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The Service Innovation Mandate in Telecommunications

The Urgent Requirements, and How API Management Can Help

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Executive Summary

As telecommunications companies (telcos) confront predictions of declining revenues and increased commoditization, establishing new service offerings will be a critical mandate. In this effort, application programming interfaces (APIs) will represent an increasingly strategic asset. This white paper explores why new service delivery is so critical for telcos, and it reveals how APIs can offer significant advantages in accelerating the delivery of innovative new service offerings. Finally, the paper provides an overview of the key strategies telcos can pursue in order to most fully capitalize on the opportunities afforded by APIs.

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Introduction: The Application Economy and the Growing Criticality of APIs

Across industries and around the world, technological innovations have quickly ushered in profound changes. In the wake of increased proliferation and innovation in the cloud, mobile applications and DevOps, a new reality has emerged for businesses in virtually every industry: The application economy. In the application economy, the customer experience—and the fortunes of a business—will increasingly be driven by application innovation.

While these changes have been pronounced in every industry, telcos have truly been in the middle of the maelstrom. As telcos seek to compete in today's application economy, application programming interfaces (APIs) are beginning to represent an increasingly significant piece of the strategic landscape.

Software is fundamentally transforming telcos' businesses and the markets they serve. Software is at the center of defining and controlling applications, networks, physical infrastructure and business services. In these software-driven environments, communications become programmable, and APIs provide a key mechanism for controlling these communications.

At their core, APIs represent an easy, standardized means for two independent software-based systems to interact with each other. In a relatively short time, APIs have emerged as a foundational element. Now virtually any time someone does such tasks as checking the weather, their bank balance or their flight status, they're relying on APIs. Today, APIs support billions of dollars in transactions.

APIs themselves represent very simple elements, but their effect can be profound. As organizations seek to reach customers through new platforms and environments, accelerate innovation and speed service delivery, APIs will represent an increasingly critical piece of the puzzle.

While APIs are critical, their true value is ultimately realized by the services that they enable. It is in their ability to foster service innovation that telcos may very well see APIs make the biggest impact on the business. As we'll see in the next section, focusing on services will be a vital imperative for telcos moving forward.

Why Should Telcos Focus on Services?

Today, telcos sit at the center of the application economy, delivering the services that are an increasingly essential part of our commerce and communications. However, in spite of the critical role their services play, many telcos are finding traditional revenue sources are projected to remain flat or decline in the coming years. For example, while SMS traffic is expected to reach an all-time high in 2014, in subsequent years both traffic and revenues are expected to decline[1].

"In the end, this isn't just a battle for revenue, it's a battle for relevance."

As a result of these trends, telcos need to find a way to generate new revenue streams, which means new innovative services will need to be delivered, and soon.

However, the demand for service innovation goes beyond revenues. It is only through service innovation that telcos can gain differentiation from the competition—both from inside and outside the telco sector. It is only through this differentiation that telcos can avoid commoditization, and being forced to compete solely on price.

In the end, this isn't just a battle for revenue, it's a battle for relevance. While voice, data and messaging services remain essential, these services alone are increasingly coming to represent the plumbing of the digital world. It is the services and applications running on top of voice, data and messaging that users experience and value—and it is in these areas that revenues will grow.

Quite simply, telcos will need to accelerate their innovation and deliver new value-added services, or they'll see revenues, mindshare and relevance decline in the quarters ahead.

API Advantages

As telcos look to deliver more services, and more innovative services, APIs can be a huge asset. Through APIs, telcos can realize a range of objectives:

APIs Accelerate Innovation

APIs can provide fundamental breakthroughs in the pace of innovation that is possible. Before, to roll out a new capability, development teams would have to embark on multi-month initiatives that would entail leveraging software development kits, substantially revising code, testing the revised code, and so on. Given the scope and investment these efforts entailed, project failure was catastrophic. However, in large part because the massive up-front expenditure required, the odds of failure were often high.

By contrast, with APIs, rolling out new capabilities can be done in a matter of days. If the new offering fails for any reason, the cost, effort and disruption will be minimal. This radical reduction of risk can fundamentally change the mindset and potential for innovation and experimentation in telcos.

1 Ovum, "Global SMS revenues will decline after 2016m," Neha Dharia November 2013, http://www.ovum.com/global-sms-revenues-will-decline-after-2016/

APIs Expand Revenue Streams and Strengthen Partnerships

APIs allow telcos to reach new customers, platforms and channels and support new business models that are better aligned with the needs of customers. By leveraging APIs, managers can think about services in a different way. For example, by enabling metered access, APIs provide an easy way to track usage. Through these capabilities, organizations can adopt simple pay-per-use business models, charge for real-time delivery or charge by amounts of data transported over the wire.

APIs offer telcos a frictionless way to expand distribution models. For example, APIs facilitate the delivery of affiliate services, enabling partners to resell services into different channels that would otherwise be untapped. Through APIs, telcos can deliver innovative identity management services to large customers, and they can start to support new device types, such as wearables.

APIs can help broaden the possibilities for supporting technical and service integration with partners and customers. Not only does this expand collaboration and fuel more innovation, but it can serve to enhance loyalty and "stickiness." Once organizations have invested in a joint API integration effort, and started to see the benefits, they become more invested in the relationship and more committed to joint success.

APIs Lower Costs

APIs facilitate the operational efficiency that can support more profitable, high value services, while enabling significant reductions in costs. APIs enable the automated, on-demand provisioning of new customers—offering a self-service, low-cost model that enables telcos to support more customers with less staff. At the same time, this self-service experience isn't viewed as a compromise or sacrifice by customers—on-demand access is exactly what they want.

APIs can help expand the automation of a range of internal processes, which can fuel cost savings, enhanced efficiency and operational agility. Through APIs, telcos can be much more effective at reusing existing services and code in new ways, which offers further efficiency gains.

Challenges and Requirements to Address

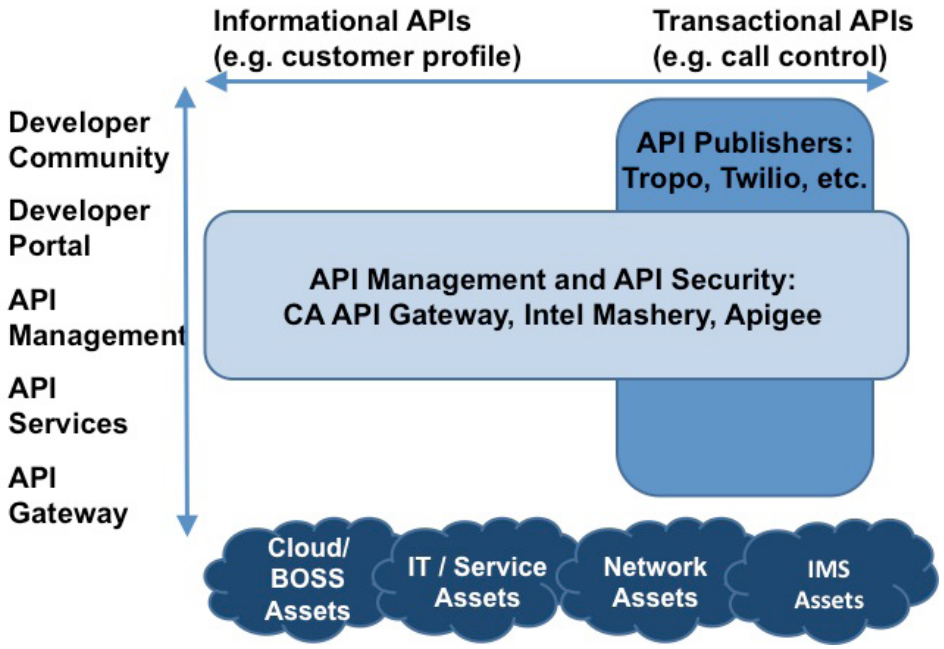
To understand the potential of APIs, telcos need look no further than the explosive growth and success of API-driven app stores from companies like Apple and Google. Does this mean telcos should keep trying to emulate this approach? Not at all.

In spite of the fact that telecom represents a $2 trillion industry[2], the players within the market haven't been able to establish an industry-wide ecosystem that can serve a pool of consumers as large as that now comprised of Apple and Android phone users. This huge addressable customer base of Apple and Android users represents a more compelling draw for developers than the market that any single telco can deliver. As they seek to expand their service offerings, telco executives will need to be mindful of this reality.

2 Insight Research Corporation, "The 2014 Telecommunications Industry Review: An Anthology of Market Facts and Forecasts," January 2014

Figure A.

An overview of the API landscape in telecom-munications



Addressing the Need for Security

When telcos expand their use and distribution of APIs, security will be a critical factor that needs to be addressed. When APIs are employed, there's a very real potential for sensitive assets, infrastructure, processes and services to be exposed. For example, telcos are increasingly leveraging software-defined networking (SDN) approaches. If APIs are published that provide access to the SDN service, an organization could be exposed to having external attackers access and manipulate critical network configurations.

As development teams procure and develop new capabilities, they will be well advised to set the new offerings up in their labs, and dedicate significant resources to testing and attacking the products. It is only through this type of effort that organizations can gain a solid understanding of how the platform will respond to different types of threats, where the vulnerabilities are and how they can be addressed.

API management software can play a significant role in managing security. With the right platform, telcos will be well equipped to address security across the API lifecycle, more efficiently institute the security policies required and more effectively monitor for potential vulnerabilities and attacks.

Understanding the API Landscape

Executives can't just start implementing a bunch of APIs, and hope they'll be effective. They need to establish a clear business strategy first, and then leverage APIs in a way that helps support the strategy.

As they set out to formulate an API strategy, it is important to do so with a clear and detailed understanding of the API landscape and the participants that operate in it. For example, there are different categories of developers and the optimal strategy and platform requirements can vary substantially depending on which category is being targeted.

As outlined in figure A, there are several components, services, and vendors that make up the API landscape. Following are some of the key aspects:

- **Developer community**. The developer community is a key group responsible for enabling innovations in the creation and usage of telco APIs. These developers can be broken into several groups:
  - **Internal**. This includes developers who are employees or contractors working for a specific telco.
  - **Partner**. This category includes developers working with a telco's content partners and system integrators.
  - **Independent developers**. This category comprises what is often referred to as the "long tail" developer community, a massive population of developers that can include large development organizations as well as individual developers serving small market niches. Within this community are those developers that are focused on delivering mobile applications for Apple and Android devices. In addition, there is a sizable group of telecom-focused app developers. This latter group can also run the gamut, from those with specialized expertise in telco protocols, as well as those with more general skills.
- **Developer portal**. The developer portal represents a key component, enabling developers to manage APIs, track how they are being used and monitor how they are performing.
- **API management**. This category refers to the management of APIs across their lifecycle, including development, testing and delivery.
- **API services**. This category relates to the packaging of APIs with value-added services. For example, a payment API could be packaged with fraud mitigation capabilities.
- **API gateway**. API gateways play the critical role of delivering and controlling access to API-based services.

Within the ecosystem, there are several different types of assets, including cloud and business operations services and systems (BOSS), network assets and IP-based multimedia services (IMS). In addition, there are two overarching API service types: information APIs, which would include customer data as an example, and transaction APIs, which can include aspects like call control.

There are two key vendor types that serve the telco API market:

- **Telco API publishers**. These companies provide telco APIs that developers use to interface with the telco network. These offerings are largely focused on transactional APIs. Vendors in this segment include Nexmo, Tropo and Twilio.
- **API management platforms**. An API management platform offers a range of capabilities that support the development, control and distribution of APIs. Solutions from API management software vendors span different types of assets and can comprise both transactional and informational API services. Offerings in this segment include the CA API Gateway, Intel Mashery and others.

Strategies for Maximizing the API Opportunity

Following are some strategies telco executives can pursue as they look to maximize the opportunities that APIs present to their businesses.

Building on Success

It is important to learn from the industry's track record, and focus on areas where telcos can build upon success. As outlined earlier, telcos have been confronted with an up hill battle in trying to emulate the app store successes of Apple and Android.

However, in recent years, plenty of successful examples have emerged of telcos leveraging APIs internally and with a range of partners. Telco executives can do well by learning from these successes and modeling new approaches on them. (See the case studies section below for some specific examples of these success stories.)

Embedding, Early and Often

Telcos can capitalize on significant revenue streams by seeking to embed core communication capabilities into every system possible. Leveraging APIs, telcos can gain an efficient way to embed communication capabilities into existing applications, services and business processes. By taking this approach, telcos can make communications a foundational component of a multitude of business ecosystems, providing users with significant efficiency, convenience and productivity gains.

Broadening Development

Working with a range of developers—including internal, partner and telco app developers—telcos can accelerate the creation of new services and applications that use communications capabilities.

Packaging Services

Telcos can leverage APIs to bring together a variety of different services, which can significantly enhance the value of offerings. For example, organizations can package and deliver an entire service stack through API integrations, giving customers a complete solution and more procurement and implementation convenience. In addition, by exposing value-added services through APIs, telcos can significantly expand their services' distribution, adoption and revenue generation opportunities.

Establishing an Ecosystem for Industry-wide Collaboration

In the end, telcos need to take a different approach to partnering with other vendors in the industry. While traditionally it has been contrary to the culture of these organizations to work with competitors, there can be some significant gains realized by doing so. By joining together with other vendors, telcos can build a true industry-wide ecosystem, one that helps broaden the potential addressable market for offerings and services, and ultimately expand revenues for more market participants.

Telco Case Studies

APIs for Private Cloud Management and Security

- **The objective**: A large provider of Internet, cable and voice services leveraged its infrastructure and service delivery expertise to start offering hosted private cloud services. To deliver more customer value and convenience, the executive team wanted to enable customers to self-provision and self-manage private cloud resources. However, in offering this self-service access, the operations team needed to ensure that optimal service levels and strong security mechanisms were preserved.
- **The solution**: The company leveraged an API gateway solution that enabled integration with the back-end infrastructure, including management and billing systems, storage and virtualization provisioning. Through a central API management approach, the organization was able to ensure security and threat protection policies were employed. In addition, they could gain the controls needed to manage the infrastructure so they could ensure they remained compliant with their service level agreements.
- **The results**: The company's private cloud services now offer much more convenience and customer value. When customers want to spin up additional storage or computing resources, they can do so quickly and easily because services are exposed via APIs. Customers can browse through the provider's portfolio and select the services that make sense for their business. Further, they can access services in a completely on-demand fashion, without any offline business processes that delay access. Customers can manage their externally hosted private clouds in a seamless fashion, as they would any internal service.

Innovative Content Delivery Platform

- **The objective**: To keep pace with the changing technology landscape and preferences of its customers, a large well-established cable provider wanted to move beyond having to deliver premium content solely through the traditional cable connection and set-top box. In the company's rapidly changing markets, this traditional approach was very limiting. This limitation was growing increasingly troublesome as the provider looked to compete with new market entrants, who were delivering content via streaming services to mobile devices, laptops, smart TVs and so on.
- **The solution**: Through an integrated API portal and gateway, the provider was able to securely expose APIs to their partners, enabling new content delivery opportunities. Now, for example, customers can log in through their gaming system, and gain access to the cable provider's premium content. However, the provider still maintains the relationship with the customer, and it retains controls and visibility into which services customers access.
- **The results**: With APIs, the cable company was able to quickly get new services to market, broaden their potential customer base for premium content and maintain effective controls over piracy and other threats. In addition, the provider is now able to charge directly for on-demand content when customers use these new access methods.

Integrating Communications

- **The objective**: One of largest communications service providers in the world was looking to deliver innovations that would enable them to bring new services into specific emerging markets. In these regions, many users didn't have smart phones, and so had been limited in terms of the functionality and services they could access. For example, they couldn't use their phones to access their social media accounts.

- **The solution**: Through APIs, the service provider could effectively orchestrate integrated communications across different platforms. As a result, the provider was able to launch a service that enabled customers to call or text into their social media accounts to make updates. Another key part of the implementation is around security and identity. Through the API management platform, the service provider could leverage policy-based controls for messages, identities and interface security. A user can now sign on to a social media site based on the number of the phone they're using. The provider stores the relationship between the phone number and the social site identity through their API management platform, so when a subscriber sends a text, the provider knows exactly which social media account to map it to.
- **The results**: Through APIs, the service provider could centrally track usage, monitor interface health and update APIs, without breaking client applications. The firm has created an agile IT platform that will enable it to more effectively leverage existing assets, so they can develop new offerings faster and cheaper. APIs enable them to expand the reach of traditional telephony, making their network applicable to more use cases and applications. As a result, the service provider could overcome many of the barriers that were limiting their growth in emerging markets.

Conclusion

APIs will be an increasingly strategic ally for telcos as they seek to combat declining revenues. Through an effectively managed API strategy, telcos can accelerate innovation and expand revenue opportunities, while reducing costs. By adopting the strategies outlined above, telcos can be well positioned to deliver innovative new service offerings that help offset the anticipated revenue declines in their traditional channels.

About the CA API Management Suite

CA Technologies provides telcos with a comprehensive set of solutions that externalize APIs in a secure, reliable and manageable way. The CA API Management Suite delivers advanced functionality for backend integration, mobile optimization, cloud orchestration and developer management. The CA API Management Suite includes the following offerings:

- **CA API Gateway**. With the CA API Gateway, you get the core functionality you need for scalable API security and management. The CA API Gateway combines policy management with runtime policy enforcement, delivering a central policy enforcement point between the business and the end user—no matter where they are located.
- **CA Mobile API Gateway**. This offering combines the power of the CA API Gateway with additional enhancements to power your mobile solution. CA Mobile API Gateway features an SDK that offers enterprise-grade SSO and geo-location support, as well as security management of mobile devices.
- **CA API Developer Portal**. This offering provides a centralized portal that allows organizations to engage, onboard, educate and manage internal and external developers. The product offers capabilities for publishing APIs for consumption, including documentation, code examples and grouping. CA API Developer Portal provides full analytics on API usage and performance.

For more information, please visit the **CA API Management Suite** page.

About This Document: Developed by the CA Service Provider Center of Excellence

This document has been written by the CA Service Provider Center of Excellence team and is intended to provide our service provider partners with the guidance they need to address some of their most pressing challenges. Our team has rich expertise in service provider businesses, strategic consulting, technical deployments, sales and marketing. Our documents are informed by the Center of Excellence team's extensive experience over the past ten years in helping build successful service provider businesses and by interviews with some of our most successful service provider partners. This document is provided for informational purposes only and on an as-is basis. The guidance and results described herein are based on the unique experiences of our staff and partners, and may not be applicable to all organizations.

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