Telco Innovation With APIs:

Need for Speed

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NEED FOR SPEED

Introduction

Telecommunications companies are part of the most pervasive and critical infrastructure in every country on earth. They cater to millions of customers, and worldwide they generate approximately $1.5 trillion in business revenue[1]. The huge revenue opportunity alone makes this market a target for disruption but there are other factors at play that make the market ripe for disruption and innovation. First, and largely because of the abundance of devices and evolution of high-speed networks, consumers are finding new ways to use what we consider traditional telephony experiences. Secondly, the shift from voice networks to IP networks opens up many new possibilities. Telecommunications and the Web are increasingly merging into a powerful services platform.

Because they are core infrastructure, Telcos are constrained by regulation. New competitors don't always have such regulation. The challenge is for Telcos to adapt to the new environment and bring their strengths and existing market position to bear to meet the challenges of today's market and consumer. If they don't they will be unable to compete, risk becoming irrelevant, and top and bottom lines will suffer.

This eBook describes how telecommunications companies must make fundamental shifts in technology and business models if they are to remain competitive.

- ✓ **Innovate around applications and APIs.**
  Every service needs to be accessible via applications.
- ✓ **Enable developers and partners to extend Telco services**.
  Do whatever is necessary to make it easy for developers to work with you and create applications and experiences.
- ✓ **Think global, not existing subscriber base and market**.
  Help developers and partners tap into the global market and provide customers with maximum choice and value.
- ✓ **Adopt the agile techniques of Internet companies**.
  Competition is coming from Web companies with platforms that enable speedy innovation and extension of brand and service to a worldwide audience.

[1] Chetan Sharma Consulting

A new playing field based on business and technology trends

The huge shift to mobile is good news for Telcos. There's an ever-increasing use of smartphones and mobile devices, and mobile subscriptions are on the upswing.

In her annual Internet trends report for 2012[2], Mary Meeker, partner at venture capital firm Kleiner Perkins Caufield & Byers (KPCB), places a considerable focus on mobile. The following trends and statistics from the report highlight the growing focus of the mobile and apps market:

- ✓ **iPhones** ramped even faster than iPods (which changed the media industry) and iPad growth is 3X that of iPhones. Android phone adoption has ramped even faster at nearly 6X that of the iPhone.
- ✓ **29% of USA adults own tablets or eReaders**, up from 2% less than 3 years ago.
- ✓ **The smartphone and tablet install base** is projected to exceed PCs in Q2 2013.
- ✓ As of November 2012 **mobile traffic represented 13% of all Internet traffic** and is growing rapidly.
- ✓ **Mobile commerce** – the experience of shopping on smartphones and tablets – continues to get better. Mobile and tablets together represented 24% of online shopping on black Friday in 2012 (versus 6% in 2010).
- ✓ **Mobile app and advertising revenue** is slated to exceed $19 B in 2012.

An increase in mobile device use drives the purchase of data plans, and consumers are generating and using more data than ever before.

The International Telecommunication Union estimates that **at the end of 2011, there were 6 billion mobile subscriptions**. That represents 87 percent of the world's population - 79% in the developing world. The worldwide mobile subscriber base is predicted to grow at a compound annual growth rate of 6 percent between 2011 and 2016, and is expected to cross **8 billion by the end of 2016** (Mobile Factbook 2012). In February 2012, Gartner reported that 1,775 million handsets were sold in 2011, up 11.1 percent compared with 2010. The top three mobile markets are China (greater than 1 billion mobile subscribers), India and the USA.

[2] 2012 KPCB Internet Trends Year-End Update

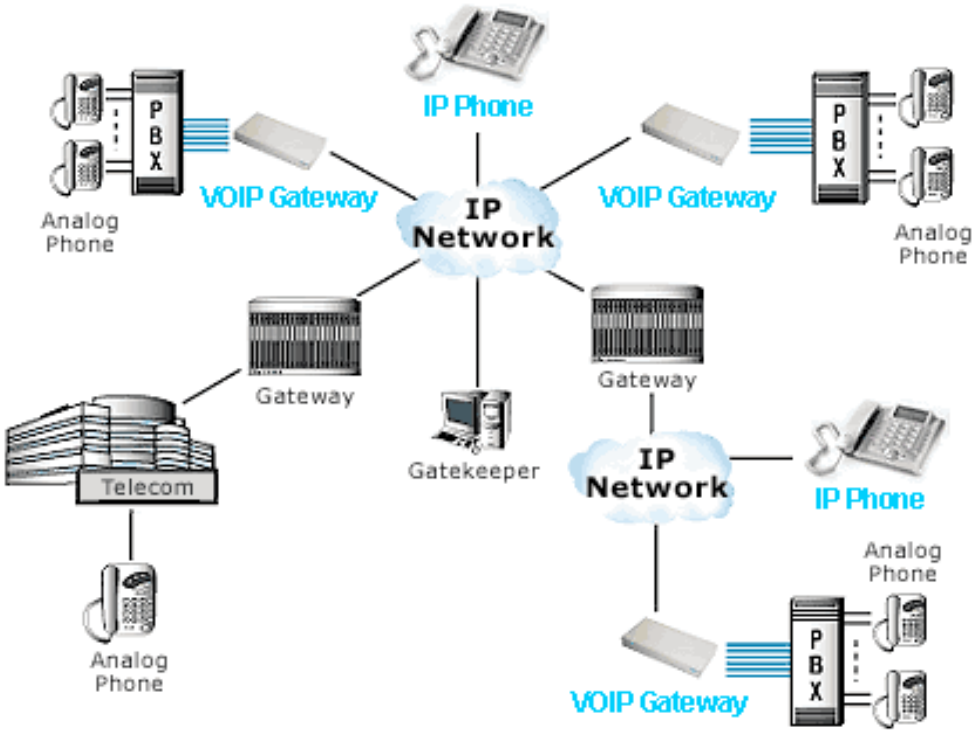
However, subscription growth in some markets is saturated. In the USA for example, there are more subscriptions than households with 331.6 million subscribers (104.6 percent of population) in November 2011 (CTIA). This means that the market is not growing overall and the only way to grow subscriptions is to take them from other players (which negatively impacts revenue per subscriber due to price competition) or to sell subscriptions to more devices per individual. Fixed-line prices continue to come down and revenue is declining as people unplug and go mobile.

The shift to mobile is not limited to consumers. The “consumerization of IT” which has people bringing their devices to work, and expecting the same great experiences with enterprise applications as they get with their consumer applications, makes a business phenomenon as well.

The app-ification of everything

Coincident with these favorable trends towards mobile for service providers, there are two significant trends causing a shift in the market and further changes in consumer behavior. Telcos ignore these at their peril.

The first trend is the shift from voice enabling networks to IP networks.



The second trend is the rise of the application Internet.

Both shifts represent the next wave of revenue beyond voice, messaging and data access and both open up the market to disrupters. Applications provide a new way to interact and IP networks enable the over-the-top (OTT) opportunity for disrupters with many popular communications apps such as Facebook, Skype and iMessage bypass Telcos' core networks by going over-the-top.

To participate fully in the mobile application revolution, Telcos need to make every service they offer consumable by applications and make everything they do mobile friendly to participate fully in the mobile application revolution.

There are new players and applications for everything – for voice calls (Skype, Viber, Voxer, . . .), for messaging (iMessage, WhatsApp, . . .), for navigation (google maps, . . .), to name a few. There have been massive investments in new growth areas, like video, with applications like Netflix, Boxee, and Youtube.

(Image www.pink-laptops.org)

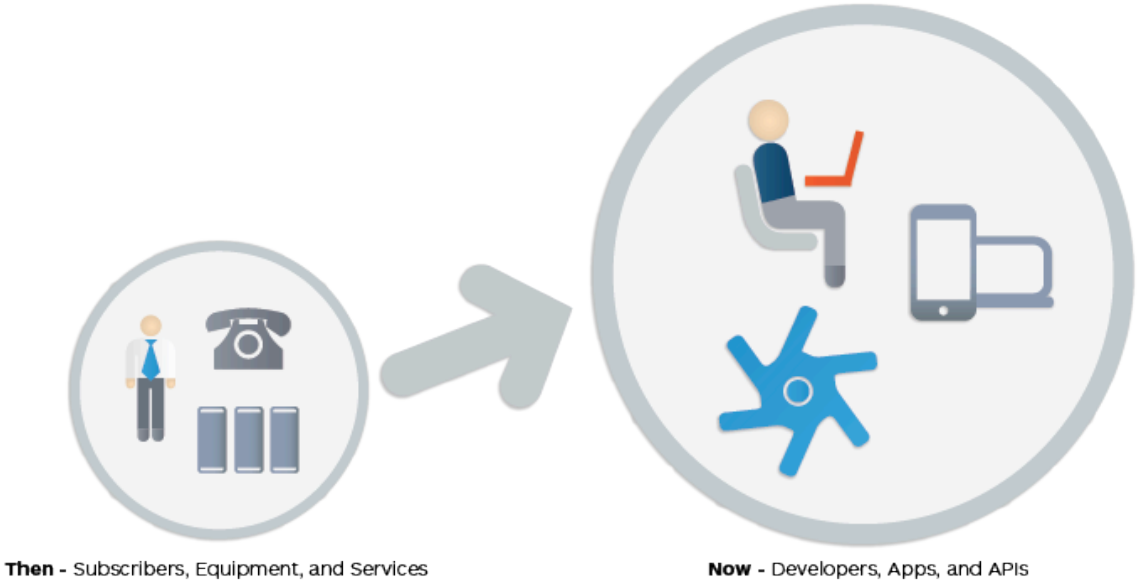
New economics of software

The new economics of software, driven in large part by open source and cloud computing, means that the cost of building new services and starting companies is dramatically reduced and new players and competition are emerging all around Telcos.

The revolution is happening at a rate that demands speed and agility on the part of Telcos if they are to meet the opportunity and stay relevant in a changing landscape.

The rise of the new networks

The context of a Telco's business has changed in a fundamental way due to the shift from the world of Telco ***subscribers*** consuming ***Telco services*** that are captive on a ***Telco-provided device***, to the new world where ***users*** use ***applications*** (G+, Facebook, Twitter, Skype, etc.) on ***open devices***.



Then - Subscribers, Equipment, and Services

Now - Developers, Apps, and APIs

- ✓ **Subscribers and customers** are no more – you now have **users and developers**.
- ✓ **Mobile devices and applications** replace traditional **equipment like landlines, fixed phones**, and so on.
- ✓ **APIs** now provide the **data and services** to those applications and devices.

The combination of the all-IP network, open devices, and the economics of software has given rise to asymmetrical competitors that look like communications networks, but play by different rules than traditional competitors. They are not regulated, charge and monetize their services differently through different business models (advertising, device sales, *freemium* models, and so on), and operate with vastly different cost bases and cycle times.

Telcos are at risk if they don't do business in different ways

In recent years, big Internet player have been showing us the way. Leading companies like Google, Amazon, Facebook, and eBay are finding great success turning their business into software platforms.

Google Maps and **Yahoo! Local** gained tremendous distribution by exposing their functionality through other sites. Google's entire business is based on syndicating its functionality and paying the channel for doing so. Facebook exposes its data and has become a platform on which entire companies have been built.

This does not mean that Telcos need to adopt the Internet platform company model fully, but it does mean that their assets and services all need to be consumable by apps, that they develop the agility and execution ability of these companies, and that they start looking for ways to enable platform and network effects.

Several Telco players have seen early success.

AT&T has built APIs that let software developers build phone and tablet applications that send text messages across the AT&T cellular network, that charge payments straight to a user's monthly AT&T bill, and more. At the end 2011, AT&T was handling 4.6 billion API calls a month on its network, and they predict that number will reach 10 billion by the end of 2012. That's traffic in the same range as the top web companies.

> ***"The culture around development and delivery is changing. We are accelerating the pace of innovation at AT&T. The transformation that is underway here is about unlocking the value of our platform and delivering new capabilities to our customers faster than ever before."***
>
> *Jon Summers*
>
> *Sr. Vice President of Applications and Services Infrastructure, AT&T*

Telefonica's BlueVia is trying a new approach to developers. Instead of asking developers to pay for access to Telco services, Telefonica has taken a page from Internet giants and is paying developers (via revenue sharing) for the additional traffic they generate. **Telefónica Digital** further extended its platform by acquiring video platform leader **TokBox,** adding cross-platform Web-based video communications to its existing voice and messaging capabilities. They also launched TuMe, a free messaging application not tied to the Telefonica network.

KT (formerly **Korea Telecom**) is South Korea's leading telecom company and among their products is the **ucloud public cloud service**. It serves the Asia-Pacific region and delivers a range of IT resources including infrastructure, platform, and software, for which developers can selectively use and pay for just those they need. KT provides APIs to enable the development of third-party software for ucloud. KT has also launched Baas.io, a mobile applications platform to make it very easy for developers to build mobile applications on KT's cloud.

Checklist for a winning strategy

Given that the context of a Telco's business has changed in a fundamental way, what are the considerations for formulating a winning strategy?

- ✓ All services will be consumed by applications
- ✓ Applications get their functionality from APIs
- ✓ Telco competition is no longer just other service providers
- ✓ The market for services is global
- ✓ Hosting is moving to the cloud
- ✓ A huge amount of innovation happens outside your company
- ✓ The need to differentiate services and appeal to application developers
- ✓ The need to change technology and business structures

All services will be consumed by applications

This is one of the most important trends of the past 5 years and goes hand-in-hand with the growth of mobile device usage and is driven by the influences of social, mobile and cloud computing. Voice, messaging, location - to name a few - are all features that need to be surfaced in an app.

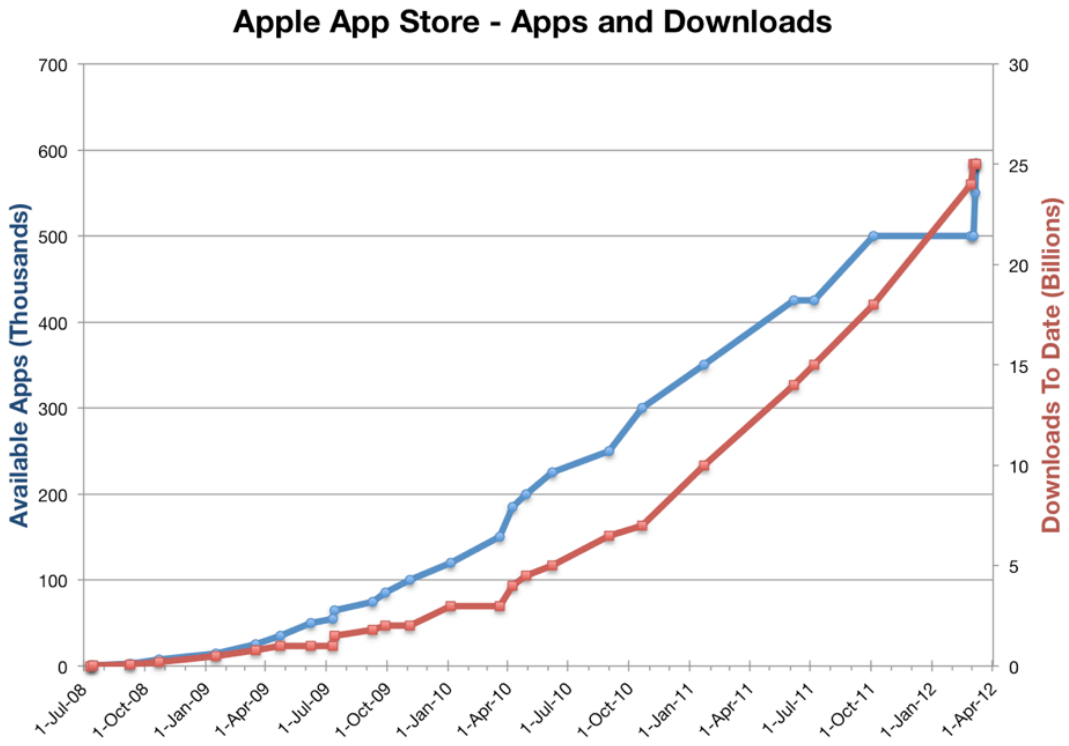


Figure 1: Apple App Store – Applications and Downloads

In addition to near-exponential growth in available apps on the Apple app store:

- ✓ According to former analyst and now VC Mary Meeker, by the end of 2013, there will be 2.4 times as many "mobile operating system" products than the old Windows standard shipping per quarter. That's 160 million Android devices, 100 million Windows devices, and 80 million iOS devices shipped per quarter. [3]

- ✓ Meeker also predicts that by the end of the second quarter in 2013, the installed base of tablets and smartphones will be larger than the installed PC base.

- ✓ Android smartphone adoption is growing six times faster than the iPhone. Meeker suggests, "*… to assume you can ignore Android is to say you can safely avoid the biggest part of the potential market.*"

[3] http://techcrunch.com/2012/11/05/mary-meeker-internet-trends/

Applications get their functionality from APIs

APIs power applications. The following chart indicates the exponential growth of public APIs over the past several years.

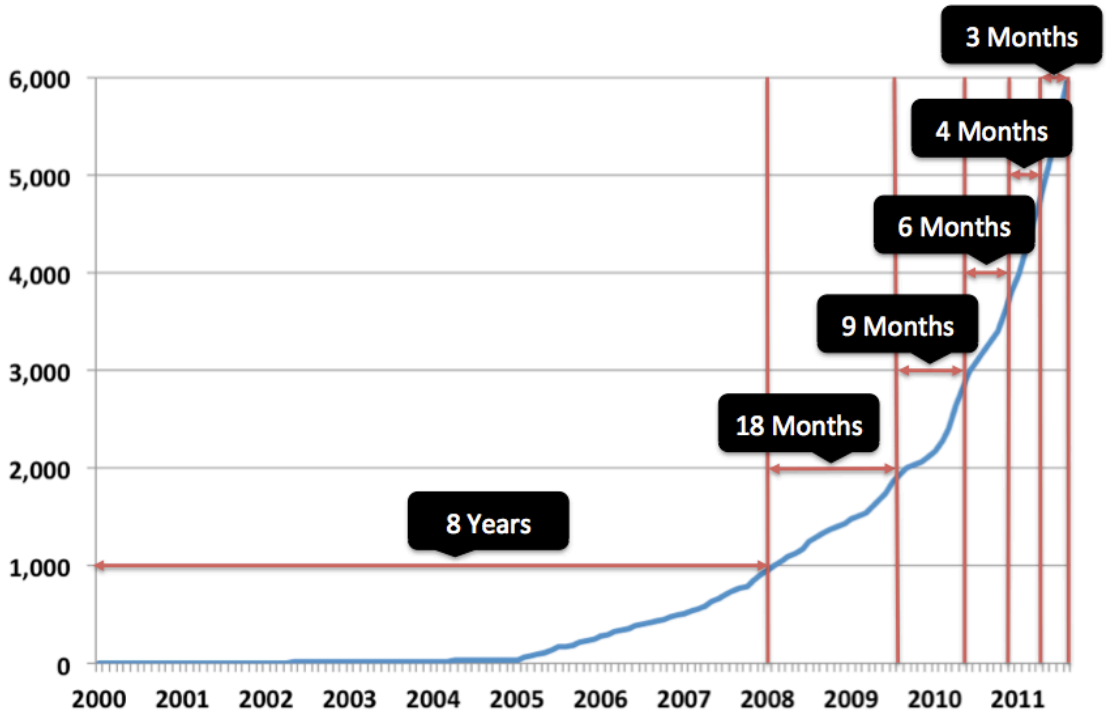
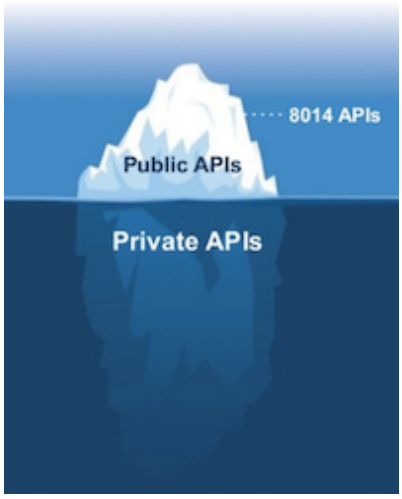


Figure 2: Growth in externally facing APIs 2000-2011 *(Source: ProgrammableWeb)*

Note that this number of APIs represents only a subset of all APIs. Many APIs are private so are not visible to the public.



If Telcos want their core services (voice and messaging) or enabling services (advertising, payments, location, etc.) consumed, and to realize revenue growth from the app economy, the services have to be available in applications via APIs. In other words, every homegrown service should be built as an API and then the applications tethered to that API. *(Image source: faberNovel)*

Telco competition is no longer just other service providers

Competition is coming from everywhere – from Internet companies, hardware companies, and niche players – from anybody that has a global network, which has applications and experiences across devices. Just look at the number of popular communications apps such as Facebook, Skype and iMessage bypass Telcos' core networks by going 'over the top' (OTT).

The market for services is global

Telco's are no longer competing exclusively in their 'home' market. Facebook, Google, Skype, and others are all global services. To win, Telco's need to provide great services for their subscriber base and think about a whole-world market. This means releasing services not necessarily tied to your network (like Telefonica's TU Me app) and finding ways to interoperate with other operators to present the largest possible market of users to developers.

Hosting is moving to the cloud

Most Telco operators have a hosting business that they built or acquired to complement their ISP business. However, Amazon and Heroku among others have shown us that instant access to a programmable *Infrastructure as a Service* (IaaS) is a compelling alternative to hosting or *managed services*. Cloud platforms expose APIs. In order to evolve a Telco's hosting business, and stay ahead of the competition coming from cloud companies, Telcos need to release cloud infrastructure businesses with instant access and great APIs. That said, achieving feature parity with Amazon will likely not be enough - Telcos will need to leverage their network position and competitive services to offer a compelling IaaS alternative.

A huge amount of innovation happens outside your company

Telco operators have traditionally focused on internal product innovation and mass-market services targeted at their own subscriber bases. However, it is impossible to fund all of the ideas necessary to address all of the market niches. Business teams will simply never be able to justify the investments required to find the winners. This underscores the importance of never releasing a first-party service without a corresponding set of APIs.

Companies like Twitter, Google and Facebook have shown us how to do external product innovation. The goal is to tap into the innovation and creativity of external developers as well as offering numerous and disparate niche services. People within and around niches come up with ideas to serve those niches.

The need to differentiate services and appeal to app developers

The onus is firmly on Telco companies to examine their capabilities, rank them based on what the market will find valuable, and then figure out how to take them to market.

APIs are fundamental to making this happen by letting software developers build phone and tablet applications that do everything from sending text messages across cellular networks to charging payments straight to a user's monthly bill to new functionality that Telco providers may have never imagined.

To be successful Telcos must provide developers:

- ✓ **Well-designed APIs for network and other services.** It's key to provide your services as an API so that they can be consumed by the innovative ecosystem outside your company, thereby capturing developer mindshare, and helping expand your brand in ways not possible before.

- ✓ **Trusted and secure links between developers and subscribers for payment.** Telcos need to think about how their services can help developers solve problems and make money. Note that in the Web world, APIs are often free to use so that developers don't need to worry about up-front costs.

- ✓ **Access to a sizeable user base, an addressable market, and cross-operator reach**. Telcos traditionally have the former. For a developer, the latter is typically a geographic region (North America, Europe, China, India, . . .) or perhaps all 1 billion Facebook users.

  A Telco's subscriber base is likely not an addressable market unless they have 100% of the subscribers in their country. It is essential to figure out how to work with other operators to get full coverage for services in entire markets.

- ✓ **Consumer demographic information and network usage for better application experiences.** Telcos are uniquely positioned to provide aggregated data around subscribers, their devices, network usage, and so on, which can be highly valuable for developers to both target and create apps that address the real needs of customers. This will result in better customer experience and positive impact for Telcos in both retention and upsell revenue. It's a winning proposition for customers, developers and Telcos.

- ✓ **Access to enterprise customers.** Telcos traditionally have strong relationship with enterprise customers. As enterprise customers embrace Web and mobile applications, Telcos need to provide all their services through APIs and target enterprise developers as a separate segment. If Telcos can provide enterprises and their employees seamless experiences across devices, reliable and secure networks and ability to use Telco services such as voice, messaging, QoS, etc. natively in their apps, that will help both revenue and retention.

- ✓ **Access to subscribers through retail outlets and beyond.** As developers create interesting apps and experiences for customers, they also need to create demand and customer adoption. Telcos invest heavily in customer relationships and communication. In most markets, they also have a physical retail presence for customer interactions. These are highly valuable assets for developers large and small to access, engage and promote their apps.

- ✓ **Ease of adoption.** Developers will look for instant registration and access, self- and community service, tools to make adoption easy, and so on. Today, many Telco services have multi-week onboarding times. To simply try something out developers have to sign negotiated legal agreements, wait to set up a VPN, file a ticket to get their IP whitelisted, get issued and then install a digital certificate, and so on.

  The process is just too slow and kills innovation and deals. Telcos need to make adoption as easy or easier than the competition. And remember, the alternative (the competition) may be a Web company that offers a 5-15 min experience from self-registration to first API call!

The need to change technology and business structures

In addition to differentiating services and in order to appeal to app developers as described above, most Telcos will need to make changes to their business processes and organizations.

Business structures that supported Telco ***subscribers*** consuming ***Telco services*** that are captive on a ***Telco-provided device*** simply no longer suffice. The new world of ***users*** that use ***applications*** created by **developers** who may or may not work for the Telcos demands a change. Telcos must:

- ✓ **Be easy to work with.** Telcos need to support massive self-service and ease-of-use for developers. Developers will not tolerate long cycle times and old-fashioned ways of doing things when much easier alternatives are available.

  Telcos must simplify contracting processes to make it much easier to do business with them. They must enable self-support to cut the cost of supporting large numbers of developers. Developers are not Telco customers and shouldn't be considered as such – they need to be thought of as channel partners – as an extended part of your company and brand.

  With solid developer support in place, and a good API and API management program, Telcos can bootstrap and foster innovation, and invite developers to participate and carry their business value outwards, and at the same time maintain security and control of their business assets.

- ✓ **Complements to your business.** Telcos need to grow revenues in areas adjacent to their traditional business by fostering complements to their business. Doing so means getting Telco capabilities extended into new areas, and adopted by other companies.

- ✓ **Justify a business case and fail fast.** It is important to think of many small niche successes rather than large mass-market services. To get there, Telcos need to embrace the **'fail fast' model** and do faster iterative development like big Web companies do.

- ✓ Telcos should avoid trying to **justify a business case** in the traditional fashion. Look at how very difficult it was for many companies to justify the business case to build out a massive web presence and how they were 'Amazon-ed' or 'eBay-ed' or 'Netflix-ed' as a result. There's a massive shift in consumer consumption behavior and expectation, and adjusting a company's business models and services to respond to this shift is critical to staying relevant and competitive in the market.

  A business won't have all the answers when they start. That's ok. They won't find the answers sitting on the sidelines pondering. Just jump in and act to solve problems and address pain points for your developers (channels) and consumers (end-users). Expose the APIs against which developers can build innovative applications and figure out the business model as you go.
  Start an innovation fund.
  Talk to developers.
  Attend hackathons.
  Act! Answers come by doing.
  If you wait until the answers are obvious, it will be too late.

- ✓ **Tectonic organizational shift from the inside out.** Most Telcos need to change whole organizations from the inside. Some have chosen to acquire technology and experience, which is certainly a good way to bootstrap efforts. In this case, the most successful acquisition strategies are those that leverage their acquisitions to change the company so that the culture shifts to one that behaves more like a platform company.

  That means shifting from organizations that ship an application or service to customers or subscribers to shipping an API to developers. This changes many things for a business, including product design and development processes, which are different when an API is your product.

Is it too late? Are Telcos already out-played by the disrupters?

What advantages do new players enjoy in providing services traditionally provided by Telcos?

Low barriers to entry means lots of entrants, and increased participation means the odds of winning ideas is increased. New players enter the market without the fixed costs of operators, and sometimes with **new asymmetrical business models**.

Take Skype for example. It enables its users to make free voice and video calls from a computer or a phone to another computer or phone by routing the call through the Internet. Skype also offers a premium service, SkypeOut, which allows users to call landlines, mobile phones and smartphones – for a fee.

Or take Apple's iMessage business model. It favors hardware sales over messaging revenue offering iPhone users free text messages while on Wi-Fi.

> ***"You lie awake at night worrying about what is that which will disrupt your business model. Apple iMessage is a classic example. If you're using iMessage, you're not using one of our messaging services, right? That's disruptive to our messaging revenue stream."***
>
> *iMessage disrupts our messaging revenue stream*
>
> *Randall Stephenson AT&T CEO*

Finding a niche, gaining a foothold

These new players are able to create 'niche' products that address niche use cases, which can eat away at traditional Telco service revenues.

No one disruptive innovation or business model by itself takes all the revenue away, but each individually makes an impact. For example, Skype doesn't kill all revenue from voice but it takes a share of *the last high margin frontier* that is long distance and international voice revenue.

Often, the disruptive service can be lower quality but has other attributes – like lower cost – that can allow it to get a foothold in the market and take revenue from established players. This is the classic path of disruption - a product or service becomes so commonplace and accepted that there is no new innovation on the product. Think about voice calls. Have they changed? Are not voice calls overly sufficient for their purpose? It is at that point that a market gets disrupted!

In other cases, the disrupter can be better than the Telco equivalent because it fits a niche or for example provides new and innovative combinations of different services. For example, you can now let your phone geo-tag a photograph you just took at a new restaurant and post that photo to Facebook with a Google maps link along with your review of your experience.

Whether lower quality but more cost effective for consumers, or solving a niche problem, the net affect is massive pressure on revenues for the traditional Telco.

Untethered by regulation

Because they are core infrastructure, Telcos are constrained by regulation in a way the disrupters are not.

Summary

Telcos have many hurdles and challenges to maximize their potential in a new world of APIs and applications. They also have advantages where new players face challenges in providing services traditionally provided by Telcos.

If Telcos want a piece of the future communications market, they need to find ways for their services to participate in and contribute to the apps economy. Leveraging their strengths and working with a new breed of application developer to expand their brands and bring new and innovative services to market will be rewarded in revenue and profit. But Telcos must act fast as agile Web companies gain ground.

The imperative for Telcos:

Innovate around applications and APIs. Delivering applications across devices for customers will drive success. Applications need APIs. Telcos need to create clean APIs that are easily accessible and adoptable by developers, whether their own, or their partners'. Build your applications on the APIs and release them both. Iterate, iterate, iterate.

Enable developers and partners to create applications and experiences. Put processes in place to make it easy for developers to work with you. Collaborate and create new business models that help developers and partners monetize and extend your services revenue through apps.

Recognize that your market is global. Help developers and partners tap into the largest possible global market. Provide customers with most choice and value.

Adopt the agile techniques of Internet companies. Like any business, Telcos embarking on an API initiative need to have clarity around business goals and value proposition of their API for developers and end users. That said, you cannot know everything beforehand.

Above all, Telcos need to get in the API game, measure progress as they go, and iterate fast – there's a real ***NEED FOR SPEED***.

About Apigee

Apigee is the leading provider of API products and technology for enterprises and developers. Hundreds of companies including AT&T, eBay, Pearson, Gilt Groupe, and Walgreens use Apigee to reach new customers and drive innovation through APIs. Apigee's API Platform enables businesses and developers to create and deliver well designed, scalable APIs and apps, drive developer adoption, and extract business value from their API ecosystem. Learn more at apigee.com.