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DIGITAL LIFE

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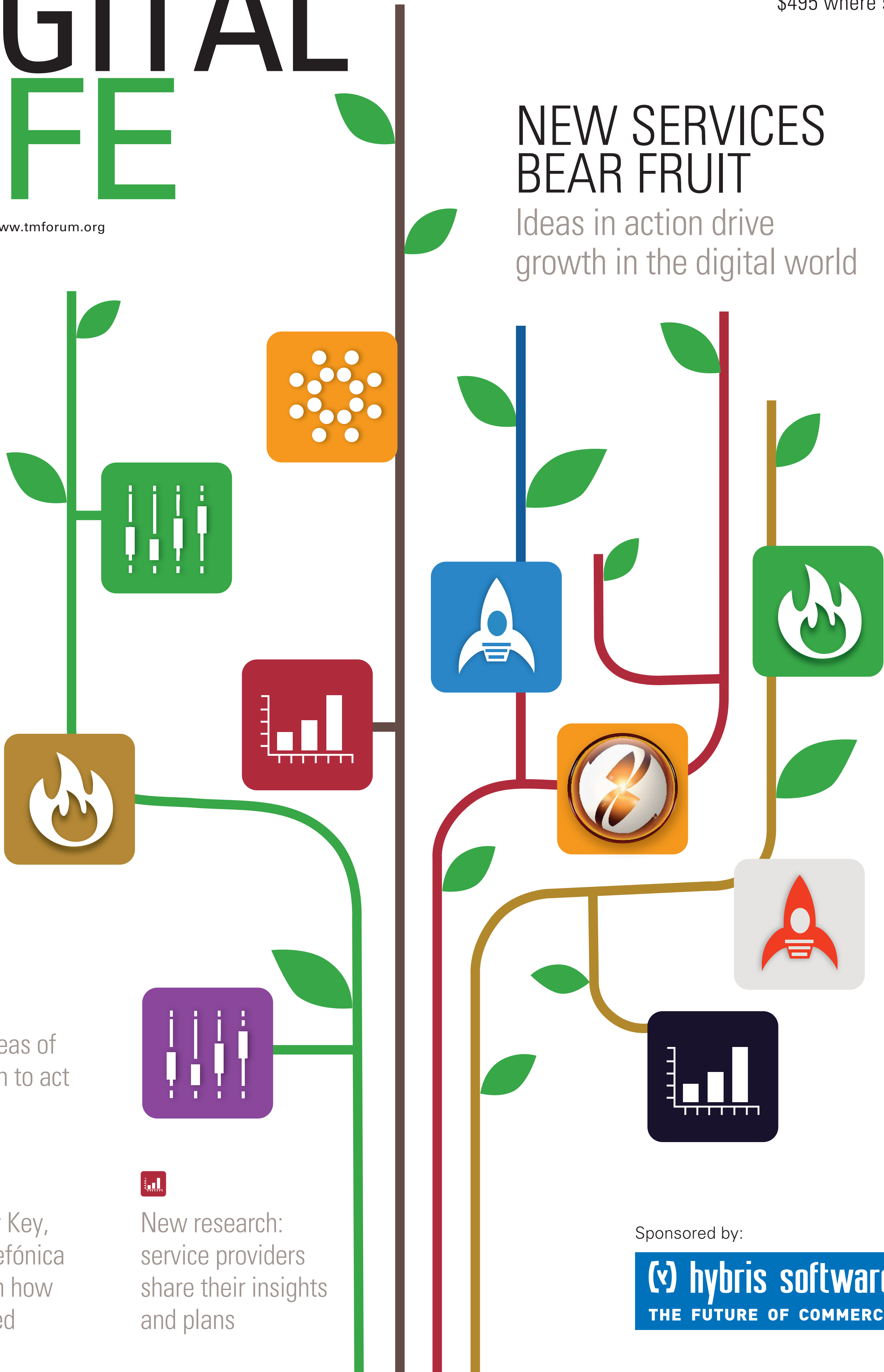
NEW SERVICES BEAR FRUIT

Ideas in action drive growth in the digital world



Hot 10 areas of innovation to act on now

Matthew Key, CEO, Telefónica Digital on how to succeed

New research: service providers share their insights and plans

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A WARM WELCOME TO THIS FIRST EDITION OF **DIGITAL LIFE**

In the last 10 years, how we communicate, consume information and entertainment, and conduct business has changed forever. The digital revolution is transforming our personal and professional lives at speeds we've never seen before. Technology is no longer the preserve of wealthy nations: in the same decade, digital services have helped overturn governments, transform the distribution of aid and medicine, and accelerate economic growth in developing countries.

The impact on established business has been profound. The music, movie and publishing industries, and their entire value-chain of production, distribution and retail have been changed irrevocably. Only now are the winners and losers of this first wave of the revolution becoming clear. But it's not over yet: in the next 10 years every industry – and the global economy itself – will be transformed. In short, everything that can be digital, will be.

Predicting the ultimate effect of disruptive technology isn't easy, and the digital revolution has already presented many paradoxes. To those who said we were about to witness the end of reading and literature, a recent study showed Amazon customers who own a Kindle eReader device actually read up to four times *more* books than those who do not. Becoming digital has simply made it easier to purchase, carry and so read books.

The effect on TV viewing has also been paradoxical. A recent study in the U.S. showed that teenagers today watch *more* TV than ever, thanks to second screening and social media. Going social makes TV watching a more engaging experience, and not just for teenagers: the majority of tablet owners regularly use their device while watching TV too.

In a digital world that moves at the speed of innovation, the future can be hard to predict.

Only the paranoid survive

For the communications industry, the future is equally uncertain. Few industries in history have faced so many threats and opportunities, at the same time. As the mobile market approaches global saturation point, a new breed of competition has emerged – enabled by that very saturation and the proliferation of connectivity.

Competitive 'over-the-top' services are exerting growing pressure on the established communications business. In August 2012, SMS alternative WhatsApp hit the milestone of 10 billion sent messages in one day. That's a ten-fold increase in 12 months, and just one of countless examples of the rapid erosion of traditional voice and messaging services. True, it's still a fraction of global SMS traffic, but it's the speed of this migration – and the loss of margins it represents – that's raising temperatures in the board rooms of operators around the world.

In the words of Intel's former CEO Andy Grove, "only the paranoid survive." Disruptive technologies are the nemesis of any complacent business, and for communications service providers, now is the time for reinvention.

Of course, connectivity is the oxygen of the information age, and data connections and usage are only set to rise exponentially. But providing connectivity alone will not be enough. It's bundled, enterprise-grade digital services delivered through partnerships, and platforms combined with connectivity, that hold the keys to growth in the face of shrinking revenues from established services.

Enter the digital enterprise

Communications service providers are well placed to capitalize on this next wave of digital opportunity. The first wave of the digital revolution has focused on the consumer, and now consumers are taking that revolution into their enterprise workplace. Enterprise-grade, mission-critical services including enterprise 'IT-as-a-Service' are poised for growth, while vertically-focused solutions such as eHealth and smart grid are already showing huge potential.

All of these services require a level of trust; security and reliability communications companies have in their DNA. The 'best efforts' quality of digital services to date won't meet the needs of business and life-critical services. The communications industry has both the skills and assets to deliver the reliability and security needed for these services to succeed. Capitalizing on these opportunities means making the leap from being *communications* service provider to *digital* service provider.

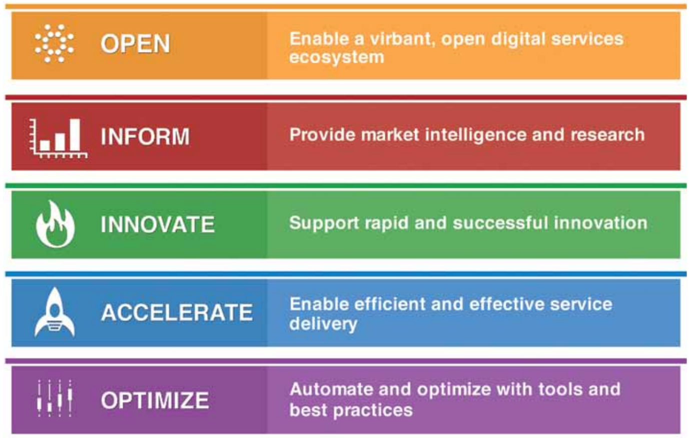
Crossing the chasm to digital services won't be easy. There's the existing business to steer through harsh conditions; ever-increasing, well-funded competition; shareholders demanding rapid growth; legacy infrastructure and integration challenges; and a business and technology culture with its roots in a very different business environment. Success requires focus, vision and radical thinking – embracing a new set of core competencies for a service provider's business.

Opening up for digital

Whichever way you turn in the digital world, being open is a universal ingredient of success. The digital economy has thrived because the Internet provides an open, common platform and set of agreed protocols for systems and devices to talk to one another.

Successful cloud services and platforms have embraced this open approach, offering rich application program interfaces which reduce the cost of integration and drive the growth of ecosystems, reducing the barriers to entry for small, innovative businesses.

As we move in to the era of enterprise-grade digital services, I believe maintaining an open, agile approach to innovation and integration will be crucial.



For service providers' IT, this presents two challenges: how to deliver a scalable business platform able to deliver an agile and constantly evolving set of products, services and support multi-partner business models at the lowest possible cost; and how to open up existing, significant capabilities securely and globally.

As a global industry association, at TM Forum we're energized by the challenges ahead, and committed to helping our members succeed in the digital economy. That's why we recently launched our Digital Services Initiative, focused on overcoming the challenges of managing complex digital services and enabling an open, vibrant digital economy.

The Initiative has five key pillars, designed to underpin our member's success in the digital economy, as shown in the graphic above. The unique research into the insights and challenges faced by service providers (see page 8) included in this report is the just the first stage in helping our members embrace the opportunity of digital services.

With over 950 member companies covering the globe, we're expanding our members' ecosystem to encompass new digital divisions of our current members, as well as attracting key enterprise players from a number of verticals who have an essential role to play in digital services for finance, health, energy and more.

I look forward to working with you as we take on these challenges together, and in the meantime, enjoy *Digital Life!*

Nik Willetts
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CAPTURING THE DIGITAL OPPORTUNITY

The digital revolution has brought about enormous change and, to remain competitive in a changing world, it is essential to move fast, embrace new opportunities and innovate. By Matthew Key, CEO, Telefónica Digital.

The digital revolution has already fundamentally re-written the rules of many industries, from music through to photography. This process of change is accelerating and will disrupt and transform society and almost every business.

My job is to help Telefónica transform its business model in order to embrace this digital revolution. The fact is that digital will dramatically change the way our industry operates. In many ways it already is and the time to seize the opportunity is now.

Digital technology does not recognize physical boundaries or respect companies that have been successful in the past. The low barriers to entry, the minimal cost of innovation, and the speed with which customers adopt new products, and abandon products they have grown up with, have given the digital revolution an unstoppable momentum.

The opportunity for companies like us is to sit at the heart of this new digital world. We have global reach, a crucial billing relationship with hundreds of millions of customers, experience working with large corporates and governments, and huge distribution networks in terms of retail stores and customer service operations. Plus we are the ones that are putting smartphones – a driving force of digital – into consumers' hands.

In order to seize on this opportunity, we need to behave and act differently. We should learn from the Internet/software sector, which is more entrepreneurial and has risk-taking at its core. It's agile and iterative; it's not afraid to scrap things that aren't working and it sacrifices process for speed. Most of all, it's about innovation and putting a premium on doing things differently.

I believe that there are three key aspects to succeeding in the digital space.

Open innovation

We should embrace innovation wherever it comes from. As the barriers to entry have come down, the innovation cycle has changed forever. Great ideas are just as likely to come from a lone developer as from within an R&D department.

What's more, innovation is just as likely to emerge out of São Paulo, Tel Aviv or Bogotá as it is from Silicon Valley or London. The challenge is to identify the ideas and industrialize the solutions.

That's why we created Wayra – a technology accelerator programme, incubating 170 start-ups across 11 countries. Wayra allows us to identify and nurture groundbreaking ideas in areas relevant to our business.

We gain access to a wider pool of ideas, and the start-up companies we are supporting have the opportunity to take their innovations to our 300 million customers.

In-house research and

development undoubtedly remains important, but you also need to identify disruptive innovation from outside your company and outside your industry.

Building ecosystems

Trying to control digital services from end-to-end is no longer an option. Partnerships are vital to work with specialists in areas that are not a core competency. By creating a vibrant ecosystem around products and services, where different companies play to their key strengths, the sum can be greater than its parts.

Take Firefox OS where Mozilla is seeking to establish a new, open mobile operating system based on HTML5. We support its goals because we believe driving open web standards in mobile will be the only way to ensure innovation continues. But we know that a new OS can only be successful if based on the broadest possible cross-industry support. This means involving as many network operators, hardware manufacturers, chipset makers, content owners and developers as possible.

Social innovation

The most exciting aspect of the digital revolution is the role technology can play in changing society positively. Combine social needs with a new business model and you have a recipe for success that will create new opportunities.

Healthcare is one such area. Public administrations around the world are grappling with the rising costs of healthcare, particularly the costs associated with chronic conditions such as heart or respiratory problems. In the UK, 5 percent of NHS patients have chronic conditions and they account for 50 percent of the NHS's annual budget.

We are already trialling services in several countries to enable people to monitor these conditions in their own homes and share the results in real time with their doctor, improving the quality and cost of healthcare.

Financial services is another. In Latin America, only 30 percent of the population has a bank account, and yet mobile phone penetration is over 100 percent. Activities that we take for granted, such as paying a bill, can involve people taking days off work and standing in line for many hours. Delivering banking services via mobile can not only transform people's lives, but also transform the delivery of government services, such as pensions for instance.

We have all looked at industries such as music, travel, and publishing and thought why did they not embrace the digital change? Change is difficult, particularly when you are talking about changing a model that has proven successful for so many years.

The good news is that the opportunity is significant. Digital is paving the way for brand new products and services that will introduce new revenue streams. It has the potential to drive huge efficiencies in the way we operate, and it will allow us to empower our business and public sector customers to do things differently.

Thanks to our position as a trusted service provider, we can be at the forefront of enabling our customers' digital lives.

This period of change may feel uncomfortable, but my message is move fast, embrace the opportunities, create new ecosystems, and build stronger businesses and a better society.

Matthew Key
CEO, Telefónica Digital

HOW TO PROSPER IN **THE DIGITAL REVOLUTION?**

The digital revolution is enabling unprecedented innovation, which has and is disrupting business models and entire industries. Nowhere is this more true than for communications, which underpins the entire digital ecosystem. Communications service providers understand they need to become digital service providers. In October, TM Forum surveyed over 150 executives from within service provider members to find out how they plan to do it. Philip Marshall, Ph.D., Founder and Chief Research Officer, Tolaga Research, guides us through the findings of this unique research.

Unlike the publishing, music, advertising, PC and other industries, communications' day of reckoning has been postponed by the boom in data services. That day is coming, though.

Networks underpin all digital services, which are driving unprecedented capacity demands and necessitating huge investment. Yet those who run the networks are receiving modest revenues from these services. At the same time, their core services, phone calls and messaging, are being eroded at an accelerating pace, as they move from being charged-for, discrete (even if bundled) services to apps.

The big question is what to do about it.

In October 2012, TM Forum carried out a Digital Services Survey of over 150 executives from within service provider members. This was complemented by in-depth interviews with some of the communications industry's most experienced, senior executives. The research revealed that digital services represent fewer than 10 percent of overall service revenues for 40 percent of the respondents, while only 15 percent of participants say they account for more than 20 percent of income – sobering figures (see Figure 2).

Service providers certainly recognize the importance of digital services and particularly the tremendous rate of market take-up. Part of the problem of responding is that executing transformation strategies is a huge undertaking, and the field is littered with expensive failures. It is even more challenging now, given the pace of innovation, the diversity of ecosystem players and the proliferation of business models.

It is well-known that service lifecycles are diminishing, but perhaps one of the most important findings of the in-depth interviews was how much they are shortening and the rate of change is accelerating. For example, one interviewee states that some of their company's mass market services have had their product lifecycles shorten from 36 to 24 months, then closer to 12 months.

Yet the survey found that crucially, many of these services and the need for speed are not supported by vendors (see Figure 6 on page 14), with about 50 percent of new developments relying on in-house efforts. In the face of these challenges, we anticipate that communications service providers will rapidly migrate to and mimic the platform-based approaches that are

"Service providers certainly recognize the importance of digital services and particularly the tremendous rate of market take-up."

being pursued by Tier 1 players like Telefónica if they prove successful.

Key considerations include:

- How to respond to players like Apple, Google, Facebook and Skype, who are offering over-the-top (OTT) services. In particular, under what circumstances is it better to partner with OTT players and when does it make more sense to compete? Are there opportunities to utilize OTT solutions as service enablers and mimic OTT innovations so that they can be used in parallel markets?
- Which key assets and capabilities can communications service providers use to attain sustainable market value and how this is expected to change as digital services continue to evolve? This can vary greatly between mature and emerging markets, and depending on the starting positioning of the service provider; such as whether they have control of premium content and an established data center infrastructure. The positioning of the service provider is also affected by the pace of innovation and span of experimentation, which is one of the hallmarks of the digital services marketplace.
- Operational transformation strategies, in terms of changes to organizational structures and employees' incentives, and IT and network transformation. This is crucial for service providers to reduce costs and become agile enough to handle the variety of services which customers are demanding – and their ever-shrinking service lifecycles. With the market itself evolving so fast, service providers cannot just transform once, but are finding they need to change continuously. How and what they prioritize are the key to success.
- Market focus and partnership strategies includes market segments, whether consumer, small, medium and large enterprise, and vertical industries such as energy, transportation and healthcare. Communications service providers can no longer dominate market categories with vertically-integrated solutions, but must develop partnerships and play a lesser role across a wider variety of markets. This is particularly the case in vertical market solutions, such as those associated with machine-to-machine (M2M) communications, where they must partner with other industry specialists, such as in healthcare, energy and transportation.

This report investigates the variety of digital service strategies that communications service providers are pursuing, their progress and their plans for the future.

A perfect storm

Industry commentators who have been anticipating the digital economy for many years couldn't have predicted the manner and rate at which it is unfolding. Within the last five years, the digital economy has been simultaneously bolstered by the proliferation of smart devices, application stores, cloud computing and the extensive application developer communities.

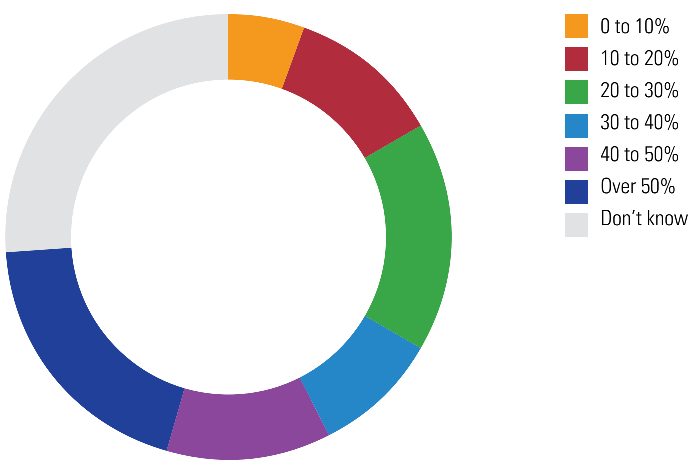
This has created the ideal conditions for digital services to thrive and caught many industries, including communications, by surprise. Global smartphone penetration already exceeds 20 percent, having growing from almost nothing in 2007, when the first iPhone was launched.

Figure 1 shows the smartphone penetration estimates among the respondents of the TM Forum's Digital Services Survey. It shows over half the respondents estimate smartphone penetration levels of more than 20 percent, and 19.6 percent of respondents estimate levels greater than 50 percent.

The penetration rate of smartphones is growing at an astonishing rate and they will become the predominant type of device on mobile networks within the next three years. The smartphone market is dominated by devices that run on the Android (Google) and iOS (Apple) operating system environments to facilitate extensive application development activity. Both Android and Apple are well on the way to having 1 million

Figure 1: Smartphone penetration among respondents

What percentage of your subscribers are smartphone users?



Source: TM Forum Communications Service Provider Digital Services Survey, 2012

apps in their respective stores.

Even though digital services create massive network traffic demands, communications service providers struggle to monetize digital services. Figure 2 shows that fewer than 16 percent of respondents can attribute more than 20 percent of their revenues to digital services. We believe that in most cases, providers with greater than 20 percent of revenues have well-established, premium content offers.

All the senior industry executives who were interviewed one-to-one agreed that communications service providers have been slow to innovate in digital services, even though the speed of subscribers' adoption is placing tremendous pressure on them to do so. The key barriers to responding were identified by respondents as being company culture, technical transformation, strategies for identifying profitable business models and partnership strategies.

Changing company cultures

Company culture plays an important role in attacking the digital services market, as does the need to continuously evolve organizational structures and corporate priorities. In our survey, we found communications service providers have made tremendous efforts to transform their company cultures: over 26.3 percent (11.7 plus 14.6 percent) of respondents believe company culture plays a small or negligible role in constraining the digital service market (see Figure 3). Yet 34 percent of respondents (6.8 plus 27.2 percent) feel culture remains an inhibitor, so clearly for many there remains much to do.

The survey found the cultural inhibitors are predominantly:

- complexities in gaining consensus among internal departments, which respondents attribute to the number of departments involved, protracted approval processes and a lack of accountability;
- fear of cannibalizing established product and service revenues; and
- risk-adverse cultures.

The survey results generally indicate strong support from C-Level executives and widespread recognition that the dynamics of the digital services market will demand continued changes in corporate cultures. There is also an almost universal agreement that efforts to shift towards Internet-centric philosophies are much at odds with traditional telecom philosophies.

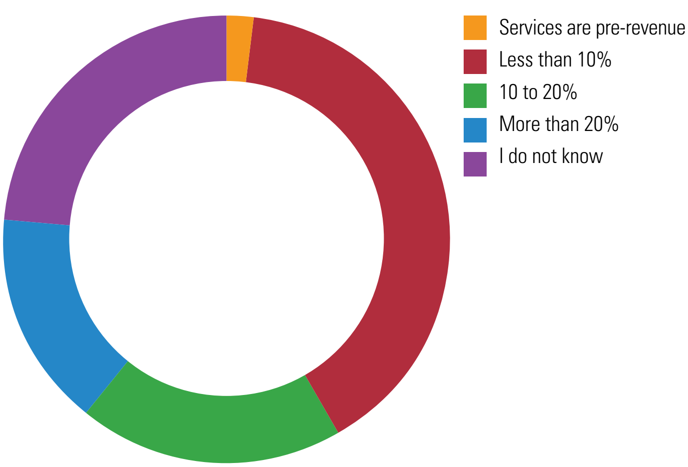
Driving partnership strategies

Most digital services have fragmented value chains which demand cooperation among multiple ecosystem players for solutions that are brought to market.

Figure 2: Estimated digital service revenues as a percentage of total revenues for survey respondents

Approximately what % of your total services revenue comes from digital services?

(revenues from digitally delivered services other than voice, data and messaging)



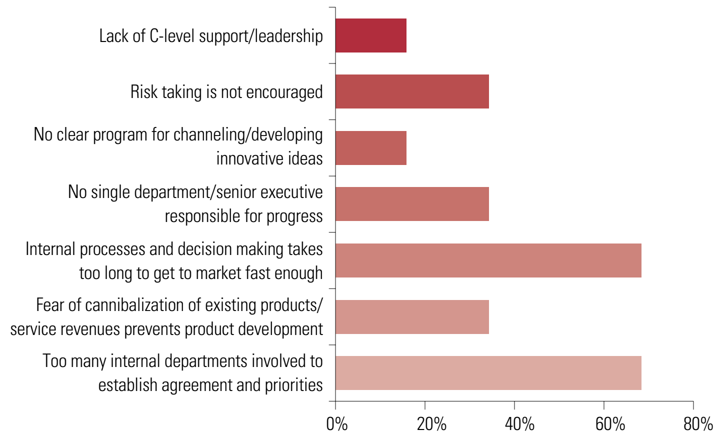
Source: TM Forum Communications Service Provider Digital Services Survey, 2012

"There is also an almost universal agreement that efforts to shift towards Internet-centric philosophies are much at odds with traditional telecom philosophies."

Figure 3: Company culture or process prohibits innovation

Company culture – corporate culture or process prohibits innovation
(percent of respondents)

If you selected Closely Applies or Exactly Applies, please select any of the following which apply to the challenge experienced:



Source: TM Forum Communications Service Provider Digital Services Survey, 2012

This contrasts sharply with traditional, vertically-integrated telecom services. Now communications service providers need to partner across the value chain and acquire competencies in areas of strategic importance.

The fragmentation of the value chain is particularly acute in the M2M market, where solutions are applied to a vast range of services, from automotive and transportation, to energy and smart grid, healthcare and home security.

As partnerships become more commonplace for communications service providers, they will shift their businesses from being product-centric to retail-centric. Along with the appropriately architected solutions, this shift will enable two-sided business models that bring players together to facilitate and monetize digital service innovations.

Our survey showed that communications service providers recognize the challenges of value chain fragmentation. Many are developing platforms to orchestrate cooperation and building partnerships with ecosystem players. In some cases communications service providers are acquiring key assets in markets they regard as strategic, such as Verizon's recent acquisition of Hughes Telematics Inc.[1] (HTI).

The partnership and 'co-opetition' strategies adopted by communications service providers are more complicated when they involve OTT players. In some cases communications service providers compete

> *"Many service providers are developing platforms to orchestrate cooperation and building partnerships with ecosystem players. In some cases, communications service providers are acquiring key assets in markets they regard as strategic."*

[1]See *TM Forum Case Study Handbook 2013*, which can be accessed free by all employees of our member companies by registering on our website then going to www.tmforum.org/casestudyhandbook2013

against OTT players, while on other occasions they partner with them. Based in the survey interviews, there is no clear consensus among respondents about the best co-opetition strategies, with communications service providers partnering with OTT players at varying levels.

The online survey results illustrated in Figure 4 indicate that 28.1 percent (25.2 and 2.9 percent) of respondents believe that partnerships are difficult to establish, particularly in terms of:

- identifying the right partners for new services;
- a lack of relationships with developer communities; and
- a lack of control over the value chain.

The fact that altogether some 57.1 percent saw finding the right partners as a serious problem also indicates that other companies are not necessarily anxious to partner with them: after all traditional 'telco' rules, terms and conditions have made it difficult to do business with them, especially for smaller, faster-moving companies, who so often have had onerous and unsustainable terms inflicted on them.

Business cases, risk challenge investment

The rate of innovation and diversity of digital services make it difficult for communications service providers to balance their investments in digital services relative to those for legacy services. The survey results in Figure 5 show that 31.1 percent (20.4 plus 10.7 percent) of respondents think digital services are stifled by funding shortfalls. The top three challenges cited by these respondents were:

- lacking business cases for digital services when compared with the revenue streams for existing services (cited by 51.4 percent of respondents);
- internal competition for funds (cited by 40.5 percent of respondents); and
- limited funds mean they can only focus on a small number of opportunities (cited by 35.1 percent of respondents).

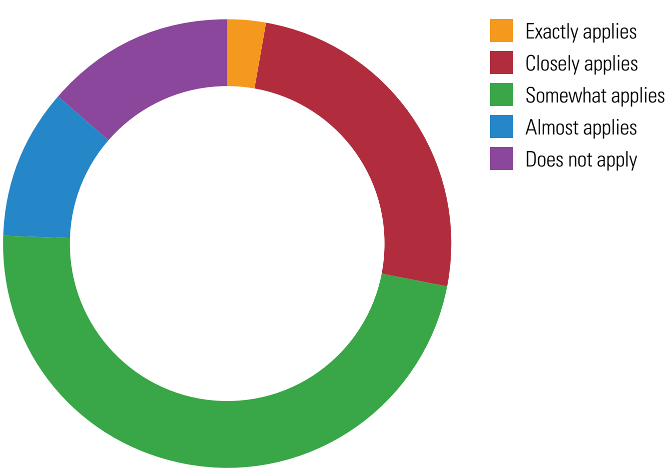
Discussions with the senior industry executives revealed that they had made considerable strides in addressing issues around business cases through platform-based solutions, and by choosing market solutions such as cloud computing and M2M solutions in vertical markets. Some Tier 1 operators, such as AT&T, Orange, Telecom Italia, Telefónica, Verizon and Vodafone, have implemented innovation labs and platform-based solutions as ways of carrying out affordable experimentation that they hope will lead to scalable offerings they can control.

There are notable variations in their approaches to platforms, particularly where OTT providers are involved. For example:

- The focus of initiatives like Telefónica Digital are clear – innovate to dominate services within its core business, partner with strong industry players to develop opportunities in new markets and create open developer environments to enable

Figure 4: Partnerships are a key requirement for communications service providers to succeed in the digital services market

Partnerships – necessary partnerships are difficult to establish
(percent of respondents)



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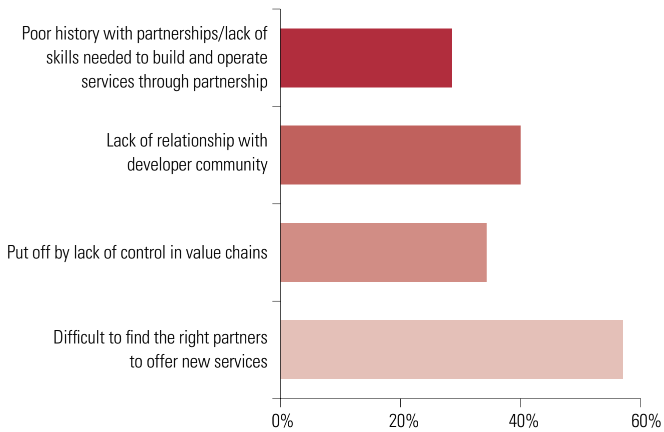


Source: TM Forum Communications Service Provider Digital Services Survey, 2012

experimentation and the creation of new services (see pages 22 and 23).

- Tier 1 operators like AT&T and Verizon in the U.S. market are unique in that they have nationwide mobile coverage and regulated, partial, fixed-line coverage across the country. Co-opetition strategies with OTT players vary depending on where communications service providers have fixed and mobile or mobile-only coverage. For example, Verizon competes or partners with Netflix for video services depending on whether or not it has fixed broadband/content offers in the respective markets.
- Telstra in Australia believes that it can partner and collaborate with OTT players and introduce deep packet inspection (DPI) technology to manage the delivery and security of services. This parallels AT&T's proposal to introduce toll-free data services and charge OTT players for their customers' usage, in effect capitalizing on being part of a '1-800 type' data service (that is free to the user at the point of consumption). Some communications service providers, including SK Telecom and Korea Telecom, are lobbying their regulator to enable them to charge OTT players for access to their networks. They are not alone: among others, Luigi Gambardella, Head of the European Telecom Network Operators' association, ETNO, wants the ITU to change its regulatory approach to the Internet, enforcing some kind of sender pays principle. While there is much talk of this being fairer – that those who generate traffic should pay for its carriage – the less often expressed view is that it is a way of extending the life telco-type charging models.
- Most communications service providers are being driven by customers to cooperate or collaborate with popular OTT providers such as Google, Facebook and Twitter. Many service providers anticipate there are opportunities to leverage widely adopted OTT capabilities as service enablers for broader consumer offers.

Technical transformation underpins profit

Communications service providers' technical infrastructure has evolved over many decades to create vertically integrated service silos that are optimized for particular products. These vertical architectures have proved costly and inflexible. In recent years, communications service providers have been eliminating silos where they can to evolve their service environments, and reduce costs and risks.

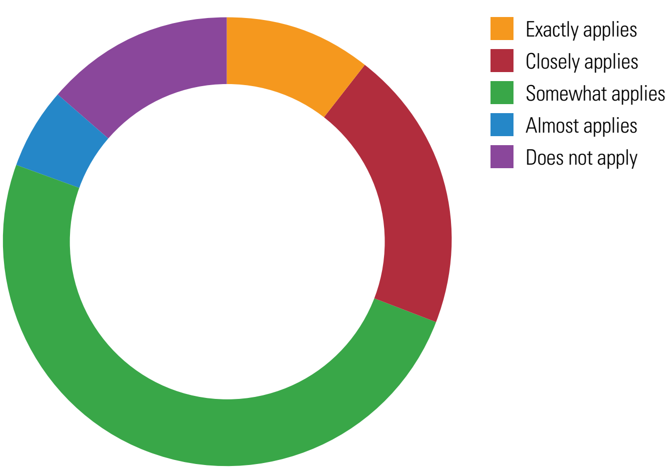
This is largely thanks to standardized, commercial off the shelf approaches enabled by TM Forum's Frameworx suite of standards-based tools and best practices (see page 34).

Digital services are pushing this further because they need a variety of new capabilities, including the following which respondents to the survey identified as the most common:

- Open development environments to provide

Figure 5: Business case challenges and internal funding priorities stifle digital service innovation

Investment – funding to develop ideas into products is difficult to secure



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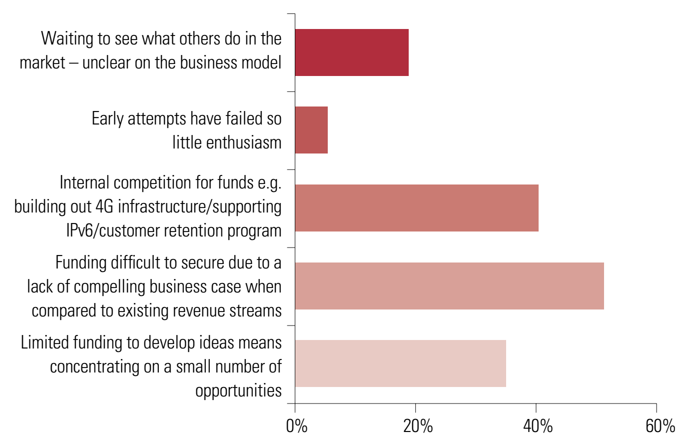
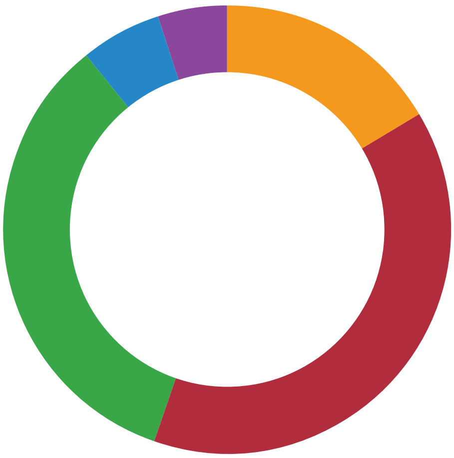


Source: TM Forum CSP Digital Services Survey, 2012

Figure 6: Integration challenges for digital services

Integration – legacy systems are too complex or expensive to integrate with when developing new products



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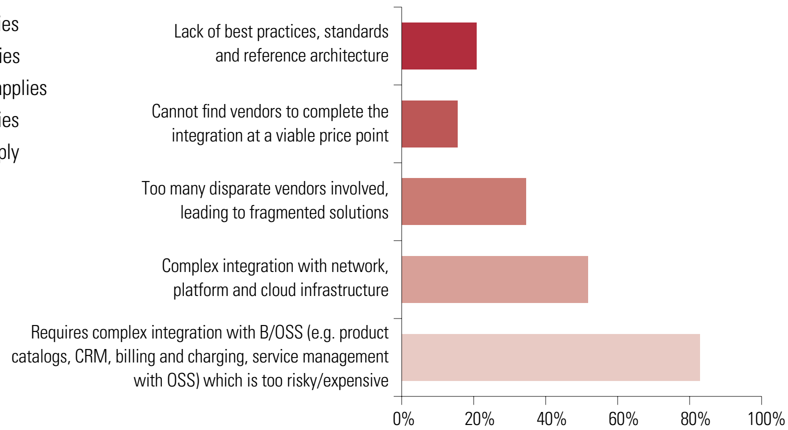


Source: TM Forum Communications Service Provider Digital Services Survey, 2012

service enablement and exposure.

- Automation to reduce costs and improve reliability, which becomes particularly complicated in the case of autonomous M2M devices where management and monitoring must encompass network and device nodes.
- Flexibility to support the greater variety and reduced lifecycles associated with digital services. Several respondents estimated that the lifecycles for digital services are half those of their established services and say they expect lifecycles to shrink further.

It was generally agreed that given the pace of innovation and changing demands in the digital services market, continuous transformation efforts would be necessary.

Figure 6 shows that 55.3 percent of respondents (38.8 plus 16.5 percent) believe that their legacy systems are too complex or expensive to integrate into the development of new products. Of these respondents, 82.8 percent believed that Business and Operational Support System (B/OSS) integration was the major concern, while 51.7 percent also cited complex network, platform and cloud integration issues.

The on-going integration challenges are serious issues for service providers and were investigated as part of the study. The end-to-end management challenges are being addressed by the Forum's Digital Services Initiative, and the integration of the management layer across multi-cloud environments to drive service assurance is a key part of the new, practical Multi-Cloud Management Packs for Digital Services, which will be available to members from TM Forum's website as part of the Frameworx 12.5 release in December 2012.

The survey results in Figure 7 show that 43.0 percent (25.2 plus 17.8 percent) of respondents believe they will struggle to implement, operate and scale new digital services profitably. The greatest concern expressed by these respondents is the difficulties in provisioning, activation, subscriber management and service assurance.

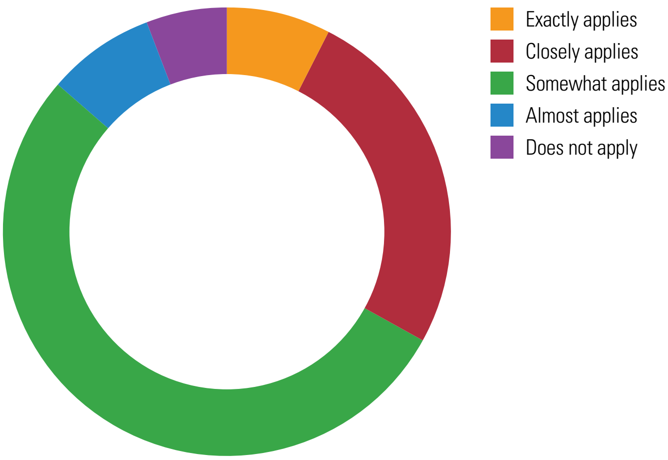
Strategies to ride the digital wave

The strategies that communications service providers are adopting from digital services are almost as broad as the variety services in the offing. Figure 8 illustrates this diversity where 57.9 percent of respondents indicate that they have collaborative approaches and 42.9 percent indicate that they have competitive business strategies for digital services. In addition, 35.7 percent indicate connectivity-centric strategies.

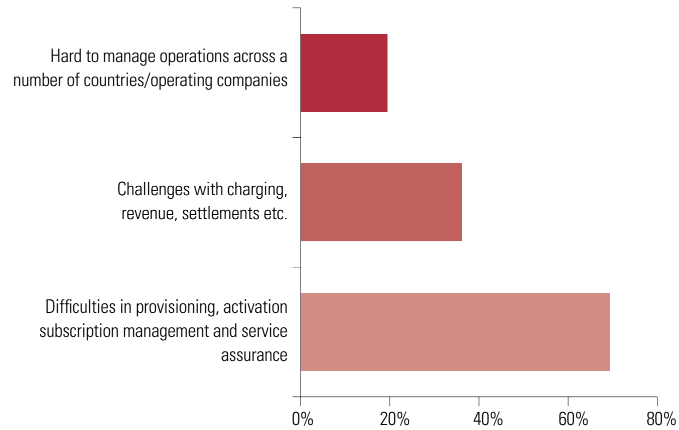
In reality, communications service providers could be

Figure 7: Integration challenges for digital services

Operations – difficulty in implementing/operating/scaling operations for new services at a profitable cost base (percent of respondents)



If you selected Closely Applies or Exactly Applies, please select any of the following which apply to the challenge experienced:



Source: TM Forum Communications Service Provider Digital Services Survey, 2012

expected to embrace all these strategies, depending on the services they offer. It is this diversity of requirements that proves the most challenging aspect of providing digital services and is their primary agent for change.

While 12.7 percent of survey respondents lack a clear strategy for digital services, it is heartening to see that almost 60 percent recognize that partnerships and collaboration are necessary to succeed in the digital services market.

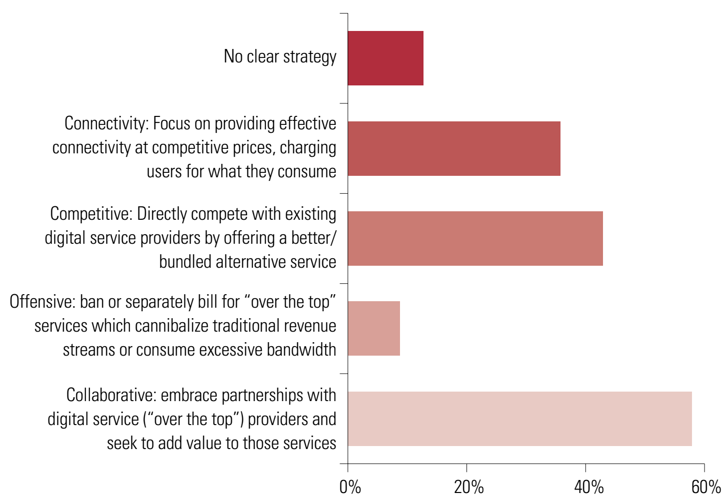
Given its huge momentum, communications service providers across the globe are addressing the many challenges of digital services with vigor, placing bets and investing heavily in the market.

While there are differences in their go-to-market strategies, the most are focusing on four categories of digital services, namely:

- vertical industry solutions and M2M, typically with vertical sector emphasis towards transportation, energy and healthcare;
- cloud-based services including established infrastructure and platform as a service offerings in addition to a variety of cloud orchestration, management and security solutions;
- socially-orientated, unified communications and infotainment, which build on their legacy in telephony and messaging; and
- premium content with the

Figure 8: The diverse digital services strategies for communications service providers

Which of the following statements best describe your company's business strategy towards established digital services (e.g. social media, apps, VoIP, cloud etc.) (please check all that apply)



Source: TM Forum Communications Service Provider Digital Services Survey, 2012

greatest innovation occurring among players that have premium content.

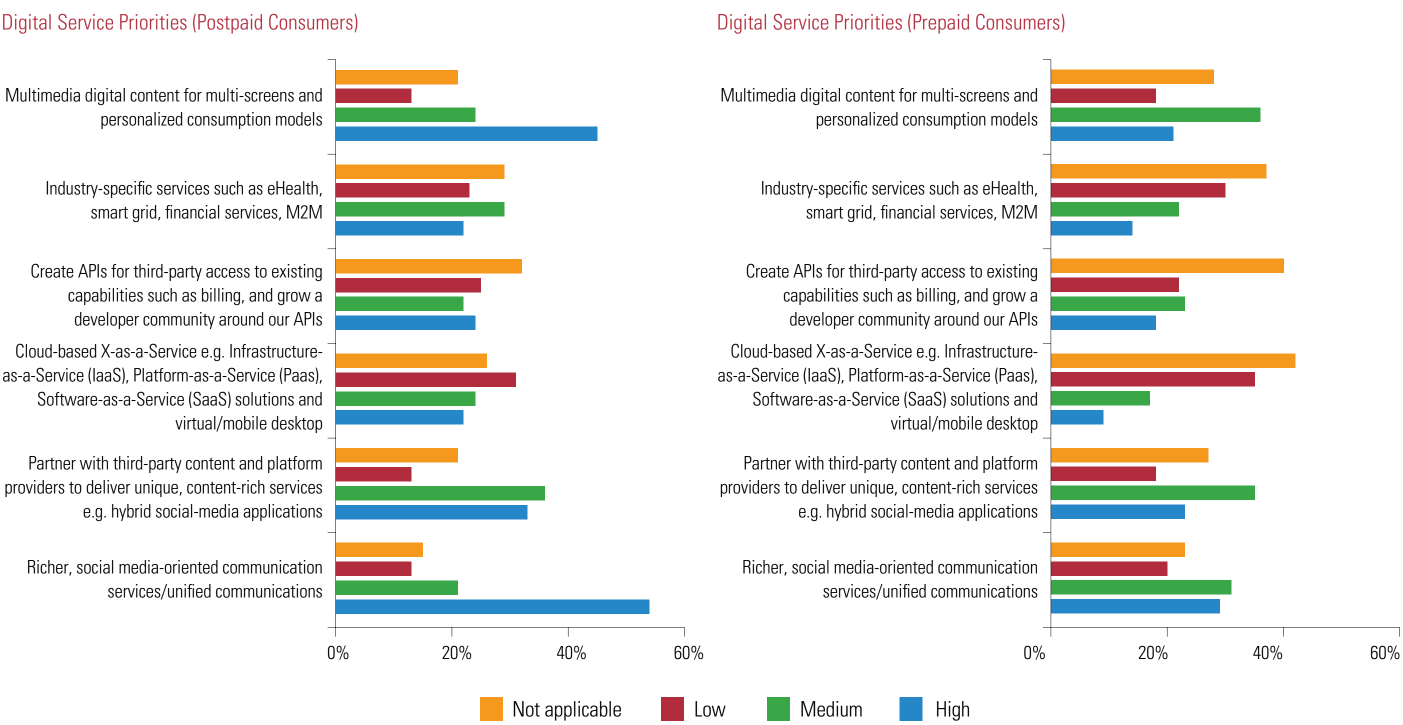
Although communications service providers are expanding their large, small and medium enterprise offers, they still recognize the importance of maintaining robust consumer offers, given the size of the consumer market and its growing role in defining solutions for the enterprise market. Many of the respondents plan to target the small and medium enterprise (SME) markets by 'hardening' consumer solutions by adding security and quality of service capabilities.

Communications service providers' priorities vary among market segments, which is illustrated in Figures 9 and 10. Figure 9 shows priorities for the post-paid and pre-paid consumer markets and reveals that the highest priority for post-paid services are associated with multimedia digital content for multi-screens and personal consumption, and richer social media-oriented communication services/ unified services.

This contrasts the service priorities for pre-paid subscribers, which are less certain and place more emphasis on partnering with third-party content and platform providers to deliver unique, content-rich services, such as hybrid social-media applications.

Figure 9 shows the digital service priorities for

Figure 9: Communications service providers' positioning strategies to capitalize on the digital services with consumers



Source: TM Forum Communications Service Provider Digital Services Survey, 2012

"Within the prosumer/SME market, communications service providers recognize the blending of functionality that is commonplace in the consumer market."

the large enterprise and prosumer/SME market segments. In these markets, communications service providers are placing higher priority on industry specific services such as eHealth, smart grid, financial services, M2M and cloud-based X-as-a-Service such as Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (Paas), Software-as-a-Service (SaaS) solutions and virtual/mobile desktop.

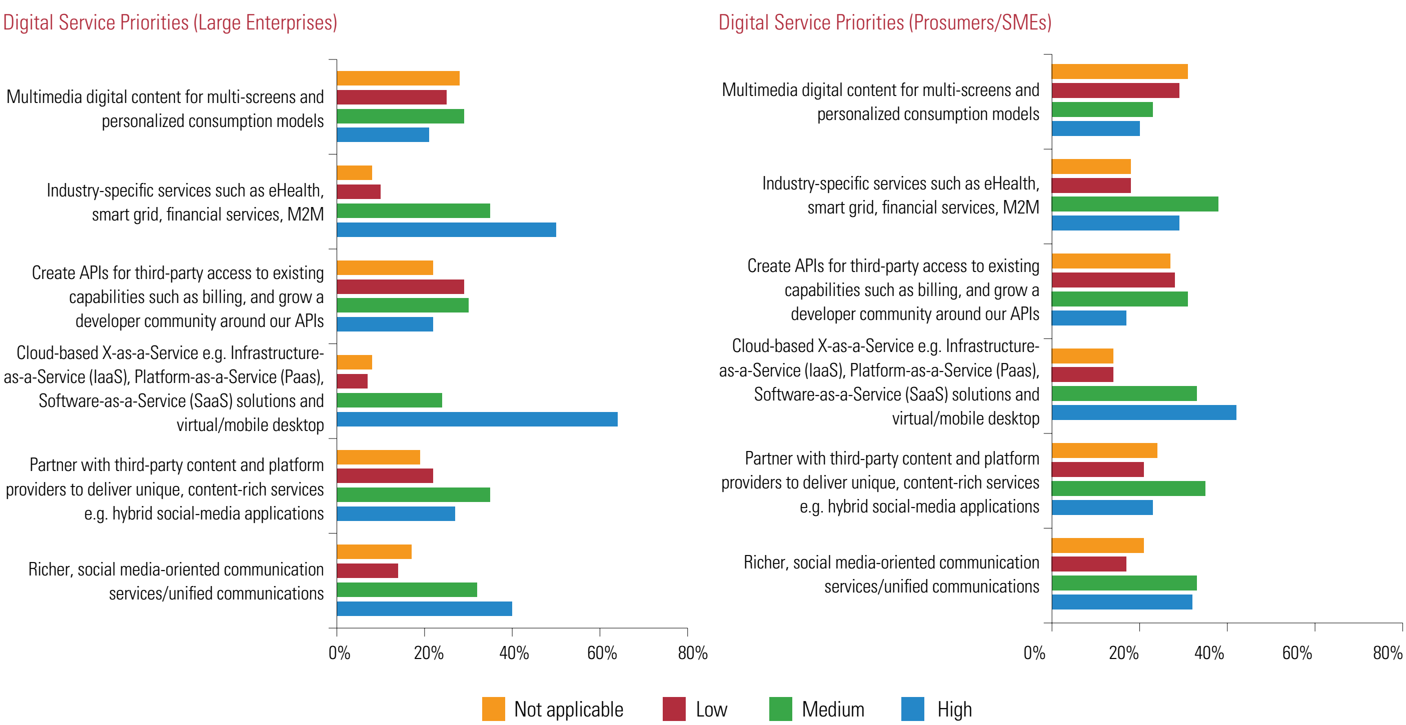
In addition, within the prosumer (see page 27)/SME market, communications service providers recognize the blending of functionality that is commonplace in the consumer market, giving some emphasis to richer, social media-oriented communication services/unified communications.

Unified communications go social

By stressing richer, social media-oriented communications, communications service providers are augmenting their old-style telephony and messaging offers, with social and Internet messaging capabilities. This can be broadly classified as social and unified communications.

The viral adoption of social networks like Facebook illustrates how radically and quickly communications is changing and the robustness and scalability of social communities. As unified communications gain broader market adoption, users' identities become blurred with the proliferation of IP-based social networking and messaging solutions.

Figure 10: Communications service providers' positioning strategies to capitalize on the digital services with enterprises, prosumers and SMEs



Source: TM Forum Communications Service Provider Digital Services Survey, 2012

"The viral adoption of social networks like Facebook illustrates how radically and quickly communications is changing and the robustness and scalability of social communities."

Encouragingly, many of the survey's respondents recognize they cannot rely on using their control of the subscribers' phone number as a means of controlling their customers' identities, hence will be increasingly pressured to embrace and integrate other communities such as Facebook and Twitter.

Players like Telefónica are developing platform capabilities to compete directly against OTT players in their core markets and collaborate in areas where OTT providers can extend offers into new markets. Others like AT&T, Telstra, Turkcell and Zain Group are taking more partnership-oriented approaches.
In addition, we generally observed a tendency for smaller players in their respective markets to partner.

Service lifecycles are diminishing due to accelerated innovation. One interviewee states that some of their mass market services have seen product lifecycles[2] decrease from 36 to 24 months, then closer to 12 months. In addition, many of the new services lack vendor support, with about half of new developments relying on in-house developments. In the face of these challenges, we anticipate that communications service providers will rapidly migrate and mimic the platform approaches being pursued by Tier 1 players like Telefónica if they prove successful.

Communications service providers are looking to platforms that underpin their social media and unified communications strategies, that will provide highly reliable core communications on the one hand while enabling innovation on the other. This includes efficiently integrating personal subscriber information with other relevant service and business intelligence.

Although many platform initiatives target next generation network technologies, they are equally relevant to 2G network and SMS messaging environments. Communications service providers globally are using the services platforms to bundle innovative SMS messaging and telephony services. As an example, Zain Group recently used its value-added services (VAS) platform as the basis for a purpose-built platform for tracking the location and maintaining the security of a group of Haj pilgrims from Pakistan.

Cloud services have a silver lining

The promise of capital and operational efficiencies, and faster service delivery is driving the proliferation of data centers and cloud services. Indeed, cloud was communications service providers' number one priority regarding their strategies to capitalize on the digital services with enterprises, prosumers and SMEs as illustrated in Figure 9. They are clearly anticipating robust revenue opportunities from cloud services.

Almost all the Tier 1 communications service providers have been acquiring or building massive data center resources and offering a variety of IaaS and/or PaaS offers for many years. Now they are expecting that demand for cloud services will evolve in parallel to the digital services market and with the proliferation of mobile broadband, driving the need for:

"Communications service providers are looking to platforms that underpin their social media and unified communications strategies, that will provide highly reliable core communications on the one hand while enabling innovation on the other."

[2]See TM Forum's *Product Lifecycle Management – an introductory guide,*which will be available free to members from the Forum's website from December 2012.

- continued cloud service capacity provided through infrastructure, platform and SaaS offerings;
- increased security demands, such as in identity management and data protection; and
- The orchestration of services across public and private cloud boundaries.

Premium content hits the multiscreen

Many service providers, like AT&T, Comcast, Telstra and Verizon, have the rights to premium video content such as sports and news channels. They are capitalizing on this content with multiscreen strategies for delivering content among TVs, tablets and smartphones.

For example, Telstra in Australia leverages its rights to Foxtel video and exclusive rights to sporting events, delivering the content across company-branded tablet and smartphone devices. Telstra also bundles its service with other infotainment, such as messaging and music services.

Verizon also offers a multiscreen solution and partners with players like Netflix and Redbox to enable delivery of content to mobile devices outside its fixed broadband footprint.

Players like Telstra and Verizon don't believe that it is necessary to control the ownership and aggregation of content, rather they are focused on controlling the distribution of content and associated transactions. Their agenda is to ensure users consume more content in more places.

As we've mentioned already, communications service providers could benefit greatly by integrating premium content with other social media and unified communication capabilities to improve users' experiences and benefit from third party service innovations.

Even communications service providers who lack direct control of premium content recognize its importance in their overall digital media strategies. Their strategies involve acquiring premium content assets (such as via Netflix), identifying ways to wrap the content to add value and differentiation to the content, and integration across devices to ensure it can be consumed how, when and where the customers choose.

In Figures 9 and 10, the role of third-party content for rich service does not receive as high a priority as many of the other capabilities listed. However, in interviews with senior executives from communications service providers, it is clear they believe premium content, whether acquired directly or through partnerships, will play an important role in the consumer market in future.

Vertical markets and M2M

Pervasive communications, web services and developer communities, and the availability of low-cost sensor networks is driving opportunities in vertical markets and M2M services. Most notably, communications service providers are pursuing these opportunities where they have achieved a high penetration rate for their services and are seeking ways of extending the market and their income. Hence M2M solutions are being widely implemented by communications service providers across a variety of industries, including healthcare, energy, transportation, smart cities, retail and exploration. They are partnering with (and in some cases acquiring) companies which have specialist vertical capabilities and expertise needed to deploy and run M2M services.

Communications service providers are also implementing their own platforms or partnering with companies like Jasper Wireless to deliver common device management and basic service orchestration functionality for M2M services. Others are working to offer the expected rise in demand for sophisticated network and device end-point management systems to ensure they perform reliably and securely.

Most of the Tier 1 respondents to our survey have established M2M initiatives, resulting in a slew of partnerships with companies like Mercedes and BMW in the automotive industry, GE Healthcare and Johnson & Johnson in healthcare, and Tesco in retail. Throughout the interviews, M2M services were the

"Pervasive communications, web services and developer communities, and the availability of low-cost sensor networks is driving opportunities in vertical markets and machine-to-machine services."

most commonly identified as requiring partnership.

The key challenges that respondents associate with M2M services include:

- the need for low-cost, automated service provisioning and management;
- industry standards, particularly for interfaces across the ecosystems; and
- nimble IT infrastructure able to 'mash' M2M with other capabilities, such as social networking and infotainment in the case of automotive.

The survey results shown in Figure 11 indicate that communications service providers have differing strategies towards the M2M market and between verticals. Most commonly they plan to position themselves as infrastructure and connectivity providers, followed by platform providers. Fewer than 30 percent of them plan to dominate their respective vertical and M2M sectors with pre-packaged solutions and some 15 percent have no clear strategy.

These results align with the one-on-one interviews with senior executives from communications service providers. However in these discussions it became clear that service providers are more likely to offer end-to-end solutions in M2M markets which are fragmented and without clear ecosystem leaders, such as in smart cities or smart-building solutions.

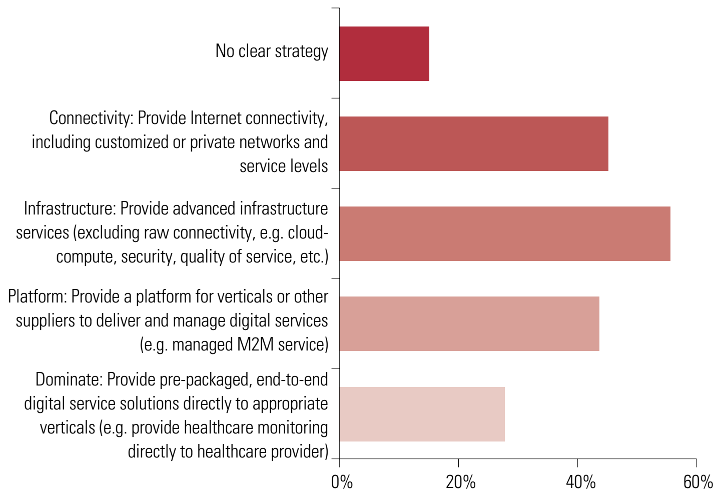
Conclusions

In the face of major disruption, communications service providers across the globe are transforming to respond to the digital services challenge. Although our study demonstrates their approaches are varied, several key trends are evident. In particular:

- communications service providers generally recognize that partnership strategies[3] are core to their success as digital services become more common. These strategies require a cultural shift as well as the service providers identifying the areas where they can best add sustainable value. Our survey revealed that communications service providers perceive the most challenging partnerships to be those associated with the OTT players, where the boundaries of 'co-opetition' have yet to be properly established.
- Internal organizational issues hamper the progress of communications service providers' digital service strategies. Some progress has been made, but internal culture and structures are generally slow to embrace Internet-centric philosophies, which are so at odds with the ethos of traditional telecom. To overcome these challenges

Figure 11: Communications service providers' strategies concerning vertical markets

Which of the following statements best describe your company's business strategy towards established new vertical-focused digital services (e.g. eHealth, smart grid, telematics, etc.) (please check all that apply)



Source: TM Forum Communications Service Provider Digital Services Survey, 2012

> *"Internal organizational issues hamper the progress of communications service providers' digital service strategies. Some progress has been made, but internal culture and structures are generally slow to embrace Internet-centric philosophies."*

[3]See *Managing partnerships – an introductory guide*, which will be available to members from the Forum's website from December 2012.

communications service providers are hiring personnel and in some cases acquiring companies to gain competencies.

- The transformation of IT and operations is critical if communications service providers are to support digital services reliably and economically. Successful transformation strategies involve much more than optimizing legacy systems. They need highly automated solutions which anticipate the autonomous nature of many digital services, plus the consistency to enable third-party development. Horizontal integration is necessary so that communications service providers can monetize the intelligence encompassed in IT and operational systems, and of course as discussed on page 8, there is the burning need for faster time-to-market as competition hots up and service lifecycles become much shorter. TM Forum's new Digital Services Initiative and its Frameworx suite of standards-based tools and best practices are designed to help its members do exactly that – see page 34.

  Although IT and operational systems transformations to support digital services are still in the early stages, Tier 1 players like Telefónica, Vodafone, Telecom Italia, Orange and Verizon are betting on platform solutions which define their commercial strategies for business services. We expect the most commercially successful platforms and approaches will be adopted by other providers.
- Throughout the study, communications service providers identified M2M as being core digital services that they had already (or were planning) to implement. The M2M verticals that were regularly identified in the study were energy, healthcare and automotive/transportation. The communications service providers are partnering with companies which have vertical industry expertise or acquiring companies to gain it.
- Many of the communications service providers interviewed in the survey have extensive data center resources from which to deploy a variety of cloud-based services, including traditional IaaS and PaaS offerings, plus service orchestration among public and private clouds, and a variety of security services.
- Premium content featured prominently in our survey, particularly among those communications service providers which have access to it, whether through ownership rights or partnerships. Many communications service providers are looking to capitalize on their premium content with multiscreen strategies which span TV screens, tablets, laptops and smartphones, and incorporate a variety of personalized, targeted advertising solutions.
- Communications service providers are most challenged by their strategies for social media, unified communications and OTT infotainment.

  Most notable are partnership strategies for OTT voice and instant messaging providers and social networks like Facebook. In most cases, communications service providers have opted to partner with the respective providers and anticipate that they can add value to the improved customer experience they enable. Some Tier 1 providers like Telefónica have opted to partner with the OTT players for innovative new services and compete for services such as unified communications that it regards as core to its business.

Big changes right across the digital landscape are redefining the communications industry. It is entering an era of extensive experimentation and the emergence of business models and service offers that are not even contemplated today.

TM Forum would like to thank all those who took part in the survey for their time and insights.

"Many communications service providers are looking to capitalize on their premium content with multiscreen strategies which span TV screens, tablets, laptops and smartphones, and incorporate a variety of personalized, targeted advertising solutions."

HOT 10 AREAS FOR INNOVATION

Innovation must be one of the most talked-about topics right across the entire business spectrum. Everyone wants to innovate, yet there is much uncertainty about how and where to invest the time, talent and funds. Here, Annie Turner explores 10 hot areas that are at boiling point for innovation.

Before we embark on our exploration of these areas, it is worth reflecting that innovation is often seen as being something entirely new, but this is not necessarily the case. The definition of to innovate, according to *The Oxford English Dictionary* is "to introduce as something new… to make changes".

Hence innovation[4] is not solely about the exotic and original, it's often about doing what you do already but better – whether faster, cheaper, more efficiently and more effectively, or a combination of all of them. It's also about a mindset – seeing the possibilities, having the wits to act on them and push that action through. This might mean making big changes or refinements as you go along or even abandoning a project at a late stage if it turns out to be impracticable.

The key is to learn and if you're going to fail, fail fast, learn and move on, closely coupled with never losing sight of the customer and understanding how what you're proposing will affect them.

Whether it's looking to pricing models that more closely reflect what services cost to deliver and support investment in next generation infrastructure or launching a new portfolio of digital services, these two rules apply.

#1 Execution is the key

There is no such thing as a billion dollar idea, the key is execution – how you put it into practice. Simply concentrating on a bright idea, rather than how you can make it happen, is doomed to failure. This combined with a constant focus on the customer has to be the top consideration, no matter what course of action communications service providers are considering.

Or as Tim Cook, now CEO of the world's most valuable company ever, Apple, reportedly said in the 1990s: "If you've lost the battle, one way to win is to move to a new battlefield."

At that time, Microsoft was at its peak while Apple had had a near-death experience in 1997.

Apple continued with and greatly improved its existing business, paring down its complex, large portfolio of products and continuing to pay close attention to the design and user interface of the new ones.

Under Cook's oversight, it also straightened out its messy supply chain (although at the time of writing, this problem had again reared its ugly head in the aftermath of the iPhone 5 launch), and all while looking for pastures new. In 2001 the company introduced the iPod and iTunes, paving the way for

"Innovation is often about doing what you do already but better – whether faster, cheaper, more efficiently and more effectively, or a combination of all of them."

[4]See *TM Forum's Creating an Innovative Organization – an introductory guide*, available free to members from our website from December 2012

the iPhone in 2007, the App Store in 2008, the iPad (2010) and iCloud in 2011.

On the way through, it has all but destroyed the music industry's business model, changed the face of the Internet and mobile phones, had a profound impact on the communications sector, dealt a hammer blow to the PC market and, as a 'sideline', the late Steve Jobs also transformed animation through Pixar.

Apple is perhaps the exemplar of the all-important point that innovation doesn't have to be about new ideas, execution is the key. The MP3 format had been around for years before Apple bundled it into an easy-to-use ecosystem that was seamlessly integrated with a series of highly desirable consumer devices.

It speaks volumes that company names which become the words for various digital functions – to Google is to search online, to Skype is to use VoIP (although most of its users probably don't know that), Facebook is synonymous with social networking and PayPal with paying for things securely and painlessly online – weren't new ideas as such. They succeeded because they made things that people wanted to do easy, thereby playing to mass markets rather than geeks.

It's also a sharp reminder that innovation isn't something you do once – remember when the Sony Walkman was a world-beating, mass market brand and product, synonymous with personal music?

#2 Don't write off small ideas as not being sufficiently impactful

There's another big lesson from Apple's story too – for the music companies who agreed to allow Apple to sell their inventory on a revenue-share basis, iTunes didn't 'move the needle' at the time. They failed to see that iTunes would all but destroy their highly profitable, time-honored business model, as one wit pointed out, by making it easier to buy digital music tracks than steal them.

Likewise it's all too easy for service providers who run multi-billion dollar operations to write off relatively small ideas as not being sufficiently 'impactful' to bother with. They would do well to consider M-PESA in Kenya, which has between 20 and 30 percent of the country's gross domestic product flowing through it annually (estimates vary).

M-PESA accounts for some 16 percent of Safaricom's (provider of the M-PESA services, now owned by Vodacom) revenue, more than it makes from SMS. But the real point is that it is hard to put an exact figure on how much Vodacom has gained in terms of customer loyalty and first-mover advantage through M-PESA. New services aren't just about profitability, but attracting and keeping customers, strengthening the brand and giving customers what they want – and benefiting from partnerships.

Again M-PESA is a good illustration: although Kenya's banks vigorously opposed M-PESA initially, they have benefited greatly. They stand to gain a whole lot more too, as Safaricom moves to transform M-PESA into a multi-play ecosystem, building a platform that will form the heart of its value-added services. It will deepen and expand its relationships with financial institutions to broaden its portfolio and also intends to open the platform up to other third parties to enable them to offer services too.

In a nutshell, Safaricom is seeking to increase customer loyalty (in part through a new M-PESA top-up scheme that offers 10 percent discount – see page 28 for more about the importance of pricing innovation) and through better, more consistent customer experience across the board.

In the next section we look at how some service providers are already tackling the challenge of creating new lines of business and business models while running (and improving) their core operations.

#3 Implementing big changes while running core activities

The communications industry has been talking about transformation for a long time, but often what we've described as transformation has in fact been about improving what we do already, rather than making fundamental operational changes and introducing new revenue streams.

The fact is, service providers need to do both and the focus on innovation around digital services must be proportionate as revenue streams will be small in the short and medium term.

For instance, Telefónica reckons its core revenues are likely to drop by around 25 percent by 2015, while digital will only make up around 10 percent of the total over the same period. It's critical that operators do not lose sight of the importance of managing their core business as well as they can – and there are lots of improvements that could be made, particularly around customer experience, which needs to be embedded in all approaches.

It has been noted many times that innovation is frequently stifled by the dead hand of the parent corporation, and that one solution is to set up an incubator or separate business unit that is not imbued with the corporate culture.

Little wonder there is a growing trend for former telcos to disaggregate into focused business units. For instance, in March 2012, Singtel Optus announced the formation of three business units, including Group Digital Life, whose aim is to become a leading player in the digital ecosystem, with innovative digital services, while leaving the rest of the business to get on with its core activities.

However, Telefónica' s similar move has attracted the greatest amount of attention. In September 2011, the service provider announced a new division, Telefónica Digital.

The company says, "Its mission is to seize the opportunities within the digital world and deliver new growth for Telefónica through research and development, venture capital, global partnerships and digital services such as cloud computing, mobile advertising, M2M [machine-to-machine communications] and eHealth," (see page 27).

At the same time, Telefónica reorganized geographically into two units: Latin America will continue as a business unit, while Spain has been folded into the wider European operation. In addition, the company has set up a global resources unit, running HR, group purchasing, IT and technology.

There is acute interest in how things work out for Telefónica, certainly if things appear to go well, it could become the blueprint for running a communications services company.

#4 Devices: What's HTML5 got to do with anything?

If you don't get it yet, you will. The arrival of HTML5 – the mark-up language for presenting web content – is going to have big implications for the communications industry in the widest sense and on many fronts.

Apple bet against the Internet and Google with its App Store and in the short-term at least looks to have won spectacularly. The beauty of the App Store (apart from the revenue share for the storekeeper) is that the contents are pre-packaged, optimized for mobile, task-specific and screened for conformance to these principles.

HTML5 has the potential to enable communications service providers to break the app stores' stranglehold and move out of the walled gardens back into the 'wild'

"Apple bet against the Internet and Google with its App Store and in the short-term at least looks to have won spectacularly."

of the 'true' Internet – and some operators haven't been slow to see the potential.

The big shortcoming of app stores is the level of control exerted by Apple in particular. The Maps debacle is a good example of how this will become increasingly annoying for users many of whom prefer Google Maps on their iPhones through the browser, in what is essentially an HTML5 app.

In February 2012 Telefónica Digital announced it is to develop a phone built around what it called the Firefox mobile OS, working with Firefox's creator, Mozilla – the beta version went live in November 2012. They will develop an architecture to support HTML5 applications on phones using web application program interfaces. Those HTML5 applications will access the underlying capabilities of the phone that previously were only available to native applications.

The strategy is to reduce mobile operators' reliance on other mobile operating systems and provide a range of feature-rich handsets, including low-cost ones to drive the take-up of smartphones in developing markets. In July 2012, Telefónica Digital announced it had secured support for its plans from Deutsche Telekom, Etisalat, Smart, Sprint, Telecom Italia, Telefónica and Telenor for the project and would offer Firefox OS-based devices in Brazil early in 2013.

Whether or not HTML5-based mobile apps will supplant native mobile apps in some markets at least remains to be seen. Certainly the LiMo Foundation, an operator-backed initiative that proposed using Linux as an open mobile OS, did not achieve its goals, although the world has moved on since then.

On the plus side, the take-up of mobile services in emerging economies is booming (Africa is now the second biggest market after Asia-Pacific) and there is a huge pent-up demand for affordable devices for Internet access.

It is possible that in developed markets, we'll see users reacting against being forced to choose between competing, closed ecosystems, which is where we seem to be heading with Amazon, Apple, Google and Microsoft, with the latter two moving into producing tablet devices intended to compete with the iPad, iPhone and iTunes.

The combination of HTML5, proliferation of LTE and more widespread use of Wi-Fi to offload traffic from cellular networks are likely to result in more content (see page 27) being stored in the cloud, making consumers more agnostic about devices and operating systems.

As Randal Stephenson, CEO, AT&T, has argued, this should drive down the price of devices enabling operators to stop or reduce subsidies, giving operators greater room for manoeuver on pricing (see page 28) and other elements, and wrest some control from device makers.

#5 Entering a new era of content

It is instructive to consider that the worldwide market for mobile apps is something like $25 billion in 2012 (estimates vary), which is a drop in the ocean compared with the $2.1 trillion worldwide, which is what Gartner[5] predicts consumers will spend on digital information and entertainment products and services in 2012. This is expected to rise to $2.7 trillion by the end of 2016.

So, as we move from the era dominated by the app, to the wider frontier of the Internet-by-mobile proper, fueled in part by HTML5, content is going to become more important and likely to overturn the established Internet business models.

For instance, in 2012, AT&T, Verizon and T-Mobile USA have all said they expect U.S. consumers will be offered free data services within a year, paid for by content providers. In June, Randal Stephenson, CEO, AT&T, said content companies are concerned that smartphone and tablet users might start to move away from bandwidth-hungry applications and services like YouTube video because they cost too much to use via tiered data plans.

Stephenson was quoted saying[6], "The content guys are coming to us and asking for 0800 data. I would be surprised if we don't see some (of these) services launched in next 12 months." He also said that he expected to see data-only plans entering the market as phone calls and messaging move from being services to applications.

In Africa, the world's second largest mobile market after the Asia-Pacific region, content has a different role to play. Here there are thousands of indigenous languages, while the Middle East, there is a dearth of Arabic material, so service providers are looking to local content to drive the take-up of mobile broadband then help keep customers.

Mobile broadband is growing fast in Africa – it is expected to increase 36 times over between 2012 and 2015 – but from a low base of below 4 percent penetration. As we reported in our report TM Forum *Africa Insights: Time for transformation*[7] report, published in September

[5] www.gartner.com/it/page.jsp?id=2094015
[6] www.ft.com/cms/s/0/56629c24-ac10-11e1-a8a0-00144feabdc0.html
[7] The report is available to all employees of our member companies who register on our website and for non-members to buy from www.tmforum.org/AfricaInsights

2012, "Without relevant local content, operators will not maintain usage at the levels they need. The most popular Internet sites accessed across the continent are still the likes of Facebook, Google, the BBC and YouTube." Hence content is not a nice-to-have, but an essential ingredient if operators in many parts of the world are to build sustainable digital businesses.

Vodacom, Safaricom and MTN have or plan to launch their own app stores to promote apps that have a local resonance, created by African developers. Some are also providing greater encouragement and support to those developers, helping them design and test their apps or even providing university courses

Mobile operators' efforts around content will be a key trend in some markets.

#6 Powering other brands online

While writing this, the fashion show season was in full swing. Interestingly, for a global business that is based on looks and ego, the firm that is behind the success of many of the world's biggest haute couture companies and to whom they are looking for future prosperity is all but invisible – Italy's Yoox Group.

As an article in the *Financial Times* pointed out[8], as well as selling luxury goods through its own online stores, Yoox has become the partner of choice for operating so-called mono-brand stores on behalf of some of the biggest names in the business, from Valentino and Armani through Pringle to Alexander Wang, Marni and Dolce & Gabbana.

In August 2012 its domination in this sector seemed to be sealed by an agreement with PPR to administer the e-commerce operations of its luxury brands Bottega Veneta, Balenciaga, YSL, Sergio Rossi and Alexander McQueen. According to the *FT*, this is the first time a major luxury group had ever been in a formal partnership with a technology company for its global online retail operations.

Tellingly, Rodrigo Bazan, President of Alexander Wang, was quoted in the article saying, "If you want a global e-commerce operation, there's simply no alternative" and added, "Between the logistical issues, taxes, customer service and fraud, global e-commerce is incredibly complicated. To do it yourself for a brand is almost impossible."

The article also said that Yoox serves 101 countries in 11 languages and has offices in Shanghai, Tokyo, Europe and the U.S.

Increasingly, luxury brands want global e-commerce operations. Online luxury sales amounted to €6.2bn in 2011, according to a report by Italian luxury goods association Altagamma and the consultancy McKinsey. They are estimated to reach €15bn by 2016, with China outpacing the U.S.

If this global/local/total package approach to online commerce isn't a real possibility across myriad other sectors for service providers who are already developing cloud services and e-commerce platforms, we'll eat our expensive hats.[9]

#7 The rise of the machine – the M2M opportunity

The Internet of Things – that is the imminent era of billions of interconnected devices – will dwarf the world of person-to-person communications which has so astounded us by its growth over the last decade.

There are lots of aspects to it, from healthcare to smart grid, telematics, security and the Connected Home[10]. While the size and scope of the market is not in question, viable business models are yet to be ironed out. In particular, from the communications service providers' point of view, finding a profitable role rather than just providing connectivity is a burning question.

There are also lots of different drivers within these various sectors; in the case of smart grid, they extend beyond preventing massive power outages, such as that suffered in India in July 2012, to a much better understanding of consumption and how it can be managed more effectively, environmental reasons, enabling the mass use of electric automobiles, the potential benefits of smart meters, integrating renewable energy sources and reducing energy theft.[11]

There are lots of opportunities for service providers to partner with

[8] www.ft.com/cms/s/0/e4461fc8-019e-11e2-8aaa-00144feabdc0.html#axzz27TLhsTUc

[9] Each sector is explored in detail in TM Forum's Insights Research report *M2M strategies for communications service providers*, published in December 2011, which can be downloaded free by all employees of our member companies or bought from here: www.tmforum.org/InsightsM2M

[10] See TM Forum's *Quick Insights* report: *Smart grid: Commonalities, convergence and building new competencies* at: www.tmforum.org/Smartgrid2012

[11] TM Forum's *Quick Insights* report will be available from our website from December 2012

specialist companies to offer monitoring services as a managed service, providing guaranteed connectivity and absorbing the start-up costs in return for shared revenue from the other stakeholders – in the case of eHealth, they could include health authorities, doctors' practices, specialist applications and services partners and perhaps equipment providers – depending on how the deal is structured.

Some communications service providers have set up separate business units that focus on particular areas in conjunction with partners, such as Verizon's Connected Home, working with partners including Motorola and Lowe's, and AT&T's M2M Enterprise unit.

M2M is also about developing new business models, for example extending business-to-business models to business-to-business-to-consumer. Hughes Telematics Inc. (HTI – now owned by Verizon) is a great example of doing just that on behalf of Mercedes Benz – you can read all about it in TM Forum's *Case Study Handbook 2013* on our website.

Communications providers could exploit their economies of scale and coverage, as well as their expertise in charging and billing, existing relationships with their customers and their well-recognized brands (although underpinning white label services is another option) and identity checking and authentication.

Whatever the route chosen to address the M2M markets, two of the pillars of success will be the exploitation of analytics and big data[12] and managing partners[13] – some of whom will be the OTT companies. In some circumstances they will still be competitors – just as communications service providers have both competed against and cooperated with each other for over a hundred years.

Arguably OTT companies are as much in need of new business models as communications service providers – see page 24 on HTML5. Among other things, operators could charge OTT companies for local caching, marketing support and distribution, guaranteed quality of service, embedded apps, 'real estate' on devices and revenue share.

#8 Better meeting customers' needs – prosumers and small and medium-sized enterprises are poorly served

A new group of workers is emerging called prosumers - that is, one person businesses – with about 1.8 million of them in the U.K. alone already. They typically don't have a high level of ITC skills – although ITC is likely to be a crucial component of their operations – nor the time or resources to acquire or pay for them on a case-by-case basis. Collectively they are badly served, typically treated as retail customers, yet collectively they present a huge opportunity for service providers in many countries round the world, particularly as cloud services become increasingly mainstream.

There are about 8 million small and medium-sized businesses (SMBs – more commonly referred to outside Europe as small to medium-sized enterprises or SMEs) in the U.S. alone and 80 million to 100 million across the globe, according to industry veteran and entrepreneur Dr. Hossein Eslambolchi[14].

He suggested that, "Service providers are well

"Prosumers are typically treated as retail customers, yet collectively they present a huge opportunity for service providers in many countries."

[12]For more about big data and analytics, their importance and application, please see TM Forum Insights Research report, *Big data: Big volume, big payback, big challenges* at: www.tmforum.org/insightsbigdata

[13]TM Forum's *Guide to Managing Partnerships* is available to all employees of our member companies who register on our website

placed to provide security services, charging small and medium sized enterprises maybe $1,000 a month, and doing it profitably through exploiting economies of scale… because the cost of not protecting their business is much, much higher.

"In the worst case you could lose the business altogether. The web means that businesses' websites need to be up 24 x7 or you lose customers and revenue, and damage confidence in your business long term." He concluded, "So we're looking at a possible global market of something like $800 billion for offering a relatively simple service."

Cloud opportunities

The *Microsoft SMB Business in the Cloud* 2012 research report[15] was designed and conducted in conjunction with Edge Strategies Inc. in December 2011. The research questioned 3,000 small to medium-sized businesses (SMBs also often referred to as enterprises or SMEs) that employ two to 250 employees across 13 countries: Australia, Brazil, China, Denmark, France, Germany, Japan, Russia, South Korea, Spain, Turkey, the U.K. and the U.S.

It found that only about 20 percent of respondents believe data is less secure in the cloud than it is in their on-premise systems. Some 36 percent overall and 49 percent of larger SMBs think that data is as secure in the cloud as in their own systems.

Local is better when it comes to service providers: the report finds most SMBs feel it is important to buy services from a provider with a local presence, and 31 percent feel this is critical.

Half of the SMBs surveyed say cloud computing is going to become more important for their operations, and 58 percent believe working in the cloud can make companies more competitive. As part of this, cloud adopters want to do more with devices. Mobility is essential to cloud users. They want mobile devices for more than email, including productivity and business apps.

Typically, no single service provider has achieved dominance in the prosumer/ SME sector in most markets, which is providing an opportunity for smaller, specialist service providers. Vodafone's U.K. campaign was likely motivated in part by the growing presence of Daisy Group, which specializes in providing services to SMEs with an average of 80 employees – in June 2011, it had doubled its revenue after 15 acquisitions in the space of 18 months. *The Financial Times*[16] reported back then that, "The acquisitions boosted its customer base to more than 75,000 businesses, and helped turnover rise 98 per cent to £266.3m."

Research carried out by McKinsey for the business lobbying group, the Confederation of British Industry, found that companies with a turnover of between £10 million and £100 million account for fewer than 1 percent of British businesses, but generate 22 percent of economic revenue and 16 percent of all jobs.

The message is clear: prosumers and SMEs present a big opportunity for communications service providers and if they don't meet their needs, someone else will. Arguably, to avoid retraining the entire sales force – a massive undertaking – the key is to sell services through a specialist channel (B2B2C). Although again, this raises the vexed issue of working effectively with partners, which is clearly an urgent issue and one that the communications industry has yet to address.

#9 Pricing innovation

Pricing is rising up corporate agendas, and here's why. According to an article[17] in *MIT Sloan Management Review* in June 2012, "pricing has a substantial and immediate effect on company profitability. Studies have shown that small variations in price can raise or lower profitability by as much as 20 or 50 percent."

The Deloitte Review[18] reports, "One study suggests that pricing has two to four times the potential to influence profitability relative to other business levers. Companies that actively pursue pricing as an important part of their strategy typically outperform industry peers on several financial metrics"

No wonder then that Informa Telecoms & Media

[14]You can read the full, exclusive interview with Dr. Eslambolchi, *Big data, big opportunities and the laws of physics*, in the latest edition of TM Forum's *Business IQ*, published May 2012. It is free for all employees of TM Forum member companies to download and for non-members to purchase from www.tmforum.org/BIQOperationalCC

[15]Go to www.edgestrategies.com/ component/k2/item/117-just-released-2012-microsoft-edge-technologies-smb-cloudadoption-study.html for more information

[16]See www.ft.com/cms/s/0/d44665e4-a1b7-11e0-b9f9-00144feabdc0.html for more information

[17] http://sloanreview.mit.edu/the-magazine/2012-summer/53413/is-it-time-to-rethink-your-pricing-strategy/

[18]www.deloitte.com/view/en_US/us/Insights/Browse-by-Content-Type/deloitte-review/52bc68082ce88310VgnVCM3000001c56f00aRCRD.htm

recently stated: "The future evolution of mobile data pricing will be the single most important factor in determining the development of a sustainable and profitable business model for operators."

The move in pricing that has attracted the most attention over the last year also happened in June 2012, when Verizon Wireless, the U.S.'s largest mobile operator by subscribers, announced a fundamental change in the way it charges consumers for phone calls and data. The much anticipated move will likely have far-reaching implications for the cellular industry in the U.S. and beyond.

In time, it will make average revenue per user as a measure of an operator's performance irrelevant and has been hailed as the biggest change to tariffs for 20 years, although this is possibly overstating the case somewhat, as arguably pay-as-you-go remains the biggest innovation in mobile charging.

The company abandoned its monthly voice and data plans in favor of a *Share Everything* tariff on June 28, which in effect treats voice as just another data service running over its 4G network. It will offer unlimited phone calls and texts, instead charging for a metered monthly data allowance that can be shared by up to 10 devices.

According to reports, a *Share Everything* subscriber with a smartphone, for example, would pay a monthly access fee of $40 that includes unlimited calls and texts, and a fee of $60 for two Gbytes of data that could be shared between devices. Each additional device would also pay a monthly access tariff of $10 for a tablet or $20 for a laptop.

Other operators are expected to follow this pricing model, which will enable them to pay for their hefty investments in 4G technology and make a reasonable return on investment from ever-rising data traffic levels, while encouraging users to connect more devices to networks.

Verizon Wireless and AT&T, which previously abandoned unlimited data plans in favor of metered tariffs, have indicated over the past year that they plan to introduce shared data plans to encourage consumers to connect more devices to their networks.

Clearly this model doesn't affect prepay customers, which account for the vast majority of customers in many countries around the world (they account for 96 percent of all mobile users in Africa, the world's fastest growing market) nor where 4G has yet to be rolled out.

Nevertheless, at the time of writing it looks to be a big shift in thinking and herald the shape of things to come, in developed markets at least.

#10 Making money from exposing application program interfaces

As one communications industry veteran pithily remarked at a recent meeting, "Network businesses have an aversion to exploiting the network they own, why? Because we all want to be Mark Zuckerberg instead of sweating the assets we've got."

An excellent way of making the most of assets is by exposing them to third parties, which the industry has talked about for a long time, but progress has been painfully slow. However, while the operators have failed to act decisively, others have exploited the opportunity very successfully.

An illuminating indication of where we are with this is that Twilio, which "provides infrastructure APIs [application program interfaces] for businesses to build scalable, reliable voice and text messaging apps," according to its website, has attracted a community of 75,000 developers. As one pundit noted, "That is more than all the operators put together."

The other three main companies that develop API-based products and services for network operators (and others) are Apigee, Apoena and Voxeo. Between them they offer a range of services from a general purpose API infrastructure to a smaller set of APIs. Some operators

"An excellent way of making the most of assets is by exposing them to third parties, which the industry has talked about for a long time, but progress has been painfully slow."

want their API providers to run almost the whole show, including bringing a developer community with them.

Whatever variation of services they offer, the purpose of these API specialists is to hide the complexity of the interfaces to make them much easier and faster for developers to build applications on. They work because they aren't reliant on getting a uniform response from everyone whose APIs they build on, rather they deal with the different parties so the developers and API providers don't have to.

Their progress is in sharp contrast to the GSMA's OneAPI initiative, which initially attracted the support of about 30 operators. According to the GSMA website, "OneAPI is an incremental addition to existing mobile infrastructure, in most cases requiring a Service Delivery Platform (SDP), which is connected to other network platforms such as Short Message Service Center, Mobile Messaging Service Center, Location Gateway and Billing Gateway.

Many operators have already provided bespoke APIs to these platforms but, critically, OneAPI allows a globally standardized API to be introduced." Since it was launched, its progress seems limited to the three major Canadian operators – Bell Mobility, Rogers Communications and TELUS – launching the GSMA OneAPI Gateway in May 2012.

This was more than two years after a commercial pilot was launched in Canada, which is a very long time in the fast-moving world of apps. Remember that the iPad was launched in April 2010, in which time it has been so successful, it has undermined the PC market, and its model of a device tightly coupled to an ecosystem (iTunes) is now being emulated by Google, Microsoft and Amazon.

There are two notable, pioneering examples of Tier 1 operators forging ahead with their own API programs; AT&T's API (which supports native and HTML5 apps) and Telefónica announced its developer community, BlueVia, in February 2011 that operates "across Telefónica's global footprint". Telenor has also recently joined the Bluevia initiative.

Telefónica said it would offer between 10 and 50 percent of the revenue generated by API transactions to the developers, and in addition developers retain 70 percent of any application sales and subscription revenues.

How well they succeed in attracting and working with the developer community for their mutual benefit remains to be seen, but as one pundit commented, the concern is that for basic services a single operator's reach is too geographically limited to

The $115 billion opportunity for exposing services through APIs in 2015

- Payments API (digital goods) $2 billion (assumes a competitive fee of just 10 percent)
- Presence/location $4.5 billion (note assumes a solutions-based approach not just raw API revenues)
- Long tail messaging $3 billion (ignore short tail as aggregators do that today and internal operator politics will limit what can be addressed with the messaging API)
- Voice call control $40 billion
- Multimedia call control $2 billion
- Advertising API $7.5 billion
- Hosted Unified Communications $1 billion
- Directory $2.6 billion
- M2M $1.5 billion market
- Number provisioning $4 billion to $9 billion
- USSD API $14 billion (developing markets)
- Billing non-digital goods $24 billion
- Collaboration $1 billion
- Content delivery $1 billion
- Interactive voice response/voice store/ other voice related value-added services $2 billion

*Note: This is significantly less than the analysis I did back in 2005 (it's now one third the size) as operators are late to the market. Many opportunities have significantly reduced due to the entry of freemium, web-based models and device-based business models. (Alan Quayle).

be a huge success outside very large insular markets, such as the U.S. This ignores the fact that the combined customer base of Telenor and Telefónica provides huge coverage.

In the meantime, APIs are popping up like mushrooms. The Programmable Web (www.programmableweb.com) is tracking their progress in its API Directory. In October 2011, it reckoned there were 4,000 of them, which had risen to 7991 on November 26 2012. There is a lack of standardization, with everyone doing their own thing, and the way things look now, the most popular will become the de facto standards.

Despite the network operators' slow progress, there is still a huge opportunity for them to make money from exposing APIs: according to consultant Alan Quayle (www.alanquayle.com) the market will be worth at least $115 billion a year by 2015. See panel opposite for how he breaks this down.

In April 2012, Quayle hosted a TM Forum webinar entitled *Making money through service exposure (APIs) and the new business models it enables* (which all employees of TM Forum's member companies can access free of charge once they've registered on our website at www.tmforum.org/webcast/moneythroughAPIs.

So exposing APIs remains a substantial business opportunity for operators, but the longer they delay in exploiting it, the greater the share others will take – and as the statistics from the Programmable Web indicate, the API sector is accelerating rapidly.

"Despite the network operators' slow progress, there is still a huge opportunity for them to make money from exposing APIs."

RINGING IN A **DIGITAL FUTURE**

Moritz Zimmerman, CTO, hybris

In the last decade the telecommunications sector has experienced significant and dramatic change, including deregulation, competition plus the convergence of mobile, voice, data and IP access. But the greatest game changing event in recent years has been the emergence of e-business channels that have helped to revolutionize forever how consumers own, consume and pay for products and services.

All of which means it's no longer enough to define market and service offerings simply in terms of the capabilities and capacities of the network alone. Instead the focus is shifting from new customer acquisition and network expansion to building superior and personalized customer relations that reduce churn, boost profitability and maximize an organization's ability to monetize its products and services. And that means gaining mastery of today's fast growing digital commerce marketplace.

Rich new digital horizons

Make no mistake, global revenue from digital products and online services is on the rise across all industry sectors. According to recent research from Forrester Consulting[1], in 2012 a major worldwide financial services publication grew subscriptions for its digital editions by 31% year-on-year, exceeding print subscriptions for the first time.

It's a story that is being replicated across the board; 60% of the media, entertainment, leisure and high-tech companies Forrester surveyed reported that revenue from digital services had grown or significantly grown in the past months.

Clearly today's consumers and business customers have readily embraced the concept of purchasing content, goods and services through a variety of online models that include subscriptions and automated renewals; models that generate recurring revenue streams and help 'lock in' customers for service providers.

All of which means firms in all industry sectors are getting serious about their next generation e-commerce digital strategies.

The next imperative

The proliferation of today's digital lifestyle has already spurred many telecom operators to ensure they are well positioned to capture the digital opportunity. According to Forrester's report, in 2012 telecommunication companies reported that annual revenue growth for digital products and online services was growing by 38%, with 15% growing rapidly.

This growth is fuelling the drive for service providers to explore initiatives that differentiate them in the marketplace – initiatives that bolster customer care and trust, deliver an effortless and enriched customer experience, and deliver value across all touch points. Not doing so risks losing customers who increasingly are looking for this as level of service as standard.

Right now telecom operators can make use of hybris' transformative B2B and B2C omni-channel commerce software to engage online with customers and handle complex orders that include 'virtual' as well as physical products.

Using these commerce platforms, operators can create production-ready customizable web storefronts through which they can offer phones, plans and cloud services under a variety of flexible recurring price models. Featuring advanced packaging capabilities; operators can easily construct complex bundles of products, with sophisticated rule-based discounts, and give their customers the power to create their own packages with a modern guided-selling experience.

For the future operators will be able to explore 'cascading commerce' as a means to making it more convenient and opportune for customers to purchase products and value added services that are relevant to them at a specific moment in time. Because by applying deep contextualization to the purchasing process, operators will be able to understand what a customer is reviewing right now and offer the opportunity to buy at key decision points.

Getting it right in any channel

At the heart of the next generation digital strategy is the ability to create a desirable customer experience that is a true market differentiator. But a great customer experience needs to cover multiple aspects – from search engine optimization, to product content, site conversion, self-care and cross-channel hopping into retail stores. And as the customer 'experiences' the operator from an overall view, remaining consistent and relevant in the way a customer is dealt with is – in any channel – essential.

Yet the rewards of getting it right can be significant. Personalized offers, presented to customers in the right multi-channel way, have been shown to increase ARPU by 18% and represent the perfect opportunity for operators to extend their relationship with customers.

Building such agility into a multi-channel digital strategy depends on achieving a deep understanding of how the customer's purchase journey transitions across multiple channel touch points, which increasingly begins with the website. Done well, service providers can pursue additional revenue sources and offer a true omni-channel experience.

For all your customers this can include providing a single view of product and plan offerings from any device, the ability to seamlessly transition from buying online to pick up in-store, the ability to access long-tail product availability in-store, plus the ability to subscribe to value-add services such as streaming video and digital content either online or in-store.

Meanwhile, operators can offer business customers a rich set of B2B functionality – including self-service account management, procurement processes, organisational hierarchies, employee entitlements, volume purchasing, and enterprise-class reporting.

Making the vision a reality

In the digital world, service providers are free to conceive complex product variations, business models, pricing structures and merchandizing strategies without the normal constraints that apply in the physical domain. Service providers are well positioned to take advantage of the opportunity to monetize digital products and online services across a variety of channels, thanks to an already well established subscriber base and a clearly defined role in the transaction.

The challenge for many telecommunication operators will be how to merge this world successfully with existing retail store operations and other channels, and the effective management of new models such as automated subscription renewals and the administration of downloads.

But the opportunities to capitalize on omni-channel merchandizing are significant. In the not too distant future customers should be able to buy a phone and a plan, and purchase value add services (downloading songs or apps, for example) – either online, in-store, or via a call center – and more. The only potential limiting factor could be the imagination of service providers themselves.

"In 2012 telecommunication companies reported that annual revenue growth for digital products and online services was growing by 38%, with 15% growing rapidly."

[1]The Future State of Digital Commerce Solutions, Forrester Consulting, August 2012.

WHAT IS TM FORUM FRAMEWORX AND **HOW CAN IT HELP YOU?**

Adopted by 90 percent of the world's largest service providers, TM Forum's Frameworx suite of standards-based tools and best practices provides the blueprint for effective, efficient business operations. Frameworx enables you to assess and optimize performance using a proven, service-oriented approach to operations and integration.

Frameworx helps you:

- Innovate and reduce time-to-market with streamlined end-to-end service management.
- Create, deliver and manage enterprise-grade services across multi-partner value-chains.
- Improve customer experience and retention using proven processes, metrics and maturity models.
- Optimize business processes to deliver highly efficient operations.
- Reduce IT systems integration costs and risk through standardized interfaces and a common information model
- Reduce transformation risk by defining a proven blueprint for agile, efficient business operations.
- Gain independence and confidence in your procurement choices through conformance certification and procurement guides.
- Gain clarity by providing a common, industry-standard language for processes, information and applications.

Frameworx is developed in the Forum's unique Collaboration Community and continues to evolve through the efforts of the Community to meet changing market needs. It is driven by service providers and available exclusively to members, whose companies represent more than 90 percent of the world's communications subscribers.

Frameworx is made up of four core frameworks:

Business Process Framework (eTOM)

The Business Process Framework defines a comprehensive set of efficient, clear and effective business processes that are critical to running a service provider's business, at the least possible cost. The framework provides a multi-layered view that starts with primary organizational functions and drills down to thousands of process details, and is strongly aligned with ITIL. It is supported by off-the-shelf tools to provide an implementable catalog of the business processes and includes users' guides and sample process flows to ensure your processes are streamlined across the enterprise and across partners in a value-chain.

Information Framework (SID)

The management of services, customer experience, networks and enterprise management functions demands consistency of data across an enterprise. The Information Framework provides a comprehensive, industry-agreed structured set of definitions for the information that flows through an enterprise and between service providers and their business partners. It is a widely adopted model that is supported by off-the-shelf tools for implementation into software solutions, reducing time and effort for creating standardized integration points.

The Application Framework (TAM)

Understanding how your business processes are implemented in your software systems environment is essential. This Framework provides a model for grouping processes and their associated information into recognizable applications that span the service provider's operations, business and enterprise management functions. It provides a common language and identification scheme between buyer and supplier for all application areas. It helps in the design of enterprise architecture through a better understanding of your systems.

The Integration Framework

This Framework provides direction on how operational processes can be automated by utilizing standardized information definitions from the Information Framework to define standardized Service Oriented Architecture (SOA)-based management systems. It also provides an automated means to create standardized interfaces and use these interfaces to integrate applications within the enterprise and with partners.

TM Forum Frameworx also includes adoption best practices for implementing key Frameworx-based functions across competencies such as revenue assurance, service level agreements and security; and management best practices for procurement, business metrics and benchmarking.