2 compliant and supports third party RCS clients that implement UP2.2 Client Directory and pass interoperability testing.

Interoperability between different directories enables exchange of information about chatbots between directories, and drives more traffic to brands, regardless of the messaging client and the MaaP being used by the users. Directory to directory exchange thus benefits MNOs and brands in terms of extended reach and access. Additionally, it will enhance the user experience for consumers and attract more users.

Directory to directory exchange will also enable users to access bots available on a roaming network while traveling.

As of the date of this whitepaper, we are not aware of any live implementation of directory to directory exchange. However, most directory providers mentioned in below sections have indicated openness to implement directory to directory exchange.

9. Examples of RCS directories

Currently, there are only a handful of RCS directories available to users. Though all of the directories share a common goal of helping consumers and brands to simplify the bot discovery process, each of the directories is unique in its features and functionality, and each of them plays an important role in creating a robust RCS ecosystem.

In order to deep dive into how industry leading players are building and leveraging directories to support P2A discovery, we interviewed the leading RCS experts at Orange, Vodafone, and Synchronoss to get firsthand insights on their directory initiatives, which we present here. We also detail out the features, offerings, and functionalities of our own directory - Dotgo Bot Store™.

9.1. Orange

Orange supports a UP 2.x standards compliant RCS chatbots directory as they believe it is an important part of the overall discovery mechanism. With this directory, Orange aims to facilitate P2A discovery, and provide the convenience that a user does not have to leave the messaging app to discover or engage in a conversation with a bot. The directory is planned to be offered as the Client Directory within the Samsung Messaging app.



Additionally, Orange is looking at solutions to help users discover bots that work for both Google Messages and Samsung Messages.

Orange's broader vision is to support a generic search which could link not just to its own Client Directory, but also could be widely linked to other search engines that look for RCS bots available elsewhere, and then pull the bots into the Orange directory experience. Such a capability will further enhance and streamline the P2A discovery process.

Process for onboarding bots to the directory

Bots launched on any Orange Network are listed in the directory as part of the bot on-boarding and verification process.

Target audience for the directory

The directory is targeted to users who wish to discover their favorite brands and start a conversation with the brands. The directory is targeted equally towards brands and aggregator partners, who would like to list their bots in the directory and make it discoverable to users. So, discovery is a competitive necessity, as well as a clear user and business benefit.

9.2. Vodafone

Vodafone is one of the only MNOs with its own developed and maintained RCS platform and MaaP. Vodafone has built a UP 2.2 compliant directory as part of its MaaP, providing users a convenient way to reach the brands. This directory has been launched and is available in all Vodafone markets where RBM is launched (including Germany, UK, and Italy). With this directory, Vodafone has created an unparalleled environment for brands to seamlessly communicate with users.



UN75, a bot for the United Nations to do a survey of users, was one of the first bots to be made popular by the Vodafone directory. Figure 13 shows the UN75 bot appearing in the Client Directory in the Samsung Messages app, and how a user may connect with the UN75 bot from the Samsung Messages app.

Key features - Directory integrated with Samsung Messages

The Vodafone Chatbot Directory is accessible from the Samsung Messages app. The directory is triggered whenever a user searches from within the "chatbots" tab of their Samsung Messages app, and a list of matching brands who have RCS chatbots are displayed.

Vodafone supports country-specific listings for each Vodafone carrier, due to the national variations of businesses. For example, a user based in Bristol searching for a beauty salon, needs to see chatbots for salons in Bristol, and not in Berlin. Therefore, for optimal relevance, Vodafone has flexibility to control which bots are visible in each country.

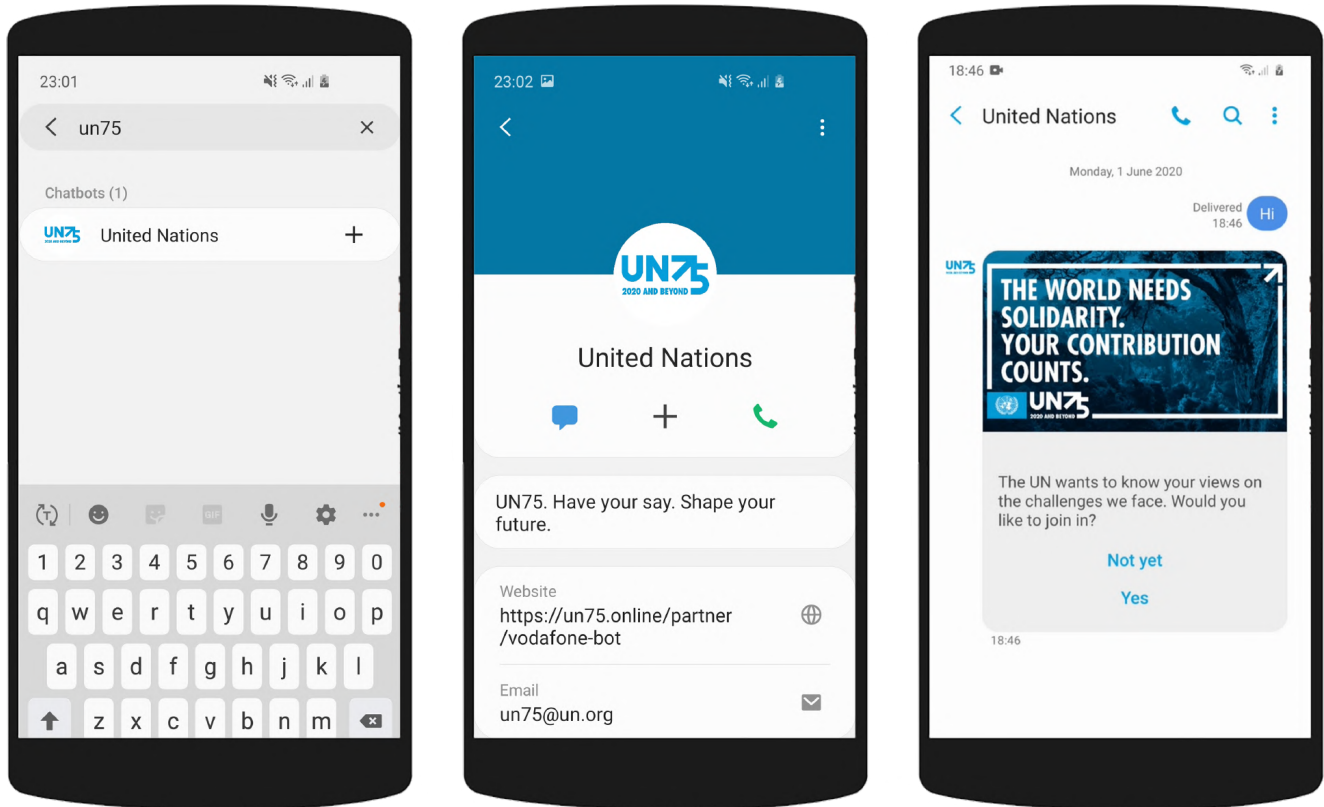


Figure 13: United Nation's RCS Chatbot in the Client Directory of the Samsung Messages app, connected to the Vodafone MaaP (Source: Vodafone)

Process for onboarding bots to the directory

Vodafone uses a form to gather information on the RCS bots to be onboarded to the MaaP and into the directory. Vodafone undertakes rigorous quality checks and assesses the quality and use case of each bot, and only once the bot is verified, it is made available to users, and the listing appears in the directory. Such a process ensures consumer confidence and trust.

Target audience for the directory

This directory is targeted to Vodafone mobile users with an RCS capable device so that they can look for brands easily and have a better option than SMS or email to communicate with the brands. Vodafone's ultimate aim is to enhance the users experience by bringing engaging and relevant content to their customers.

9.3. Synchronoss

Synchronoss has built the RCS Messaging Marketplace (Figure 14) to provide brands and businesses a simple, self-service way to onboard and manage their bots in a directory, and to enable them to build relationships with their customers. As brands are in different stages of messaging maturity, Synchronoss believes that a directory will provide an advanced and easy platform to discover and drive adoption for the RCS bots, especially for the brands with lesser maturity. At the same time, consumers will benefit from an improved user experience, and derive value by being able to discover, connect, and start chatting with the brands with ease.



Figure 14: Synchronoss Messaging Marketplace (Source: Synchronoss)

Key features- Flexible billing and bot submission process

The Synchronoss directory offers MNOs flexibility in terms of the bot submission process. Brands will be able to submit bots into the directory via a web portal, or via Rest APIs.

Synchronoss directory supports UP2.X search, deep linking, and QR codes as a triggering method to allow users to connect to bots. Users will also have the possibility to share their reviews and feedback based on their experience with the RBM agents.

Process for onboarding the bots to the directory

The Synchronoss directory supports two methods of onboarding:

- Invitational method: MNOs can roll out an exclusive, early access program with selected brands to onboard their bots.
- Self-service method: This is an open invitation for brands to submit their bots via the web-portal or by using APIs.

Each method includes a verification process where the chatbot is verified to ensure trust and quality.

Target audience for the directory

The RCS Messaging Marketplace is primarily targeted towards MNOs who need to scale their offering to brands to allow them to monetize their RCS investment. The directory also caters to brands, as it is a great tool for brands to boost the visibility of their RBM agents

9.4. Dotgo

Developed by Dotgo, Dotgo Bot Store is the world's first and only open directory for RCS and WhatsApp bots. The directory has a listing of RCS and WhatsApp bots offered by different brands and networks globally, and aims to provide convenience and value to consumers, brands, and MNOs. With more and more RCS and WhatsApp bots being launched, the Dotgo Bot Store facilitates discovery and deep linking, and help brands get more traction for their bots and eventually witness an increase in engagement rate with consumers. While Dotgo Bot store includes both RCS and WhatsApp bots, we have focused the discussion in this whitepaper on the RCS bots.



The World's First and Only Web-based RCS Directory Available Globally

The Dotgo directory was launched in May 2020, and has been selected as the default directory by several MNOs, while being available on dozens of other MNOs as well.

Dotgo's search capability enables consumers to discover and connect with RBM agents of the brands they are interested in. To do so, consumers can use either of the two channels available for discovery, as illustrated in Figure 15: (a) the web portal at dotgo.com, (b) the directory chatbot, an RBM Agent called Dotgo Bot Store. The Dotgo Bot Store chatbot can be used from within any RCS Messaging Client – including Google Messages and Samsung Messages.

Users can search for chatbots by name or keywords; or they can browse chatbots by category, country or carrier.

Directory Chatbot - DotGo Bot Store

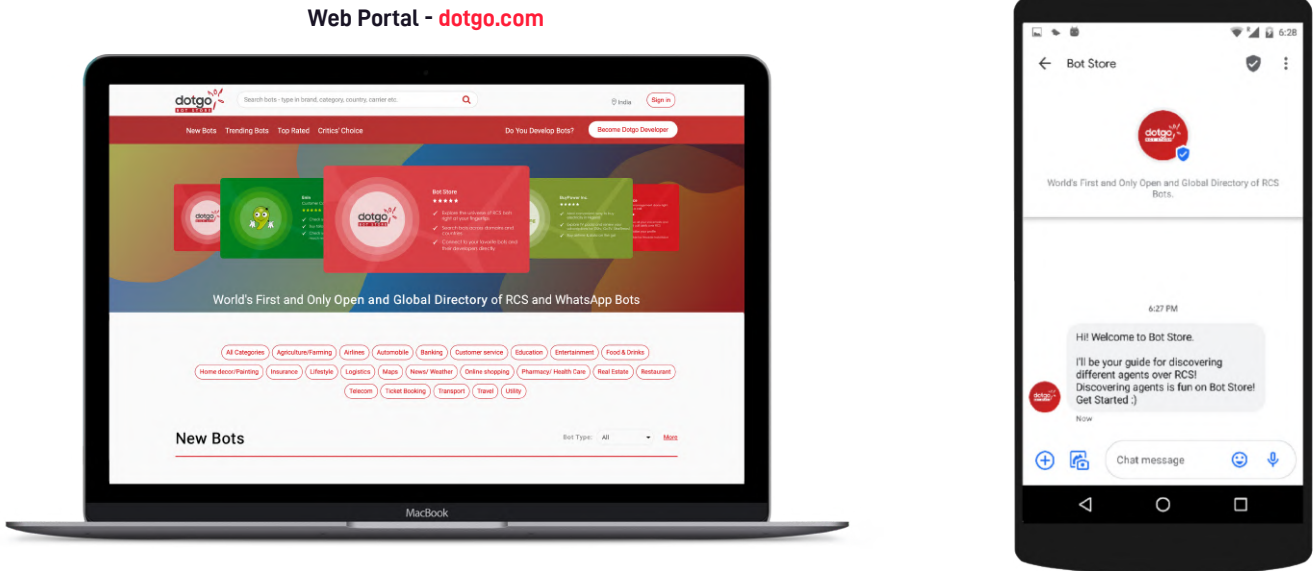


Figure 15: Two channels for discovery through DotGo Bot Store

Dotgo provides information such as a description of the RBM agent, country and carriers supported, screenshots showcasing the kind of conversations that are possible using the bot, triggers to get connected with the bot and start chatting, brand website, Terms of Service, Privacy Policy, and support email address. Figure 16 illustrates the country/carrier availability of one of the bots listed in the Dotgo directory.

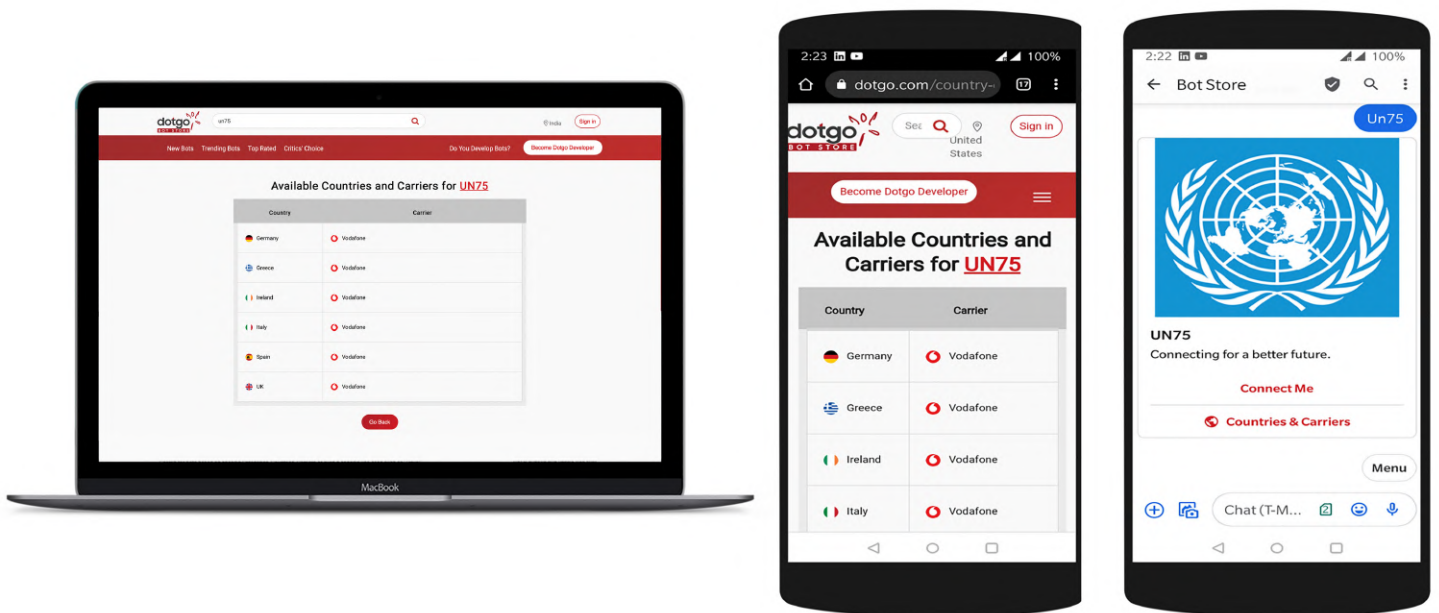


Figure 16: Country and Carrier availability for UN75 bot, as listed on Dotgo Bot Store

If the brand offers a similar bot on WhatsApp, it is linked to the RCS bot, so that users searching for WhatsApp bots can also find the brand's RCS bot (and vice versa), further increasing visibility. There are also options to share the bot through social media platforms, including Facebook, Twitter, LinkedIn, and WhatsApp.

After the user discovers the RBM Agent, they are presented with trigger options to be able to start chatting with the desired agent - clicking on the 'Connect Me' button, making a call to a number, or scanning a QR code. The user can select one of these trigger options to chat with the bot, as they are deep linked. As an example, simply clicking on the 'Connect Me' button starts a chat. Naturally, a user can only chat with the RBM Agents that are supported by their MNOs.

The Dotgo Bot Store has sections such as sponsored, trending, top rated, and critic's choice to promote and highlight various RBM Agents. With Dotgo Bot Store, brands get visibility for their RBM Agents, can boost customer engagement and get the opportunity to acquire new customers.

Process for onboarding bots to the Dotgo Bot Store

There are two ways of listing bots in the Dotgo Bot Store:

1. As part of bot onboarding and verification process: Available for MNOs who have selected the Dotgo Bot Store as their default directory. The developers provide information about their bots as a part of the onboarding and verification process. After the brand and bot verification is completed, and adherence to the policies is confirmed, the bot is listed in the Dotgo Bot Store, along with being made live on the MNO.
2. Submitting bots for listing: Available for all other MNOs. The developers and brands can sign up and create an account on the [Dotgo Developer Portal](#), and can then submit details of their bots for listing, as illustrated in Figure 17. The bot details and triggers are verified, prior to listing the bot on the Bot Store. Developers can also make subsequent changes or enhancements to the directory listing, or choose to un-list their bot at any time.

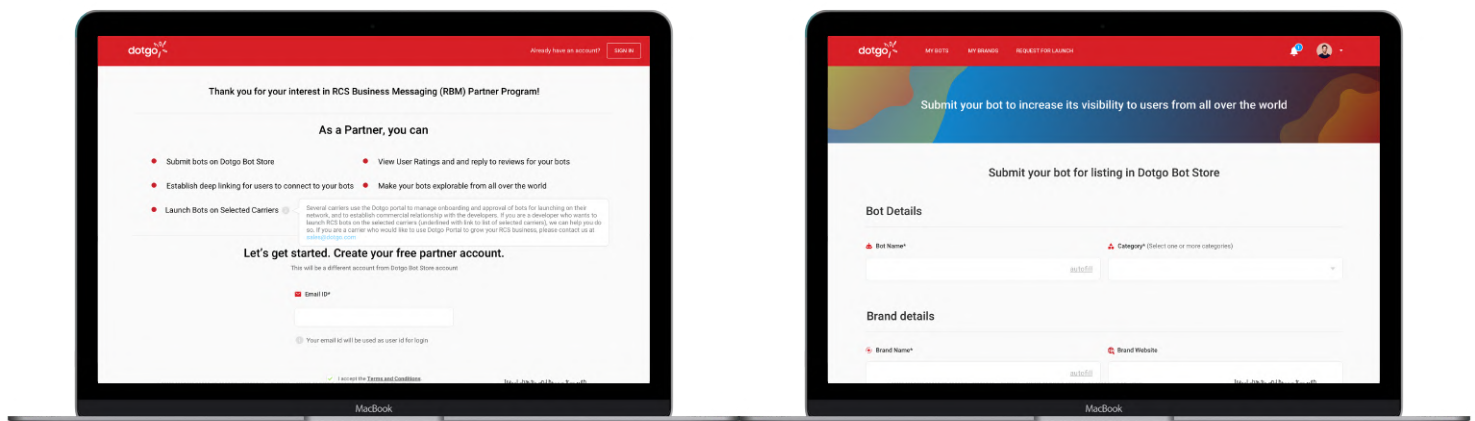


Figure 17: Developer sign-up and submission of bots to Dotgo Bot Store

Targeted audience for the directory

The directory is targeted to end users to explore, search and connect to bots available on their MNO. The directory is also targeted to the developers to list and showcase their bots for easy discoverability and trigger options. MNOs can choose Dotgo Bot Store as their default directory, and to implement the Chatbot Directory Function to support the Client Directory on RCS Clients such as the Samsung Messages app.

Brands wanting to list their RBM agents in Dotgo Bot Store should go to developers.dotgo.com. MNOs desiring to offer the Dotgo Bot Store for discovering bots on their networks should email sales@dotgo.com.

10. Summary

MNOs, RCS Clients, MaaP providers, independent directory providers, and developers play an important role in bringing directories to life, and are contributing towards making it possible to use directories across any RCS Client and MaaP.

Figure 18 below collates data from Figure 7, Figure 9, and Figure 11, to show the various channels available to users today for bot discovery, depending on the MaaP used by the MNO and RCS Client used by the user.

Discovery Channel	RCS Client								
	Google Messages			Samsung Messages			WIT Software RCS Client		
	Web Portal	Directory Chatbot	Client Directory	Web Portal	Directory Chatbot	Client Directory	Web Portal	Directory Chatbot	Client Directory
MaaPs									
	✓	✓	✗	✓	✓	✗	✓	✓	✗
	✓	✗	✗	✓	✗	✓	✓	✗	✗
	✓	TBC	✗	✓	TBC	ES	N/A	N/A	N/A
	✓	✗	✗	✓	✗	✓	✓	✗	✗
	✓	✗	✗	✓	✗	✓	✓	✗	✓
	✓	✗	✗	✓	✗	✓	✓	✗	✗
	✓	✗	✗	✓	✓	✓	✓	✓	✓

TBC-to be confirmed, ES-expected soon, N/A – not applicable

Figure 18: Availability of bot discovery with various MaaP Platforms and RCS Clients

10.1. RCS Client support for searching different directories

In Section 9, we have discussed four different directories, two of them developed by MNOs for their own subscribers, and two of them from vendors. Some of these directories are already available in the market, whilst some are under development. In addition to the directories mentioned in Section 9, AT&T has spoken extensively about their directory built together with Samsung. Mavenir and WIT Software also provide a directory as part of their MaaP.

How effective are these directories in enabling users to search bots from their phone? Users have different RCS Messaging Clients, and all of them would like to search, regardless of the RCS Messaging Client they have.

We would thus like to answer the following question: Can a user who has a particular RCS Messaging Client on the phone (and also has a web browser), access and search from one or more of these seven directories considered?

Figure 19, lists, for each directory, whether a user can search or browse the directory from the RCS Messages Client in their phone – either using a Directory Chatbot, or using the Client Directory. For example, the AT&T Directory can be searched from the Samsung Messages app (using Client Directory), but there is no way to search the AT&T Directory from the Google Messages app. Similarly, the Synchronoss Directory can be searched from the Samsung Messages app and the WIT Software RCS Client (using Client Directory), but not from the Google Messages app. The Dotgo Bot Store can be searched from all three - Google Messages app (using Directory Chatbot), the Samsung Messages app, and the WIT Software RCS Client.

From amongst these directories, only Dotgo Bot Store provides a web portal for search.







Directory	RCS Client	Google Messages	Samsung Messages	WIT Software RCS Client	Web Browser
 AT&T		✗	✓	✗	✗
		✓	✓	✓	✓
		✗	✓	✗	✗
 BotHub		To Be Confirmed	Expected Soon	Not Available	✗
 synchronoss		✗	✓	✓	✗
 vodafone		✗	✓	✗	✗
		✗	✓	✓	✗

Figure 19: RCS Client Support for different directories

As per Figure 19, there are implementations where users of Samsung Messages are able to search for bots from every one of the listed directories. Practically, the same is true from the WIT Software RCS Client. However, the only search options available to Google Messages users are the Dotgo Bot Store and Orange BotHub Directory.

10.2. User preferences for searching Bots

A poll was conducted during the [MEF Connects Rich Communications event](#) held on 1st of October, 2020 to understand how users want to search for chatbots. The following question was asked during the live poll:

How will you search for bots from a brand?

- From the web*
- From a directory chatbot inside the Messages client*
- Using search built into certain clients, such as Samsung*
- All of the above – depends on the situation*

Almost half (45%) of the respondents, selected the option "All of the above – depends on the situation" which means that most of the consumers see themselves using all three methods, depending on the situation they are in. The next highest responses were tied between web search (29%), and Directory Chatbot (29%), with built-in search in the messaging app (Client Directory) receiving a nod from 21% of the respondents. Attendees were permitted to choose multiple answers.

The above results were quite revealing because several platforms and MNOs have focused on search using the Client Directory, to the exclusion of other search mechanisms. Looking at these results, it is clear that it is even more important to provide Directory Chatbots and web search so that it enables users to discover chatbots easily based on their preferences.

How will you search for bots from a brand?

From the web



From a directory chatbot inside the Messages client



Using search built into certain clients, such as Samsung



All of the above – depends on the situation



Figure 20: Directory Poll Results

11. Recommendations

The [Mobile Ecosystem Forum \(MEF\)](#) has taken a leading role in bringing the industry together to solve the challenges faced in the rapid adoption of RCS business messaging. MEF is working on industry wide frameworks for verification, charging, and discovery.

In the process of writing this whitepaper, we have had the opportunity to hear and learn from several industry leaders. Based on our learning, we would like to list a few recommendations to help de-fragment the ecosystem, and help grow P2A messaging:

1. **Search:** Bot discovery is very important to enable users to engage in RCS Business Messaging, and we need to equip users to search for bots at their convenience, using a method of their choice. Search should be accessible to all RCS users, regardless of the RCS Client, and be available consistently across all MNOs, regardless of the MaaP selected by the MNO. Users have expressed interest in having access to multiple channels for search, as borne by the survey detailed in Section 10.2:
 - a) **Web Search.** In the survey, 74% of users indicated they would search for bots over the web
 - b) **Directory Chatbot.** The same survey showed that 74% of users would also like to search using Directory Chatbots.
 - c) **Client Directory.** 66% of users want to search using a Client Directory.

Carriers need to enable chatbot discovery across all of the above three channels. Furthermore, Directory Chatbots can be made available on all RCS Clients, and all MaaPs, while Web Search can be made available on all devices, and should thus be prioritized.

2. **Triggers:** There needs to be a uniform way for users to start messaging and chatting with a brand. A uniform framework is needed for developers to provide for initiation of P2A messaging from users, by supporting (a) trigger URLs so that the bot can send a message to the user upon being triggered, and (b) providing an ID that enables a user to send the first P2A message to the bot. The Trigger URLs can be embedded into "Connect Me" buttons in directories and web pages, or be activated using QR codes, voice calls, SMS, or USSD. Visual consistency of the RCS "Connect Me" buttons across channels should be established, as it will help user recognition, trust, and engagement.
3. **Directory APIs:** MaaPs store information about all bots launched, and are the authoritative source for bot information. Support of APIs to access bot information from a MaaP would go a long way to ensure reliable and accurate data in the directories. Carriers should make a commitment to support Directory to Directory, and Directory to Client APIs, and to make the bot info available to independent directories.

- 4. Independent directories:** Open directories can help provide a seamless experience to users and brands. Independent directories can work across all MaaPs, and all RCS Clients, thus hiding all the complexity from users and brands.

12. Conclusion

Consumers are getting more and more comfortable messaging with businesses from OTT apps as a preferred means of communication. Hence, brands want to leverage OTT business messaging to provide the best possible experience to their customers. The limited functionalities of SMS don't match today's expectations from consumers and brands - it is apparent that RCS will lead the future.

In the fast-moving ecosystem of conversational messaging over RCS, there is a need for users to be able to discover and connect to RCS chatbots. With RCS gaining popularity, more and more RBM Agents will be developed. Synchronoss believes that 50% of the world's businesses will have RBM Agents over the next five years. Hence, it is essential to create awareness about these RBM Agents and let users know about their existence, features and benefits.

An RCS directory creates awareness and facilitates discovery of RBM Agents, boosting visibility for brands. After discovery, deep linking plays a key role in connecting users to the brands. Thus, directories, discovery, and deep linking, all help increase usage for RBM Agents creating monetization opportunities for various stakeholders in the ecosystem.

Adoption and usage for directories can be increased by educating MNOs on the importance of directories, and educating brands on the value of RCS. Learnings from different early markets, such as USA, Japan, Mexico, Brazil, India, and Nigeria will be key to shape the future of RCS and directories.

13. About Dotgo and the contributors

13.1. Dotgo

Dotgo™, a global leader in RCS and other rich business messaging solutions, is the provider of the Dotgo Bot Store™, world's first and largest directory of RCS and WhatsApp bots. Embracing the paradigm shift to rich business messaging that is underway, Dotgo is building the cloud communications technology and services needed in a world where every business must have a presence inside messaging apps, just as they had web sites and smartphone apps. RCS, Google Business Messaging, iMessage, and WhatsApp are fast becoming the de-facto standards for business messaging for brands, offering exciting possibilities for customer engagement. Dotgo enables brands and developers to transform customer

interactions using rich business messaging, and helps mobile operators make RCS business messaging a reality. Dotgo is a Google partner, and a member of the Mobile Ecosystem Forum. For more information, visit www.dotgo.com. Dotgo and Bot Store are trademarks of Dotgo Systems Inc. in USA and other jurisdictions.

13.2. Orange

Orange is one of the world's leading telecommunications operators with sales of 41 billion euros in 2018 and 148,000 employees worldwide (as of 30 September 2019), including 88,000 employees in France. The Group has a total customer base of 268 million customers worldwide as of 30 September 2019, including 209 million mobile customers and 21 million fixed broadband customers. The Group is present in 26 countries. Orange is also a leading provider of global IT and telecommunication services to multinational companies, under the brand Orange Business Services. In December 2019, the Group presented its new "Engage 2025" strategic plan, which, guided by social and environmental accountability, aims to reinvent its operator model. While accelerating in growth areas and placing data and AI at the heart of its innovation model, the Group will be an attractive and responsible employer, adapted to emerging professions.

Orange is listed on Euronext Paris (symbol ORA) and on the New York Stock Exchange (symbol ORAN). For more information please visit: www.orange.com, www.orange-business.com or follow on Twitter: [@orangegrouppr](https://twitter.com/orangegrouppr).

13.3. Synchronoss

Synchronoss was the primary party responsible for enabling the world's first "Full RCS" or "Gold Country" in 2018 for the Japanese market through their deployment of the "+Message" RCS platform, which was enabled seamlessly across SoftBank, KDDI, and NTT DoCoMo. Within one year of deployment, Synchronoss assisted the operators to grow their RCS subscriber base to 15 MM, with an additional 35M targeted by year-end 2021 (source: GSMA RCS Business Messaging Lab, Tokyo 2019). Synchronoss was also selected to provide a similar platform for the three largest U.S. operators - T-Mobile, AT&T, and Verizon – for their joint-venture project called "CCMI", which is expected to roll-out in the coming months. For more information on Synchronoss, visit www.synchronoss.com.

13.4. Vodafone

Vodafone Group is one of the world's leading technology communications providers, connecting people and organisations of all sizes to the digital society. Vodafone has extensive experience in connectivity, convergence and the Internet of Things, as well as championing mobile financial services and digital transformation in emerging markets. Vodafone Group has mobile operations in 22 countries, partners with mobile networks in 42 more, and has fixed broadband operations in 17 markets. As of 30 June 2020, Vodafone Group has 300+ million mobile customers, 27 million fixed broadband customers and 22 million TV customers, including all of the customers in Vodafone's joint ventures and associates. For more information, please visit: www.vodafone.com.

14. Glossary

ABC – Apple Business Chat

A2P - Application-to-Person

A2P Message – A message sent from an application to a person (i.e. from an enterprise to a user)

MAU – Monthly Active Users

P2A - Person-to-Application

P2A Message – A message sent from a person to an application (i.e. from a user to an enterprise)

P2P - Person-to-Person

RCS - Rich Communication Services

RBM - RCS Business Messaging

Client Directory - A list of bots displayed to the user inside the built-in search functionality of an RCS Messaging Client.

Deep linking - A deep link is any link, which when invoked by users with RCS enabled devices, allows them to initiate an RCS chat with a brand, e.g., by "click to chat", "Connect Me", "Call a number" or "scan QR code" on a website, in an email, or in a physical advertisement.

Directory Chatbot – A chatbot that contains information about other available chatbots, and helps a user to discover a chatbot for a brand the user is interested in. A directory chatbot is sometimes called a “chatbot of chatbots”, or a “chatbot finder”. Using a Directory Chatbot, a user can find and select the desired bot to start an RBM chat from within their Messages app.

GSMA - GSM Association (commonly referred to as the GSMA) The Global System for Mobile Communications, originally Groupe Spécial Mobile is an association of most of the MNOs in the world.

MaaP - Messaging as a Platform, a platform used to provide RCS Business Messaging. The MaaP may be deployed in the cloud, or may be deployed in the MNO's data center.

MNO (Mobile Network Operators) - Mobile network operators, also known as carriers, mobile phone operator, mobile network carriers- are independent communication service providers that own the complete telecom infrastructure for hosting and managing mobile communications. Examples of MNOs include AT&T, Orange, and Vodafone.

RBM Agent – An RBM Agent is an RCS endpoint that communicates with users on behalf of an enterprise, and is used interchangeably with “chatbots”, or simply “bots” in this whitepaper.

RCS Messaging Clients (or RCS Clients) - Messaging apps such as Samsung Messages, Google Messages, +Message, and JioCall that enable users to use the RCS Service (Send/Receive messages over RCS) are called RCS Messaging Clients, or just RCS Clients. +Message (in Japan) and JioCall (in India) are white labeled versions of the RCS client provided by WIT Software.

RCS Platform - The platform, including the infrastructure and technology to launch the RCS service. The platform may be deployed in the cloud, or may be deployed in the MNO's data center.

RCS Platform Providers - The companies that provide the RCS Platforms. GSMA lists the RCS Platform Providers on its [website](#).

UP 1.0 - Universal Profile 1.0 (Supported P2P RCS messaging) UP 1.0 laid the groundwork for P2P messaging with features such as group chat, audio and video messaging, and location sharing. Source:

https://www.gsma.com/futurenetworks/wp-content/uploads/2017/07/RCC.71_v1.0.pdf

UP 2.0 - Universal Profile 2.0 (Added support for A2P and P2A RCS messaging) – Building on UP 1.0, UP 2.0 focuses on driving RCS business messaging through the use of RESTful APIs, rich media, sender verification, branding, and generating customer insights through targeted messaging. UP 2.0 introduced MaaP to support A2P and P2A messaging. Sources:

<https://www.gsma.com/futurenetworks/digest/universal-pro-file-version-2-0-advanced-rcs-messaging/>

https://www.gsma.com/futurenetworks/wp-content/uploads/2017/07/RCC.71_v2.0.pdf

UP 2.2 - Universal Profile 2.2 (Added support for Client Directory) – UP 2.2 defined the role of Verification Authorities in verification of brands and Chatbots. It also added multiple enhancements for P2A messaging, including (a) defining the interfaces between RCS clients, operator networks, and the MaaP, for chatbot search and deep linking;(b) client to directory, and directory to directory interfaces; thus laying the groundwork for implementation of Client Directories. Sources:

[RCS Universal Profile Service Definition Document Version 2.2, May 2018, GSMA.](https://www.gsma.com/futurenetworks/digest/universal-profile-version-2-2-for-rcs/)
<https://www.gsma.com/futurenetworks/digest/universal-profile-version-2-2-for-rcs/>

User or user – A mobile end user, who is using a service on his mobile device.

Verification Authority - The Verification Authority is the entity that completes the business verification of the RBM Agent's brand, and the technical and compliance verification of the bot. This involves the verification of the brands legal existence, the verification of the aggregator's authority to submit the RBM Agent on behalf of the brand, and the verification of the compliance of the bot to the policies and guidelines.

15. References

[P2A Discovery for RCS, February 2020](#), Whitepaper from GSMA.

[The RCS Business Messaging Opportunity for Mobile Operators](#), June 2019, Whitepaper from 3Cinteractive

16. Credits

We would like to thank the following people and teams for providing their expertise and precious time in helping us write this whitepaper.

- Communication Services Product Team | Orange
- Elizabeth McCord | Principle Product Manager | Vodafone
- Chandler Waldis | Product Manager | Synchronoss
- John Duffy | Future Messaging Team | IMI Mobile
- Gavin Thomas | Independent Consultant
- Ian Germer
- Product & Marketing Team | Dotgo
- Several other leaders in the messaging industry and from MaaP providers, who reviewed and provided feedback and suggestions.

17. Limitations

This whitepaper provides coverage of the directory support from most of the major global players in the RCS ecosystem, including Dotgo, Google, Orange, Mavenir, Samsung, Synchronoss, Vodafone, and WIT Software. The systems being used in Korea and China have not been considered.

The RCS Clients being used in Japan (+Message) and Jio in India (Jiocall) are provided by WIT Software. We have not listed these clients separately and have bundled them into the one listed for WIT Software.

18. Authors

For any questions, please contact the authors directly.

- Surinder Singh Anand | CTO & VP Product Management | Dotgo | sanand@dotgo.com
- Inderpal Singh Mumick | CEO | Dotgo | mumick@dotgo.com
- Olisa Pal | Senior Marketing Lead | Dotgo | opal@dotgo.com

