



Messaging in the 5G era

New lens, new experience, new value

June 2021



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Executive summary

Messaging has turned into a battle for engagement

The divergence in consumer engagement between SMS and OTT platforms over the last 10 years reflects a large-scale shift towards what has become a new style of messaging. Features such as group chat, user notifications, integration with photos and media, and APIs to increase ease of content sharing have changed the usefulness and emotional response to what is an otherwise binary form of communication. This has also enabled a new set of revenue models, with messaging the hook into a wider suite of services and e-commerce transactions. Network effects have then taken hold. SMS now averages around 1–2 messages per person, per day, compared to 30–50 for WhatsApp.

RCS was envisaged as a bridge to renewed consumer engagement, and has evolved as a solid messaging platform in its own right. The challenges to consumer adoption have been more a result of lack of scale and interoperability based on the number of operators that support it.

5G: new experiences, brand connection and channel scale can lead to incremental revenue

The onset of the 5G era presents a new opportunity for how RCS messaging can be enhanced and repositioned in the eyes of consumers and brands. For consumers, this means taking advantage of 5G data speeds and low latency for richer experiences, sharing of higher resolution photos, improved video and potentially immersive reality scenarios. Rather than charging directly for messaging, operators can use it as a tool to differentiate from competitors and reduce churn, and as leverage to charge premiums for 5G data tariffs.

Business 5G messaging offers the greatest chance of driving incremental revenues for operators and brands, playing to scale, interactivity and security. Richer communications channels with customers and prospects can generate sales, grow brand loyalty and keep churn in check via new support channels. Brands have reported click-through rates on RCS campaigns that are up to 10x that of SMS, and with greater follow-through than digital advertising. This has a direct line into monetisation. Aggregators and solution hosting providers (including those of AI-driven chatbots) as well as third-party developers would also participate in this revenue opportunity. Banks, retail and fashion companies, and government agencies (e.g. health, pensions and transport) are among the most promising verticals to adopt 5G messaging.

The route to scale: sizing the addressable market

We have forecast the size of the addressable market of RCS consumers. That is, the number of people who could use RCS if they wanted to, rather than actual users, which is subject to definitional issues and not widely reported. The two prerequisites are service from an operator that supports the RCS standard and owning an Android smartphone (with the exceptions of China, Russia, Iran and Cuba).

Approximately 1.1 billion mobile connections are currently reachable with RCS. This equates to 21% of the global mobile subscriber base. We expect the global number of reachable RCS users will total 2.7 billion by the end of 2023, or 50% of the mobile base.

Asian countries currently account for the majority (60%) of the addressable market. Japan, China and South Korea are the principal actors driving our increase in reach, reflecting the operator development support and vanguard 5G position that will make interoperability easier.

Influencing factors for the forecast: upside and downside

The upside case first depends on more operators adopting RCS from the 92 – or 12% of operators worldwide – that currently do. In addition to direct usage, the service would benefit from increased visibility and network effects in areas where service economy merchants tap into messaging as an e-commerce or payments channel.

Apple's non-support is another factor; if this were to change, it would provide a major boost to RCS reach overnight, given Apple's 15–20% share of the smartphone base worldwide. China could be an early change instance as a result of new regulatory requirements that necessitate all new 5G user devices to support the UP 2.4 RCS standard.

Finally, there is the importance of conveying a 'why' story to consumers. 5G can underpin genuinely new functionality that helps, but this will not on its own alter the awareness gap that operator messaging faces against WhatsApp and other OTT options. Adoption will benefit to the extent that operators, Google and others are able to remedy the awareness gap through handset and service marketing – especially as part of the 4G to 5G upgrade path.

There are also downside scenarios to consider. While it is unlikely that operator support would decline on current numbers, if expansion failed to materialise at significant scale or without full interoperability, the reach of RCS would be precluded. The shelving in April 2021 of an RCS-based messaging joint venture in the US between AT&T, Verizon and T-Mobile is emblematic of this risk.

Google's continued support and, by extension, the de-facto presence of RCS in Android smartphones is crucial to scale prospects. While there are no indications of any intention to pull back, RCS support is a commercial decision for Google in a product area that has undergone significant evolution over the last five years.

There is also the risk of a 'crowding out' effect from WhatsApp and other OTT platforms if scale and/or consumer mindshare remain subdued.

Our overall outlook is positive, albeit with a reducing window of opportunity. The combination of 5G's arrival, the further spread of all-IP networks and the backup from Google provide RCS with tailwinds on the adoption S-curve. The next 12–24 months will be a particularly important period emerging from the pandemic to showcase 5G messaging as part of the overall 5G value proposition and range of experiences.

Scope and definitions

Report scope

- **Chapter 1: Messaging in the 5G era: why it still commands value** – A brief historical analysis of mobile messaging, including SMS and OTT platform options (notably WhatsApp and WeChat), followed by a view of engagement drivers for consumer and business segments in the 5G era.
- **Chapter 2: 5G messaging: targets and revenues** – An outline of the audience segments for 5G messaging services, along with potential revenue models for mobile operators and other participants in the value chain.
- **Chapter 3: Addressable market and reach** – Quantifying the current and forecast addressable reach of RCS on a regional and global level. This takes into account operator support, 4G and 5G subscriber evolution, and anticipated smartphone sales patterns over the next three years. We also provide upside and downside influencing factors for the RCS outlook to confer a holistic perspective.
- **Chapter 4: Case studies** – On-the-ground perspectives from mobile operators in different regions as to how they think about the messaging value proposition and monetisation strategies in the 5G era. Each case study is based on executive input, complemented by our own market data and analysis.

Definitions

- **A2P (application to person)** – A specific form of cellular messaging sent from businesses, government agencies or other organisations to consumers. A2P messages are typically sent through a separate mobile network channel to SMS and may be distributed directly from a mobile operator or via an intermediary (often called an aggregator).
- **Business 5G messaging** – Messaging services primarily employed by B2B and enterprise verticals using 5G networks. RCS is expected to be the default option, though SMS can still be used. Distribution models include B2B and B2B2C.
- **Consumer 5G messaging** – Messaging services primarily marketed at consumers on 5G connections. RCS is expected to be the default option, though SMS can still be used. Most consumer messaging flows are person-to-person (P2P).

- **IoT 5G messaging** – Messaging services used to distribute messages between objects or machines interconnected in a single 5G network. This includes a wide range of scenarios such as smart homes, buildings, urban traffic and signage, and utilities.
- **P2P (person to person)** – Messages sent and received between consumers – whether over RCS, SMS or OTT channels.
- **RCS (Rich Communication Services)** – An enhanced IP-based cellular messaging protocol first released in 2008 that incorporates deeper media and content sharing capabilities than SMS. The protocol licence was purchased by Google in 2015 and is now incorporated as a native client in Android smartphones for participating handset manufacturers, with Samsung the largest.
- **SMS (short messaging service)** – The original and default messaging service on cellular-enabled mobile phones beginning in the GSM era in the 1990s that has latterly served through the 3G and LTE standards. Messages are carried over a cellular network using S7 signalling, with the system interoperable between all operators worldwide.

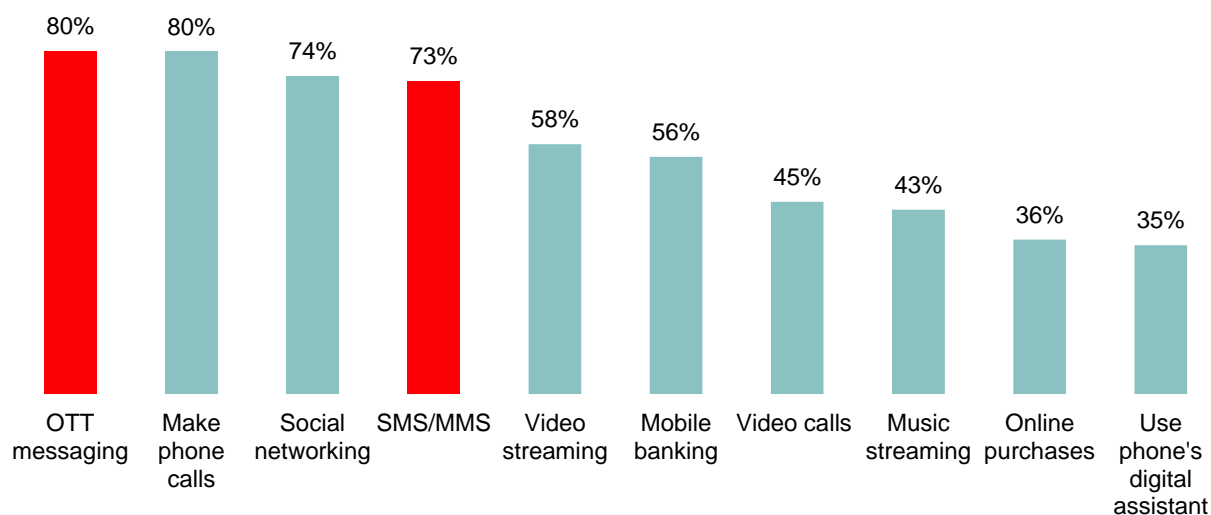
1: Messaging in the 5G era: why it still commands value

Messaging has turned into a battle for engagement

Whether through SMS, WhatsApp or OTT alternatives, messaging remains a near-ubiquitous method of mobile communication. This is reflected in GSMA Intelligence survey data: around 75% of people still use SMS on a weekly basis, while 80% message on at least one OTT platform (not mutually exclusive). Making phone calls and social networking are the only other activities with similar reach, with a range of other digital media at smaller shares (see Figure 1).

In its most basic form, the staying power of messaging lies in the convenience and trust of simple, secure and fast two-way communication. This has remained remarkably consistent over the 30 years since SMS was first invented, even as the range of media and communication options has increased massively following the launch of the iPhone and through the broader smartphone era.

Figure 1: Even if SMS has fallen behind OTT messaging, the staying power is clear
What people do on their smartphones at least weekly



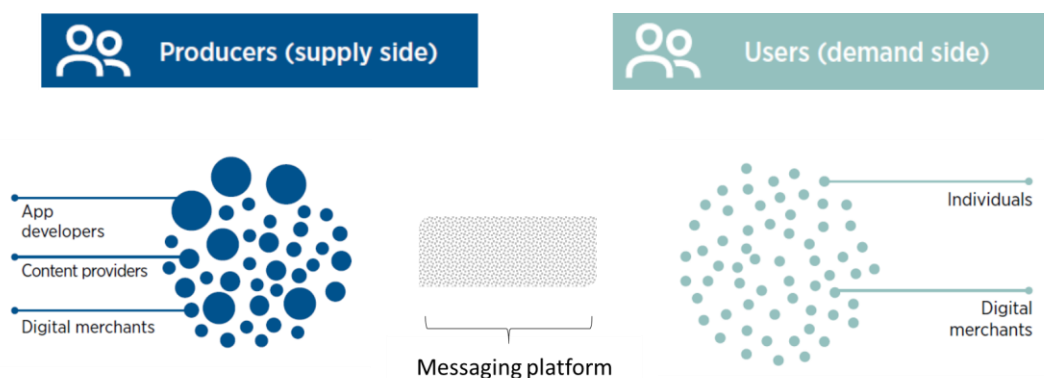
N=1,000 per country across 20 countries
Source: GSMA Intelligence Consumers in Focus Survey 2020

Messaging has, however, become bifurcated, driven largely by the global rise of WhatsApp over the last 10 years alongside a number of national champions, notably WeChat. The pace of adoption has been rapid. For WhatsApp, what was once an unknown challenger to a scaled

ecosystem of 5 billion people has risen to a user base of 2 billion and daily throughput of 100 billion messages. This equates to around 40% of mobile phone owners on average worldwide, though this is much higher in many countries.

WeChat has similarly scaled to reach approximately 1.1 billion active users as of 2020, implying a penetration rate of more than 95% of Chinese smartphone owners – essentially everyone. Penetration rates above 60–70% are mass market, resulting in a virtuous circle fuelled by network effects, third-party content and merchant ecosystems, and further users. For both WhatsApp and WeChat – and to a lesser extent smaller scale players such as Kakao, Viber and Snapchat – the central strategy has been to use messaging as a hook into a wider suite of services monetised through advertising or other third-party merchant fees (see Figure 2). This has had the effect of commoditising messages – the proximate reason for the general shift among mobile operators to replace per-message and volume pricing with unlimited.

Figure 2: Setting up third-party services and payments with messaging as the hook



Source: GSMA Intelligence

Addressing the usage deficit versus OTT messaging requires a new experience

SMS remains a universal standard for messaging in any cellular-enabled mobile phone. Its addressable user base is the same as the number of people that own a mobile phone with an active service contract – approximately 5 billion people worldwide. However, it has lagged OTT alternatives in growing consumer engagement, evident in the implied customer usage rates based on reported disclosure and estimates in countries where SMS volumes are not available. SMS averages around 1–2 messages per person, per day, worldwide – compared to 30–50 for WhatsApp.

Table 1: SMS faces a usage deficit versus WhatsApp

| | Users (billion)* | Messages carried by platform | |
|---------------------|------------------|------------------------------|-------------------|
| | | Total per month (billion) | Per user, per day |
| SMS | 4.3 | 188 | 1.4 |
| A2P | 4.3 | 139 | 1.1 |
| Whatsapp (total) | 2.0 | 3,042 | 30–50 |
| Whatsapp (business) | 0.175 | ? | ? |

*SMS and A2P users calculated based on 80% monthly usage rate of unique mobile subscribers worldwide (5.2 billion). WhatsApp total reported by Facebook in October 2020.
Source: Facebook, Mobilesquared, GSMA Intelligence

The SMS deficit reflects the large-scale shift in consumers towards a new style of messaging. Features such as group chat, user notifications, integration with photos and media, and APIs to increase the ease of sharing content (tied closely to the social era) have changed the usefulness and emotional response to what is an otherwise binary form of communication. Enhanced functionality, combined with herd mentality and network effects, pulled users towards a common meeting ground.

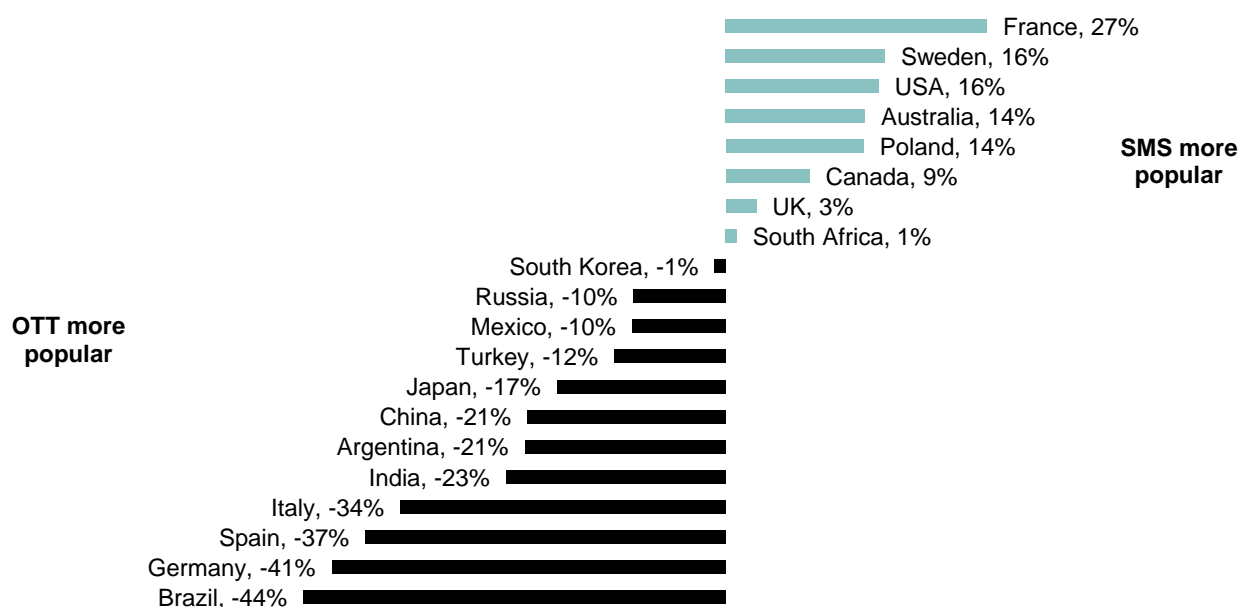
While it would be easy to conclude that WhatsApp has commandeered a winner-takes-all end game, this would be simplistic and wide of the mark. There is nuance beneath the surface that matters in a forward-looking context to the 5G era. One poorly understood aspect is the notion that messaging services are zero sum. While WhatsApp has become a widely used platform – and in so doing cannibalised SMS volumes – in countries where both options exist, most people use both. In some countries, SMS remains the preferred medium, including France, the US, Canada and Australia (see Figure 3). While SMS usage rates have fallen well below OTT alternatives, the underlying SMS platform remains ubiquitous and with it the latent space to innovate.

RCS – a bridge to the new experience that still requires scale

The above conclusion was the rationale for RCS, which has evolved as a solid messaging platform in its own right. The challenges to consumer adoption have been more a result of a lack of scale and interoperability based on the number of operators that support it. Google's purchase of Jibe (the middleware software medium) in 2015, and subsequent move to incorporate RCS as a default messaging client on Android smartphones, offers an addressable base of well over 2 billion people. If 5G capabilities can be incorporated to underpin new features and usability, combined with core operator assets of security and trust, there is potential for a renewed messaging story in the consumer and B2B segments.

Figure 3: SMS/RCS and OTT alternatives don't have to be mutually exclusive

Difference in population that use SMS compared to OTT messaging services (can do both)*



*Defined as share of consumers that use SMS or MMS on at least a weekly basis minus the share that use an OTT messaging platform (any), recognising that the categories are not mutually exclusive. For example, in France, 91% of people use SMS at least weekly, versus 64% for an OTT platform: $91 - 64 = 27$.


Source: GSMA Intelligence Consumers in Focus Survey

Messaging now versus what it could be

This augurs the question of what messaging could become with a rethink on the user experience combined with the in-built scale of the mobile base. 5G messaging promises to leverage this scale.

It begins with maintaining support for SMS. At the same time though, 5G messaging aims to leverage 5G data speeds and low latency to deliver more for consumers – richer experiences, sharing of higher resolution photos, improved video and immersive reality scenarios. The latter is of particular interest if, for example, RCS could be adapted to incorporate content sharing between friends in separate locations such that it confers a shared experience to a common interest such as a sports match or music concert. OTT applications running on a 5G network could claim to support similar experiences. However, here we can return to the core value proposition of SMS, MMS and RCS in terms of interoperability, as well as a common identity and billing profile linked to a trusted service provider.

Finally, there is the business dimension and verticals, which is where most of the incremental revenue opportunities reside in messaging. The figures presented above for A2P are averages. Business messaging is far less widespread than SMS, so the consumer audience is smaller,



distributed primarily across high-income countries. If we assume a current active audience of 1.5 billion, usage would be closer to 2 messages received and/or sent per person, per day. This should be viewed as a case of 'less is more'.

SMS and RCS are highly personalised, direct channels that provide brands with a straight line to target audiences with clear action calls. The channels also offer known security protections – something that matters for trust in general and particularly applications in e-commerce and payments subject to fraud and grey market re-routing. Operators have the opportunity to trial the use of 5G features, in partnership with brands, that re-engage users with a messaging experience tailored to specific offerings. This can also be seen as a tonic to digital advertising on Facebook and Google, which – though widespread – can lack cut-through amid increasing noise.

2. 5G messaging: targets and revenues

The 5G messaging customer and how to monetise use cases

As with many communications technologies, the market for 5G messaging can be broadly understood as a combination of consumer and enterprise use cases. This builds on the way SMS and RCS messaging opportunities have been split into person-to-person (P2P), application-to-person (A2P) and person-to-application (P2A) categories.

Many of the industry dynamics (and questions) that apply to SMS and RCS apply to the world of 5G messaging. How, for example, will operators monetise messaging and where should they invest their efforts? At the same time, where 5G brings new capabilities to the messaging offer, new opportunities, value propositions and monetisation strategies will emerge.

To this end, it is important to understand the primary markets for 5G messaging services and understand how they will generate revenues, for operators and beyond.

Consumer 5G messaging

For most people, messaging is easiest to understand within the consumer context. To some level, we are all familiar with text messaging and its evolution to multimedia messaging, including OTT and RCS offers. 5G messaging carries this forward, building on familiarity with new 5G features and capabilities. Most importantly, 5G provides operators with a natural opportunity to rethink their consumer business strategies and offers. Renewed promotion of messaging – enhanced by 5G – is a logical step.

Monetisation models

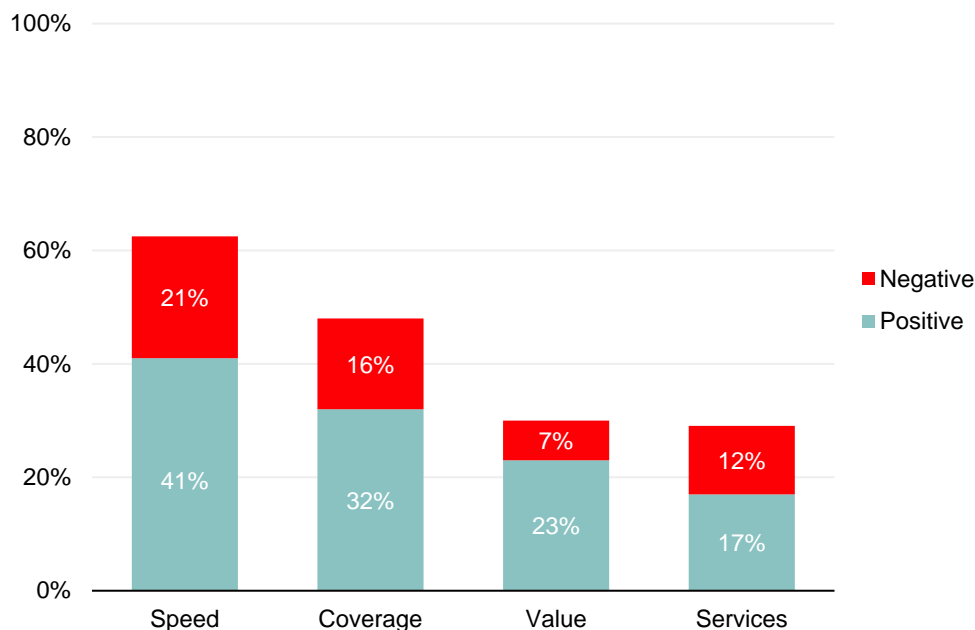
The potential monetisation models build on those for previous generations of messaging, extending them in the 5G context:

- **Messaging packages.** An allowance of messages or unlimited messaging may be included with service packages, or available as an add-on, as a form of direct monetisation. Data usage could be zero-rated (not counted against a data allowance) as many operators already do with popular OTT messaging apps.
- **A competitive differentiator.** Rather than charging directly for messaging services, operators can use 5G messaging as a tool to set themselves apart from competitors that do not yet offer 5G messaging services or do not actively market them.

- **A 5G sales tactic.** While consumers may be happy with 5G speeds and coverage, fewer report a positive experience with new 5G services. A significant share of consumers claim a negative 5G experience due to a lack of compelling 5G services. As operators look to drive 5G uptake, 5G messaging services could serve as a tool to help improve this experience.

Figure 4: How consumers rate their 5G experience

Percentage of 5G users



Respondents were asked to select all that apply, so positive and negative sentiment towards speed, coverage, value and services do not sum to 100%. N=458.

Source: GSMA Intelligence Consumers in Focus Survey

Business 5G messaging

Business 5G messaging offers the greatest likelihood of driving revenues for operators and others. It aims to connect people with companies and brands – opening up clear monetisation opportunities. As with consumer 5G messaging, it takes forward the RCS business models and strategies with the added capabilities delivered by 5G networks.

The goal is to connect people with brands, including marketing, sales and support functions. RCS specialist Infobip recently highlighted the following core use cases for connecting with customers and prospective customers:

- **Notifications** – confirming transactions such as purchases, deliveries or contract updates.
- **Engagement** – delivering information (either pushed or requested) on product offers, discounts and loyalty programmes, or simply to build brand recognition and customer loyalty.

- **Support** – direct interaction with agents (live or automated/chatbot) about products, services, billing details or other enquiries.
- **Security** – support for account authentication, password resets and suspicious activity notifications.

Across these use cases, the direction of interaction will vary. It may involve an A2P push of information to the user – whether proactive (based on a campaign) or reactive (based on a user query). Alternatively, it may involve a P2A-initiated search for information or support. Where chatbots cannot provide the needed support, P2P interactions may be involved. Regardless, the value of making these connections via 5G messaging channels rests on two key features: trust and reach. As with previous generations of operator-led messaging platforms, trust is derived via a connection to operators and their customer relationships; for brands, this level of trust is critical as it directly impacts their image and commercial relationships. Reach follows from leveraging universal messaging application platforms that can connect users to multiple brands, rather than relying on users to download and use brand-specific applications.

While these same benefits and business drivers apply to RCS delivered over 3G or 4G, 5G messaging enhances the value proposition by opening up new forms of interaction thanks to 5G's network capabilities. For example, support could be delivered via high-definition video, which would have proven difficult to deliver previously. Brand engagement, meanwhile, should be enhanced by new interactive experiences made possible by the bandwidth and latency capabilities of 5G.

The greatest impact of 5G on business messaging may well be the renewed focus on B2B opportunities. Vertical markets and enterprise digital transformation are key 5G opportunities; in a GSMA survey, 83% of operator CEOs expressed the view that business and government markets represent the greatest potential for additional revenues from 5G. As operators – and the mobile ecosystem more broadly – look to leverage 5G in support of new momentum in the enterprise sector, there is a clear opportunity for messaging to play a part and be included in new enterprise service offers.

Monetisation models

Monetisation models for business 5G messaging are similar to the business messaging models that came before, with 5G providing enhancements.

- **Engagement.** The key value proposition is better brand engagement with customers. That engagement is core to the monetisation model. Richer communications channels with customers and prospects can help generate sales, grow brand loyalty and keep churn in check via new support channels. Brands have reported click-through rates in RCS campaigns that are up to 10x that of SMS campaigns. Where 5G messaging is more interactive, the monetisation value is clear.

- **Aggregation and exposure.** While brands will leverage 5G messaging to better connect with customers and prospects, they will not do this directly; messaging aggregators will serve as a conduit, connecting multiple brands via RCS services. Mobile operators may opt to play this role, or it could be adopted by specialist service providers. Either way, brands will pay for the services.
- **Solution hosting.** Powering 5G messaging (consumer or business) will be a set of solutions and infrastructure responsible for managing and delivering the messages: RCS application servers, messaging-as-a-platform (MaaP) solutions and chatbot discovery solutions. Operators may choose to invest in and deploy these solutions directly. They may also choose to buy them in a hosted format, potentially alongside aggregation services.

If much of this applies in a pre-5G messaging world, how does 5G change the industry dynamic? Does 5G functionality offer new revenue models? At a foundational level, brand engagement and support should be improved with the rich content and interactivity supported by 5G – that's the core value proposition of 5G messaging. If engagement is improved, more brands should be eager to get involved, driving their revenues and those of the mobile operators with clear 5G messaging value propositions. However, this can be extended to a model in which messaging is a conduit to other service plays. Exclusive content access, retail store openings, and music and sports events are examples of where brands can use 5G messaging as a route into deeper customer engagement that can be monetised indirectly.

IoT 5G messaging

IoT 5G messaging is a subset of consumer and business 5G messaging. Rather than a new business category or target market, it is a messaging application that fits within an IoT framework. However, as 5G business models evolve, it is an important use case to highlight.

As an A2P use case, IoT 5G messaging involves connecting IoT devices into a messaging workflow with messaging sessions triggered by a specific event type. In the consumer space, this might be home alarm notifications integrated into an RCS session. In the business space, it could be notifications for equipment status or workplace safety incidents. Tied into sensors and video cameras, messaging sessions would alert an authorised user of the activities, and share realtime information via video flows – unidirectional or bidirectional.

The value of integrating IoT devices and processes into a messaging offer is one of convenience. For end users, the convenience stems from accessing important data and notifications via a common, familiar platform. For IoT solution providers, the convenience results from being able to integrate notification workflows and processes into an industry standard solution accessible to a broad set of users – whether or not they have downloaded a solution-specific application. There is also value in implementing a unified standard given that existing machine-to-machine (M2M) and IoT networks often have a fragmented set of signalling protocols, which increases cost and complexity. In the process, this should serve to make the solutions more effective (easier to use and action) and thus more valuable.

How 5G adds value

The value of IoT messaging in the 5G era borrows on both the capabilities of 5G and the business transformation it is driving. An ability to support high-definition video or larger file sizes – thanks to the capacity of 5G – will be a boon to many IoT messaging applications. In business-critical applications, for example, the quality of a given video session could have a significant business impact. At the same time, enhancing the value of IoT solutions with a messaging component represents a further strategy for operators looking to 5G as an opportunity to re-engage with new consumer and enterprise businesses (and partners).

3. Addressable market and reach

To estimate the number of users that can be reached via RCS, we mapped the different options for how customers can access the service, then built a model to identify the addressable market over a three-year period between 2021 and 2023. The addressable market size is the number of people who could use RCS if they wanted to, rather than actual users. The model uses GSMA Intelligence datasets, insights from expert interviews and data points from operators and messaging solution suppliers.

Forecasting the addressable market for RCS

The use of different messaging platforms can be measured and forecast in several ways:

- volume of messages sent or received
- monthly active users (MAUs)
- addressable mobile connections.

We have selected 3 – the number of consumer connections that can receive an RCS-standard message. The primary input drivers to the model are:

- mobile operator adoption of RCS
- share of mobile subscribers on 3G, 4G and 5G connections
- Android smartphone market share in different regions.

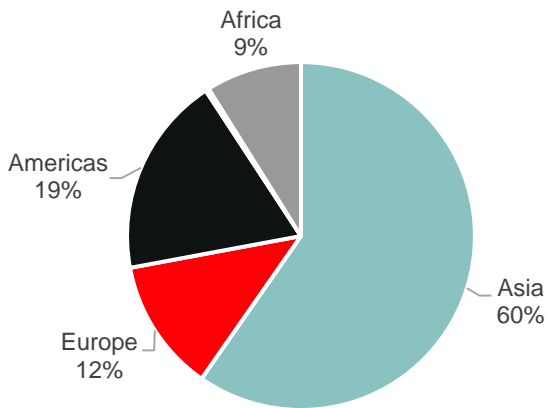
This approach allows us to measure the size of the RCS addressable market, including operator-enabled RCS connections and Google-enabled RCS connections. Message volume (1) is a proxy for usage but does not address scale. MAUs (2) address scale but are challenging to accurately measure given the opt-in nature of RCS among mobile operators, and variable reporting definitions.

Key findings

- There are approximately 1.1 billion connections currently reachable with RCS. This equates to 21% of the global mobile subscriber base.
- We expect the global number of reachable RCS users will total 2.7 billion by the end of 2023.

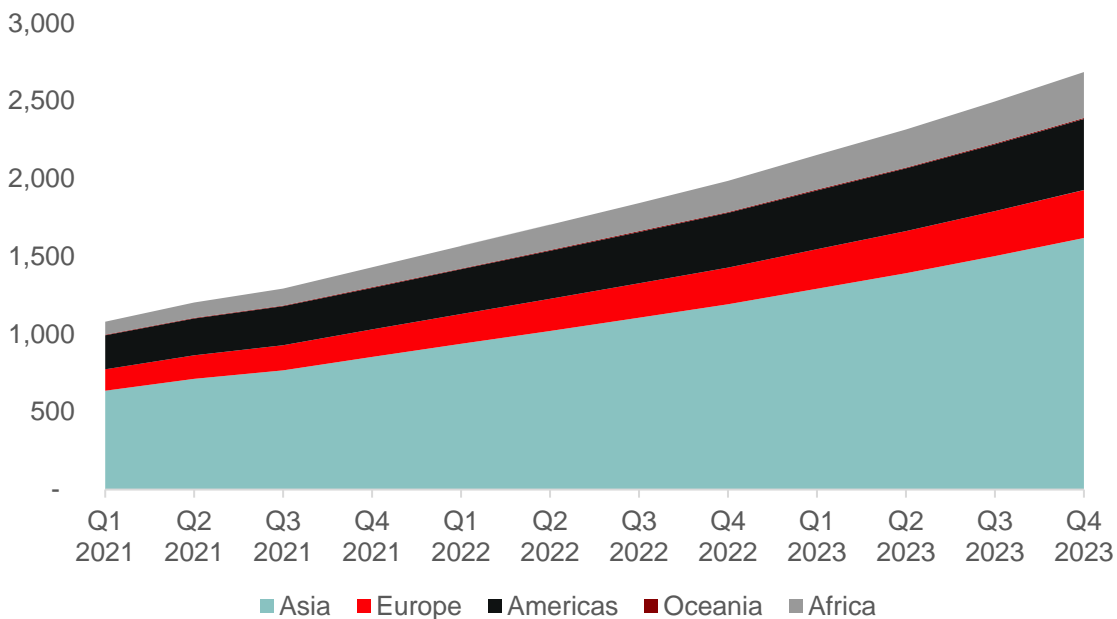
- Asian countries currently account for the majority (60%) of the addressable market. Japan, China and South Korea are the principal actors driving our increase in reach given the operator development support and vanguard 5G position that will make interoperability easier.

Figure 5: Where the RCS addressable market lives (2021)



Source: GSMA Intelligence

Figure 6: Regional forecast of subscribers reachable via RCS messaging standard
Million



Source: GSMA Intelligence

Forecast drivers and influencing factors

Our forecast quantifies the size of the RCS addressable market – the number of people who could use RCS if they wanted to. The two main prerequisites are service from an operator that supports the RCS standard and owning an Android smartphone (with the exceptions of China, Russia, Iran and Cuba). The forecast does not seek to predict the actual number of RCS users, which depends on the commercial strategies of OEMs and mobile operators, and the level of customer opt-in. Neither does it quantify the reach of RCS into B2B verticals.

Our general view is positive, with a reducing window of opportunity. The combination of 5G's arrival, the further spread of all-IP networks and backup from Google provides RCS with tailwinds on the adoption S-curve. However, it is important to acknowledge upside and downside influencing factors to this forecast.

Upside

Increased operator adoption

At present, 92 operators support the RCS standard. This equates to approximately 12% of telecoms operating companies worldwide, with significant regional disparities (see Figure 7). Increasing the number of operators that offer RCS, particularly in Europe, the Middle East and Africa, would make the service more visible and potentially stimulate network effects in areas where service economy merchants can tap into messaging as an e-commerce or payments channel (Africa is a good example).

Apple

Our forecast assumes Apple does not adopt RCS, continuing its position of preferring to retain control over the iMessage platform that excludes interoperability with Android. If this were to change, it would provide a major boost to RCS reach overnight, given Apple's 15–20% share of the smartphone base worldwide – a figure that is more than 40% in many western countries. This may happen in China as a result of regulatory requirements. The China Communications Standards Association (CCSA) has laid out new requirements that all new 5G end-user devices support the UP 2.4 RCS standard.

Resonance

A big part of the erstwhile challenge for RCS and its backers has been raising awareness and conveying a 'why' story to consumers. 5G can underpin genuinely new functionality that helps, but this will not on its own alter the awareness gap that operator messaging faces against WhatsApp and other OTT options. Adoption will benefit to the extent that operators, Google and others are able to remedy the awareness gap through handset and service marketing – especially as part of the 4G to 5G upgrade path.

B2B spillover effect into the consumer segment

Our forecast does not include business adoption of RCS. Should B2B adoption of RCS grow, it has the potential to raise awareness among consumers in receipt of messages from brands, helping stimulate their own adoption for personal use.

Downside

Stagnation or decline in operator adoption

While it is unlikely that operator support would decline on current numbers, if expansion fails to materialise at significant scale or without full interoperability, the reach of RCS would be precluded. The recent shelving in April of an RCS-based messaging joint venture in the US between AT&T, Verizon and T-Mobile is emblematic of this risk.

Google

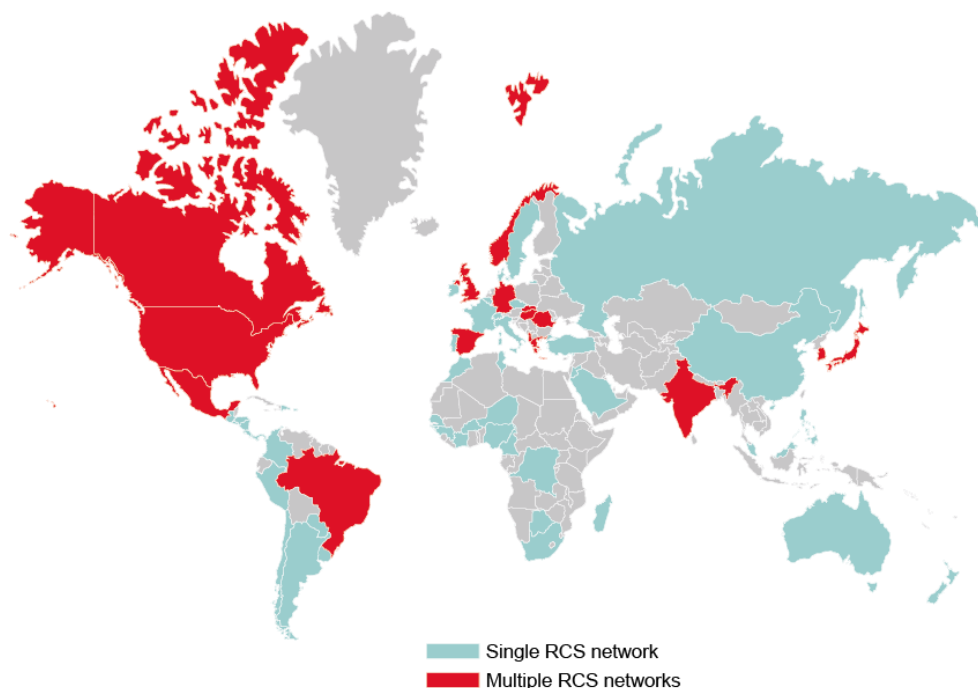
Google remains the primary development and distribution engine for RCS as the default messaging client on Android smartphones. If Google were to pull back from or discontinue RCS support (regionally or globally), it would significantly undermine the addressable reach. While there are no indications of such an intention, RCS support is a commercial decision for Google in a product area that has undergone significant evolution over the last five years.

WhatsApp and OTT crowding out

WhatsApp, Facebook Messenger, WeChat and other OTTs trade on network effects. This produces self-replicating user growth and attracts third parties to the ecosystem, in areas such as gaming and e-commerce. The longer RCS operates at low scale without interoperability between all operators in a given country, the longer the network effects are structurally reduced, which will constrain adoption.

Figure 7: RCS networks around the world

Data as of June 2021



Source: GSMA Intelligence

4. Case studies

The following case studies profile the strategic plans for 5G messaging for mobile operators from different regions. They include on-the-ground perspectives from operators on the evolution of messaging value propositions, how these can and will change in the 5G era, and the monetisation strategies for capturing value in the consumer and business segments.

Each case study is based on interviews and discussions with executives at the respective company, complemented by our own data and understanding of market dynamics. While the findings have been synthesised and are expressed by us, the contents reflect the views, strategy and outlook of each organisation and should be interpreted as such.

China Mobile

Current messaging offer

China Mobile has committed to and promoted the RCS messaging service for many years, and it has now been upgraded to what it views as a '5G messaging' service (with the terms interchangeable). The main features provided by China Mobile include:

- one-to-one and one-to-many messages
- chatbot messaging service (both A2P and P2A)
- network fallback to SMS and MMS
- multimedia file transfer.

China Mobile opted for an on-premise deployment based on the GSMA RCS UP 2.4 specification. Given the large number of China Mobile subscribers, network resource efficiency is a major concern. China Mobile provides rich business messaging (RBM) – another term for RCS targeted at business verticals – based on standalone messaging, which removes the load from the central network components and therefore eases the scaling of the service.

Messaging strategy in the 5G era

How messaging will change in the 5G era

China Mobile identifies several technical enhancements as important underpinnings for a new and better user experience with RCS messaging:

- edge computing – provides a better user experience by enabling latency-sensitive applications such as multimedia file transfers
- network slicing – important for service quality to enterprise customers in specific scenarios (e.g. an emergency chatbot service)
- enhanced M2M capabilities – can expand the 5G messaging service to the IoT market
- payment capabilities
- location identification, big data and AI – can enable more convenient and humanised services for consumers.

Ultimately, consumer and business adoption comes down to the utility and usefulness of the messaging service. The focus is therefore on incorporating technical enhancements while pushing a new marketing ethos that centres on brand connection with consumers.

Customer segments that are priority targets

The company sees 5G messaging as not only an upgrade of SMS and MMS but a fundamental part of what 5G can offer to people and brands. The company is trying to establish a more user-friendly and open messaging ecosystem to encourage outside innovation. This means close partnerships with other operators and standards bodies in messaging.

Priority verticals include finance, e-commerce, logistics, healthcare, transportation, education, media and hospitality. Banks are currently the most active business partners, with a range of customer use cases from account management to financial transfers. Most verticals are attracted by the ability of RCS to reach a large number of consumers, the reassurance of network fallback to SMS and MMS, and the strong security measures.

5G messaging: market outlook

Strategic importance of messaging for telcos in the 5G era

5G messaging plays an important role in the 5G era by underpinning services that increase customer satisfaction and loyalty, as opposed to developing a relationship based solely on mobile data connectivity. This is about relevance at a time when the range of digital media choices for consumers has never been greater. China Mobile believes 5G messaging is likely to be the first successful 5G service with large-scale subscribers for business verticals, even if efforts in cloud and private networks have a higher profile.

How China Mobile sees the overall market outlook

China Mobile believes there are two main challenges to tackle in scaling 5G messaging:

- **Handset maker support.** For consumers and enterprise customers, a scaled 5G messaging ecosystem is the most important expectation. China Mobile is therefore focused on increasing the quantity of handset terminals that support GSMA UP 2.4.
- **Third-party business partners.** Attracting abundant and active business partners who provide high-quality chatbot services to operator subscribers is another key issue. A solid range of attractive and easy-to-use services provided by 5G messaging is a key selling point and a hook for those not familiar with RCS or who are dormant users.

There is also the importance of maintaining an open and unified global standard for 5G messaging participants, particularly device vendors. Proprietary standards, by contrast, risk fragmentation and lower scale – both disincentives for third-party developers. The complexity of 5G messaging technology means the core set of standards should be kept stable, allowing for flexibility to satisfy regional requirements.

Table 2: China: mobile market context

| | 2020 | 2025 |
|--|--------------|--------------|
| Total population | 1.44 billion | 1.46 billion |
| Mobile subscriber penetration | 83% | 84% |
| Smartphones as a share of mobile connections | 72% | 89% |
| Share of Android users | 81% | TBD |
| 5G as a share of connections | 13% | 51% |

Source: GSMA Intelligence, Statcounter, June 2021

Deutsche Telekom

Current messaging offer

Deutsche Telekom (DT) first launched RCS in Germany in 2013. At the time, it was a P2P-only product positioned as an enhanced successor to SMS and alternative to WhatsApp. The focus now is on evolving RCS into a product whose primary utility is for business clients – an era it calls ‘messaging 2.0’. DT has formed partnerships with Vodafone and Telefónica in its home market to increase scale with aggregators and align on technical specifications with standards bodies such as the GSMA and ETSI.

In Germany, consumer messaging has not, to now, had marketing heft behind it as consumers must effectively opt in to RCS even if pre-installed on an Android smartphone. Apple’s continued hold out of support for RCS remains a significant challenge for consumer awareness and take-up.

Business verticals are viewed as the incremental opportunity in the 5G era. However, there is a short window of opportunity to showcase the value add of new features and, crucially, reposition the image of operator messaging.

Messaging strategy in the 5G era

How messaging will change in the 5G era

DT has a philosophical position on messaging in the 5G era: it is not about tech; rather, it is about reshaping people’s attitudes to what messaging is and could be.

RCS is part of the implementation guidelines for 5G messaging clients. DT believes this is good but meaningless in the eyes of consumers and businesses who want to understand the value proposition compared to OTT options. Much of what RCS can offer is already present but is latent given the lack of visibility, customer adoption and network effects. This must change.

Customer segments that are priority targets

The proposition for DT is that 5G messaging services seek to amplify customer interaction with brands they know and love. DT is prioritising a limited set of verticals in 2021/2022 through its aggregator partnerships:

- healthcare
- airlines and travel
- retail and e-commerce.

These verticals demand scale and security – assets where operators are at their strongest. To augment the experience, DT wants to hone in on use cases requiring flexibility and convenience. In the airline sector, for example, in addition to flight check-in, RCS could offer the ability to change or amend a booking directly from the messaging client, rather than needing to visit a separate

website or app. The same would apply for hotels, restaurants and other travel services, including international roaming when connecting to a mobile service in a foreign country. Authentication would become seamless as customer profiles linked to a phone's SIM obviate the need for time-consuming identity checks through an app or website.

5G messaging: market outlook

Strategic importance of messaging for telcos in the 5G era

Messaging remains one of the key unique telecoms services. It plays to reliability, trust and scale. The challenge for operators is that these qualities are, in many senses, hidden and only valued once a problem is exposed, such as with a security breach. This requires a doubling down on such assets alongside a push to make popular features that draw on multimedia (videos and sharable content) more visible.

The other important thing to get right is tariffing. Communication services are, by nature, deflationary over time without some type of differentiation that justifies a price premium. That can be counteracted through bundled pricing, in which RCS is used as a lever to apply premiums for consumers and B2B clients via aggregator hubs.

How Deutsche Telekom sees the overall market outlook

The first priority for DT is to bring scaled aggregators on board, such as Infobip, Sinch and Twilio, as distribution partners in approaching B2B clients. RCS service should also be seamlessly operable on 4G, 5G and Wi-Fi connections. Google provides a carrier cloud service, and DT expects the first use cases for rich business messaging in 2021, with initial targets in eastern European countries such as Greece, Hungary and Slovakia.

The awareness gap remains a major barrier to RCS success. DT is focusing on increasing RCS visibility with brands through its aggregator partnerships and through service-level marketing to consumers who are considering 5G smartphone upgrades.

Finally, there is an 'innovation dilemma' to redress. Legacy sales models for the telecoms sector are generally volume driven for voice and messaging (price per minute or message). The risk of commoditisation means sales teams need to rethink incentive structures such that messaging products are sold on a different baseline, such as revenue shares or even click rates akin to the digital advertising model.

Table 3: Germany: mobile market context

| | 2020 | 2025 |
|--|------------|------------|
| Total population | 84 million | 83 million |
| Mobile subscriber penetration | 88% | 89% |
| Smartphones as a share of mobile connections | 78% | 84% |
| Share of Android users | 64% | TBD |
| 5G as a share of connections | 1% | 52% |

Source: GSMA Intelligence, Statcounter, June 2021

Orange

Current messaging offer

RCS is most prolific for Orange across its Africa and Middle East footprint. Orange first launched RCS for consumers in 2017 in Jordan, Morocco, Côte d'Ivoire, Tunisia and Madagascar. This was followed by a further eight countries in Africa during 2018 and 2019: Senegal, Guinea-Bissau, DRC, Niger, Cameroon, Botswana, Burkina Faso and Mali. There are plans for three remaining operating markets in late 2021 or early 2022. This provides the company with an extensive footprint of RCS reach in Africa – a region characterised by youthful populations and a growing service economy, with mobile payments a crucial facilitating factor. In the Middle East, take-up has been slower but the service is growing. In Europe, the service is active in four countries.

In the business realm, Rich Business Messaging (RBM) plans are at trial stage in eight countries across MEA. Discussions with aggregators are taking place in parallel, with a view to having ready-made scale at the point of commercial launch.

Messaging strategy in the 5G era

How messaging will change in the 5G era

Orange is keen to dial down the hype of new-fangled 5G use cases such as VR and instead focus on basics that drive off the better interactivity that RCS generates. In Africa, most consumers are still on 3G and 4G tariffs; the strategy is to grow familiarity and regular use of RCS so that the messaging experience is a more natural fit when the eventual migration to 5G happens. The company points to Côte d'Ivoire as an example of where the focus is on bill payments. Interaction rates on RCS campaigns are 10x those for SMS – a solid lead indicator. RCS is being used to promote Orange services in bill payments and emergency data (for prepaid customers running out of credit). The use of bots is also increasing through partnerships with e-commerce groups.

In more advanced countries, particularly in the Middle East, 5G messaging has more near-term potential as a tie-in to Orange services and a selling point in the 5G upgrade path, though with Orange focusing on the marketing pitch rather than a 'killer app'.

Customer segments that are priority targets

In Europe, Orange's focus is on B2B and enterprise. Banks, insurance companies and other financial services organisations are the most receptive groups. A range of messaging use cases come into play, including payments, current account updates and disbursements. However, there are other consumer-facing industries where Orange views 5G messaging as relevant. The strategy is to pursue a layered approach, focusing on high-priority sectors first to generate proof points. Revenue models come through partnerships with aggregators and fees earned through other Orange services, rather than directly charging for messaging. As with OTT platforms, messaging is a hook into a wider service ecosystem.

Africa remains some way off scaled RBM as A2P volumes are currently low. This is expected to rise over the coming five years as smartphone adoption grows (from the current regional average

of 50%, to 70% by 2025) and as formal employment rates rise, carrying an associated flow of salary payments through mobile money and consumer spend via e-commerce channels.

5G messaging: market outlook

Strategic importance of messaging for telcos in the 5G era

For Orange, the rationale for RCS in the 5G era is one of relevance and commercial value in both the consumer and B2B segments. Aside from interoperability and scale, the company believes the most important thing is to focus on practical use cases that provide an immediate difference to lives. For example, while the provision of emergency data would often be an afterthought in Europe where smartphones are ubiquitous alongside unlimited data tariffs, it remains a real pain point in Africa. The messaging link to facilitate the data top-up is valued. This principle also underpins Orange's strategy of utilising RCS as a route to engagement with other Orange services, particularly banking and insurance.

How Orange sees the overall market outlook

Orange is positive on the overall outlook because it is customising its approach to specific regions based on the customer profile and local culture of a given country. In Europe, this means banking and insurance. In Africa, it is more basic financial services. This provides management autonomy rather than a reliance on generalist strategies. While other providers may have different sell-in strategies, Orange believes that getting the basics right trumps fancy functionality.

In addition to common standards, operator adoption and continued expansion of Android smartphone penetration, Orange highlights the importance of promotional activity. In Africa, where churn is high in the prepaid customer base, the risk is that only, for example, 50% of 100,000 customers receive a promotional message for an RCS campaign. Clear planning and targeting become crucial in spreading the word.

Table 4: Africa and the Middle East: mobile market context*

| | 2020 | 2025 |
|--|-------------|-------------|
| Total population | 629 million | 669 million |
| Mobile subscriber penetration | 38% | 44% |
| Smartphones as a share of mobile connections | 50% | 61% |
| Share of Android users* | 81% | TBD |
| 5G as a share of connections | <1% | 3% |

*Orange operating markets

Source: GSMA Intelligence, Statcounter, June 2021

Turkcell

Current messaging offer

Turkcell operates a hybrid messaging strategy that uses cellular channels via SMS and RCS, and a proprietary OTT option (BIP) linked to a service ecosystem. The move to develop BIP in 2013 became a strategic priority in the smartphone era as WhatsApp scaled rapidly in Turkey (and is now ubiquitous at over 95% of smartphone owners), leaving Turkcell at risk of lost usage and mindshare for messaging. Turkcell now views each messaging platform as complementary, with BIP the central channel through which P2P and A2P are integrated where possible. BIP has now reached 30 million active users. Turkcell has achieved around 25% take-up in its domestic consumer base and has dispersed adoption across 192 countries as a freely available application.

Messaging strategy in the 5G era

How messaging will change in the 5G era

Turkcell does not foresee disruptive changes in messaging technology *per se*. Instead, the changes are in the ease of integration with other services and tie-ins with social media and content sharing. The company views enterprise verticals as a viable target for increased use of operator messaging. Currently A2P accounts for less than 10% of Turkcell's messaging traffic, implying significant headroom. Consumer and business success depends on interoperability and easy-to-use functionality such as video sharing.

Customer segments that are priority targets

In addition to its own digital services, Turkcell has amassed a third-party ecosystem for its messaging platforms with more than 400 corporate integrations. The enterprise play is a white-label model with secure, encrypted communications. The company is targeting several sectors:

- banking
- healthcare
- entertainment
- transport (particularly airlines).

Each sector has high demand for direct, secure and interactive touchpoints with customers. In practice this could mean, for example, airline customers being able to change flight bookings in an app. In a healthcare context, it could mean booking medical appointments and potentially remote consultations. In financial services, the ability to manage current accounts and savings products without website or external app log-ins reduces friction and is therefore viewed as positive for customer engagement. In this sense, the integration of the messaging app (BIP) with third-party services to drive engagement follows that of WeChat and other OTT platforms.

5G messaging: market outlook

Strategic importance of messaging for telcos in the 5G era

Turkcell views messaging as a lever for loyalty and relevance, and as a lynchpin to its own digital services suite (Lifecell). Messaging is emblematic of the strategic pivot to a 'digital' operator the company made five years ago. BIP is an OTT-style app run by an operator rather than one that uses the RCS suite. Turkcell views this distinction as secondary to the more fundamental point of designing services that customers like and use, irrespective of the technology that powers them.

5G provides new capabilities in speeds and lower latencies that will help with higher definition video consumption and sharing. However, these upgrades are generally incremental. Turkcell sees the underlying value of messaging for telcos more as a marketing aid in the 4G-to-5G upgrade path. Enterprise take-up represents a greater potential revenue opportunity if A2P bulk messaging can be expanded further into existing high-usage sectors such as banking as well as new verticals such as health and transportation.

How Turkcell sees the overall market outlook

Turkcell has a positive outlook for its own messaging ecosystem that combines BIP with RCS and A2P/SMS channels. It ascribes success to a differentiated product with firm management commitment as part of a digital services package. In Turkey, the 25% penetration in its own customer base implies a latent in-fill opportunity. With RCS, the company highlights particular potential in A2P. However, to grow the RCS addressable audience, Turkcell notes a number of key barriers to overcome: Apple's participation, device compatibility and, crucially, interoperability between operators to enable network effects. Interoperability, in particular, is a prerequisite to RCS scale, with new operator integrations key over the next two years.

Table 5: Turkey: mobile market context

| | 2020 | 2025 |
|--|------------|------------|
| Total population | 85 million | 87 million |
| Mobile subscriber penetration | 67% | 70% |
| Smartphones as a share of mobile connections | 83% | 89% |
| Share of Android users | 84% | TBD |
| 5G as a share of connections | <1% | 14% |

Source: GSMA Intelligence, Statcounter, June 2021



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