Hype Cycle for API and Business Ecosystems, 2020

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The highly interconnected nature of the global economy became evident as COVID-19 spread to almost every country within weeks. As application leaders navigate the pandemic and resulting recession, interconnectedness and business and API ecosystems will provide many of the solutions.

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What You Need to Know

Technology continues to underpin, and make possible, a highly interconnected global society. The current pandemic shows in a dramatic way, just how interconnected the world is. But interconnected business ecosystems, underpinned by APIs, provide a way forward by allowing organizations to be adaptive and flexible, and to create new solutions, services and business models to mitigate and thrive in the subsequent economic downturn.

The Hype Cycle

In early December, the first case of COVID-19 was identified in China. Just over three months later, much of the world had closed borders and imposed strict lockdowns to slow the spread of the virus.[1] The virus spread rapidly along highly interconnected global pathways. Application leaders can expect that the pandemic and the subsequent economic downturn will have three phases, each requiring an ecosystem-based response:

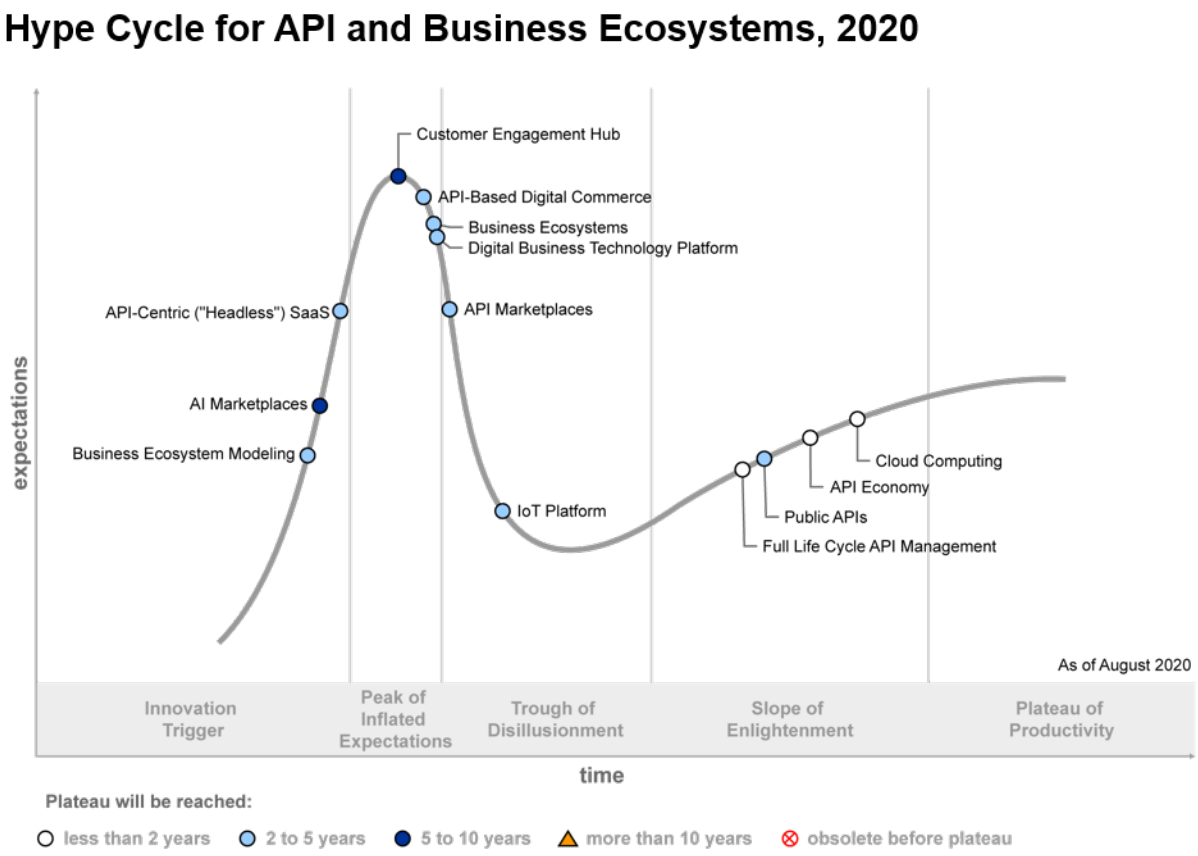
- **Respond —** With a focus on the organization's core, we saw a rapid shift to enable the organizational ecosystem. This included shifting to remote working and teams, using technology to enable business processes, and changing the way the organization worked. This shift was enabled by composable APIs, cloud computing and public APIs, for example, and by an ecosystem perspective of the organization (see "Application Leaders: Master Composable

Enterprise Thinking for Your Post-COVID-19 Reset" and "COVID-19: Lean on Principles and Values in Tough Times").

- **Recover —** In this phase, the focus shifts to improving productivity and performance. In most cases, this will involve innovation with new technology and incorporating complementary business capabilities from the business ecosystem, both enabled through API marketplaces, API-based digital commerce, and public APIs (see "Mediated APIs: An Essential Application Architecture for Digital Business" and "Identifying Digital Opportunities During and After the Pandemic").
- **Renew —** With a recovery in sight, the focus now shifts to creating new services, experiences and business models leveraging the business ecosystem. In this phase, the focus is on, for example, cloud computing, API economy and public APIs (see "Winning in a World of Digital Dragons" and "5 Digital Ecosystem Types That Will Impact Every Enterprise").

While the future is uncertain, one thing is clear — the global ecosystem will continue to provide risk and a lot of opportunity.

Figure 1. Hype Cycle for API and Business Ecosystems, 2020



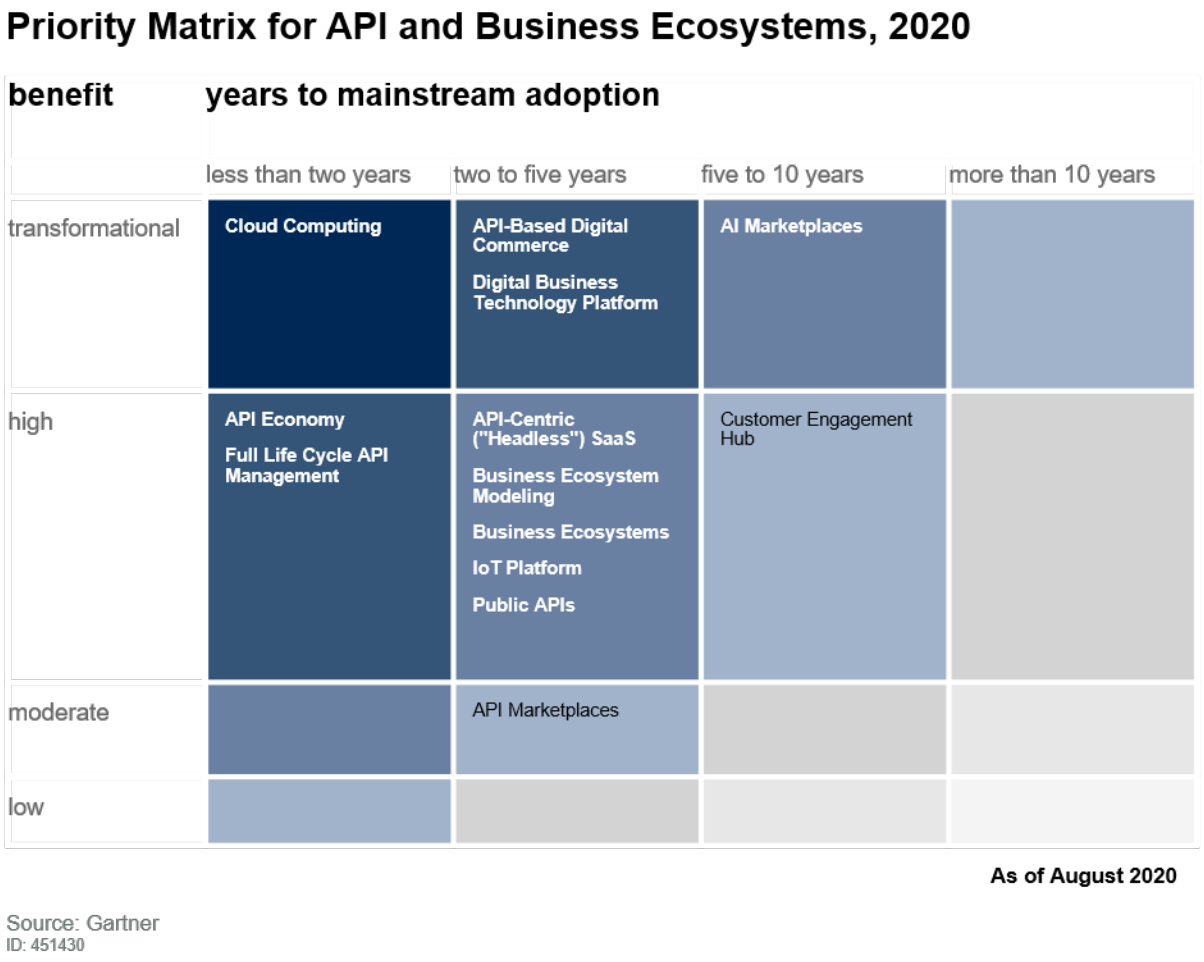
Source: Gartner
ID: 451430

The Priority Matrix

All of the innovation profiles in this year's Hype Cycle, with the exception of API marketplaces, which enable other innovations, have potentially transformation or high business benefit. Application leaders still see some build-out of the "foundational" technologies, such as cloud computing and full life cycle API management, needed. With that in place, application leaders see the technologies that underpin business ecosystems in the next wave, such as API-based digital commerce, the digital business platform, etc. Our expectation is that these technologies will be high priority and deliver value sooner as executives aim to accelerate digital business initiatives.[2]

As noted in The Hype Cycle section, as we move through the respond and recover phases, the emphasis of technology investments will be on allowing the organization to be flexible and adaptive, as well as more responsive to market changes. Looking forward to the renew phase, the emphasis will change to growth and creating new business models.

Figure 2. Priority Matrix for API and Business Ecosystems, 2020



Source: Gartner
ID: 451430

Off the Hype Cycle

To provide readers with clearer, more focused research that supports their analysis and planning, we have included only those innovation profiles most strongly linked to the Hype Cycle and its theme. In many cases, selecting only the most salient profiles has reduced the number of innovation profiles on the Hype Cycle. To that end, we have removed:

- Artificial general intelligence
- Event-driven architecture
- Blockchain in logistics and transportation
- Blockchain in supply chain
- A digital business
- Content collaboration platforms
- ContinuousNext
- Things as customers
- Blockchain business models

On the Rise

Business Ecosystem Modeling

Analysis By: Marcus Blosch

Definition: A business ecosystem model is a dynamic network of entities (people, businesses and things) interacting with each other to create and exchange sustainable value for participants. Business ecosystem modeling is focused on extending the scope of enterprise architecture (EA) to the business ecosystem of customers, suppliers, devices, partners and organizations that make up an organization's ecosystem.

Position and Adoption Speed Justification: Although it is at an early stage, business ecosystem modeling is practical and desirable, and an important input into digital strategy (see "The Gartner Digital Ecosystem Framework: How to Describe Digital Ecosystems in the Digital Age"). There are clear case studies of business ecosystem modeling, so we place business ecosystem modeling at post-trigger 35% on the Hype Cycle. For organizations with experience in business-outcome-driven EA, business ecosystem modeling is a natural step. Modeling business ecosystems is the entry point for the development of the digital twin of the organization. For this reason, we position the time to plateau at two to five years.

User Advice: Business ecosystem modeling extends the scope of EA beyond a purely internal focus into the ecosystem and the relationships, information and systems that connect it. Many EA techniques remain the same. However, the goals and focus now extend beyond the boundaries of

the home organization, looking at how the ecosystem shapes the business model and opens up opportunities for innovation (see "5 Digital Ecosystem Types that Will Impact Every Enterprise").

The organization defines business outcomes that require increased collaboration in the ecosystem (for example, many organizations begin with a focus on closer collaboration with their suppliers). Therefore, enterprise architects can show how EA can support the design and setup of these collaborative relationships with the techniques illustrated here. Many business executives are often unaware that the EA team can play a role in creating these business ecosystems. As such, the EA team and its sponsor (such as the CIO) must take the opportunity to sell the concept whenever possible (see "Better Business By Design With the Business Architecture Landscape").

Explore new vendors that support visual renditions of the ecosystem, and support feeds from existing systems that visualize value exchange within the ecosystem.

Business Impact: Business ecosystems are set to become a major source of opportunity and innovation for all organizations. Organizations that can leverage the customers, information and capabilities available to them in the business ecosystem can create new business models far faster than would be possible with traditional approaches. This will require organizations to develop the skills, models and tools needed to create these business ecosystems.

Benefit Rating: High

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Sample Vendors: Avolution; BiZZdesign; Kumu; Mavim; Tr3Dent

Recommended Reading: "Eight Ways Ecosystems Supercharge Business Models"

"5 Digital Ecosystem Types that Will Impact Every Enterprise"

"Better Business By Design With the Business Architecture Landscape"

"The Gartner Digital Ecosystem Framework: How to Describe Digital Ecosystems in the Digital Age"

AI Marketplaces

Analysis By: Alexander Linden; Eric Hunter

Definition: AI marketplaces bring together buyers and sellers to support the sale of AI algorithms while supporting key infrastructure and transactional capabilities for all parties involved. AI exchanges are very similar to marketplaces, but the focus is on sharing over monetization. Some AI exchanges are used within an organization to support internal sharing of prebuilt algorithms among data scientists.

Position and Adoption Speed Justification: AI marketplaces remain a nascent technology and are only very slowly moving for now. The role of marketplaces and exchanges is to solve the "long tail" of demand by giving data science teams and citizen data scientists access to these special purpose

algorithms and highly domain-specific solutions. This is done to eliminate or reduce the demands to build them from scratch. So far, the amount of traction they receive is very limited. Most likely, this concept is still too alien and maybe even complicated in its current form for most enterprise users. The concept was framed three years ago as “algorithm marketplaces” and still has a diverse mix of offerings including APIs, microservices, platform economy and possibly even blockchain for distributed use and billing. In an extremely heuristic area like AI, the exploratory nature of work can indeed be nicely supported by marketplace and exchange mechanisms, where publishing costs of AI algorithms are literally zero. This low barrier enables even smaller snippets of analytical code and data to be distributed alongside features and functions that can be commercialized. As with any marketplace or exchange, AI marketplaces and exchanges are self-regulated, and given their nascency, AI marketplaces and exchanges will be transforming and might end up as part of larger solutions.

User Advice: Market traction for AI marketplaces and exchanges remains in the early phases. Users can get ahead of the curve and learn to deploy components from major AI marketplaces and exchanges with relatively low efforts. The risks for these marketplaces and exchanges are low, while the opportunity for long-term benefits is high. While adoption is in the early phases, enterprises are encouraged to establish governance and standards for marketplaces and exchanges in their organization. Many companies failed to do this with the emergence of public cloud and they were left creating retroactive policies and remediating unplanned infrastructure, application and data sprawl in the cloud along with the unmanaged spend associated with them.

Business Impact: In the long term, AI marketplaces and exchanges will:

- Make it easier for data scientists and citizen data scientists to find and choose from the huge variety of available algorithms, experiments, datasets and solution accelerators.
- Enable organizations to build advanced analytic solutions more quickly, to solve business problems faster and accelerate time to value.
- Help address the data scientist skills shortages. There even could be potential grounds for hiring new talent.
- Provide a platform for end-user organizations and vendors to commercialize their solutions and datasets.
- Offer the flexibility and extensibility to use the best algorithms for a business’s needs.
- Attract partners and developers to contribute models, to build rich model repositories.
- Enable synergies among the ecosystem’s participants.

Benefit Rating: Transformational

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Sample Vendors: Algorithmia; Amazon SageMaker; Google Cloud Platform; KNIME; Microsoft; RapidMiner

Recommended Reading: "Algorithm Marketplaces Are Bringing the App Economy to Analytics"

"Maximize the Value of Your Data Science Efforts by Empowering Citizen Data Scientists"

API-Centric ("Headless") SaaS

Analysis By: Yefim Natis; Anne Thomas

Definition: API-centric ("headless") SaaS is a cloud application service that is offered for subscription, primarily or entirely, for programmatic access via APIs and/or event channels. Some minimal user experience may be provided as a starter set, but the strategic intent for API-centric SaaS is to be used as an accelerator for application development and integration tools. Although a business capability (SaaS), the API-centric SaaS acts as an accelerating extension feature, for a cloud platform (PaaS).

Position and Adoption Speed Justification: Most SaaS expose some of their functionality via APIs and/or event channels. But for most cases, API access is an additional or optional feature, typically enabling access to some, but not all the application's capabilities for extension and integration. User experience software or services that are provided with the SaaS are intended as the primary mode of user access to the application, although most modern SaaS provide extension and modernization tools for customization of the application experience. Some types of SaaS, however, provide API and/or event access as the primary access modality, and the number of such SaaS is increasing. Mobile back-end services (Progress Kinvey), cloud communication (Twilio), artificial intelligence (IBM Watson) and numerous e-commerce services (Stripe, Snipcart, Scalefast, BigCommerce, and more) are offered as API-centric services today. New integration vendors (such as Clever, Orderful, Plaid, PokitDok) innovate around the assembly capabilities for this emerging library of building blocks. Expect vendors to offer a growing number of headless capabilities in the near future. This trend is in line with the larger trends in application design that is shifting to continuous delivery and assembly of application experiences based on libraries and ecosystems of packaged business capabilities. Next generation serverless platforms such as AWS Lambda are designed for producing exclusively API/event-centric application services. Also, more traditional application platforms, capable of creating integrated user experience and back-end business logic (such as Microsoft Azure App Service), are often used to deliver "headless" application components. The more traditional SaaS offerings will continue to offer elaborate user experience capabilities, but the trend toward increasing innovation and diversification of user experience is forcing them to also upgrade their programmatic access. Gartner expects increasing recognition and adoption of API-centric model for SaaS delivery with the associated increase in hype. Over time, most SaaS will be used, in part or in whole, in API-centric mode, gradually moving to this model as a common mainstream practice.

User Advice: CIOs and application leaders:

- Give preference to SaaS offerings that expose more of their business capabilities as API and/or event channels.

- Plan for gradual shift of development to composition and integration of API-centric packaged business capabilities
- Give preference to application development and integration tools that provide support for assembly of application capabilities utilizing API and event interfaces.
- Ensure clean separation of the back-end business logic and the front-end user experience in all applications, to maximize future benefits of the composable application experiences
- Avoid vendor applications that lock your organization into their user experience technology.
- Give preference to low-code and pro-code PaaS offerings that are well-equipped for access to external API and Event marketplaces.

Business Impact: API-centric SaaS promote the model of composable enterprise and with that — the agility, cost-efficiency and safety of application development and business innovation.

Benefit Rating: High

Market Penetration: 1% to 5% of target audience

Maturity: Emerging

Sample Vendors: AYLIEN; commercetools; Contentful; Elastic Path; Impala; Strapi; Stripe; Twilio

Recommended Reading: "Top 10 Trends in PaaS and Platform Innovation, 2020"

"2020 Strategic Roadmap for the Future of Applications"

At the Peak

Customer Engagement Hub

Analysis By: Jim Davies

Definition: A customer engagement hub (CEH) is an architectural framework that ties multiple systems together to engage customers optimally. It enables proactive and reactive communication, as well as personalized, contextual customer engagement, using humans, artificial agents or sensors, across all interaction channels. It can also reach and connect all departments to enable, for example, synchronization of marketing, sales and customer service processes, as well as analysis of back-end and Internet of Things information and event streams.

Position and Adoption Speed Justification: A CEH is a core component of a digital business technology platform. By 2022, 60% of large organizations will extend their customer experience (CX) technology and process goals by tying together disparate systems in a holistic approach focused on the needs of customers. Additionally, departments such as marketing, digital commerce and sales will join with IT leaders to develop plans for CEHs. Even so, by 2022, only 40% of organizations will select the correct technologies to make a CEH work, and only just over 10% of

CEH architectures will include real-time event streaming, streaming analytics and continuous intelligence. The need to support the "anytime, anywhere" customer (on mobile devices, smart devices and social networks), together with the need for heightened business awareness, should make remedying these shortcomings a priority for IT leaders. This proliferation of devices, along with the vast permutations of digital touchpoints and interaction modalities, requires application leaders to transcend omnichannel and embrace a "multiexperience" UX concept to achieve greater CX outcomes in a world driven by digital experiences.

User Advice: Application leaders responsible for the CX (or for integration) and assisting chief marketing officers, digital commerce leaders and customer care directors should:

- Approach the idea of the CEH as a business strategy linked to a technology framework, rather than as a software product to be bought from the market.
- Test the fitness of CRM/CX-oriented applications to meet the needs of engaged customers.
- Examine vendors' roadmaps and readiness — as well as of their own organization — to evolve customer engagement processes and technologies.
- Identify where to apply real-time continuous intelligence in their CEH by working with marketing, sales and service leaders. The objective is to optimize real-time, cross-process, cross-business-domain, context-aware decisions and achieve a positive ROI by closing key customer journey gaps.

Business Impact: Operational and technology silos will remain a norm that IT leaders must confront in large enterprises. In place of a "rip and replace" struggle, a focus on the emerging CEH will foster personalized and consistent engagement with customers, while gaining agreement from both IT and business functions.

The CEH will support a transition from transactional economics to a more comprehensive view of customer relationship economics. The topic of customer engagement and care will become a more systemic theme across enterprises of many types — in sectors ranging from retail to healthcare. As CIOs strive to fulfill their new mandate to deliver better business outcomes for their enterprises, a CEH will be required to support their efforts.

It is not yet clear how this requirement will impact the software market, but software vendors that neglect the shift will lose market share. At present, most components of a CEH are not bundled as a suite. There is a 40% likelihood that the CEH will remain a system of systems and never evolve into a product. As organizations plan to engage customers with a greater array of digital touchpoints and interaction modalities, multiexperience will become an increasingly important strategy aligned with CEH.

Vendors tend to focus on what can be mass-produced and easily sold, rather than on products that can transform a business but require complex buying centers and change management. This limits the feasibility of a true CEH. However, the issue of siloed customer engagement efforts and processes is gaining the attention of business and IT leaders, as well as software vendors. We expect that large CRM software vendors will introduce new capabilities to bridge capability gaps by

means of acquisitions, partnerships with system integrators, and their own research and development efforts.

There is a chance, therefore, that, in the next three years, one large CRM software vendor will offer a complete CEH solution. Such a solution could emerge to target the large-enterprise sector with a strong focus on hybrid architecture and integration capabilities. It would be the result of advances in service-enabled architectures, which tie together smaller suites. It could also emerge to target the midsize-enterprise market through a cloud-only approach.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Pegasystems; Salesforce; Usermind; ZineOne

Recommended Reading: "Prepare for the Impact of a Consolidating Customer Service Technologies Marketplace"

"The Elusive CRM Magic Quadrant"

"Make Your Customer Engagement Hub Real Time With Continuous Intelligence"

"Technologies for CRM and the Emerging Customer Engagement Hub"

"Ten Steps for Planning Your Customer Engagement Hub"

"How to Build a Digital Business Technology Platform"

API-Based Digital Commerce

Analysis By: Mike Lowndes

Definition: API-based or, as more commonly used in the market, "headless" digital commerce is the provision of digital commerce functionality via APIs, to decouple presentation from business logic and to integrate commerce capabilities within any context where selling is required.

Position and Adoption Speed Justification: API-based digital commerce is being rapidly adopted by midsize to large digitally mature organizations. Such adoption is driven by:

- Recognition of the quality of digital experience as a key differentiator across multiple touchpoints (e.g., native mobile apps, marketplaces, social platforms, in-store experiences, IoT and wearables, smart homes and vehicles).
- Emergence of the progressive web application (PWA) as the dominant "next generation" of client-side presentation.
- Emergence of digital experience platforms (DXPs) in supporting "experience-driven commerce."

- Commerce as an enabling part of a wider digital business technology platform.
- Pace of innovation in digital commerce requiring more flexible, modular architectures.
- Expense and complexity of some leading "monolithic" commerce platforms, when a subset of more agile capability is desired.

The proliferation of touchpoints requires a multiexperience approach to applications. This requires the decoupling of the presentation from logic and data that an API-based approach offers. Some vendors (e.g., commercetools and Elastic Path) provide pure-play API-based commerce platforms, while others (e.g., Spryker) retain a native storefront but also provide full APIs for headless operation known as *head optional* or *hybrid headless.*

Most vendors' own native commerce platform storefronts are now shifting away from server-side "themes" or template engines toward being SPA or PWA. In this case, the platform customer may not use the API (or even know of its existence) but it nevertheless powers the native storefront. Interest in this approach is just over the Peak of Inflated Expectations as some of the complexity of this approach is being realized.

Commerce experiences built on API-based platforms can be more complex to manage than single-vendor "full stack" solutions. There is limited customer uptake in the SMB and lower midmarket commoditized digital commerce space. A key challenge when using commerce platforms completely "headless" is the integration with a fully decoupled storefront or other presentation layer. This adds complexity to implementations and can impact business user interfaces and usability of the overall system. Headless vendors are addressing this by providing reference storefronts via popular JavaScript frameworks, and ensuring business users retain control over the storefront.

User Advice: API-based commerce may fit your requirements if you:

- Want to retain granular control over multiexperiences, including deploying a SPA/PWA presentation tier.
- Already have or are looking to implement a DXP to provide a more consistent customer experience across commerce, brand and other digital properties.
- Have a large inflexible legacy monolithic, full-stack commerce application that cannot be replaced in a single step, and desire to migrate to a modular architecture.
- Are looking to support multiple digital and physical channels equally from the same business logic, and support cross-channel continuity of experience.
- Have a unique commerce business model that full-stack vendors cannot support without considerable customization.
- Need commerce integrations to support wider digital business strategies.

For more on the considerations around implementing an API-based platform, see "Innovation Insight for API-Based Digital Commerce."

Business Impact: API-based commerce is featured in the "2019 Strategic Roadmap for Digital Commerce," and will be critical for the future of "commerce to you (C2U)" (see "Industry Vision:

Commerce to You"), whereby commerce functions occur in the customer's context wherever and using whatever channels are most convenient to them. Commerce journeys will become multiexperience and an API-based approach is a fundamental enabler for such experiences.

API-based commerce says nothing about the architecture underlying the API(s). Most digital commerce platform vendors are now providing robust APIs for "headless" use cases but are not all API-based. The API is often a "bolt on" to an existing traditional monolithic architecture. An API-based platform starts with the API as the primary interface and the commerce application is built to support it. These platforms can be made available as a set of discrete capabilities that can be utilized independently. As such, these capabilities may no longer require a "whole platform" purchase or subscription. Some vendors approach this modular set of packaged business capabilities, while other vendors remain platform-focused. API-based commerce is therefore a step toward and an enabler of *composable commerce.*

Benefit Rating: Transformational

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: commercetools; Digital Goodie; Elastic Path; Skava; Spryker; Storm Commerce

Recommended Reading: "Apply the Principles Behind the Future of Applications to Digital Commerce"

"Magic Quadrant for Digital Commerce"

"Align Your Approach to the Emerging Digital Commerce Platform Landscape to Make Buy or Buy-and-Build Decisions"

"Harness the Core Capabilities of a Digital Commerce Platform"

"Innovation Insight for API-Based Digital Commerce"

"Industry Vision: Commerce to You"

Business Ecosystems

Analysis By: Marcus Blosch

Definition: A business ecosystem is a dynamic network of entities (people, businesses and things) interacting with each other to create and exchange sustainable value for participants. A business ecosystem allows participants to work cooperatively and competitively to support new products, satisfy customer needs and innovate (see "5 Digital Ecosystem Types That Will Impact Every Enterprise").

Position and Adoption Speed Justification: The shift toward business ecosystems continues to be driven by digital business with leading organizations looking to the business ecosystem as a

source of innovation and business opportunity. The drive to business ecosystems continues, often largely unnoticed or taken for granted — the increasing importance of global supply chains and customers, the rise in platform-based business models, the driving technologies of cloud and API marketplaces (see "Top 10 Strategic Technology Trends for 2020: A Gartner Trend Insight Report"). And now, a global pandemic making use of the highly interconnected nature of modern civilization.

CEOs and business leaders see the business ecosystem as a way to create innovative new business models by focusing on the customer and developing platform-based business models. Many of the most successful business models are based on the ecosystem, from Alibaba Group to Uber, and even a traditional organization such as GE is moving to develop its digital strategy based on the business ecosystem. Looking ahead there are opportunities for some in decentralized business ecoystems (see "Predicts 2020: Blockchain Business").

Many "digital dragons," companies such as Apple, Amazon, Tencent, Alibaba and others continue to build powerful ecosystem-based business models (see "Winning in a World of Digital Dragons"). These business models are based on highly adaptive, customer-centric platform-based ecosystems. No doubt, as the world returns to growth, many organizations will look to replicate the model and success of these digital dragons.

User Advice: The global pandemic will lead to a recession. At this stage it is hard to predict what form that will take, however organizations will be looking for new opportunities to cut costs, increase productivity and drive growth through new business models. Business ecosystems offer a perspective on how that can be done:

- Consider ecosystem-based business models — learn about digital dragons, and how they have leveraged the business ecosystem and platform-based architectures (see "Winning in a World of Digital Dragons").
- Model your business ecosystem — gain a better understanding of the dynamics of your business ecosystem, its risks and its opportunities (see "Eight Ways Ecosystems Supercharge Business Models").
- Look for ways that technology can innovate your business model to leverage business ecosystems (see "Top 10 Strategic Technology Trends for 2020: A Gartner Trend Insight Report").

Business Impact: Business ecosystems are set to become a major source of opportunity and innovation for all organizations. Those organizations that can leverage the customers, information and capabilities available to them in the business ecosystem can create new business models far faster than would be possible with traditional approaches. The use of information and analysis to provide insight and create entirely new services will depend on organizations leveraging the business ecosystem.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Recommended Reading: "Eight Ways Ecosystems Supercharge Business Models"

"5 Digital Ecosystem Types That Will Impact Every Enterprise"

"Winning in a World of Digital Dragons"

"Top 10 Strategic Technology Trends for 2020: A Gartner Trend Insight Report"

Digital Business Technology Platform

Analysis By: Bill Swanton

Definition: A digital business technology platform is the combination of technologies that enables an organization to deliver digital business capabilities. It enables existing platforms for IT, customer engagement, data and analytics, ecosystem partners and the Internet of Things to sense business events, decide what to do, and implement a business response that creates value for those involved. Platforms share assets such as data, algorithms and transactions with business ecosystems to match, create and exchange services.

Position and Adoption Speed Justification: Companies use a variety of relatively new-to-market integration, API mediation, platform as a service (PaaS) and other cloud technologies to implement digital business technology platforms today (see "Survey Analysis: Building a Digital Business Technology Platform Requires New Technologies and Methods"). There is currently no specific market or vendor for an entire platform — companies need to assemble components and tools from generally available cloud frameworks and a cluttered market of Internet of Things (IoT) vendors. Some service providers are marketing their platforms, which are reusable assets inevitably sold in conjunction with significant services. While digital native organizations are adept at these technologies, traditional companies often struggle with new architectural approaches, such as microservices architecture, event-driven architecture, and programmable infrastructure that may be required for large-scale implementations. Complicating matters is the rapid change in these technology markets, which may cause ongoing refactoring of the platform.

Despite these challenges, we believe digital business technology platforms are moving rapidly to the Plateau of Productivity in two to five years because:

- Organizations are being driven to digital business to mitigate disruption of their core businesses and the distancing rules of COVID-19.
- Digital business technology platforms enable platform business models, which can create rapid market growth and potentially dominate industries (see "Winning in the Platform Game, Part 1: Understand the Game and Determine Your Role").
- Regulatory requirements in some regions are requiring organizations to share business services through digital platforms. For example, PSD2 requires banks in the European Union to provide mandatory access to customer accounts for regulated third parties.

User Advice:

- Work with business leaders to identify likely use cases (sense, decide, act) needed to implement your digital business based on the strategy (see “Use Gartner’s Digital Business Layers to Communicate Your Digital Intent”).
- Build out the digital business technology platform as needed to implement the initial digital use cases. The build out will take years and may require refactoring as the business scales and the technologies used mature. Given the limits most companies face on investment, the initial investment must be relatively small, with costs scaling with revenue, which precludes major upfront infrastructure and license costs (see “How to Build a Digital Business Technology Platform”). Treat the digital business technology platform as a continuously evolving product guided through its long life cycle by a product manager.
- Work with technology and service providers to determine what digital technologies are needed to implement the use cases in a way that will scale to the level the strategy envisions. Most organizations do not yet have the skills to implement this technology so skills transfer needs to be a part of any service contract.
- Understand what APIs you might need to consume or provide to interact with customers and/or ecosystem partners inside or outside of the enterprise.
- Keep existing platforms loosely coupled by using techniques such as API mediation so you can modernize those platforms without disrupting your digital business build-out. Managing an inherently hybrid IT infrastructure for all these parts will be a major challenge.

Business Impact: DBTP enables an enterprise to become a digital business and deliver digital products and services to customers. Without it, it will be much harder for an enterprise to gain the business benefits of digital business. They empower people, businesses and things to give, take or multiply value creation for the enterprise. Digital platforms will make it easier for new market entrants, startups, competitors and, eventually, smart machines to create and pursue new business opportunities. Traditional businesses will have to build a digital business technology platform to compete and/or participate in these new markets. DBTPs provide an easier “funding/investment” target for business leaders to incorporate.

Benefit Rating: Transformational

Market Penetration: 20% to 50% of target audience

Maturity: Adolescent

Sample Vendors: Amazon Web Services; Google Cloud Platform; Microsoft Azure; NXN; Red Hat OpenShift xPaaS; VANTIQ; VMware

Recommended Reading: “How to Build a Digital Business Technology Platform”

“Use Gartner’s Digital Business Layers to Communicate Your Digital Intent”

“Survey Analysis: Building a Digital Business Technology Platform Requires New Technologies and Methods”

“How to Govern a Digital Business Technology Platform”

Sliding Into the Trough

API Marketplaces

Analysis By: Mark O'Neill

Definition: An API marketplace is a platform for API providers to publish and market APIs. Consumers, mainly developers, use API marketplaces to discover APIs and (in some cases) purchase access to APIs. API marketplaces differ from API portals since they are more likely to include APIs from multiple providers, and may showcase applications (e.g., mobile apps) using the APIs. Although public API marketplaces are more well-known, a growing number of organizations, particularly banks, now have deployed internal or private API marketplaces.

Position and Adoption Speed Justification: Public API marketplaces have not gained significant industry traction due to many factors including lack of industry-vertical API standards, lack of clearly articulated business models from API marketplace providers, and lack of dedicated marketing which impacts on developer awareness. Because of this, API providers have reported more success in marketing their APIs directly, e.g., via Google Ads search advertising, compared to registering their APIs in third-party API marketplaces. However, a number of API marketplaces have been developed by API providers themselves, and these demonstrate initial success. For example, Twilio provides a marketplace for partners to sell API access in the form of complementary add-ons to Twilio's core telephony offering, such as AI-based sentiment analysis APIs. ADP and Temenos also provide similar add-on marketplaces, showcasing add-ons which use their APIs. These API marketplaces add to the vendor's overall customer offerings, leveraging partners by marketplaces. Governments, including those of Singapore and Canada, have also begun to deliver API marketplaces that combine APIs from across their governments, both for internal and external consumption. Internal API marketplaces have traditionally found usage in larger organizations, mainly as enterprisewide API catalogs.

User Advice: Following are some recommendations for:

API providers: Recognize that your choice of API marketplace(s) in which to offer APIs will depend on the industry focus and profiles of its developers/users. Be sure to manage expectations. Gartner clients report that general, all-encompassing API marketplaces, which list APIs that can also be found through other channels (like web search), have brought API providers few new users. API marketplaces that include an integration capability, or target a particular vertical or multiparty community or ecosystem, have brought more success. But when considering commercial API marketplaces in which to register your APIs, examine billing terms carefully to understand what proportion goes to the API marketplace provider. Find out if a revenue-sharing model is available. Because your APIs may be side-by-side with competing ones, think carefully about differentiation.

If you plan to build your own API marketplace, ensure that you establish a commercial model upfront (e.g., through registration fees charged to API and app providers and/or revenue share provided to API and app providers) as well as a clear governance process for onboarding third-party APIs or apps. Understand that although it is developers who will leverage APIs through your marketplace, you must also consider incentives to ensure that businesses or end-users engage. In

addition, consider delivering an internal API marketplace first, to promote internal discovery and sharing of APIs. Vendors such as Constellant, RapidAPI, and Pronovix provide API marketplace capability based on API portals. General-purpose API management products can also be used as the basis of an API marketplace.

API consumers: As API marketplaces gradually develop, ensure that you use APIs from trusted marketplaces and trusted API providers, and that you examine usage agreements, licensing and billing terms carefully. If an API is available in an API marketplace, also investigate if the API is available through a direct business relationship with the API provider itself, possibly under better conditions.

Business Impact: For API providers, the presence of their APIs in API marketplaces can increase developer visibility and consumer mind share, which may lead to more API usage, and business scale benefits. For public API marketplaces, these consumers may include not only individual independent developers, but also new business partners. The API marketplace provider may take a share of the revenue for API access purchased through the marketplace, but this can be considered a cost of sale by the API provider.

For prospective API marketplace providers, there is an opportunity to create marketplaces for particular industries, like BBVA's API marketplace for the financial services sector. The marketplace itself can be monetized, through a registration fee or revenue sharing model. Partner solutions in the marketplace provide capabilities that are additive to the API provider's own APIs.

Internal API marketplaces also promote API discovery, sharing, and reuse.

Benefit Rating: Moderate

Market Penetration: 5% to 20% of target audience

Maturity: Emerging

Sample Vendors: Constellant; Lucybot (AnyAPI); Pronovix; RapidAPI

Recommended Reading: "How to Derive Value From APIs Using API Marketplaces"

"Choose the Right API Monetization and Pricing Model"

"To Create a Successful API-Based Ecosystem, Look Before You Leap"

IoT Platform

Analysis By: Alfonso Velosa; Eric Goodness; Scot Kim

Definition: An Internet of Things (IoT) platform is a software that enables development, deployment and management of business solutions that connect to and capture data from IoT endpoints to improve operations such as monitoring remote assets or optimizing maintenance. Capabilities include:

- Device management

- Integration
- Data management
- Analytics
- Application enablement and management
- Security

It may be delivered as edge or on-premises software, or cloud IoT platform as a service, or a hybrid combination.

Position and Adoption Speed Justification: Enterprises continue adding IoT capabilities to assets and products, seeking benefits such as cost optimization, process optimization, better interactions with customers, and new opportunities such as product as a service. The sophistication, scale and business value of these interactions call for specialized technology resources, most often implemented as an IoT platform. While enterprises across all verticals are deploying IoT, the strongest impetus comes from asset intensive industries such as manufacturing or oil and gas.

Continued integration, culture, and security challenges, and schedule delays for IoT projects, as well as excess vendor hype has moved IoT platforms closer to the Trough of Disillusionment. 2020 sees many vendors struggling to maintain business and technology viability as end users delay deployments due to economic uncertainty and employee safety concerns. Further, most large vendors have yet to develop a clear IoT platform strategy that will drive scale. Yet there is increased vendor and enterprise focus on application enablement and solutions that deliver clear business results and shorter project payback. These trends lead us to shorten the time to plateau down to two to five years. Note that the speed of adoption continues to across the consumer, commercial and industrial verticals.

User Advice: CIOs should factor in the following issues:

- Deployments: Start with smaller IoT projects, identify IoT platform technology strengths and weaknesses, acquire implementation lessons, and verify alignment to business KPIs and project payback requirements.
- Architecture: IoT platform strategies should be aligned to either external business foci, such as for an OEM's connected product, or internal foci, such as for an owner/operator of assets. Identify the range of IoT projects for your enterprise, and segment them by their focus, complexity and business objectives. Use these insights to establish a distributed deployment and a platform of platforms architecture for using multiple IoT platforms for different enterprise needs. Be aware that while this drives scalability and mitigates your vendor risk it increases your complexity and cost risk.
- Skills: IoT projects using IoT platforms require new skills. Improve team's capabilities such as integration, based on a skills gap analysis. Develop a plan for how IT personnel can complement the IoT platform skills within the business units, and drive IT-OT alignment. Plan to leverage a service partner to support critical initiatives.

- Customization: While no IoT platform will work straight out of the box, push your technology vendors to deliver vertical market modules and solutions optimized for your vertical.
- Vendor selection: Prioritize vendors you already work with, for their IoT platform. Evaluate candidate vendors on their fit-to-your-business objectives and technology. Expect roadmaps to continue to evolve quickly in the fast-changing IoT market. Key criteria center on the vendor's ability to scale from proofs of concept to operational-scale deployments, vertical market expertise, partner ecosystem, long term support capabilities, and references that show business results.

Business Impact: There is a significant opportunity for enterprise stakeholders to leverage IoT-enabled assets and business processes to achieve greater value. This includes making better decisions from the data and information generated by connected products, people and equipment. This improves decision making and provides better decisions about assets distributed across the enterprise and its external stakeholders. Unfortunately, this data has been largely locked in the assets — mostly due to lack of connectivity, but also because of lack of systems and governance processes to obtain and share this data systematically.

IoT platforms act as the intermediary between the "thing" and the business processes and applications. Therefore, they facilitate the introduction of a new potentially transformative wave of digital business innovation and digital transformation to enterprises. IoT platforms provide the middleware foundation to implement asset centered business solutions — and are part of a broader business process transformation.

Benefit Rating: High

Market Penetration: 5% to 20% of target audience

Maturity: Adolescent

Sample Vendors: Alibaba Cloud; AWS; Eurotech; Flutura; Kaa; Litmus Automation; Microsoft Azure; PTC (ThingWorx); ROOTCLOUD; Samsung SDS

Recommended Reading: "Magic Quadrant for Industrial IoT Platforms"

"Critical Capabilities for Industrial IoT Platforms"

"Survey Analysis: As More Companies Deploy IoT, They Increasingly Focus on Best Practices and Payback"

"Competitive Landscape: IoT Platform Vendors"

Climbing the Slope

Full Life Cycle API Management

Analysis By: Paolo Malinverno

Definition: Full life cycle API management involves the planning, design, implementation, testing, publication, operation, consumption, versioning, and retirement of APIs. It includes a developer's portal to target, market to, and govern an ecosystem of developers producing and consuming APIs, as well as API gateways that enforce policies around operational management, security, format translation and analytics for the collection of business and technical metrics associated with the usage of the API.

Position and Adoption Speed Justification: The requirement for API management continues to be driven by the ever growing usage of APIs in platforms enabling digital strategies, supporting new user experiences and packaging integration flows. All of these APIs must be governed, secured and monitored. However, full life cycle API management has now silently gone past the Trough of Disillusionment. This is because there is now less hype around API management; its fundamental role has been generally accepted. Companies generally know they need to run a well-governed API program and mature full life cycle API management to successfully implement a platform and develop an ecosystem, which consumes APIs at scale. The journey up to the Plateau of Productivity has been and will be slow: many companies still make the mistake of thinking that just putting in place API management will automatically create an ecosystem, secure their APIs, or generate new revenue. Most companies realize that API platforms serve digital transformations, but will take time to realize, which APIs are right for their business.

User Advice: For CIOs, API product managers, chief digital officers and application managers in charge of API programs:

- Use full life cycle API management to enable and protect all APIs (not just externally facing APIs), leveraging analytics to assess the value of and improve APIs, and a developer portal to make it easy for developers to use existing APIs.
- Treat APIs as products, and select offerings that have the ability to address needs well beyond the first year. Full life cycle API management is the functionality organizations need to run successful API programs, get an API platform ready for a digital transformation, and build an ecosystem of partners.
- Choose a functionally broad API management solution that supports modern API trends including microservices and multicloud, preferably from a single vendor. Ensure that the entire API life cycle is covered. API management has evolved from being focused only on running APIs to taking a broader view of the API and its usage across the full API life cycle.
- Create and/or support the role of API product manager to govern API life cycles. Avoid an "if we build it, they will come" mentality. Following API deployment, full life cycle API management provides metrics on API usage, which you should link to KPIs (see "How to Use KPIs to Measure the Business Value of APIs"). These metrics can be used to feed into decisions about new capabilities that may be provided by updated versions of the API.
- Understand that any digital strategy and platform/ecosystem strategy needs to be enabled by an API-rich platform, and supported by a well-governed API program.

Business Impact: As the API economy weaves itself into digital transformations, the need to start a platform business on which to build an ecosystem of partners has stolen the limelight. The real

business impact of full life cycle API management is governing an API program that enables and supports the transformation. It is now clear to most CIOs that platform and ecosystem are two sides of the same coin, and that APIs form the touchpoints between them. Business use of APIs, the role of APIs as enablers of digital transformations, and APIs' ability to open up new business channels, are now matters of clear interest to CIOs, and even to some CEOs. Obviously, running an API program is not the only way you can run a digital transformation, or build a platform and an ecosystem, but publishing APIs is certainly a great start. For some savvy companies, the idea of the platform comes first, and they then start incrementally delivering APIs as experiments to explore how the platform will work, and enable new user experiences in co-creation mode with partners in the ecosystem.

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Sample Vendors: Axway; Google (Apigee); IBM; Salesforce (MuleSoft); Software AG

Recommended Reading: "Magic Quadrant for Full Life Cycle API Management"

"Critical Capabilities for Full Life Cycle API Management"

"Ensure Your API Management Solution Supports Modern API Trends Such as Microservices and Multicloud"

"The Evolving Role of the API Product Manager in Digital Product Management"

"How to Use KPIs to Measure the Business Value of APIs"

Public APIs

Analysis By: Mark O'Neill

Definition: A public API is an application programming interface (API) that is published for consumption by third-party users and applications. Public APIs typically take the form of lightweight REST APIs, suited to mobile and web consumption. API providers often enable consumers (developers) to use a self-service portal to register and gain access to public APIs. In some cases, a public API may be monetized, for example through subscription or pay-per-use.

Position and Adoption Speed Justification: Many public APIs are available, in developer portals and in API marketplaces, delivering an extremely wide variety of capabilities, including address verification (e.g., Lob), shipping (e.g., Pitney Bowes Shipping API), mapping (e.g., Google Maps API) and AI (e.g., AYLIEN Text Analysis API). Public APIs have been key to the success of many software-as-a-service (SaaS) providers as an important way for customers to use their offerings, and for the SaaS providers to establish a platform business model. "API-first" vendors, such as Duffel or Impala in travel, Plaid (acquired by Visa) or Salt Edge in banking, Twilio (communication), and Stripe (payments), have public APIs are their primary products.

Less successfully, many established businesses have built public APIs with the perspective of "if we build it, they will come." These public APIs without a clear business model have seen poor uptake. Consequently, some high-profile organizations abandoned their public APIs to concentrate instead of more successful private/B2B APIs within an existing partner ecosystem. This development, combined with several API security incidents, has led many organizations, including some banks, to restart their public API initiatives with more of a focus on fewer APIs with a clearer business model, outcome-driven, with more consciousness of risk.

User Advice: To deploy public APIs:

- Treat public APIs as products. Create the role of API product manager to understand user requirements and communicate a clear roadmap. Ensure that the product manager engages consumers (customers) of the API.
- Focus on developer experience (DX) to ensure that your APIs are clearly documented in a developers' portal, with consistent design conforming to an API style guide, so that developers can quickly use them in applications.
- Establish a strategic marketing mindset for your public APIs. Carefully consider which developers and, by extension, which businesses and which end users will use your APIs. Understand that public APIs are often an entry point into a larger product or service. Match that to your digital strategy (or your post-COVID recover/renew strategy).
- Do not take it for granted that a public API will be used. Put API product management in place to ensure you deliver API functionality that your consumers actually need, as well as ensuring usability of your API with good design and rich documentation in a self-service developer portal. Once you have published a public API, establishing and maintaining traction requires cultivating a community of developers and tapping into nearby communities.
- Ensure that an API has an effective security strategy. This can be a combination of application delivery controller infrastructure, web application firewalls and dedicated API gateways. Bot mitigation is also key, since public APIs must be protected from misuse that can lead to data loss, fraud and skewed analytics.
- Use full life cycle API management to manage the API through the entire process of planning, design, runtime deployment and versioning, through to retirement.

To consume public APIs from third-parties:

- Ensure that you understand the business model and pricing of the service. Public APIs may be directly monetized with consumption-based pricing or tiered usage plans or may have other business models. Establish upfront if API pricing will be predictable (e.g., a fixed subscription cost per month) or unpredictable (e.g., directly based on API usage). Use this information to budget the cost of using the public API.
- Ensure that your organization is protected from security and availability issues related to consumption of third-party public APIs. Where data is being sent to public APIs, ensure that privacy controls are in place.

- Carefully examine the versioning policy of the API provider, to protect yourself from unexpected discontinuation of the API version which you are using. Examine the API usage agreements provided by public APIs used by your organization to find out the providers API versioning, deprecation, and retirement policy.

Business Impact: Delivery of public APIs give organizations an opportunity to create new revenue, open up a new business channel, add customer reach, enhance the customer experience, increase product "stickiness," and embrace new ecosystems. However, a clear upfront business model is required — otherwise, a public API risk can never be used. From the consumer side, the use of public APIs speeds up the software development life cycle by using prebuilt third-party services. This allows applications to be brought to market faster. But when consuming public web APIs, ensure the provider has a valid business model for their API, so that you reduce the risk of the API being discontinued.

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Sample Vendors: AYLIEN; Duffel; Dun & Bradstreet; Google Maps; Impala; Lob; Pitney Bowes; Stripe; Twilio; Visa (Plaid)

Recommended Reading: "The Evolving Role of the API Product Manager in Digital Product Management"

"Choose the Right API Monetization and Pricing Model"

"Cost-Effectively Scale Your Digital Business by Negotiating API Pricing in Software and SaaS Contracts"

"Managing the Consumption of Third-Party APIs"

"API Security: What You Need to Do to Protect Your APIs"

API Economy

Analysis By: Paolo Malinverno

Definition: The API economy is a set of business models and channels. It is based on the secure access of functionality and exchange of data to an ecosystem of developers, and the users of the app constructs those developers build. It is delivered through APIs to a developers' community, either within a company or with business partners and customers.

Position and Adoption Speed Justification: APIs have always been everywhere, but in the past they were mostly of interest to developers. REST APIs and the establishment of developer portals and API marketplaces changed that. Now, the basic principle of the API economy is that APIs can be new products that a company offers. They can open new business channels, advance a digital

transformations, entice an ecosystem of partners and external developers, run a revenue-generating process faster or sell more of the company's traditional products.

The API economy has established itself as a precursor of digital transformations and the primary way to grow an ecosystem. However, The term "API economy" is seldom used today, despite its principles still holding firm in all the strategic endeavors listed in the previous paragraph. Executives now prefer to talk about digital transformation or digital disruption, but the API economy and its rules are becoming mainstream. The core concept of the API economy remains; but is now articulated in terms of API producers, consumers, internal and external marketplaces as well as direct or indirect business value.

User Advice: In this post-API economy world, CIOs looking to exploit the digital disruption of APIs in collaboration with their chief strategy officer should:

- Take advantage of the benefits of scale and the new business models of the API economy by exploring and promoting the likely business and industry disruptions well-governed API programs come with. Apply design thinking to explore and promote your potential business and industry disruptions. Ensure business executive peers see APIs as business assets and real products, not just technology. Create, foster and promote a culture driven by business outcomes, measured on the APIs key performance indicators (see "How to Use KPIs to Measure the Business Value of APIs").
- No matter what your organization's industry vertical is, leverage the opportunities of open banking by using financial APIs in the new customer or partner interactions your digital transformation will define.
- Start with the pragmatic approach of co-creation with existing and new business partners to identify real-time, high-value digital interactions. Develop, enable and engage an ecosystem of developers, consumers and partners, e.g., by carefully planning and running a series of business-targeted hackathons (possibly remote), to identify high business impact value chains, and the right APIs to support them.

Business Impact: An API platform is the basis of a digital transformation, and companies will either use somebody else's platforms, thus being part of one of more ecosystems, or build one, creating a fresh ecosystem using it. APIs provide the technical foundation to a platform business, and provide a way to work with platform business giants such as Amazon or Alibaba.

Several new business models are associated with publishing APIs. Companies gain different types of value from publishing APIs or running hackathons to start a platform business model, build innovation and get innovative ideas — value that goes beyond enhancing your company image by appearing innovative. In a minority of cases — especially when the product can be delivered electronically (for example, streaming access to yesterday's final of a sporting event) — companies can directly charge for API volume usage.

However, the most common monetization model in the API economy today is indirect, where a company provides free access to the APIs it publishes, most frequently to its business partners, sometimes as part of a premium subscription to a SaaS offering. In return, the company gets leaner/

quicker/more efficient execution of a business process (such as ordering goods in a supply chain) or increased sales of a traditional product (for instance, travel companies get more bookings if they publish APIs into their reservation systems).

Benefit Rating: High

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Recommended Reading: "Digital Disruption Profile: APIs and the API Economy"

"Choose the Right API Monetization and Pricing Model"

"Top 10 Things CIOs Need to Know About APIs and the API Economy"

"From APIs to Ecosystems: API Economy Best Practices for Building a Digital Platform"

"How to Use KPIs to Measure the Business Value of APIs"

Cloud Computing

Analysis By: David Smith

Definition: Cloud computing is a style of computing in which scalable and elastic IT-enabled capabilities are delivered as a service using internet technologies.

Position and Adoption Speed Justification: Cloud computing is a very visible and hyped technology, and has passed the Trough of Disillusionment. Cloud computing remains a major force in IT. Every IT vendor has a cloud strategy — although some strategies are better described as "cloud inspired." Users are unlikely to completely abandon on-premises models, but there is continued movement toward consuming more services from the cloud and enabling capabilities not easily accessible elsewhere. Much of the cloud focus is on agility, speed and other benefits beyond cost savings.

"Cloud computing" continues to be one of the most hyped terms in the history of IT. Its hype transcends the IT industry and has entered popular culture, which has had the effect of increasing hype and confusion around the term. In fact, cloud computing hype is literally "off the charts," as Gartner's Hype Cycle does not measure amplitude of hype (meaning that a heavily hyped term such as "cloud computing" rises no higher on the Hype Cycle than anything else).

Although the peak of hype has long since passed, cloud still has more hype than many other technologies that are at or near the Peak of Inflated Expectations. Variations, such as private cloud computing and hybrid approaches, compound the hype and reinforce the conclusion that one profile on a Hype Cycle cannot adequately represent all that is cloud computing. Some cloud variations (such as hybrid IT and now multicloud environments) are now at the center of where the cloud hype currently is. And, of course, there are different types of cloud services such as IaaS, PaaS and SaaS, each at various stages of industry hype.

New and advanced use cases for cloud introduce even more terms such as distributed cloud, multicloud and cloud-native. These add to the overall cloud hype as well as the applicability of cloud to more and more scenarios, including enabling next generation disruptions.

User Advice: User organizations must demand clarity from their vendors around cloud. Gartner's definitions and descriptions (which align with other useful ones such as NIST) of the attributes of cloud services can help with this. Users should look at specific usage scenarios and workloads, map their view of the cloud to that of potential providers, and focus more on specifics than on general cloud ideas. Understanding the service models involved is key — especially the need to understand the shared responsibility model for security.

Vendor organizations should focus their cloud strategies on more specific scenarios and unify them into high-level messages that encompass the breadth of their offerings. Differentiation in hybrid cloud strategies must be articulated. This will be challenging, as all are "talking the talk," but many are taking advantage of the even broader leeway afforded by the term. "Cloudwashing" should be minimized. Gartner's Cloud Spectrum can be helpful.

Adopting cloud for the wrong reasons can lead to disastrous results. There are many myths surrounding cloud computing as a result of the hype (see "Revisiting the Top 10 Cloud Myths for 2020" for details and advice).

Business Impact: The cloud computing model is changing the way the IT industry looks at user and vendor relationships. Vendors must become providers, or partner with service providers, to deliver technologies indirectly to users. User organizations will watch portfolios of owned technologies decline as their service portfolios grow.

Potential benefits of cloud include cost savings and capabilities related to the flexible and dynamic usage models of cloud (including concepts that go by names such as "agility," "time to market" and "innovation"). Organizations should formulate cloud strategies that align business needs with those potential benefits. Agility is the driving factor for organizations embracing cloud most of the time.

Benefit Rating: Transformational

Market Penetration: 20% to 50% of target audience

Maturity: Early mainstream

Sample Vendors: Amazon; Google; IBM; Microsoft; Oracle; Red Hat; Salesforce; SAP

Recommended Reading: "Cloud Computing Primer for 2020"

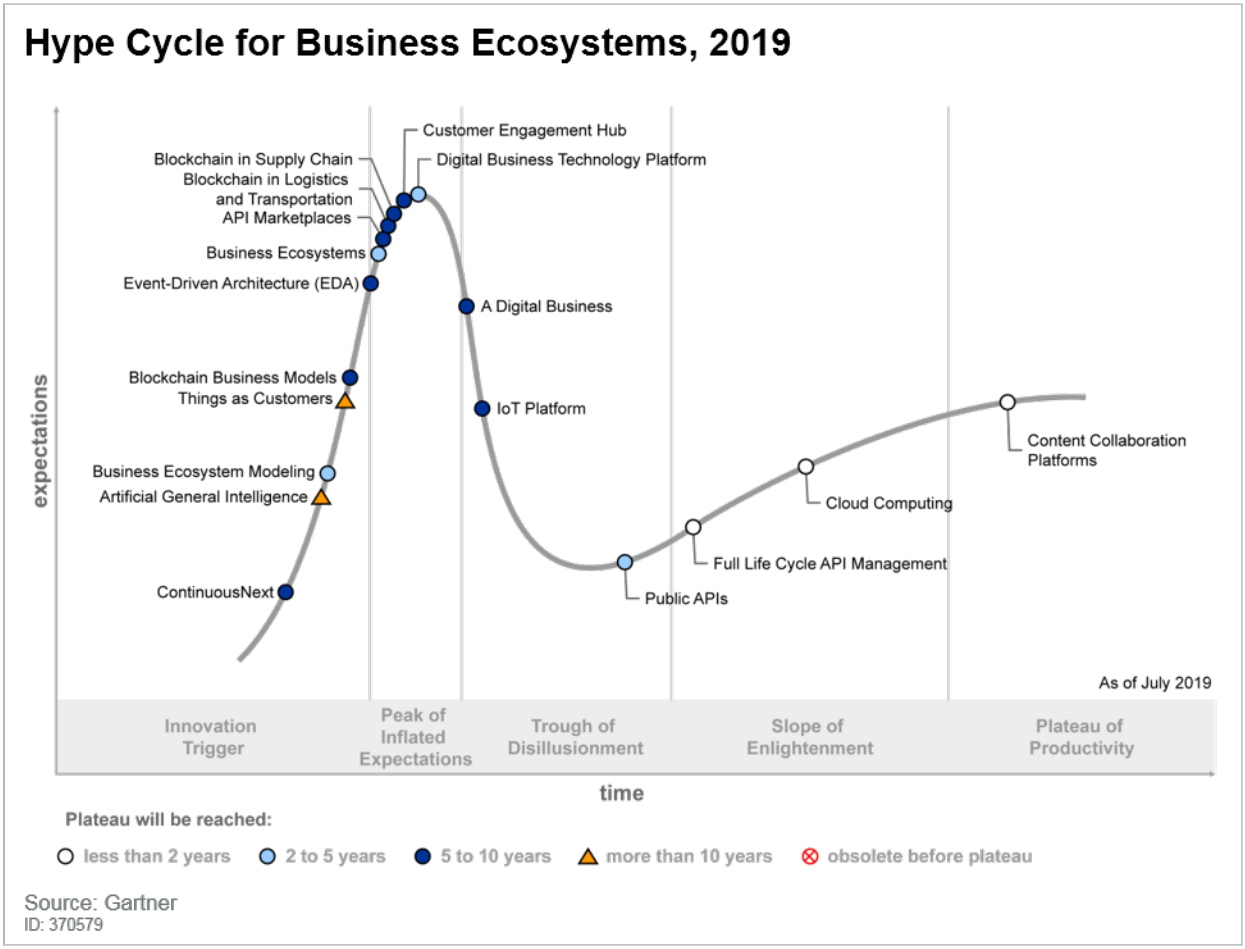
"The Cloud Strategy Cookbook, 2019"

"Revisiting the Top 10 Cloud Myths for 2020"

"Four Types of Cloud Computing Define a Spectrum of Cloud Value"

Appendixes

Figure 3. Hype Cycle for Business Ecosystems, 2019



Source: Gartner
ID: 370579

Hype Cycle Phases, Benefit Ratings and Maturity Levels

Table 1. Hype Cycle Phases

Phase	Definition
Innovation Trigger	A breakthrough, public demonstration, product launch or other event generates significant press and industry interest.
Peak of Inflated Expectations	During this phase of overenthusiasm and unrealistic projections, a flurry of well-publicized activity by technology leaders results in some successes, but more failures, as the technology is pushed to its limits. The only enterprises making money are conference organizers and magazine publishers.
Trough of Disillusionment	Because the technology does not live up to its overinflated expectations, it rapidly becomes unfashionable. Media interest wanes, except for a few cautionary tales.
Slope of Enlightenment	Focused experimentation and solid hard work by an increasingly diverse range of organizations lead to a true understanding of the technology's applicability, risks and benefits. Commercial off-the-shelf methodologies and tools ease the development process.
Plateau of Productivity	The real-world benefits of the technology are demonstrated and accepted. Tools and methodologies are increasingly stable as they enter their second and third generations. Growing numbers of organizations feel comfortable with the reduced level of risk; the rapid growth phase of adoption begins. Approximately 20% of the technology's target audience has adopted or is adopting the technology as it enters this phase.
Years to Mainstream Adoption	The time required for the technology to reach the Plateau of Productivity.

Source: Gartner (August 2020)

Table 2. Benefit Ratings

Benefit Rating	Definition
Transformational	Enables new ways of doing business across industries that will result in major shifts in industry dynamics
High	Enables new ways of performing horizontal or vertical processes that will result in significantly increased revenue or cost savings for an enterprise
Moderate	Provides incremental improvements to established processes that will result in increased revenue or cost savings for an enterprise
Low	Slightly improves processes (for example, improved user experience) that will be difficult to translate into increased revenue or cost savings

Source: Gartner (August 2020)

Table 3. Maturity Levels

Maturity Level	Status	Products/Vendors
Embryonic	■ In labs	■ None
Emerging	■ Commercialization by vendors ■ Pilots and deployments by industry leaders	■ First generation ■ High price ■ Much customization
Adolescent	■ Maturing technology capabilities and process understanding ■ Uptake beyond early adopters	■ Second generation ■ Less customization
Early mainstream	■ Proven technology ■ Vendors, technology and adoption rapidly evolving	■ Third generation ■ More out-of-box methodologies
Mature mainstream	■ Robust technology ■ Not much evolution in vendors or technology	■ Several dominant vendors
Legacy	■ Not appropriate for new developments ■ Cost of migration constrains replacement	■ Maintenance revenue focus
Obsolete	■ Rarely used	■ Used/resale market only

Source: Gartner (August 2020)

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

Understanding Gartner's Hype Cycles

How to Derive Value From APIs Using API Marketplaces

Managing the Consumption of Third-Party APIs

Application Leaders: Master Composable Enterprise Thinking for Your Post-COVID19 Reset

COVID-19: Lean on Principles and Values in Tough Times

Mediated APIs: An Essential Application Architecture for Digital Business

Identifying Digital Opportunities During and After the Pandemic

Winning in a World of Digital Dragons

5 Digital Ecosystem Types That Will Impact Every Enterprise

Evidence

[1] "Key Milestones in the Spread of the Coronavirus Pandemic," World Economic Forum.

[2] For example, Satya Nadella, CEO of Microsoft, recently observed, "We've seen two years' worth of digital transformation in two months." See "2 Years of Digital Transformation in 2 Months," Microsoft 365.

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