

Communications & Collaboration

SPARK Matrix™: **Communications Platform as** **a Service (CPaaS), 2022**

Market Insights, Competitive Evaluation, and Vendor Rankings

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Executive Overview

This research study includes a detailed analysis of the global Communications Platform as a Service (CPaaS) market dynamics, major trends, vendor landscape, and competitive positioning analysis. The study provides competition analysis and ranking of the leading CPaaS vendors in the form of the SPARK Matrix. This research provides strategic information for technology vendors to better understand the market supporting their growth strategies and for users to evaluate different vendors' capabilities, competitive differentiation, and market position.

Key Research Findings

The following are the key research findings:

Market Drivers and Trends:

In recent times, most industry verticals have been focusing on digital transformation and customer satisfaction through automated application offerings. Similarly, CPaaS, a cloud-based solution, incorporates technological advancements to enable real-time communication to clients through audio, video, chat, and messaging applications. Quadrant's analysts predict that enterprises are leaning toward CPaaS solutions and striving to embrace digital communication and collaboration at work.

The CPaaS market is quickly expanding on a global scale. It is expected to increase at a faster rate as enterprises focus on improving the customer journey experience for their businesses. CPaaS is rapidly evolving in the areas of machine learning and AI and helping enterprises to drive business communication effectively. CPaaS vendors make it easier to use various technologies, such as SMS, video, and audio, by combining APIs and integrated development environments (IDEs) to create communication solutions that improve the customer experience. Enterprises are engaging with CPaaS providers for meaningful and frictionless communications through channels of their choice, with hyper personalization, custom notifications, seamless authentication, and prompting CPaaS vendors to offer more industry-specific solutions. Moving forward, vendors are rapidly enhancing their geographic coverage and strengthening their capabilities to improve their automation offerings with mergers and partnerships.

Market Definition and Overview

“CPaaS, also known as Communications Platform as a Service, is a real-time, cloud-based customizable platform that provides businesses with solutions to connect with their customers. CPaaS vendors provide communication APIs such as voice, video, messaging service, 2FA (two-factor authentication), and others which simplify the programming process to incorporate real-time communication services. It is a solution used by developers to embed an enterprise or business application with communication capabilities that deliver better communication and customer experience. CPaaS ensures better in app calling, better reach, preferred customer channel, changing communication needs and better customer engagement that results in improved communication which in turn provides better business outcomes”

Leading vendors provide features to support continuous digital collaboration that help organizations with their communication APIs. These may include investing in advanced capabilities such as omnichannel approach, advanced messaging, conversational API, security, payments, and contact centers. Driven by the maturity of artificial intelligence and IoT, CPaaS vendors are increasingly augmenting these capabilities to support advanced functionalities and improve end-user experiences. CPaaS providers are also rapidly incorporating capabilities such as messaging, application-to-person (A2P), security, two-factor authentication (2FA), and AI-centric APIs.

The uncertainty around COVID-19 in 2021 drove organizations to adopt digital collaboration and communication, resulting in the rapid growth of these platforms. The necessity to deliver quality SMS services and voice calls has prompted many new and existing enterprises to launch their own platforms to provide clients with a robust and flexible platform.

Factors Influencing Technological Development and Market Growth

Following are the dominant technology and market development factors influencing the global accounts payable automation solution and market growth:

A Convergence of Developer and Customer Co-Creation Model

In the earlier days, CPaaS vendors had a heavy code approach and were mainly focused on the developer model for digital native customers. In this model, the developer community plays a vital role to implement or integrate the technology provided by the CPaaS vendors and roll out communication modules that contain all the programmable APIs, SDKs, IDEs, and other support-related documentation. This provides developers with a DIY (Do It Yourself) approach to build the platform as per their understanding and needs. Few vendors also educate the market by writing blogs and providing training and certifications. Few vendors who follow the developer methodologies are Twilio, Sinch, 8x8, Bandwidth, and many others.

The CPaaS market moved further from the digital native customers towards the customer co-creation approach. Here, customers other than the digital natives from any industry vertical with a physical presence are also accounted for. The customer co-creation model majorly revolves around customer engagement, sales, marketing, and working with the customer to create a technical solution that is tailored as per their needs. Through this model, users are provided with a low-code/no-code platform that assists them irrespective of their necessary background knowledge. IntelPeer, CM.com, Kaleyra and Soprano Design are some vendors who follow the customer co-creation methodology and also offer developer model centric capabilities.

The developer model vendors have started focusing on customer success teams and added consulting partners, visual builders, and consulting support. The customer co-creation vendors are also focusing on providing developer capabilities such as providing SDKs, IDEs, and support documents. Few benefits of the convergence include better extent of coverage for user's business needs, cost reduction and better mix of solutions & products.

Artificial Intelligence (AI) Integration and Orchestration

CPaaS has changed the way organizations communicate with their customers, and with the increased demand for creating a seamless customer experience, organizations are incorporating workflow automation and AI integration, known as orchestration. It unlocks several cloud-based systems and applications through AI-enabled services like chatbots, interactive voice response (IVR), and real-time decisions, reducing manual processes and personalizing communication. The process of software deployment can be intelligently automated by incorporating AI and business rules into APIs, resulting in a scalable and flexible solution. This allows companies to create one-of-a-kind communication and non-communication APIs for their users, such as voice, video, payments, security, and others, allowing them to execute a variety of industrial use cases and fulfill their needs. CPaaS vendors are gradually integrating automation into their ecosystems to improve their business operations and create a more seamless customer experience.

Rich communication services (RCS) and WebRTC

Organizations are uncovering the value of RCS messaging, and CPaaS vendors are responding by adding richer forms of communication to their portfolios to fulfill organization needs. Organizations are migrating to RCS due to the development of app-based instant messaging services such as WhatsApp and Facebook Messenger, which offer more features and functionalities than SMS. Enterprises can use CPaaS in conjunction with RCS to provide omnichannel management through communication APIs, such as video, voice, and others. Several vendors have started incorporating OTT messaging platforms like WhatsApp, Facebook Messenger, Telegram, and many others into their offerings to support advanced media functions like payments and notification alerts. With the rising prevalence of the remote working model, the demand for live support and video conferencing platforms surged and made RTC necessary for digital collaboration and communication. WebRTC applications are in high demand as they support real-time communications (RTC), like voice and video, to enable users to communicate through their primary web browsers. Vendors are incorporating WebRTC as it benefits organizations with its easy-to-adopt RTC and open-source licensing and enables them to incorporate customized services in various industry sectors.

Importance of Omnichannel communications

Businesses are increasingly embracing an omnichannel approach to provide a more seamless customer engagement owing to the growing number of digital-native consumers. Omnichannel communication is gaining traction because it provides customers with a personalized experience and on-demand service from any device. With an omnichannel approach, a CPaaS customization provides embedded communication to a wide range of available applications. Web-based real-time communication solutions, such as live support, live chat, and live video assistance are being used by CPaaS vendors, allowing for browser-based omnichannel support for multiple business processes and improved customer experience. Moving forward, CPaaS vendors are adding advanced features such as click-to-message and click-to-call to ensure that customers do not need to leave the app to initiate contact with vendors. Adopting an omnichannel approach in CPaaS helps organizations meet diverse audience needs by allowing seamless transitions and integrations between voice, chat, text, and email and resolving issues without being limited to one channel.

Competitive Landscape and Analysis

Quadrant Knowledge Solutions conducted an in-depth analysis of the major CPaaS vendors by evaluating their products, market presence, and value proposition. The evaluation is based on the primary research with expert interviews, analysis of use cases, and Quadrant's internal analysis of the overall CPaaS market. This study includes an analysis of key vendors, including 8x8, Alcatel-Lucent Enterprise, AT&T, Avaya, Bandwidth, CM.com, IMI mobile, Infobip, IntelePeer, Kaleyra, LINK Mobility, MessageBird, Microsoft, Mitto, Plivo, Radisys, Route Mobile, Sinch, Soprano Design, Syniverse, TeleSign, Telnyx, Twilio, Vonage, Voximplant, and Zenvia.

The CPaaS market has been gaining traction due to the increasing variety and complexity of communication channels and capabilities. CPaaS technology includes a dynamic set of capabilities to connect organizations with their customers and integrate real-time communication services and APIs such as voice, messaging, video, payments, security, contact center capabilities, and others into their business application ecosystem. It enables organizations to communicate over the cloud by offering software development kits (SDKs), integrated development environment (IDEs), customer support, industry-specific use cases, and low-code/no-code choices.

In the CPaaS SPARK Matrix, Q4, 2022, the vendors placed as the technology and market leaders are Twilio, Sinch, Infobip, Vonage, Bandwidth, Avaya, MessageBird, Kaleyra, Syniverse, Soprano Design, 8x8, CM.com, LINK Mobility, IntelePeer, Radisys, and Voximplant.

Twilio is positioned as the market leader in the CPaaS market as it gains market share by leveraging its robust CPaaS solution that enables organizations to collaborate with the customer. Its NLP platform builds conversational applications using messaging bots and voice assistants, SDKs, & real-time video infrastructure, and a synchronized state throughout an organization. Its adaptable, cost-effective, and cloud-based engagement platform enables businesses to manage communications for every type of consumer engagement. The company also offers support for emails, contact-centre, IOT, and many other functionalities.

Sinch is positioned as a market and technology leader in the CPaaS market as it has a significant market presence in most of the major regions. It has a significant market share in Europe, North America, India, and Latin America. Sinch's

offerings integrate seamlessly with the customer's existing business application and provide the users with secure interaction through its verification and security capabilities. A few of Sinch's offerings include high-quality and volume-based messaging, conversational AI/NLP via the Chatlayer application, flash call and phone call verification, and many others.

Infobip is one of the leaders in the CPaaS market due to its robust CPaaS offerings. It has direct partnerships with a significant number of MNOs (Mobile Network Operators) globally. Its solutions include system integrators that can provide global messaging expertise, digital market agencies that provide global market assistance, and master service agents that help organizations accelerate time to revenue while also building strong relationships with customers and driving business value. A few offerings of Infobip are a strong customer-centric approach and a digital-first communication solution.

Vonage is also positioned as one of the leaders in Quadrant's CPaaS SPARK Matrix, Q4, 2022. Vonage, with its Vonage API platform, provides users with integrated CPaaS-CCaaS and UCaaS capability that enhances the customer experience and brand awareness for the user, and they also provide accelerate services to assist customers in utilizing and putting into practice the collection of CPaaS capabilities that are available, usually for a vertical or enterprise use case. A few of Vonage's offerings include global network and deployment, secure and compliant, reliability, full suite of communications API, deep integrations and customizations, simple implementation & scalability, and conversational AI capabilities.

Bandwidth is also positioned as one of the leaders in Quadrant's CPaaS SPARK Matrix, Q4, 2022. It is one of the few vendors with a network infrastructure. Bandwidth experienced significant market growth in their voice and SMS business post-COVID era due to users adopting digitalization. The company also offers a few direct routing solutions, such as advanced E911 that provides highly reliable emergency call routing across the United States and Canada and simplified address provisioning. Bandwidth's key offerings also include local number portability, emergency communications, software-centric SIP trunking, and toll-free calling.

Avaya is positioned as a market and technology leader in this report for CPaaS market landscape. Avaya differentiates with its Experience Builders ecosystem of partners, developers, and users, its ability to integrate with contact centers, and one-click enablement with Google Dialogflow for rapid building of AI capabilities.

Its portfolio of private APIs enables hybrid integration projects and media platform as a service, which is an elastic carrier-grade media processing platform. Avaya OneCloud core also enables UCaaS, CCaaS, CPaaS, and workstream collaboration to work together and deliver a seamless solution to the user and Avaya's packaged business capability library.

MessageBird is positioned as one of the market and technology leaders in this year's Quadrant CPaaS SPARK Matrix report. They come under the developer model and hence, have a very strong developer ecosystem. The ecosystem includes an array of communication API SDKs that are ease of use and offer competitive pricing. Their API offerings are embedded over their network layer, which is, in turn, tied to a significantly large number of global network carriers. Their few offerings include free to use solution tier that gives access to all channels with minor use restrictions, 24x7 quality support, and compliance adherence.

Kaleyra is positioned as a market and technology leader in this report. The company provides an end-to-end omnichannel solution. Kaleyra's CPaaS platform offers public, hybrid, and private cloud, and on-premises deployments with numerous operator connections to ensure high quality, better price, and delivery efficiency. They also offer no-code and low-code solutions for users, security, and reliability/uptime. Kaleyra has extensive experience in highly regulated and demanding sectors (such as banking and healthcare) and enterprise-focused co-creation with customers. They have been providing localized services in many local languages and time zone with quality of delivery, transparency, and services for time-critical messaging, such as OTPs and transactional.

Syniverse is positioned as a market and technology leader. The company has over 3 decades of experience in mobile roaming, interconnections, and SMS messaging. This context provides insights such as the amount of data centres present globally and partnerships with many large global organizations. Syniverse follows the customer co-creation model when providing CPaaS with the customer development team. Syniverse's prime focus remains on the traditional brick-and-mortar businesses that are adopting digitalization. Few offerings from Syniverse are fully integrated lines of products to implement transformational technologies, including 3G to VoLTE roaming, 5G Roaming, 5G Messaging, Private Wireless Networks, and IOT Connectivity.

Soprano Design is also positioned as one of the market and technology leaders with respect to its competitors. They provide a cloud-based no-code/low-code interface to assist users in arranging communication modules, APIs, sandboxing,

and reports that can be customized. They are also one of the customer co-creation model followers where they provide new customers with customer success managers for better understanding and implementation for the customers. Few of Soprano Design's offerings include RESTful omnichannel APIs supporting SMS, MMS, RCS, WhatsApp and email, Ubisend conversational AI, and enterprise-grade High Available Disaster Architecture (HADR), a wide range of CPaaS API suite that include HTTP, SMTP, SMPP, voice API, Omnichannel, Connect API, sophisticated security, and policy controls; quality routes with high delivery rates of domestic and international SMS; wide range of product portfolio supporting chatbots, and multi-channel messaging.

8x8 is positioned as a market leader in this report. It provides CPaaS, CCaaS, and UCaaS with a future roadmap to provide an integrated solution. Currently, they offer CPaaS via their 8x8 eXperience platform. They are gaining market share by leveraging their CPaaS offerings which are easy to consume for the customers. They provide a secure infrastructure that delivers service from a mirrored, top-tier, secure, fully redundant, and geographically diverse data centre to the user. Few offerings would include 8x8s easy-to-consume CPaaS that includes an online portal that users can use to send messages without the need for integration. The company also provides access to users regarding UCaaS, CCaaS, and IVR's capabilities via APIs.

CM.com is also positioned as a market and technology leader. CM.com has been looking into conversational commerce and offers tools for users to drive analytics and draw insights into the characteristics of the enterprise. The company offers a robust payments module that allows users to operate paperless, which is a trend after COVID-19. CM.com's offerings also include a licensed payment service provider (PSP), digital ticketing proposition, and a customer data platform for an all-around view of customers out of many others. The company's services are based on direct connections from their own developed applications without any third-party vendors that assist them to offer SLA based on their capability and infrastructure.

LINK Mobility is one of the market and technology leaders in this year's Quadrant CPaaS's SPARK Matrix report. The company has focused on providing tailored solutions with respect to the country and the native language support. The company follows the customer co-creation model and provides a customer success manager for larger clients. Few offerings with respect to LINK Mobility are localization, notification, or transactional messaging (A2P), rule-based IVR

chatbot, low-code SaaS builder, OTP verification, appointment, transport and governmental communication, mobile identity verification for security & customer contact details validation, and payment of invoices via messaging channels.

IntelPeer is positioned as a market and technology leader that offers CPaaS via the Atmosphere platform. IntelPeer has been previously a global VoIP provider and offered advanced SIP solutions. They function majorly in a pure cloud environment that includes regional-specific nodes to adhere to regulatory compliances. IntelPeer's offerings include low-code/no-code communication modules; a complimentary managed solution that assists the users with customer onboarding, training, database configuration, web interfaces, and NLP; and reporting via Atmosphere Insights, assisting users to drive revenue opportunities and operational efficiency. The platform is easy to use as it is AI-embedded and comes with the drag and drop flow builder, expedited deployment, and easy implementation as all the APIs are on a single intelligent cloud platform that works seamlessly with the user's existing solutions and deep analytics as the platform can capture interactions in one place, identify trends, and make data-driven decisions with AI-powered analytics and reliable omnichannel automation.

Radisys is positioned as a market and technology leader that offers CPaaS capabilities to users via their Engage Digital platform. They offer multiple deployment options such as public cloud, private cloud, on customer premises, and at network provider edge location. The company provides unified and programmable CPaaS. They also provide users with WebRTC and SIP in case of video and voice. Radisys' s other offerings include a video chatbot where a virtual assistant human lookalike will interact with the end user for a better and immersive experience, in-call live translation, and AR/VR overlays for a better experience. Their media server is one of the leading media processing servers in the market. They also provide open integration, carrier-grade network, white labeling, and flexible pricing with respect to usage and capacity. The combination of traditional CPaaS offerings and media analytics empower users to gather AI-based insights into interactions for a broader range of applications, which can be enabled to support 5G, other wireless broadband, and IoT- based use cases for industry 4.0 and private network services.

Voximplant is one of the market and technology leaders that provide advanced features such as management API, predictive dialing system, PSTN, and many others that can be customized with respect to the user's needs and wants. Voximplant provides a full featured serverless offering that is minimal investment

in backend, and no need for external infrastructure & teams. They follow a pay-per-use pricing model. The company also provides users with a DIY cloud contact centre, call tracking, AI integrations, cloud IDE, and debugger.

IMImobile, AT&T, Zenvia, Alcatel-Lucent Enterprise, Microsoft, Route Mobile, Mitto, Plivo, TeleSign, and Telnyx are placed as challengers in the CPaaS SPARK Matrix, Q4, 2022, which have the potential to grow in the global CPaaS market in the coming years. IMImobile provides CPaaS via its WebEx Connect platform. Their solution provides most of the APIs and a low-code platform for the users to assist them to reduce cost & complexity and speed up the IT roadmap. AT&T designs programs for users with other providers of API communications. The company offers an open-source API marketplace for users, consulting organizations and network implementation services created by AT&T integrated solutions. Zenvia provides prebuilt CPaaS solutions for sales teams and customer service and marketing campaigns for SMBs. The company even offers analytic tools to track updates on the use cases and PBX capabilities. Alcatel-Lucent Enterprise provides CPaaS solutions to users with their Rainbow platform built on an open architecture that can be embedded with any business application or system. The company provides strong security which adheres to compliances such as GDPR and CCPA. Microsoft provides CPaaS via their Azure Communication Services, including APIs, comprehensive security & compliance adherences, pay-per-use, and developer capabilities. Route Mobile provides CPaaS solutions, including messaging solutions, voice solutions such as IVR, and contact centre on a regional depth. The company also provides consulting services and a visual builder for low and no-code environments. Mitto provides CPaaS solution with a constantly monitored AI-enabled global network that allows dynamic route prioritization and selection, enabling the company to assist many kinds of class of service (COS) levels. The pricing is based on COS, which is valuable to large-volume players. Plivo provides CPaaS solution to users, including many features such as basic communications APIs and PHLO visual builder for low-code/no-code environment to name a few. The company offers competitive pricing, global coverage, intuitive tools, and others. TeleSign provides CPaaS via an intelligent communications platform with most of the basic APIs. Their focus has been into security and trust. Their security APIs include authentication, fraud detection, and compliance scoring. Telnyx is a CPaaS vendor that provides functionalities into networking, identity & data, wireless, numbers, fax, messaging, and voice. The company also provides developer support. They have a multi-cloud point of presence that assists users with low latency across the globe, across USA, Europe, and APAC, and are planning to expand more.

The industry is undergoing a rapid transformation, as post pandemic, all the organizations have realized the necessity of communications & customer experience to align their business goals to create greater value. CPaaS vendors empower the user to better handle their customers for a better CX and to garner a positive brand name. Moreover, companies are integrating more capabilities and channels into their CPaaS solutions. The CPaaS market is cluttered with different players focusing on varying capabilities, such as few vendors focus on payments and few on seamless communication, AI capabilities, and others. The rising demand for digital transformation will increase awareness about CPaaS exponentially in the coming times and drive market growth. The vendor's ability to accommodate emerging technology trends, including artificial intelligence, machine learning, and a truly open & unified platform, is becoming crucial for delivering sophisticated CPaaS solutions.

Competitive Differentiators

While most CPaaS vendors provide comprehensive functionalities to support various use cases, their technology and customer value proposition may differ based on the customer size, industry vertical, geographical markets, and organization-specific requirements. Some of the key competitive factors and technology differentiators for the CPaaS include:

- **Vendors Differentiating Strategies and Use Cases:** Users are advised to evaluate each vendor's differentiating strategies and support of use cases before making a purchase decision. Users should conduct a weighted analysis of various parameters as needed by their industry needs and seek industry-specific use cases like payments, security, multi-factor authentication, two-factor authentication (2FA), and chatbots. Furthermore, users with one or more specific needs should consider the most common CPaaS use cases, including notifications and alerts, voice calls and messages, RCS, digital ticketing, automated surveys, and video conferencing. The customer should also consider CPaaS platform's ability to easily integrate communication channels with applications and enable more flexible and scalable communication.
- **WebRTC (Web Real Time Communication):** WebRTC allows users to capture and optionally stream audio and/or video media, as well as exchange arbitrary data between browsers without the need for an intermediary. It delivers high-quality and flexible audio and video capability to the desktop web browser and soon to the mobile browser. It provides the user with real-time communication via simple APIs. Vendors should be evaluated by the depth of their WebRTC offerings.
- **RCS (Rich Communication Services):** The text-based mobile protocol, also known as rich communication services (RCS), was developed as an alternative to SMS and MMS messaging. Users can create group chats, send images and videos, and receive read receipts with end-to-end encryption in RCS without any character limit as in traditional SMS. Rich features like payments, high-resolution photo & file sharing, location sharing, video calls, and much more are delivered to a device's default messaging application.

- **Integration & Interoperability:** CPaaS can be integrated with communication platforms such as Zoom, Teams, Webex, and many others. CPaaS can be interoperated with Teams, which allows application developers to build applications and experiences that interact with communication platform users over voice, video, chat, and screen sharing. Few vendors in the CPaaS market provide users with these options; hence, a vendor must be evaluated with respect to the platform integration in case business needs.
- **Depth of Security features:** CPaaS vendors must be able to protect their infrastructure from intruders and use analytical data to make proactive and insightful business decisions. To maintain customer trust, a brand must safeguard its communications with customers. Bad practices such as SMS pumping, phishing, and spam will have a negative impact on the communication channel's reputation and profitability. At this moment, most of the vendors provide 2FA (two-factor authentication). Voice, biometric & video authentication, and silent mobile verification are advanced security features which very few vendors provide. Voice and Video authentication allows the user to utilize their voice and video as a password instead of the manual text-based passwords that can be easily forgotten or penetrated due to compilation weakness, and silent mobile verification provides users with features where users can verify devices with a single tap on client's device. These features might be embedded in the CPaaS platforms by many vendors in the coming years. Hence, if a user is from a sensitive industry where security is a major concern, they should evaluate vendors by keeping these criteria or functionalities in mind.
- **Maturity of AI, Machine Learning, and Process Automation Capabilities:** Leading vendors are increasingly incorporating artificial intelligence (AI), natural language processing (NLP), machine learning (ML), and Internet of Things (IOT) to enhance the effectiveness of their services. The expansion of the market is being fueled by the incorporation of ML and AI into speech recognition, automation, agent augmentation, emotion analysis, and call analytics. These technologies significantly reduce the need for manual efforts and make it easier to create a communication platform. Some CPaaS vendors also offer AI-driven chatbots/conversational AI, real-time insights, process automation, and data unification to enhance

customer experience. Users need to carefully analyze the vendor's journey and maturity in AI, ML, and workflow automation capabilities to future-proof their investments.

- **Pricing Structure:** Users evaluate the CPaaS platform based on its competitive pricing models to reduce costs. One of the most important ways that vendors can differentiate themselves from their competitors is by considering how well they can meet the needs of their customers with respect to the cost they are charging. Majority of the vendors are either following the developer's model or the customer co-creation model. Hence, the pricing varies in both the cases from vendor to vendor. Users should assess the ability of the vendors to offer a flexible pricing structure and offer the highest value compared to their costs so that the TCO (Total Cost of Ownership) is as low as possible.
- **Scalability:** The platform architecture of CPaaS enables data unification, analytics, and enablement by allowing users for high scalability, microservices, and an expandable platform. It is highly customizable and scalable, like any "aaS," and it makes it possible to maintain reasonable communication costs. Hence, users are advised to evaluate the scalability aspect of the vendor's platform before making a purchase decision.
- **Market overlaps for CPaaS and CCaaS:** As the CPaaS market matures, vendors are looking into developing and improving more capabilities. The CPaaS market is overlapping with the CCaaS market in a way that CPaaS vendors are incorporating CCaaS capabilities like SIP trunking, number queueing, and many others, whereas CCaaS vendors are also incorporating CPaaS capabilities like omnichannel interface, enhanced usage of chatbots, and many others. Hence, a CPaaS vendor must be evaluated on CCaaS capabilities if required for any business needs of the users.
- **Product Strategy and Roadmap:** CPaaS providers should focus on expanding their omni-channel messaging capabilities, enabling better device-to-device connectivity, media processing core, new immersive experience feature including spatial codec support, AR/VR, Conversational AI, and many others. In addition to automation,

users need to find a vendor that can provide the robust on-demand processing capabilities, scalability, and integration needed for advanced messaging. Users also need to consider a CPaaS platform with a robust product strategy and roadmap so that when the user scales in the future, the product strategy and roadmap align with the users' requirements.

- **Low-code & No-code:** Visual software development environments known as low-code or no-code development platforms enable enterprise developers and users to connect and integrate CPaaS capabilities into their business applications by allowing them to drag and drop application components. While CPaaS assists users in strengthening communication channels, organizations still consider that its adoption is difficult. Therefore, users should look for a CPaaS platform that is easy to use for non-technical business users, by looking into drag-and-drop functionality that will allow them with a non-technical background to easily integrate CPaaS capabilities. Hence, users must evaluate this criterion before making a CPaaS purchase.
- **The Sophistication of Technology Capabilities:** Users are advised to conduct a comprehensive evaluation of different CPaaS vendors before making a purchase decision. Users should employ a weighted analysis of the several factors important to their specific organizations to create long-term communication and collaboration priorities that can expand options for leaders and meet the enterprise's needs. User requirements of key CPaaS features may differ based on industry verticals, cloud infrastructure, compliance requirements, user size, APIs, and automation capabilities for enhancing customer engagement and business communications. Users should also look for CPaaS solutions with a history of successful large-scale deployments and carefully analyze the existing case studies of those deployments.
- **Global Reach:** Users must evaluate the vendor's global telecommunication carrier partnerships and their in-depth presence around the globe, as it would have a direct impact on the localization and outreach of the user. This, in turn, would affect the vendor and user's brand image. Users are suggested to look for any vendor with significant partnerships across the globe so that the user can get help in case of any localization or expansion across the globe.

- **System Integrator and consulting partnerships:** System Integrators and consultants help the users with integrating the CPaaS abilities into the user's business application if the users need assistance for integration or implementation. CPaaS providers should focus on expanding their system integration and consulting partnerships so that they can assist users globally with ease. Hence, users must evaluate the system integrator and consulting partnerships as a criterion of evaluation if they need this capability in their CPaaS.
- **Payment Integration:** Post COVID-19 era has accelerated the usage of digital payments in all the major markets, including CPaaS. CPaaS platforms are increasingly being used by businesses of all sizes and in all industries to communicate with their customers, which also assists the company to ask for payment or to remind a customer that a payment is due. Vendors in the market offer payment capabilities via major payment platforms such as Apple pay, We Chat Pay, and many others. The capabilities also include many card payment systems and authentications like OTP, 2FA, and others to make payments safer for the user. Some vendors offer their payment solutions, and others partner with other payment vendors to acquire the capabilities. Users must evaluate the vendor's payment capabilities before finalizing any vendor for CPaaS.
- **Omnichannel Customer Experience:** The CPaaS omnichannel communications experience entails integrating multiple channels, or means of connecting with customers, to provide a seamless experience across the customer preferred channels. Businesses are increasingly embracing an omnichannel approach to provide better customer engagement owing to the growing number of digital-native consumers on their desired channel of communication. It is gaining traction as it provides customers with an option to switch to channels like text message to WhatsApp to video seamlessly. With an omnichannel approach, a communication platform as a service (CPaaS) customization provides embedded communication to a wide range of available applications. Users can also explore this feature before finalizing any vendor.

SPARK Matrix™: Strategic Performance Assessment and Ranking

Quadrant Knowledge Solutions' SPARK Matrix provides a snapshot of the market positioning of the key market participants. SPARK Matrix provides a visual representation of market participants and provides strategic insights on how each supplier ranks related to their competitors, concerning various performance parameters based on the category of technology excellence and customer impact. Quadrant's Competitive Landscape Analysis is a useful planning guide for strategic decision-making, such as finding M&A prospects, partnerships, geographical expansion, portfolio expansion, and others.

Each market participant is analyzed against several parameters of Technology Excellence and Customer Impact. In each of the parameters (see charts), an index is assigned to each supplier from 1 (lowest) to 10 (highest). These ratings are designated to each market participant based on the research findings. Based on the individual participant ratings, X and Y coordinate values are calculated. These coordinates are finally used to make SPARK Matrix

Technology Excellence	Weightage	Customer Impact	Weightage
Sophistication of Technology	20%	Product Strategy & Performance	20%
Competitive Differentiation Strategy	20%	Market Presence	20%
Application Diversity	15%	Proven Record	15%
Scalability	15%	Ease of Deployment & Use	15%
Integration & Interoperability	15%	Customer Service Excellence	15%
Vision & Roadmap	15%	Unique Value Proposition	15%

Evaluation Criteria: Technology Excellence

- **The sophistication of Technology:** The ability to provide comprehensive functional capabilities and product features, technology innovations, product/platform architecture, and such others.
- **Competitive Differentiation Strategy:** The ability to differentiate from competitors through functional capabilities and/or innovations and/or GTM strategy, customer value proposition, and such others.

- **Application Diversity:** The ability to demonstrate product deployment for a range of industry verticals and/or multiple use cases.
- **Scalability:** The ability to demonstrate that the solution supports enterprise-grade scalability along with customer case examples.
- **Integration & Interoperability:** The ability to offer product and technology platform that supports integration with multiple best-of-breed technologies, provides prebuilt out-of-the-box integrations, and open API support and services.
- **Vision & Roadmap:** Evaluation of the vendor's product strategy and roadmap with the analysis of key planned enhancements to offer superior products/technology and improve the customer ownership experience.

Evaluation Criteria: Customer Impact

- **Product Strategy & Performance:** Evaluation of multiple aspects of product strategy and performance in terms of product availability, price to performance ratio, excellence in GTM strategy, and other product-specific parameters.
- **Market Presence:** The ability to demonstrate revenue, client base, and market growth along with a presence in various geographical regions and industry verticals.
- **Proven Record:** Evaluation of the existing client base from SMB, mid-market and large enterprise segment, growth rate, and analysis of the customer case studies.
- **Ease of Deployment & Use:** The ability to provide superior deployment experience to clients supporting flexible deployment or demonstrate superior purchase, implementation and usage experience. Additionally, vendors' products are analyzed to offer user-friendly UI and ownership experience.
- **Customer Service Excellence:** The ability to demonstrate vendors capability to provide a range of professional services from consulting,

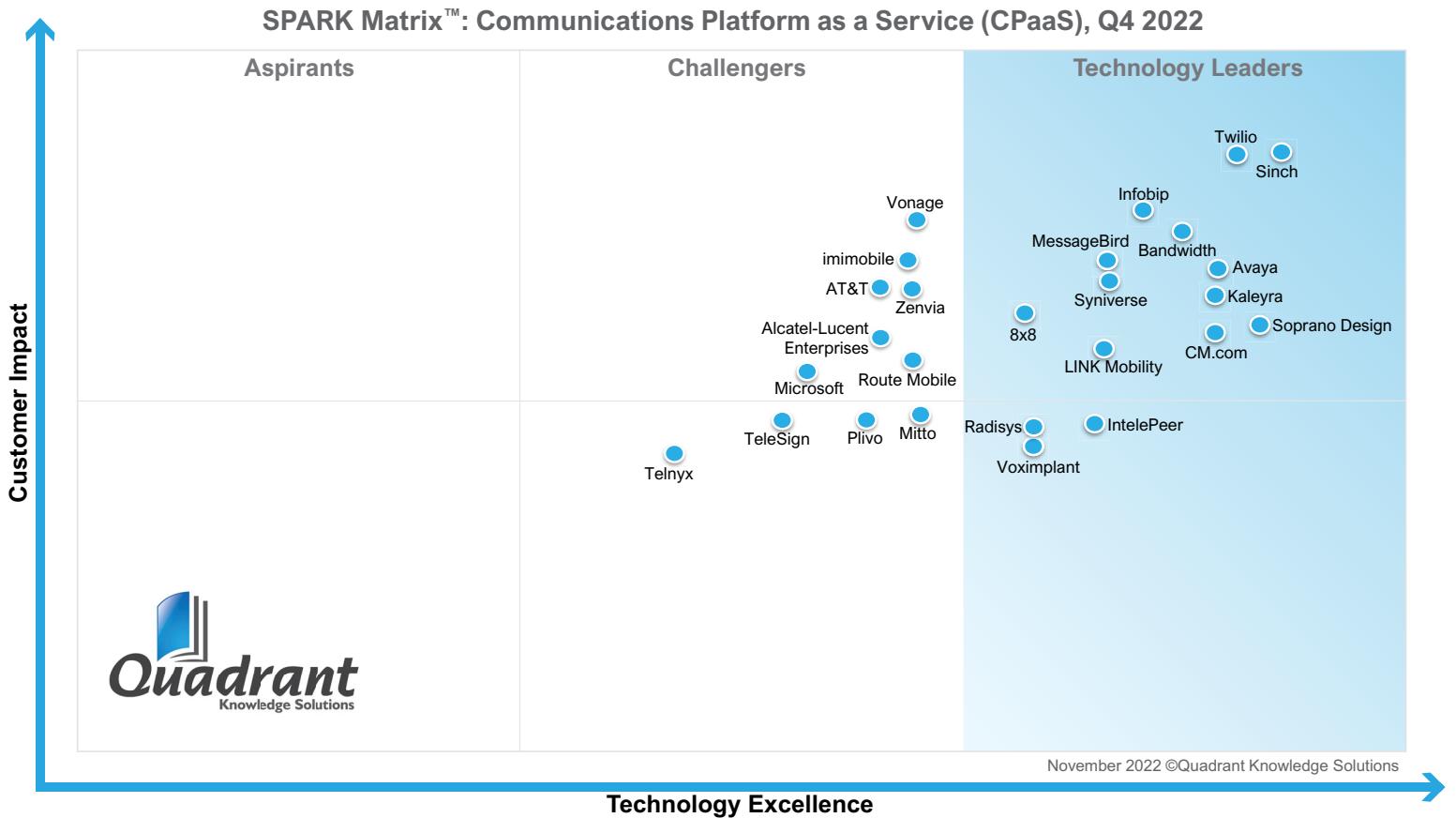
training, and support. Additionally, the company's service partner strategy or system integration capability across geographical regions is also considered.

- **Unique Value Proposition:** The ability to demonstrate unique differentiators driven by ongoing industry trends, industry convergence, technology innovation, and such others.

SPARK Matrix™: Communications Platform as a Service (CPaaS)

Strategic Performance Assessment and Ranking

Figure: 2022 SPARK Matrix™
 (Strategic Performance Assessment and Ranking)
 Communications Platform as a Service (CPaaS) Market



Vendors Profile

Following are the profiles of the leading communications platform as a service (CPaaS) vendors with a global impact. The following vendor profiles are written based on the information provided by the vendor's executives as part of the research process. The Quadrant research team has also referred to the company's website, whitepapers, blogs, and other sources for writing the profile. A detailed vendor profile and analysis of all the vendors, along with various competitive scenarios, are available as custom research deliverable to our clients. Users are advised to directly speak to respective vendors for a more comprehensive understanding of their technology capabilities. Users are advised to consult Quadrant Knowledge Solutions before making any purchase decisions regarding communications platform as a service (CPaaS) solution and vendor selection based on research findings included in this research service.

Kaleyra

URL : www.kaleyra.com

Founded in 1999 and headquartered in Milan, Lombardy, Italy and New York, USA Kaleyra has been bridging gaps between businesses and customers through various communications tools. The company focuses on providing users with a platform that has programmable application programming interfaces (APIs) which make integration easy while helping users reach, manage, and engage their customers on the go, and their enterprise grade security ensures that the user's business data is always under protection. The Kaleyra Communications Platform as a Service (CPaaS) portfolio is offered via the channels of SMS, voice, video, email, MMS, Rich Communication Services (RCS), SOIP, WhatsApp, and Push Notification.

The company offers the SMS feature that includes SMS routing, 2-way messaging, integrations, campaign scheduler, multi-lingual messaging, personalized SMS, and link shortener. Under Voice, Kaleyra offers Voice APIs, call masking, progressive dialer, click to call, intelligent agent routing, call shadowing, and enhanced analytics. Kaleyra's Video feature incapsulates direct video and audio calling, that can be integrated through SDKs, APIs and widgets. Additionally, the company provides the user with an email feature that includes email API, OTP communication fallback where users can couple email with SMS or voice to ensure your message is conveyed to their customers, and high deliverability.

Kaleyra also provides MMS where users can get a fully interactive experience with the ability to interact through media rich messaging. Moreover, the RCS feature assists the user to bring a new level of interactivity to A2P messaging. Kaleyra also offers Push Notification that includes mobile push notification APIs, with traceability, templates management, and analytics. Furthermore, the WhatsApp for Business API feature includes global reach, enhances business branding, and provides messaging in over 40 languages, custom message templates, and customer care conversations.

Analyst Perspective

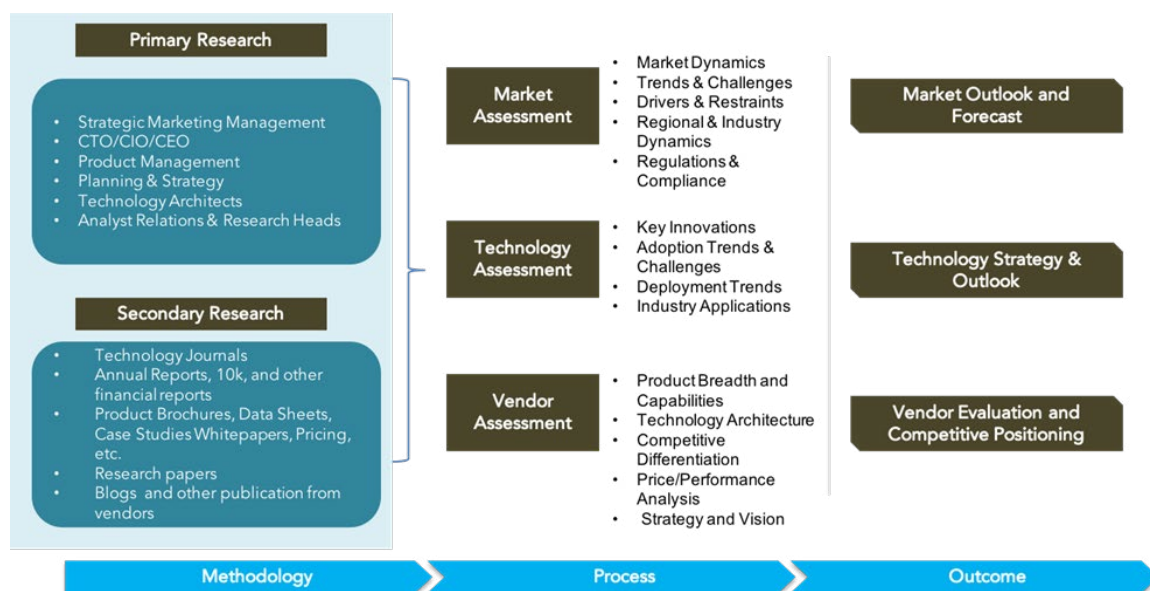
Following is the analysis of Kaleyra's capabilities in the Communications Platform as a Service (CPaaS) market:

- Kaleyra has an application programmable interface (API) based platform that engages your clients with personalized messages, chatbots, programmable voice services, and more. Its proprietary platform and robust APIs manage multi-channel integrated communication services on a global scale, consisting of messaging, rich messaging and instant messaging, push notifications, e-mail, voice services, video calling, and chatbots.
- The company also has a line of tools that assist the users with their CPaaS offerings. These are flow builder, conversations, numbers, chatbots, lookup, verify, verified calls, campaign management, and direct carrier billing. The Flow Builder tool provides the users with the drag and drop widgets to create IVR flows. Further, the company offers the conversations tool for agents to manage conversations with users while receiving and delivering messages across multiple channels. The company also offers access to toll-free, mobile, and local phone numbers. Moreover, chatbots assist the users to automate chatbot customer care interactions with artificial intelligence (AI) based conversations that solve the customers problems. The lookup API assists the users to check number validity, portability, and roaming status. Furthermore, the verification API assists the users to validate the authenticity of customers with one-time passwords delivered across multiple channels. Additionally, they also provide users with the campaign management tool that assists them to manage multi-channel communication from a single place. Lastly, direct carrier billing, also known as direct operator billing, enables the customers to pay for their purchases without a credit card as the charges or the bill is added or adjusted via their mobile phone bill.
- Some of the key differentiators for Kaleyra's CPaaS solution include experience in highly regulated and demanding industries (such as banking and healthcare), enterprise-focused co-creation with customers, providing service in their local language and time zone, and quality of delivery, transparency, and service for time-critical messaging, such as OTPs.

- In terms of geographical presence, Kaleyra has a commanding presence in Asia Pacific, especially in India, in Europe, USA, Middle East, and Africa. Kaleyra holds a strong customer base, including some of the leading brands across industry verticals such as Banking & Financial Services, Transports and Logistics, Travel & Tourism, Healthcare, Education, Entertainment, Media & Telecom, Ecommerce, Retail, and many others.
- Some of the most innovative use cases of Kaleyra include telehealth video capabilities, omnichannel communications flow, streamlining the OTP communications across multiple channels.
- Kaleyra's primary challenges include the growing competition on prices. However, with its comprehensive functional capabilities, high level customer services, integrated partnerships, compelling customer references, and robust customer value proposition, Kaleyra is well-positioned to maintain and grow its market share with continued success amongst mid-market to large enterprise segments.
- In terms of the future roadmap, Kaleyra continues its focus on privacy and personalization. They are also planning to implement chatbots in multiple regional languages, unified billing, and unified analytics platform for all messaging channels.

Research Methodologies

[Quadrant Knowledge Solutions](#) uses a comprehensive approach to conduct global market outlook research for various technologies. Quadrant’s research approach provides our analysts with the most effective framework to identify market and technology trends and helps in formulating meaningful growth strategies for our clients. All the sections of our research report are prepared with a considerable amount of time and thought process before moving on to the next step. Following is a brief description of the major sections of our research methodologies.



Secondary Research

Following are the major sources of information for conducting secondary research:

Quadrant’s Internal Database

Quadrant Knowledge Solutions maintains a proprietary database in several technology marketplaces. This database provides our analyst with an adequate foundation to kick-start the research project. This database includes information from the following sources:

- Annual reports and other financial reports
- Industry participant lists
- Published secondary data on companies and their products

- Database of market sizes and forecast data for different market segments
- Major market and technology trends

Literature Research

Quadrant Knowledge Solutions leverages on several magazine subscriptions and other publications that cover a wide range of subjects related to technology research. We also use the extensive library of directories and Journals on various technology domains. Our analysts use blog posts, whitepapers, case studies, and other literature published by major technology vendors, online experts, and industry news publications.

Inputs from Industry Participants

Quadrant analysts collect relevant documents such as whitepaper, brochures, case studies, price lists, datasheet, and other reports from all major industry participants.

Primary Research

Quadrant analysts use a two-step process for conducting primary research that helps us in capturing meaningful and most accurate market information. Below is the two-step process of our primary research:

Market Estimation: Based on the top-down and bottom-up approach, our analyst analyses all industry participants to estimate their business in the technology market for various market segments. We also seek information and verification of client business performance as part of our primary research interviews or through a detailed market questionnaire. The Quadrant research team conducts a detailed analysis of the comments and inputs provided by the industry participants.

Client Interview: Quadrant analyst team conducts a detailed telephonic interview of all major industry participants to get their perspectives of the current and future market dynamics. Our analyst also gets their first-hand experience with the vendor's product demo to understand their technology capabilities, user experience, product features, and other aspects. Based on the requirements, Quadrant analysts interview with more than one person from each of the market participants to verify the accuracy of the information provided. We typically engage

with client personnel in one of the following functions:

- Strategic Marketing Management
- Product Management
- Product Planning
- Planning & Strategy

Feedback from Channel Partners and End Users

Quadrant research team researches with various sales channel partners, including distributors, system integrators, and consultants to understand the detailed perspective of the market. Our analysts also get feedback from end-users from multiple industries and geographical regions to understand key issues, technology trends, and supplier capabilities in the technology market.

Data Analysis: Market Forecast & Competition Analysis

Quadrant's analysts' team gathers all the necessary information from secondary research and primary research to a computer database. These databases are then analyzed, verified, and cross-tabulated in numerous ways to get the right picture of the overall market and its segments. After analyzing all the market data, industry trends, market trends, technology trends, and key issues, we prepare preliminary market forecasts. This preliminary market forecast is tested against several market scenarios, economic scenario, industry trends, and economic dynamics. Finally, the analyst team arrives at the most accurate forecast scenario for the overall market and its segments.

In addition to market forecasts, our team conducts a detailed review of industry participants to prepare competitive landscape and market positioning analysis for the overall market as well as for various market segments.

SPARK Matrix: Strategic Performance Assessment and Ranking

Quadrant Knowledge Solutions' SPARK Matrix provides a snapshot of the market positioning of the key market participants. SPARK Matrix representation provides a visual representation of market participants and provides strategic insights on how each supplier ranks in comparison to their competitors, concerning various performance parameters based on the category of technology excellence and customer impact.

Final Report Preparation

After finalization of market analysis and forecasts, our analyst prepares necessary graphs, charts, and table to get further insights and preparation of the final research report. Our final research report includes information including market forecast; competitive analysis; major market & technology trends; market drivers; vendor profiles, and such others.

Client Support

For information on hard-copy or electronic reprints, please contact Client Support at rmehar@quadrant-solutions.com | www.quadrant-solutions.com