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Exposing the core assets of communication service providers through APIs
Enabling and accelerating growth in the digital ecosystem

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Preface

The proliferation of mobile devices and consumption of applications enabled on those devices has shaped and driven the lifestyles of consumers. Moreover, it has changed the way developers create and bring applications to market. It is noteworthy that a market that was nonexistent five to six years ago has now revolutionized the way we shop, order food, select entertainment, buy a gift, make a payment, or live our everyday lives.

At one point, application programmable interfaces (APIs) were a nice-to-have capability, but today they are game changers. The pervasiveness of mature digital ecosystems with rich sets of APIs available to developers to build their own digital services has extended beyond the technology industry to the media, financial services, automotive,

The mobile application market of today is shaped by social networks, mass adoption of mobile devices, and cloud computing, as well as a demand for highly accessible, user-friendly services. CSPs can position themselves to own the end-to-end customer experience and must move to do so quickly in order to avoid being marginalized.

There are now multiple access points — Web smartphones, tablets, televisions, home appliances, and machine to machine (M2M) endpoints — for the consumer looking for a continuous digital experience. As the next step, after enabling the network for such applications, CSPs can provide standard, open APIs to help developers and enterprises build cross-platform applications and serve as a one-stop shop for their needs.
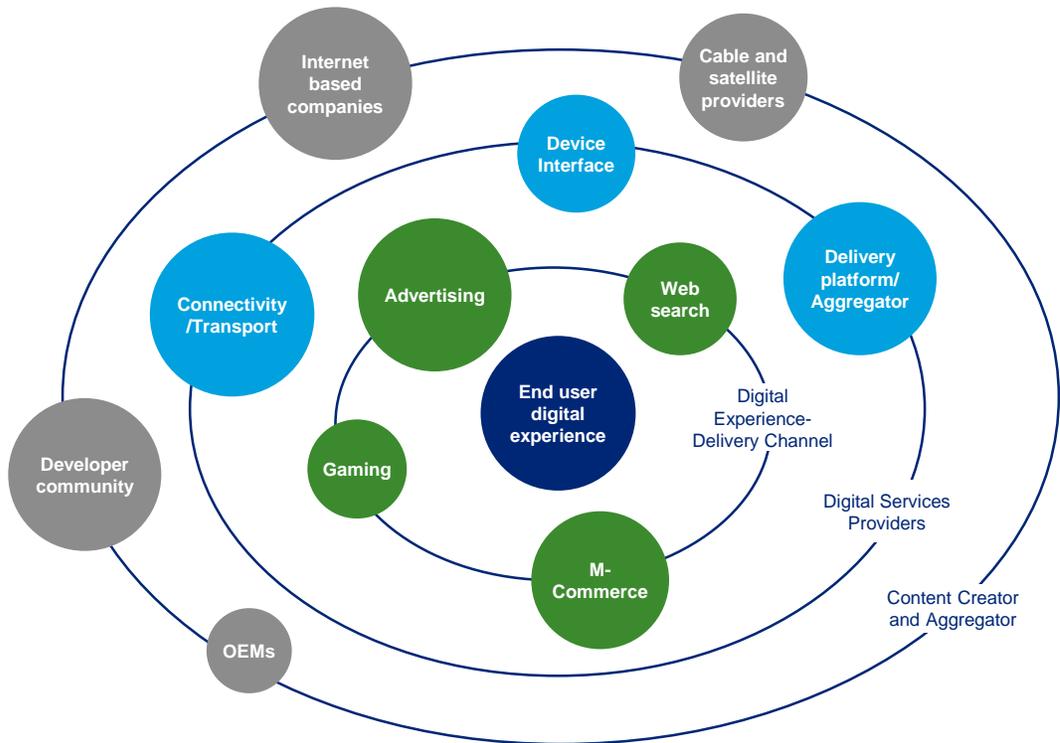
and health care industries. For communication service providers (CSPs), APIs can open new streams of revenue by monetizing existing network assets in a brokered ecosystem. CSPs should look into evolving the traditional stack to an integrated everything-as-a-service ecosystem and adopt an API-driven delivery model to increase revenue and reduce cost.

Figure 1: A digital ecosystem comprises several players and services

An API-driven delivery model supports integration between network and information technology (IT) infrastructures for new and existing services, thus enabling the creation of an agile service exposure platform that can support both external and internal APIs. External APIs allow rapid innovation, support new business models, and provide a competitive edge in the market. Internal APIs allow interoperability between business units and help achieve operational efficiency.

To adopt this model, it is important to consider evolving the service delivery platform (SDP) to address the tenets of an agile delivery methodology. This implies focusing on foundational capabilities, such as compliance, transformations to standardized open APIs, and overall governance of such an approach.

Managing challenges and barriers to entry

CSPs have to overcome several challenges to position themselves as providers of the complete spectrum of services and rich user experiences across apps and Web. For example, an initiative that CSPs committed to, but which then faced low adoption or commercialization, was the mobile wallet, Softcard, venture that allowed customers to maintain accounts directly with their mobile operators, rather than with credit card companies. This offering was put on hold in its early stages as it was determined to be too difficult and time consuming, resulting in low uptake. Now, the plan is to establish a mobile wallet that can store and exchange account information on users' existing credit cards. Given the struggles of such go-to-market initiatives, a thorough assessment of such initiatives across business and technology perspectives is necessary. Challenges should be reviewed across the following three areas:.

> CSPs face challenges, including competition from over-the-top (OTT) service providers; the time-to-market needs of new services leveraging network and device advances, such as Internet Protocol television (IPTV), personal cloud, navigation, and gaming; and the high costs of integration and implementation of such services.

Prioritization of services and products to take to market and to enable within the organization

- Lack of a unique selling point on account of several over-the-top (OTT) alternatives to core CSP assets and services, such as APIs for messaging, location, and call control.

- Fragmented use cases and mash-ups that leverage core network assets and strategic partner relationships to recognize and serve the needs of customers.

- Nonalignment of external-centric (i.e., outside the organization) and internal-centric (i.e., within the organization) API initiatives, which causes inefficient use of resources, such as time and money.

Speed of service and product deployment, as well as management of the same

- Lack of self-service tools and portals to enable easy onboarding and provisioning of secure environments for validation testing and deployment hinder rapid delivery and time to market.

- Heavyweight SDPs with legacy applications result in high costs and long timelines for integration and implementation of new services.

> The demise of the wholesale applications community (WAC) is indicative of ineffective API standardization efforts by CSPs. However, cross-carrier initiatives that provide developers' with portability across networks are important and required if CSPs want to differentiate themselves in this digital era.

- As part of an industry with heavy regulatory scrutiny (i.e., security, legal, privacy), the architectures of SDPs and service orchestrators are not always able to adapt and scale with the changing landscape, which drives up costs and risks for any modifications that need to be made.

- Cumbersome operations, service enablement processes, and tools (i.e., helpdesk management, technical management, service planning and engineering, and application and operations management) in a world that demands rapid time to market, hinder a CSP's ability to launch complete products and services in a timely manner and within budget.

Branding and experience with developers

- Long-tail developers are less likely to associate CSPs with the rapid pace of innovation when compared to Internet-based companies, such as Google, Facebook, and Amazon. Significant investments (i.e., outreach, marketing, and partnerships) are required of CSPs to play in the nontraditional software services realm.

- CSPs also lack experience building digital ecosystems; engaging developers with remunerative business models and easy-to-adapt terms and conditions; and providing open, standardized APIs for their use. While CSPs have historically engaged in vendor relationships, it is becoming increasingly necessary to move to a partnership model, which may cause ambiguity as CSPs may be both teaming and competing with the same entity.

Applications of APIs and benefits derived from APIs

An API-driven delivery model can help CSPs expose core network capabilities to deploy new applications and stimulate network usage, which can drive efficiency and increase revenue across the following areas:

- **Network Integration** — Open and standardized APIs can and will be drivers and enablers for network and IT integration, which will help CSPs build and maintain more efficient and agile network, IT, and service infrastructures.

Highlights of advantages of external and internal APIs

Agile-like deployment
Increased use of self-service tools, along with abstracted infrastructure, supports agile-like deployment.

Rapid time to market
Standard, self-sufficient APIs serve as building blocks in the development of a product offering, hence reducing the overall time to market.

Third-party revenue
APIs can attract third-party developers of content and applications to a CSP's development platform by providing easy access to systems such as billing engines and network services that OTT service providers cannot provide.

Revenue share with developers
CSPs can agree on a revenue-sharing model with third-party application developers for access to particular APIs.

Increased efficiency
Equipment- and service-related APIs allow CSPs to easily manage multivendor network infrastructures via a common set of services.

Easier integration
Business units connected only by APIs are can be better integrated in the evernt there are mergers or acquisitions. Each unit can build its own service, with minimal interference of core and legacy systems, which reduces costs and disruption to service.

Reusability and maturity
Network and service exposure APIs will eventually allow CSPs to structure their entire technology environments into API-addressable modules.

Improved support functions
Setting up and supporting an API-driven delivery model requires various service enabling tools and processes, which together form a strong support function for the larger organization.

- **Offer Transformation** — An API-driven delivery model will help CSPs transform their offer road map to include exclusive control capabilities, such as media access and identity management, to quickly create innovative services in collaboration with first and third-party developers.

- **Management of Multivendor Network Infrastructure** — An API-driven delivery model will help ease exposure of data and control services for consumption using common platforms and tools to drive efficiencies in management and operations.

- **Modularization, Reusability, and Maturity** — Atomic, self-sufficient APIs can be consumed by different business units as building blocks for a stable and tested product offering with limited customization needs.
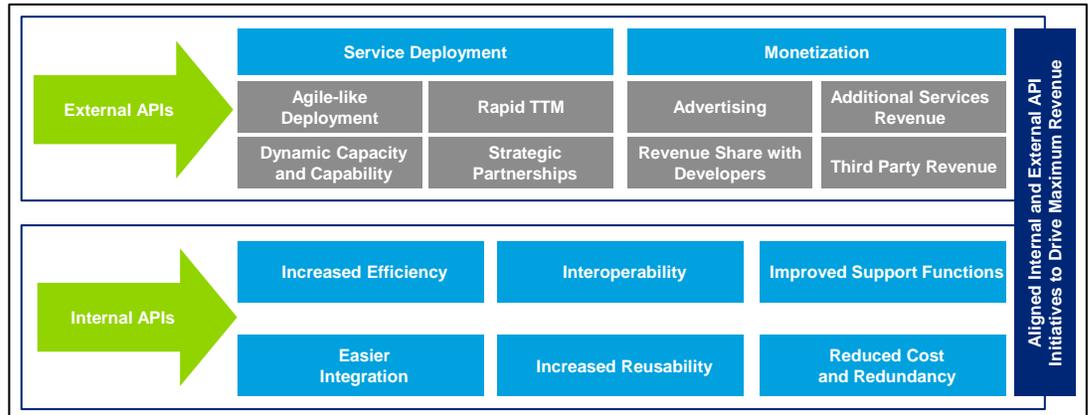

Figure 2: CSPs can derive extensive benefits from leveraging both externally and internally exposed APIs

Narrowing the gap between external and internal API initiatives will provide value to CSPs as functionality, infrastructure, and service components can be reused across the board. Teams, including legal, product realization, and IT, can avoid the burden of lengthy review and approval processes and accelerate internal service innovation.

Enabling an API-driven delivery model

Leveraging and enhancing network services, while migrating to next-generation SDPs, will be the cornerstone on which CSPs can pivot towards an API-driven delivery model. As offers evolve from common enablers to orchestration and control capabilities that afford maximum efficiencies, CSPs will need to focus on the following capabilities.

SDP evolution

CSPs need to look beyond the traditional usage of SDP enabling technology for aggregation or monetization of services and try to leverage this technology to create sustainable, innovative services. Taking an abstraction of legacy service-oriented architecture (SOA) to the cloud
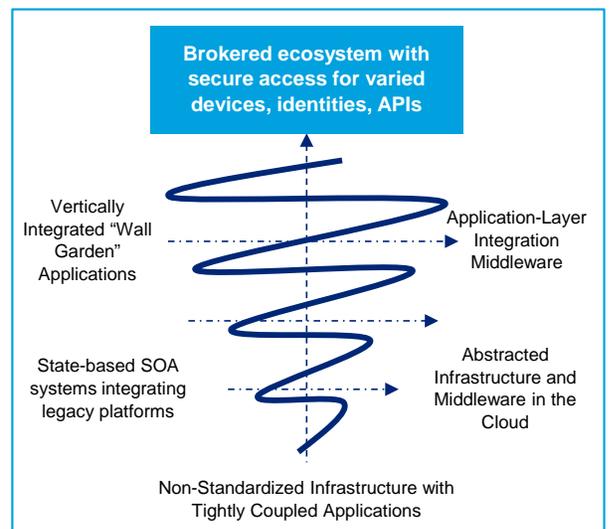

Figure 3: SDPs need to evolve to adopt a Web-oriented architecture to meet the needs of the brokered digital ecosystem

and leveraging existing capabilities, such as personal data, device and location information, identity management, quality of service, etc., can result in the creation of innovative, cross-digital services in the areas of social networking and big data and in vertical segments, such as health care and automotive, to name a few. For example, AT&T partnered with ivee to use ivee's speech engine for voice-activated services. Furthermore, Deutsche Telekom partnered with the machine to machine (M2M) community to expand its outreach to M2M and Internet of Things (IoT) services and devices.

Service orchestration enhancements

An assessment of the current state of API programs for their maturity level and use of cloud offerings across the organization should define the strategy for a common API-driven delivery model. The objective should be to identify existing atomic and composite services within each function for reuse. Reliance on Web interfaces for uniform access to key functions, such as onboarding and registration, and a self-service model for provisioning and configuration will drive the optimum use of resources. Furthermore, a migration to cloud architecture will provide the required agility, virtualization, and scalability for future growth.

Other foundational capabilities

- A compliance framework for security, privacy, legal, and regulatory requirements.

- An API transformation and exposure layer that includes translation of protocols, messages, and tokens to enable interoperability and standardization.

The evolution of the application, platform, and infrastructure ecosystem should grow from many fragmented and customized solutions to an open framework of lightweight, easy to consume services that are optimized for a multitude of devices, identities, and APIs.

Creating and accelerating an API-driven delivery model

Migrating to an API-driven delivery model requires more than just realigning existing infrastructure and resources to create an agile model, it requires a fundamental change in mindset and in the way CSPs typically approach realization of a business opportunity. Streamlined methodologies and processes across the following phases will help CSPs overcome internal roadblocks to the adoption of this model.

Program governance

- Establish governance and control points in the program, with a focus on performance, availability, and scalability.

- Ensure alignment with your overall business goals. Metrics should measure success on business impact (i.e., revenue, reduced cost, and number of active projects), customer experience (i.e., latency, availability, and transaction by subscriber), and program participation (i.e., number of new developers, number of software development kit and sample app downloads, number of transactions, and revenue generated from APIs).
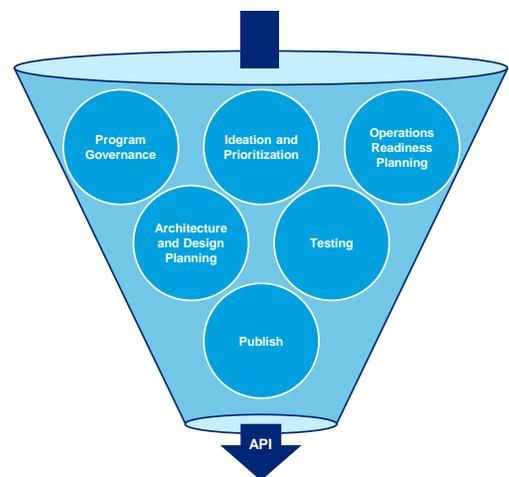

Figure 4: Tenets of an API-driven delivery model

Ideation and Prioritization: Participation from marketing (i.e., enterprise, developer, and new products) in ideation, use case definition, and prioritization is critical to this phase as marketing will provide the anchor for the APIs to be exposed to the marketplace.

- External APIs should be prioritized based on early feedback from the developer community, partner needs, market trends, and alignment with strategic business goals.

- APIs for internal consumption should be prioritized based on operational and organizational efficiencies, cost optimization, reduction in redundancy, and as enablers of external APIs.

- Finally, validation of the business case should serve as the underlying motivation to guide API prioritization efforts (both for internal and external APIs).

Architecture and design planning

- Architectural evolution should align closely with the services road map developed as a result of ideation and prioritization.

- Network capacity planning, network and infrastructure sharing topologies, and operations and support planning are other aspects that need to be considered.

- API standardization efforts can be targeted toward lightweight, Web-oriented architecture in which REST, JSON, and oAuth are emerging as popular choices.

Operations Readiness Planning: This phase requires input from multiple stakeholders to define requirements in a manner best suited for realization. Collaboration with marketing, legal, and operations teams must be solicited to monitor developer experience; usage and traffic; and security, privacy, and legal risks, with a focus on interface, access, and data integrity.

An API-driven delivery model is as much about adopting new technology as it is about changing the operating model to manage resources (i.e., people and technology) and streamline processes. It requires changing the organization's mindset to emphasize fast, nimble delivery to overcome traditional functional and technical barriers of monolithic applications and feature sets.

BlueVia by Telefonica

Europe, Latin America

BlueVia by Telefonica has a well-established long-tail developer program available across multiple geographies. A varied revenue-sharing model based on features used is in play, with 70:30 revenue split for application sales and subscriptions enforced.

Telenor's MOVE ecosystem

Norway

Telenor uses the MOVE project to work with select independent software vendors to create digital services for enterprise customers.

T-Store by SK Telecom

Korea

SK Telecom has set up an open marketplace in which developers can develop and sell apps to customers. Developers can choose their own branding and price points, as well as play a large role in marketing their products. An annual developer membership fee model is in play, with a 70:30 revenue split enforced.

Testing

- Test-driven development, including automated test suites that can keep up with and complete regression and new functionality testing to meet time-to-market needs, is most essential.

- Sprint demonstrations should be conducted with business and development stakeholders to validate the quality and alignment of developments to the signed-off requirements.

Publish — Consumers of APIs (e.g., enterprises, original equipment manufacturers, and other partners) are the most critical element in the process. Their feedback, along with long-tail developer recruitment and community management, should be included in marketing plans and processes, in addition to partner management.

Conclusion

To sustain growth beyond existing broadband and voice services, communication service providers must seek new solutions and platforms to drive internal efficiencies, while opening new revenue streams and channels to market existing services. Using APIs as a foundational capability for this purpose makes a very compelling case for adoption due to their flexibility, ease of use, and scalability. There are several barriers to accomplishing this ideological shift, the biggest of which is the perception that a slow-paced, process-heavy organization that struggles in the face of competition from OTT service providers will have difficulty in adopting a more nimble product development and launch approach. To address this mindset, CSPs must aggressively adopt rapid and iterative development methodologies with suites of tools and platforms to support them. A careful selection of services that will be exposed as internal and external APIs must be based on continuous feedback from the target developer community, and the ability to adopt this feedback and introduce changes within a short turnaround time are essential.

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CSPs should also look to APIs to truly transform the development and realization of their own products and services by rendering access to the underlying platforms, systems, and network enablers via APIs. This will speed up innovation and maximize reuse of assets for service creation. This will lead to dual benefits — creating incremental revenue and lowering costs — which can be realized through very structured planning and execution of simple, yet far-reaching transformational tools, processes, and technologies across the service creation and delivery framework.