

Communications Review*

A journal for telecom, cable, satellite, and Internet executives

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Breaking the mold



Cover image: Cupboard full of preserving jars

Communications Review

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Communications Review

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Contents

12 Message from the Editor

Features

14 Hit and miss

Many factors will determine competitive advantage for communications companies in the 21st century. But few are as powerful as innovation. The industry has already seen the power of innovation to transform businesses, and to disrupt them. How well communications companies respond to disruption, by innovating and by addressing the tensions in their markets and within their own organizations, will play a major part in determining their future success.

by Christopher Wasden

22 Cultivating the future workforce

The year 2020 is only a decade away. Yet the communications industry's workforce and the way it is sourced, organized, and managed will change radically by that date. Using scenario planning to look back from the vantage point of 2020, PricewaterhouseCoopers has mapped out three scenarios that illustrate how organizations and their human capital might evolve. Each scenario will become relevant and influential, we believe, among communications operators and one especially so.

by Carol Stubbings

30 Achieving a symbiotic relationship

At first sight, the network neutrality argument might appear to protect consumers against ISPs and network operators seeking to degrade or block access to bandwidth-heavy online services. But, in fact, a regulatory approach based on net neutrality ultimately risks cutting off the financial lifeblood of innovation on the Internet. Online applications and content providers should stop chasing the false economies that net neutrality offers. Instead, they should collaborate commercially with bandwidth providers to deliver the new, differentiated, high-value services that customers will value and be happy to pay for.

by Alastair Macpherson and Darren Waterman

38 Developing risk resiliency

In the wake of the global financial crisis and economic downturn, risk management has returned to the top of the boardroom agenda. For communications operators facing a complex and fast-changing blend of technological, customer, and regulatory risks it is especially critical to align and link risk and performance management in a way that creates sustainable value for shareholders. Operators that can achieve “risk resiliency” can make better, risk-informed decisions with greater confidence and clarity even in the wake of economic volatility.

by Joe Atkinson

Perspectives

48 Didier Bellens, Belgacom

Belgacom has always focused on innovation to fuel its growth. Here, CEO Didier Bellens shares his perspectives on effective competition and the role of regulation in leveling the field; the importance of mobile and the responsibility the industry has to consumers; and how customer satisfaction is an essential part of both growing the business and reducing costs.

54 Lars Nyberg, TeliaSonera

The shared values of TeliaSonera are to add value, show respect, and make it happen. Since 2007, Lars Nyberg, president and CEO, has been living these values and leading a journey of change within the organization. From the certainty of unlimited bandwidth demand to the death of flat fee pricing and a commitment to the role of telco as conduit, here he discusses some alternatives to ideas as they often are written about in the industry today.

Sommaire

12 Éditorial

Articles

14 Beaucoup d'appelés, peu d'élus

De nombreux facteurs seront déterminants pour l'avantage concurrentiel des sociétés de télécommunications au XXI^e siècle, mais peu ont la puissance de l'innovation. Le secteur a déjà constaté le pouvoir de l'innovation en matière de transformation, mais aussi de déstabilisation, des entreprises. Face à cette déstabilisation, la réussite des sociétés de télécommunications dépendra de leur capacité à innover et à résoudre leurs tensions internes et celles qui sévissent sur leurs marchés.

par Christopher Wasden

22 Cultiver les ressources humaines de demain

Dix ans seulement nous séparent de l'année 2020. Pourtant, les ressources humaines de l'industrie des télécommunications—et la façon dont elles sont recrutées, organisées et gérées—seront radicalement transformées d'ici là. En faisant appel à la planification par scénarios, PricewaterhouseCoopers a établi trois scénarios montrant quelle pourrait être l'évolution des organisations et de leur capital humain en 2020. Selon nous, tous ces scénarios, mais plus particulièrement l'un d'entre eux, concerneront les opérateurs de télécommunications et auront une influence sur eux.

par Carol Stubbings

30 Établir une relation symbiotique

À première vue, l'argument de la neutralité du réseau peut sembler protéger les consommateurs des FAI et des opérateurs de réseau qui cherchent à dégrader ou à bloquer l'accès aux services en ligne très consommateurs de bande passante. En réalité, l'approche réglementaire basée sur la neutralité du réseau risque de faire caler le moteur financier de l'innovation sur Internet. Au lieu de rechercher les fausses économies offertes par la neutralité du réseau, les fournisseurs d'applications et de contenus en ligne doivent engager une collaboration commerciale avec les fournisseurs de bande passante afin de fournir les nouveaux services différenciés à valeur ajoutée que les clients jugeront utiles et qu'ils seront prêts à payer.

par Alastair Macpherson and Darren Waterman

38 Développer la résilience aux risques

La crise financière mondiale et le ralentissement économique ont redonné une forte priorité à la gestion des risques au sein des conseils d'administration. Pour les opérateurs de télécommunications – qui sont confrontés à une alliance complexe et hautement fluctuante de risques technologiques, de clientèle et réglementaires – il est particulièrement critique d'aligner et de lier la gestion des risques et des performances afin de créer durablement de la valeur pour les actionnaires. Les opérateurs qui se montrent résilients aux risques peuvent prendre des décisions plus avisées, plus conscientes des risques, avec une confiance et une clarté accrues, même dans le sillage de la volatilité économique.

par Joe Atkinson

Perspectives

48 Didier Bellens, Belgacom

Belgacom a toujours misé sur l'innovation pour nourrir sa croissance. Dans cet article, Didier Bellens, Administrateur délégué (CEO), expose ses idées sur la concurrence efficace et le rôle de la réglementation dans l'égalité des chances offertes aux différents acteurs du marché, l'importance du mobile et la responsabilité du secteur à vis-à-vis des consommateurs, et le rôle essentiel de la satisfaction des clients dans le développement de l'activité et la réduction des coûts.

54 Lars Nyberg, TeliaSonera

Créer de la valeur ajoutée, faire preuve de respect et se donner les moyens de réussir, telles sont les valeurs de TeliaSonera. Depuis 2007, Lars Nyberg, Président-directeur général (president and CEO), vit ces valeurs au quotidien et conduit le changement au sein de l'organisation. De la certitude de la demande de largeur de bande illimitée à la fin de la tarification forfaitaire en passant par le rôle de passeur des sociétés de télécommunications, il revisite ici certaines idées dominantes du secteur pour en proposer une autre vision.

Índice

12 Mensaje del editor

Artículos

14 Ensayo y error

Muchos factores determinarán la ventaja competitiva de las compañías del sector de las comunicaciones en el siglo XXI, pero muy pocos son tan poderosos como la innovación. El sector ya ha podido constatar el poder de la innovación a la hora de transformar a las compañías y trastocarlas. La capacidad de las compañías de comunicación para responder a tales trastornos, innovando y ocupándose de las tensiones presentes en sus mercados y en su propia organización, será fundamental para determinar cuáles serán sus logros futuros.

por Christopher Wasden

22 Cultivar la plantilla del futuro

Solamente falta un decenio para el 2020. Sin embargo, la plantilla de la industria de las comunicaciones así como su selección, organización y gestión habrá cambiado radicalmente para ese año. Utilizando la planificación de escenarios y retrocediendo desde la posición ventajosa de 2020, PricewaterhouseCoopers ha preparado tres marcos hipotéticos que ilustran de qué modo pueden evolucionar las empresas y su capital humano. En nuestra opinión, estos escenarios cobrarán relevancia e influencia entre los operadores de comunicaciones, y uno de ellos lo hará con especial fuerza.

por Carol Stubbings

30 Lograr la simbiosis

A primera vista, el argumento de la neutralidad de la red puede parecer volcado en la protección de los consumidores, frente a proveedores de servicios de Internet y operadores de red que pretenden degradar o bloquear el acceso a servicios on-line que requieren un ancho de banda considerable. El hecho, sin embargo, es que con un enfoque regulatorio basado en la neutralidad de la red se puede poner en peligro la vital corriente financiera de la innovación en Internet. Es preciso que los proveedores de contenidos y aplicaciones on-line dejen de perseguir las falsas economías que ofrece la neutralidad de la red. En cambio, deberían colaborar en términos comerciales con los proveedores de ancho de banda con el fin de ofrecer los servicios novedosos, diferenciados y de gran valor que los clientes apreciarán y por los que estarán dispuestos a pagar.

por Alastair Macpherson and Darren Waterman

38 La resiliencia ante el riesgo

Tras la crisis financiera y el bajón económico mundial, la gestión de riesgos ha regresado a los primeros puestos del programa de trabajo de los consejos directivos. Para los operadores de comunicación que afrontan una combinación compleja y sumamente cambiante de riesgos tecnológicos, de clientes y regulatorios es especialmente importante conciliar y enlazar la gestión de riesgos y resultados de una forma que cree un valor sostenible para los accionistas. Los operadores que puedan lograr la “resiliencia ante el riesgo” podrán tomar, con mayor confianza y claridad, mejores decisiones basadas en un conocimiento de los riesgos, incluso tras el paso de la volatilidad económica.

por Joe Atkinson

Perspectivas

48 Didier Bellens, Belgacom

Belgacom siempre se ha centrado en la innovación para alimentar su crecimiento. En este artículo, el consejero delegado Didier Bellens comparte sus puntos de vista acerca de la competencia eficaz y el papel que la regulación desempeña a la hora de allanar el camino; la importancia de las comunicaciones móviles y la responsabilidad que el sector tiene para con los consumidores; y de qué forma la satisfacción del cliente es un factor esencial para expandir el negocio y reducir los costes.

54 Lars Nyberg, TeliaSonera

Los valores que defiende TeliaSonera son sumar valor, mostrar respeto y materializar logros. Desde 2007, Lars Nyberg, presidente y consejero delegado, ha estado viviendo estos valores y encabezando el camino hacia el cambio en la empresa. Desde la certidumbre de que habrá demanda de banda ancha ilimitada, del fin de la tarifa plana y de su compromiso con el papel de las compañías de telecomunicaciones como mediadoras, Lars Nyberg expone algunas alternativas a las ideas actuales y la forma en que a menudo son presentadas en el sector.

Inhaltsverzeichnis

12 Vorwort des Herausgebers

Beiträge

14 Über das Ziel hinausschießen

Viele verschiedene Faktoren bestimmen, ob ein Telekommunikationsunternehmen im 21. Jahrhundert Wettbewerbsvorteile erzielt. Besonders wichtig ist die Innovationsfähigkeit. Die Telekommunikationsbranche hat bereits am eigenen Leib erfahren, wie Innovationen Geschäftsmodelle verändern und neu ordnen können. Wie geschickt Telekommunikationsunternehmen gesellschaften mit Innovationskraft und aktivem Handeln auf diese Einflüsse reagieren, wird für ihren künftigen Erfolg eine maßgebliche Rolle spielen.

von Christopher Wasden

22 Die Mitarbeiter der Zukunft fördern

Bis zum Jahr 2020 sind es nur noch zehn Jahre. Doch bis dahin werden sich die Mitarbeiter von Telekommunikationsunternehmen - und auch die Art und Weise, sie zu organisieren, zu führen und zu akquirieren - radikal verändern. PricewaterhouseCoopers prognostiziert mit Hilfe der Szenariomodellierung die Entwicklung im Jahr 2020 und leitet daraus drei unterschiedliche Szenarien ab. Ziel ist, besser vorhersagen zu können, wie sich Unternehmen und ihr Humankapital verändern werden. Jedes einzelne dieser Szenarien ist für Telekommunikationsunternehmen relevant und einflussreich. Eines davon wird besonders wichtig.

von Carol Stubbings

30 Eine symbiotische Beziehung aufbauen

Auf den ersten Blick scheinen die Argumente für Netzneutralität Konsumenten vor Netzerkannbietern und ISPs zu schützen, da diese die Nutzung von Anwendungen mit hoher Bandbreite verhindern oder blockieren. Doch tatsächlich ist Netzneutralität ein Regulierungsinstrument, das letztlich das Risiko birgt, Innovationen im Internet den Hahn abzdrehen. Internetapplikationen und Inhalteanbieter sollten sich nicht hinter falschen wirtschaftlichen Argumenten für Netzneutralität verbergen. Vielmehr sollten sie mit Breitbandanbietern kommerziell zusammenarbeiten, um neue, differenzierte und hochwertige Dienste anzubieten, die von Kunden geschätzt werden und für die sie auch zu zahlen bereit sind.

von Alastair Macpherson and Darren Waterman

38 Risiken abfedern

Im Zuge der weltweiten Finanzkrise und des wirtschaftlichen Abschwungs ist das Risikomanagement wieder ganz oben auf die Agenda des Aufsichtsrats gerückt. Für Telekommunikationsunternehmen, die vor zahlreichen komplexen, sich schnell verändernden technologischen, verbrauchergetriebenen und regulatorischen Risiken stehen, ist es besonders wichtig, diese Risiken mit einem Performance-Management-System zu verbinden. Nur so können sie nachhaltige Werte für Shareholder schaffen. Unternehmen, die in der Lage sind, die Risiken abzufedern, können selbst in einem volatilen Umfeld bessere, risikobewusste Entscheidungen mit größerer Sicherheit und Klarheit treffen.

von Joe Atkinson

Perspektiven

48 Didier Bellens, Belgacom

Belgacom hat sich schon immer auf Innovationen konzentriert, um Wachstum zu erzeugen. Didier Bellens, CEO von Belgacom, beschreibt seine Ansichten über effektiven Wettbewerb und die Rolle der Regulierung im Marktumfeld. Er gibt Einblicke in seine Sichtweise zur Bedeutung des Mobilfunks und der Verantwortung, die die Branche gegenüber Konsumenten trägt. Er schildert, welche Rolle Konsumenten und Kundenzufriedenheit spielen, um Wachstum zu generieren und Kosten zu reduzieren.

54 Lars Nyberg, TeliaSonera

Telia Sonera legt größten Wert darauf, Werte zu schaffen, Respekt zu zeigen und Ideen umzusetzen. Seit 2007 lebt Lars Nyberg, Präsident und CEO von Telia Sonera, diese Werte und hat das Unternehmen durch eine Phase der Veränderung geführt. Er spricht über Aspekte, die in der Branche selten zur Sprache kommen: Die Gewissheit der anstehenden Nachfrage nach unbegrenzter Bandbreiten, der Wunsch nach dem Ende der Flatrate und das Schicksal der Telekommunikationsunternehmen, zum bloßen "Leistungsanbieter" zu werden.

内容

12 主编寄语

文章摘要

14 勇于尝试，无论得失

21世纪中，很多因素都将影响通信产业的整体结构并决定电信企业的竞争优势，创新能力无疑是其中最重要的之一。通信企业对创新的威力已然熟知，无论其结果是带来成功的商业革命或仅仅造成旧的运营模式分崩瓦解。我们坚信，电信企业唯有通过平衡外部市场与内部组织间各要素的发展节奏，把握创新并实现最大化收益，方可成功应对今日之变革，方可晋升成为明日之强者。

作者 Christopher Wasden

22 孕育新生代人力资源

我们预计，整体通信产业的人力资源结构将在2020年前后发生翻天覆地的变化——既包括人力资源的获取、又涉及组织的构架以及公司管理的方式。现今的企业仅有10年短暂时光为之进行准备。普华永道对三类未来可能的发展方向进行了展望，力图揭示不同情境下的通信企业组织结构及人力资本的演进道路。每种情景假设均可能在特定的发展状态下变得更为可信，进而对电信运营商产生重大影响——更关键的是，总有一种预期会变为现实。

作者 Carol Stubbings

30 共生共荣

初步解读所谓“网络中立性”的主张，不免得出这样的结论：其目标是为了保护大众消费者权益不被电信运营商或通信服务提供商力图降低或阻断高流量互联网应用的企图所影响（原因在于此类应用通常消耗大量带宽或占据大量资源）。但进一步深思，基于“网络中立性”主张的行政命令若得以推行，则很可能有损互联网经济的支柱和血脉，最终阻碍创新。故此，在线应用服务提供者以及内容提供商需要警惕“网络中立性”保护伞所提供的虚假繁荣，转而寻求与宽带服务运营商共生共荣的经营模式，力争通过新颖的、差异化的、高价值的在线服务获取客户的认可并获得收入。

作者 Alastair Macpherson and Darren Waterman

38 风险恢复力

适逢全球经济从低谷中逐步复苏之际，风险管理重新成为企业最高管理者的首要议题之一。对于电信运营商而言，无时不刻都在面临复杂多变的技术进步、客户偏好、监管要求，而不同要素之间的相互影响则进一步加剧了风险水平。在此情境下，关键的议题是：如何将风险控制与绩效管理以适当的方式融合，从而创造股东价值。若可实现我们称之为“风险恢复”这一宏图，电信运营商则能够在曲折的经济恢复过程中增强信心、明确思路，在洞察风险的基础上快速做出客观的决策。

作者 Joe Atkinson

前沿展望

48 Didier Bellens, Belgacom

Belgacom一贯重视通过不断创新助推企业成长。在本期前沿展望栏目中，Belgacom的首席执行官Didier Bellens 将与读者分享他对于下述主题的洞见：1) 推进更有效的市场竞争；2) 运用监管影响力平衡市场环境；3) 移动服务的战略意义及电信产业对客户所负责任；以及 4) 客户满意度为何是持续发展业务及不断降低成本的重要基础。

54 Lars Nyberg, TeliaSonera

TeliaSonera一直致力于将“尊重各方需求，提升企业价值”作为建设企业共享价值中心的核心目标。自2007年来，TeliaSonera主席及首席执行官Lars Nyberg秉承上述理念，领导一系列变革工作。其中既包括处理无限增长的带宽需求、应对无差别定价方式的逐步消亡、以及管理电信运营商作为服务通路的承诺。本文中Lars Nyberg就当今电信领域的一些热点问题和重要抉择进行了深入的探讨。



Message from the Editor

Our latest edition of *Communications Review* has been published at a defining moment in the economic cycle, when many countries are showing signs of recovery but some markets are accelerating much more quickly out of the downturn than others are. For communications operators, this is the moment of truth when they demonstrate whether their platform for recovery provides a robust foundation for renewed growth.

Resuming growth will often mean changing the game: innovating in products, services, and operating models to seek out and secure new revenue streams, which will outgrow and ultimately replace legacy revenues. With this requirement in mind, the overarching theme we have chosen for this edition is “breaking the mold.” This means taking a hard look at how we do things. It means examining potential new ways to move forward in such mission-critical areas as innovating products and services, recruiting and managing talent, managing risk, and reconciling the regulatory and commercial issues surrounding Internet services.

As we focus on this theme, our first article, “Hit and Miss,” is right on target. Author Christopher Wasden examines what communications operators need to do now to achieve three key goals: sustain their pipeline of new products and services; compete against new entrants to the industry; and maintain a sustainable business for the future. The answer, Mr. Wasden demonstrates, is to deliver more and better innovation. Experience shows that the companies that innovate most successfully are those with an organizational structure and approach that fosters creative tension between today’s business and tomorrow’s.

The article concludes with a valuable list of questions that can help you assess the role of innovation in your organization. I urge you to test them against your current innovation model. For me, perhaps his most memorable, and perceptive, insight is that true innovation requires not just discipline, but also a willingness to fail. As the article mentions, Apple’s first attempt, in partnership with Motorola, at developing a music-playing cell phone—the ROKR—was a failure. Just look at what happened next. This example shows us that a business’s ability to learn from, and respond to, any failure is a key factor in harnessing innovation for success.

A further critical enabler in building a pipeline of successful innovation for the future is the ability to find and retain the right talent—the focus of our second article, “Cultivating the Future Workforce.” Drawing on recent research by PricewaterhouseCoopers, author Carol Stubbings uses scenario

planning to look back on today's communications operators from the vantage point of 2020, examining how the industry's sourcing, organization, and management of its workforce will need to change. She assesses this transformation through the lens of each of three scenarios, while taking account of the distinct values, aspirations, and priorities that characterize the "millennial generation." Our author concludes that the future workforce actually is already with us, and that communications companies face an absolute need to take some key decisions now—or risk losing the war for innovative talent in the future.

Our third article adopts a different angle on breaking the mold by investigating a concept that could present one of the greatest threats to future innovation in the Internet age: network neutrality. In "Achieving a Symbiotic Relationship," authors Alastair Macpherson and Darren Waterman point out how any other industry would classify network operators and ISPs as business-critical suppliers to online application and content providers, and would allow each grouping to make its own commercial agreements with the other. By requiring bandwidth to be provided unconditionally to all applications on an equal basis, network neutrality undermines the commercial rationale for innovation on the Internet, and ultimately threatens less—not more—choice for consumers. The authors call for market forces to be allowed to hold sway, enabling operators and content providers to collaborate on innovative services that customers will pay for.

These first three articles are about managing the risks that emerge in breaking the mold. In the fourth article, "Developing Risk Resiliency," by Joe Atkinson, we move to the heart of this pivotal issue by looking at how a communications operator can manage all its risks in a way that corresponds and contributes directly to its performance as a business. As the article points out, managing risk should be not an end in itself, but a means of driving higher performance. Communications operators' complex and volatile risk universe makes

it especially crucial for them to align and link risk and performance management. Mr. Atkinson describes four key steps that operators can take to achieve "risk resiliency" and to drive better, risk-informed decision making throughout their business.

Finally, in our Perspectives section, we meet two decision makers who already are actively breaking the mold to position their businesses to sustain growth and create value. Didier Bellens, CEO of Belgacom, describes how his company formulates its strategy around quality, convergence, and innovation. He also shares his views on issues such as the role of regulation, the future of mobile services, and the overriding importance of customer satisfaction. And Lars Nyberg, president and CEO of TeliaSonera, discusses how operators must change their worldview and mind-set to keep pace with the increasing importance of communications in customers' lives.

For the first time in two years, I believe the industry's underlying agenda is shifting from cost to growth. True, we still need to keep a tight rein on risk and capital, but more and more new opportunities are emerging, and players with the ability to innovate and accelerate their businesses are in the best position to seize them. As the global economy turns, I think the articles in this edition of *Communications Review* reflect this rich blend of realism and excitement. To see whether you agree, I am eager to receive your suggestions and feedback on this issue. Please send any comments to me at colin.brereton@uk.pwc.com, or feel free to call me on [44] (0) 20 7213 3723.



Colin Brereton
Partner
Global Communications Leader
PricewaterhouseCoopers LLP



*A target stuck with arrows
Thimphu, Bhutan*



Hit and miss

With the dramatic changes that communications technology has enabled over the last decade, most communications operators likely would describe themselves as innovative. However, to continue to bring new products and services to market, to compete against new entrants from outside the industry, and to maintain a sustainable business for the future, communications companies will need to do more.

Research shows that over two-thirds of all business-related innovation initiatives fail. Some companies, clearly, are more successful at innovation than others. Why? Does innovation just happen, or is there more to it than that?

True innovation requires discipline and an organizational structure and approach that can foster creative tension between the communications business of today and of tomorrow. Failure, too, is a key ingredient. A business' ability to learn from and respond to its failures is a key factor in how effectively it can harness innovation for success.

Few industries are more closely associated with the idea of innovation than communications is. Over the last decade, developments in technology have completely changed the industry and the world around it. Despite this, the nature of innovation, and what drives and sustains it, is more often than not overlooked.

True innovation is widely misunderstood. To some, innovation is creativity. Others confuse novelty with innovation. Neither view is correct. In fact, both are wrong because they ignore an essential ingredient: value.

The recent history of the communications industry is littered with examples of new technology failing to deliver value, and with companies too often relying on novelty or perceived creativity without understanding what appeals to customers and their subsequent willingness to pay for it. For example, seven years ago Sony launched a phone that had many of the features found in today's runaway success—the iPhone—but was met with utter indifference from consumers. Even Apple's first attempt at developing a music-playing cell phone, the ROKR, with partner Motorola, similarly failed to tap into consumer demand for the "next big thing".

Simply put, that which is creative and new becomes innovative in a business context only when it creates value—that is, when people are willing to pay for it. Or to put it another way, innovation that is never commercialized is worthless.

Defining innovation, however, is just the first step. Harnessing innovation and making it work requires an understanding of what drives it and what sustains it. In general, people do not wake up in the morning and say, "Today, I'm going to be innovative." Rather, the innovator needs something to react against, something that might usefully be

thought of as a tension. Tensions are meaningful structural gaps—resulting from changes in rules, resources, roles, relationships, or goals—that are important but difficult to close. In other words, innovators react to what they perceive as a meaningful difference between things as they are and things as they ought to or could be. So, for example, as little as a few years ago, mobile phones could do just one thing—make calls. Innovators saw the possibility of such devices providing much more—such as Internet connectivity, music and photo storage, and numerous applications that simply make life easier—from locating a good restaurant to navigating the best route to your destination. The result? An innovation: smartphones that do all of that and more.

Whether responding to external problems or to those embedded within the organization, innovation cannot occur without tension. Neither can it emerge in the absence of failure and the pain that failure engenders. In fact, the pain of failure leads to the tensions that encourage innovation and growth, so failure is the first step. Innovative organizations transform frequent failures into successes. The trick is to think differently as a result of the tensions within or outside a business, to fail fast and frequently so that sustainable solutions come quickly to the fore.

As significant as they are to the process, value, failure, pain, and tension in and of themselves cannot produce innovation. The binder in this dish is discipline—and, more specifically, market discipline.

A tale of two disciplines

The central tension in all organizations is that between exploration and exploitation. Exploration—the search for the new—drives innovation. Exploitation,

which seeks to use past innovation, suppresses it. This explains why most organizations, particularly large ones, struggle with innovation. For example, operators seeking to protect their fixed line service in the face of competition from wireless can lose sight of the promise of the new model. They need instead to manage the tension between creating the communications company of tomorrow and running the communications company of today.

Creating additional services and value from new technology requires them to remove the organizational barriers between platforms and silos in order to allow collaboration. Some large operators struggle to find the right way to achieve that convergence between wired and wireless, or retail and business. They fail at crossing the silos and getting convergent solutions. That failure risks relegating them to providing dumb pipes rather than intelligent solutions for which their customers will pay. Such an approach requires market discipline and an ability to operate outside the hierarchy.

The struggle is rooted in two opposing forms of discipline that must achieve a dynamic balance if innovation is to occur. The first of these, market discipline, governs exploration; the second, hierarchical discipline, is aligned with exploitation. All organizations are, in fact, tension systems that operate between these two: the edge of equilibrium (hierarchical discipline that exploits previous innovations) and the edge of chaos (market discipline that creates the next generation of innovation). Dynamic balance is achieved when a company resists the impulse to allow hierarchical discipline to triumph in order to eliminate the tensions enabled by market discipline.

In any organization, innovation emerges from a process that is driven by people’s passions. Given the organic, chaotic nature of this process, some sort of filtering and development processes—or market discipline—are necessary in order to promote good ideas and separate them from bad. This filter generally takes the form of an innovation committee or group that enables the emergence of activities that occur outside the mainstream of the standard operating procedures that define day-to-day business. The purpose of this innovation committee is to enable disruption that moves activity toward the edge of chaos.

The innovation committee backs the best ideas that emerge from these activities and gambles on their viability. In addition, this innovation committee protects employees from their bosses, enabling them to use some of their time and the resources they provide to follow their innovative passions. By transferring from the hierarchy (the boss) the decision regarding advancing the innovation and by allocating innovation resources to a group focused on empowering innovative visions, market discipline supplants hierarchical discipline.

Market discipline is essential to the discovery of what might be termed radical, next generation innovation. In essence, it enables such innovation to emerge and become the foundation for future growth. (See Figure 1.)

But this is not to say that market discipline is better than hierarchical discipline. In fact, market discipline generally operates within the broader structure of the hierarchy. The point is that the discipline required within an organization is a function of where one resides on the exploration/exploitation continuum. Successful innovations emerge when the right discipline is applied to the right opportunity, and they are hindered when the opposite occurs.

At first glance, hierarchical discipline may seem to stifle innovation. Unlike market discipline, hierarchical discipline focuses on efficiency rather than variety. In hierarchical structures, individuals are aligned by silos and report to bosses who limit what they can and cannot do. While such an approach does in fact stifle radical innovation, it is essential to incremental innovation, which must occur to extend the life cycles of stable products that need a “next version”—one that is slightly better or different but not radically so—to stay alive.

This is perhaps where many communications businesses find themselves. They have proven themselves masters at operating within silos (e.g., wired and wireless) but arguably less adept at working between them.

While hierarchical discipline dominates most large organizations, many companies have found ways—inventive in themselves—to install market discipline processes around their innovation efforts. While financial support is important, innovation also requires time, and the freedom to use that time. That means providing innovative employees with some protection from their bosses and their bosses’ focus on the here and now. Both Google and 3M have embraced approaches that allow innovative

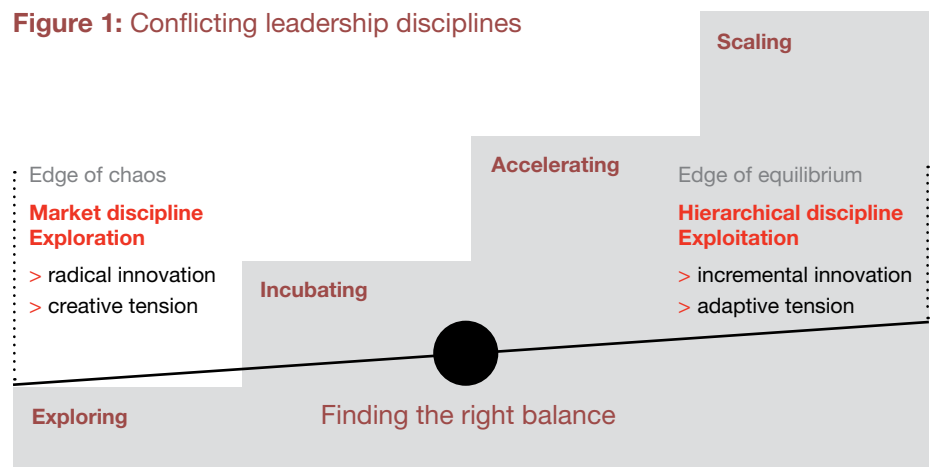
employees to spend some of their time harnessing their passions rather than performing their job-specific duties.

A platform is the most valuable type of innovation because it creates a sustainable competitive advantage. Apple’s App Store started in response to users jailbreaking the original devices in order to add applications and functionality that were not available from within Apple’s walled garden. Having opened the garden to developers, Apple has seen its smartphone rapidly outsell other manufacturers’ products, even when those competitors, such as RIM or Nokia, had a considerable head start.

By creating an open-innovation ecosystem that provided developers the tools to innovate, simple and compelling economic terms to distribute, and a simple review and approval process, Apple has created an entirely new open innovation paradigm that none of the other mobile software or device providers has yet been able to replicate. However, Google, another non-telco company, is coming close.

While much of open innovation is inner directed, it is possible to view the model as flowing two ways. Often, conscious efforts at creativity result in innovations that a company cannot use. In fact, some estimates suggest that 90% of all information

Figure 1: Conflicting leadership disciplines



technology innovations never achieve commercial viability and that more than 90% of all patents expire without creating any economic value. Innovative companies that apply the open innovation model could license innovations that they cannot use to others. Instead of being a wasted asset, the innovation produces value.

Take Pfizer, for example. The company recently directed that any innovation developed in-house that Pfizer cannot use should be sold to another company. When people vote with dollars—whether inside or outside a company—market discipline is in play and innovation flourishes.

Sparking innovation: Harnessing tensions that drive innovation

While market and hierarchical discipline are necessary for radical and incremental innovation to thrive, it is important to understand what lights the fire of innovation in the first place. The energy force that causes innovation can be thought of as tensions that emerge from a number of sources. (See Figure 2.)

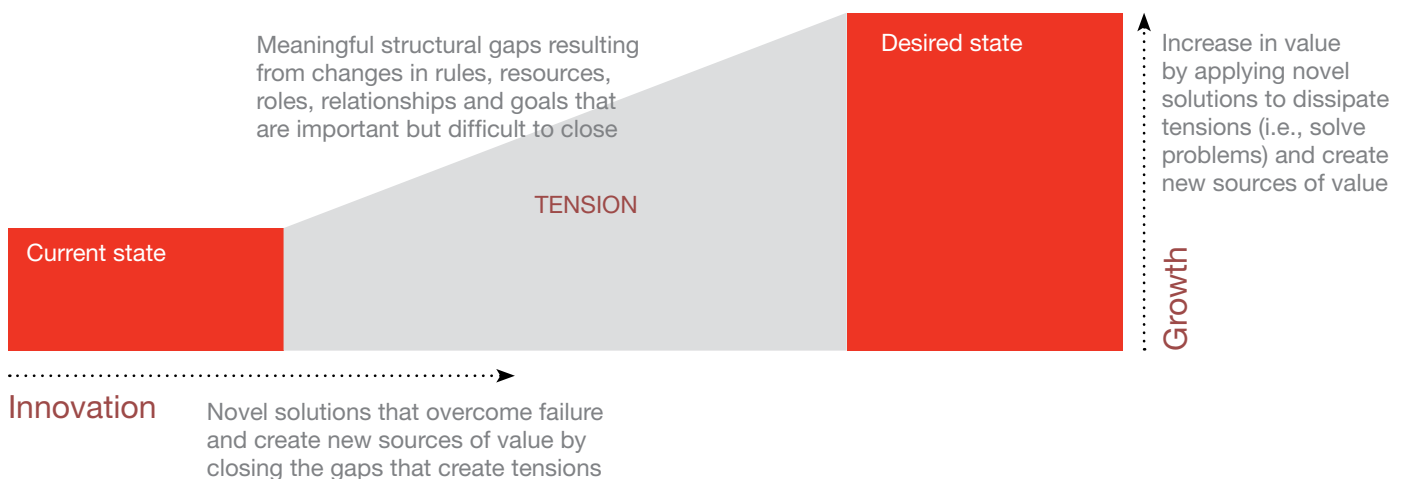
Resolving such tensions leads to unique points of view that cause innovators to see the world differently from the status quo and to envision unique ways in which to solve problems.

The smartphone story illustrates this well. In response to consumer dissatisfaction with the limited functionality of cell phones, smartphones that provide Internet access, store and play music, and host many different apps are eclipsing the cell phone market. This desire for more and better cell phone technology is a macro-level tension capable of spurring innovation. Innovators sense such tensions, believe that they can dissipate them, and develop innovations that take the tension out of the system. From another perspective, innovators take such tensions out of the marketplace and bring them into the organization, thereby driving innovation in the company. By so doing, the leading smartphone manufacturers are earning 35% of all the profits in the overall cell phone market on just 3% of all the sales¹, and smartphone customers are reported to be the happiest and most satisfied.²

The problem is that many organizations are not structured in a way that allows such innovation to occur, and they let their current structures blind them to alternatives that would create the tensions necessary for innovation and growth. Many communications businesses struggle to work well between different technology platforms (e.g., wireless and fixed line) and business silos (e.g., retail and business). Creating additional value and services rests precisely on the ability to collaborate and work across those organizational barriers.

In such cases, leadership has the opportunity to shake things up and literally create the environment that releases the creative energy necessary to innovate. It can, for example, shift resources, eliminate dead wood, move boundaries, reorganize departments, change expectations, and so on. Tensions are tensions, and whether they originate in the marketplace or within the organization, they drive innovation effectively. The key is to enable them to emerge and to harness them through disciplined practices that lead to innovation and growth.

Figure 2: Tensions that drive innovation



As the discussion on the previous page illustrates, not all tensions are alike. In fact, they come in three distinct flavors:

- **Creative tensions** generally emerge through market discipline in turbulent environments and result in radical innovation.
- **Adaptive tensions** are related to hierarchical discipline and result in incremental innovation.
- **Maladaptive tensions** occur when the wrong discipline is applied to the opportunity being pursued. Maladaptive tensions drive failure and pain, unless and until they are transformed into creative or adaptive tensions.

As we will see, with innovation, failure is not necessarily a bad thing.

Failure is an option

Where does failure fit in? Simply stated, failure implies a gap between what is and what could or should be. It occurs when something fails to live up to expectations or to satisfy needs. In other words, to fail is to fall short. It is the first step in a process that results in innovation and, ultimately, in growth. (See Figure 3.)

That failure drives innovation is not an intuitive concept. For example, people often think of all the innovations that came out of the United States space program and ask, where was the failure that caused these innovations to emerge? The initiating failure was World War II and the much more advanced German missile program. However, the failure that accelerated space-program innovation was Sputnik. This failure caused great pain in the US psyche and led to President Kennedy's famous challenge to do things "because they are hard."

Even in more modest and more recent innovation challenges, failure plays the same role. For instance, in the cell phone example discussed earlier, the innovator spots a *failure* (dissatisfaction with an increasingly limited technology tool and multiple devices doing many of the same things—MP3 players, phones, cameras, Internet, etc.). The failure results in *pain* (consumers are frustrated by the number of technology tools they require to meet their needs). This pain creates a *tension* (between the current state of multiple devices and a desired state of a multifunctional single device), which leads to *innovation* (the smartphone) and *growth* (the cell phone market is in decline, while the market for smartphones is growing at double-digit rates, even during a significant recession).

In the process just described, failure is the critical first step. However, to be effective, failure must be fast and frequent. Lingering in the failure mode only stifles innovation as the tension becomes increasingly maladaptive and limits long-term growth unless it can be transformed into creative tension. What separates good innovators from bad is how they approach failure and what they do with it. Apple provides a classic example of the latter, that is, of an innovator that views failure as a stepping-stone to success.

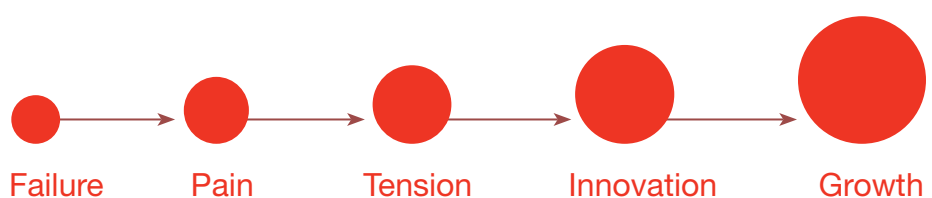
Apple's approach to failure resulted in two great innovations—the iPhone and the iPod. The failure from which the iPhone emerged was the ROKR,

an early example of a cell phone by Motorola that could not only make calls, but play music as well using the iTunes software. When the ROKR failed to sell, Apple did not try to work with its partner to fix it, but, instead, reinvented it. Apple continued to innovate, and the result was the iPhone. They realized that it is better to dispense with 10 failing concepts quickly and move on than to hang on to one failing concept and try to fix it.

The Newton was the failed concept that eventually became the iPod. One of the first personal digital assistants (PDAs), the Newton was a huge failure in the marketplace and created an important tension that led Apple to bring back Steve Jobs. However, Apple did not tinker with the Newton in hopes of fixing it. Rather, from the failure, they quickly learned about what separates a good PDA from a bad one and about the convergent technologies that eventually would become the iPod.

In addition to its own failures, Apple seizes opportunities based on the failure of others. In the case of the ROKR, Apple was not alone in launching a failed concept. They kept a close eye on the failures of others and hired promising innovators from other organizations to develop and launch their ultimate product. In essence, they leveraged others' failures to harness creative tensions within Apple that led to their bringing an innovation to the market that has created the new paradigm in mobile media technology.

Figure 3: Innovation begins with failure and ends with growth



Today, Apple has institutionalized failure through its 10:3:1 approach to development. Under 10:3:1, Apple designers create 10 new concepts, whittle them down to three prototypes, and select the best to take to market. With this approach, they expect 90% of their initial ideas and two-thirds of their prototypes to fail. However, by fostering fast and frequent failures, they decrease their overall investment in failure, which leads to greater success.

The lesson with regard to innovation is this: Failure, particularly fast failure, can either liberate an organization or bog it down. Apple is an example of the former; big pharma characterizes the latter.

For many years, the pharmaceutical industry simply did not understand innovation. They thought that innovation lent itself to economies of scale and could be mass produced in the same way they manufacture pills. Over the past decade, hundreds of billions of dollars have been spent in an effort to create new drugs, yet most companies have almost nothing to show for that investment. Why? They have made the mistake of making fast failure virtually impossible by attempting to innovate through hierarchical rather than market discipline structures.

Whereas hierarchical discipline perpetuates and causes massive overinvestment in failure, market discipline actively seeks signals of value and eliminates those activities that fail to measure up.

Companies are also discovering that using market discipline to shake things up in their organizations is a good thing. For example, according to Mikko Kosonen, a former Nokia strategy chief, the

company uses market discipline to create organizational tensions that intentionally lead to instability. He observes that a mix of tension and collaboration is designed to “keep the organization awake,” because “the very things that make you great will kill you—unless you take medicine to stay agile.”³

Avoiding the downside of innovation

Innovation is the lifeblood of any company’s success. However, as with most benefits, innovation comes with a number of unintended consequences. In fact, there are two: One is organizational, and the other is societal.

From an organizational perspective, companies can suffer from innovation overload or, to put it another way, innovation fatigue. Many handset manufacturers, arguably, have succumbed to this condition. It flourishes among companies that have failed to distinguish between that which is merely novel and that which is genuinely innovative. It is possible to generate an endless stream of novel ideas, but only those that create value—economic, social, or personal—are innovations. When market discipline is applied to separate the wheat (value-producing creativity) from the chaff (mere novelties), organizations find that what remains is an extremely manageable set of genuine innovations.

From a societal perspective, two phenomena are worth noting. The first involves the inevitable abuse of innovation, and the second, once again, involves value.

Most innovations enable some type of abuse. The Internet has provided us virtually unlimited access to information, but it also has provided unprecedented business opportunities to criminals, a fertile stalking ground for predators, a spike in identity theft, and invasions of privacy. Advances in cell phone and PDA technologies have brought the world two devices that fit in our pockets, but these devices have led to increases in traffic accidents and are absorbing more and more of our (and our children’s) time in not necessarily healthy or productive ways.

Fortunately, some (but not all) such abuses are mitigated by the impact of value on innovation. When it comes to an innovative product or service, an evolving value proposition filters out a lot of the abuse and misuse. This, however, can take time.

When a new technology enters the market, it could take a decade before users discover ways to change their workflow and do things differently to create new sources of value. For example, MP3 players that required users to “rip” songs from a CD did not harness the power of the Internet to change the workflow related to music consumption. Rather, they merely mimicked a process that reel-to-reel, cassette, and eight-track tape users had performed for decades. The iTunes Store radically reinvented this process by changing workflow and enabling purely technological innovations to find their practical application. For nearly all innovations, a gap of about 10 years exists between a technology innovation and its impact on workflow.

In another example, when personal computers first came on the market, people did little more with them than replicate paper-based systems. After 10 years or so, people began to realize how computers can help us do things differently—for instance, writing, editing, and designing; managing data; accessing information; creating new business models; networking socially and for business purposes, and so on—thereby creating value that was inconceivable when the technology was first applied to a problem. No doubt, as time passes, new technologies like Twitter that today appear to be mere novelties may evolve into productive tools as innovative practices catch up with innovative technologies and more and more people discover legitimate uses for them.

Assessing innovation in your organization

In today's volatile economic climate, two critical needs have risen to the fore: the need to control risk and the need to innovate. At first glance, these needs might seem to be at odds with each other. In fact, they share common ground in their concern with the unknown and the improbable. While controlling risk is all about preparing for the unknown and facing the improbable, innovation is all about enabling the unknown and the improbable to emerge within your organization and about allowing people to organize themselves to innovate and address these uncertainties. Communications businesses ignore either or both to their detriment. Clearly, here is an example where a dynamic balance between the two yields optimal benefits.

Communications businesses that embrace innovation will succeed today and in the future. Will yours be among them? How will you know? The following questions might help you assess the role of innovation in your organization:

- Do you think of innovation as occurring along a life-cycle continuum?
- Do you apply principles of market and hierarchical disciplines at the right time in the innovation life cycle?
- Do you know how to change your organizational structures to accelerate innovation?
- Do your growth and innovation strategies lead to innovation fatigue?
- Do your innovation disciplines enable fast and frequent failure to accelerate success?
- Do you know how to transform the maladaptive tensions in your organization into creative and adaptive ones?
- Do you understand and exploit the links among failure, pain, tension, innovation, and growth?

Many factors will determine competitive advantage for communications companies in the 21st century. Few are as powerful as innovation. The industry has already seen the power of innovation to transform businesses, and to disrupt them. In less than a decade we have seen the Internet change forever the way that business is conducted around the world. New mobile solutions are set to do the same—particularly in emerging markets where mobile financial services and telehealth are taking off rapidly, far exceeding provision in more developed markets.

How well communications companies respond, by innovating and by addressing the tensions in their markets and within their own organizations, will play a major part in determining their future success.

Endnotes

¹ Sara Silver, "Apple, RIM Outsmart Phone Market," *The Wall Street Journal*, July 20, 2009.

² Phil Goldstein, "Study: iPhoneers are the happiest smartphone users," *Fierce Wireless Daily*, July 17, 2009.

³ P. Dvorak, "Experts have a message for managers: Shake it up," *The Wall Street Journal*, June 16, 2008.

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Senior man trimming bonsai with child watching in greenhouse.



Cultivating the future workforce

The year 2020 is only a decade away. Yet the communications industry's workforce and the way it is sourced, organized, and managed will change radically by that date. Using scenario planning to look back from the vantage point of 2020, PwC has mapped out how organizations and their human capital might evolve through three scenarios, each of which we believe will be relevant and influential among communications operators and one especially so.

We also have examined the distinct values, aspirations, and priorities that characterize the "millennial generation," whose members are starting work now and will populate these new worlds. Put simply, the future workforce is already with us and communications companies must decide now how they will recruit, manage, and develop these people, or face losing the war for talent and competitive edge over the coming 10 years.

During the recent economic conditions, the response of many communications businesses has been to focus on survival and to balance rigorously cutting costs with laying down a solid platform for future growth. For most companies, people costs—accounting for up to 70% of spending in some organizations—represent the largest business cost. As a result, people costs usually are among the first to be targeted in the effort to reduce expenditures. While cutting head count can yield significant, immediate savings, it also may risk undermining an operator’s ability to compete when the upturn arrives and thereby may endanger the business’s long-term sustainability.

However, successful long-term investment in human capital is not about merely how much money is spent, but also the way it is spent. Concentrating on short-term survival may distract management’s attention from the underlying trends that will shape the future of employment: an aging workforce, chronic talent shortages in many parts of the world, an increasing need for global worker mobility, and the profound organizational and cultural issues arising from the shift in economic power toward emerging economies.

Furthermore, the recent global financial crisis has raised fundamental questions about the institutions and practices of modern business life. Across the world, doubt has been cast on whether organizations that previously were highly trusted—most obviously in financial services but also in other sectors, including communications—actually behave responsibly toward society as a whole. Confidence in the underlying ethics of business has been shaken, and a new generation of workers is reassessing the balance between the financial rewards employers offer and the ethical values under which they operate.

Three scenarios for the future

To investigate the implications of these developments, PricewaterhouseCoopers (PwC) has produced a report called *Managing tomorrow’s people—How the downturn will change the future of work*. Using a scenario planning approach, the report analyzes three alternative views of the workplace a decade from now, envisaging three distinct “worlds,” or business models, for 2020 that we believe may coexist in the future.

The first scenario, the Green World, can be characterized as collectivist. In it, the demand for greater transparency and social responsibility has led to a situation where sustainable business is equated with good business. In the second scenario, the Blue World, individualism has triumphed, with big-company capitalism and individual preferences overriding corporate responsibility. In the third scenario, the Orange World, ongoing fragmentation has seen the business world split up into myriad small, lean, highly specialized companies and providers that interact and collaborate in countless ways.

As we will see, these three worlds are not mutually exclusive, and all three bring implications for communications operators. Given a future in which these three worlds coexist, one of the main differentiating factors between the

companies in each world would be their ability to attract different types of personalities from among the millennial workforce.

To help identify the characteristics and expectations of this new generation, we can draw on another piece of PwC research in the same series: *Millennials at work: Perspectives from a new generation*. As this study points out, all employers, communications operators included, need to start preparing themselves now to recruit, develop, and retain young talent, whose demands and aspirations will be very different from those of preceding generations.

Scenario 1: The Green World

In the Green World, companies are recognized and appreciated for good corporate behavior, not just for their business results. People decide to work for particular businesses, and to buy their products and services, because they share their ethical and environmental values.

Clearly, a reputation for responsible behavior is already increasingly important for companies across all sectors. Businesses aspiring to play a central role in this version of the future need to be aware of the long-term impact of today’s decisions on the sustainability of their business model. Short-term action that may appear to conform to an ethical and green agenda could have long-term negative implications.

The Green World

“Sustainable business is good business”

Companies have a powerful social conscience intrinsic to their brand and to a green sense of responsibility. The focus is on sustainable, ethical ways of doing business and a strong drive to minimize and mitigate risky business practices. The responsibility ethos is enforced by governments and regulators at a national and an industry level. Green World employees engage with their company’s brand, and are prepared to work for it because it reflects their own values but likely will leave if they believe the company has ceased to live by those values.

For example, some companies will look to make radical changes to their reward/bonus programs and staff contracts because of the backlash against perceptions of excessive pay. Changes that are too rapid, or poorly thought through, could result in a first-mover disadvantage if staff feel their benefits have been significantly reduced compared to other organizations. This could seriously undermine the company's ability to attract and retain talent over the long term.

Similarly, new zero tolerance/zero risk approaches in areas such as ethical behavior or business expenses could produce good short-term results by sending the market a signal that bad behavior is being stamped out. However, such approaches also could contribute to the creation of a highly risk-averse culture within an organization that would seriously hamper creativity and innovation over the long term.

Given the global downturn, companies in survival mode may view the green agenda as not critical for the time being, meaning sustainability projects and initiatives might be put on the back burner. However, cutting this investment too far could leave a company's reputation and brand more exposed to damage and could affect its ability to engage with employees and customers.

Often, for example, green motives are used as the excuse for stripping back travel expenses to control costs as a result of the downturn. Many organizations that operate globally, however, rely on "social capital"—the ability of their global networks to cooperate and collaborate across borders to support the business and deliver products and services to customers. By limiting face-to-face contact, companies could

risk undermining many years of investment in building social capital across their global operation.

The Green World has some major areas of relevance to communications operators. One lies in their opportunity, as major consumers of energy in their own right, to reduce their internal power consumption by making facilities such as data centers more energy efficient. However, operators' internal opportunities to reduce energy usage are dwarfed by their massive potential to help their customers across all industries cut their own emissions—by helping others work in more efficient ways and reduce physical travel. This broader beneficial impact may be especially attractive to talent in the Green World.

Communications companies' positive impact can extend to the social arena as well. In developing markets such as Africa, mobile services have the potential to let society leapfrog the relative lack of fixed line services and harness huge social and lifestyle benefits. At a basic level, someone who walks five miles from a village and finds water can alert everyone else immediately. In the longer term, operators can play a key role in tackling poverty in emerging markets by enabling the rollout of mobile banking and money transfer services.

Scenario 2: The Blue World

Weighing the long-term consequences of their actions is equally important for companies in PwC's second scenario—the Blue World. This scenario embodies a future in which collective social responsibility is subordinated to individuality, and in which big companies with big brands take a paternalistic and potentially career-long interest in their employees' lives.

In the Blue World of 2020, against the backdrop of the emerging world's growing economic dominance, a culture of performance and efficiency has developed for managing global companies that have grown larger than many individual countries. Blue World companies have invested in size, technology, strong leadership, monolithic global branding, and sophisticated metrics. They have highly engaged, committed workforces who are well trained and skilled and who operate in a globally interconnected way.

In the Blue World, long-term investment in securing the talent pipeline is critical for businesses to remain competitive. Clearly, recruitment decisions made today will have significant ripple effects. For example, reducing graduate intake numbers for a couple of years could seriously limit the options for leadership succession in 10 or 20

The Blue World

"Corporate is still king"

In 2020, Blue World companies embody big-company capitalism. Blue World companies have invested in size, technology, the talent pipeline, strong leadership, and sophisticated metrics. They have highly engaged, well-trained, and strongly committed global workforces. Work may be pressurized and fast paced, but staff enjoy a wide range of benefits that help them run busy lifestyles and that "lock" them into the organization. For those who perform well, the rewards can be very high. Blue World companies attract people who like the security of working for a big, potentially career-long employer.

years' time. Cutting back on training and development is used widely to reduce costs in the short term. Possible long-term risks, though, include not only damaging customer service or product quality, but also lacking the right skills to compete in the upturn—and being forced to incur the higher costs of hiring new talent.

The Blue World scenario also involves a heightened emphasis on metrics to measure people performance and productivity. This reflects the need for companies to deal with the reality of having to do more with less, which in turn means that having the right data is critical. Currently, relatively few organizations tackle people metrics in a rigorous or structured way, and many struggle with knowing what to measure and how to interpret the data. The danger in a downturn is that companies make cuts to their people management akin to “conducting surgery by candlelight”, generating short-term savings but also problems down the line.

Trying to operate in the Blue World brings major implications and challenges for communications operators. As fundamentally innovative and talent-based businesses, operators need to safeguard their future intellectual capital. To do this, some may choose to bind their best employees and even those employees' offspring to the company for life, by expanding beyond traditional training, development, and benefits programs to create corporate universities, schools, hospitals, and even towns. This trend will gain momentum as companies become bigger than countries and take on some activities formerly handled by nation states.

Such a cradle-to-grave approach may help a Blue World company ride out the impact of having to rely on an

increasingly aging workforce. Also, as the war for talent intensifies, the business's wider role in supporting its employees' families may give it access to a pipeline of young talent as its employees' children grow up. However, a Blue World organization may well miss out on some of the more innovative and mercurial talent, who will reject the idea of being “owned for life” by a single employer. By their nature, these individuals, whose numbers are set to increase in the millennial workforce, place a high value on their own independence, flexibility, and work/life balance, and are eager to gain wide experience with different companies. These people may well fit more comfortably into our third scenario: the Orange World.

Scenario 3: The Orange World

The Orange World represents the most radical departure from current models of big-company capitalism. It is also the scenario that PwC believes may carry the greatest relevance and resonance for the future of the communications industry. In our view, operators will participate in the Orange World of 2020 in two ways: first, by adopting it as a way of organizing and managing their own operations; and, second, by providing innovative products and services that enable businesses in other industries to become Orange World organizations.

In the Orange World, the pre-existing trends of outsourcing and of globalizing the workforce have been taken to the logical conclusion permitted by technological progress. The result is a future made up of myriad small companies, where businesses are fragmented, networked, and nimble and rely on an extensive, ever-changing network of outsourced providers. These businesses have multiple clients and contracts. They tap into a global workforce on a flexible basis as required, supported by continual technological advancement and innovation.

Communications operators are ideally suited to such an environment. With technology continuing to advance, and with services such as mobile voice having evolved from an expensive luxury to a near-utility lifestyle necessity, the communications industry is facing either wide-scale consolidation or fragmentation and potentially both. At the same time, there is massive interdependence throughout the communications value chain. Consumers, however, are moving toward demanding a single, easy-to-use device that handles all their needs, one that encompasses voice, Internet, e-mail, messaging, and MP3.

All these forces point to a future in which small, highly specialized, innovative companies collaborate

The Orange World

“Tribes thrive”

In the fragmented Orange World, companies are usually small, lean, and nimble and rely on an extensive network of suppliers. They have multiple clients and contracts, and they access a globally diverse and flexible workforce of team workers on a supply-and-demand basis. Employees in the Orange World are technology savvy and are networked to communities of other employees with similar skills. They enjoy the freedom and flexibility of setting and controlling their working pattern and work/life balance. This structure is closely correlated with the communications industry, which is enabled by continual technological advancement and innovation and where loose, collaborative “cloud” networks can come and go, project by project.

flexibly with partners of all sizes to develop and deliver communications-related products and services tailored closely to customers' evolving needs. Apple's iPhone is an early illustration of a potential new way of working. In the first nine months after the launch of the iPhone, Apple sold a billion software applications for use on the mobile device. The vast majority were created by individuals, and Apple reviewed, tested, and marketed the applications in exchange for a percentage of the revenues.

In line with this emerging trend, in the Orange World individuals who provide professional services, such as programming expertise, will market themselves more like companies or sports stars than traditional freelancers. They will be able to sign up with agents who offer their services via online communities to the highest bidder for specific projects anywhere across the world. Technology and high-bandwidth communications links will make the place where innovation takes place irrelevant, and prices for particular skill sets will vary as demand for various specializations rises and falls.

Rather than qualifying in a discipline, working for a few decades, and then retiring, skilled individuals will learn, retrain, and reshape their lifestyles throughout their lives, a far cry from the traditional linear career common in today's corporation as well as in the Blue World of tomorrow.

Clearly, collaboration within and across the fragmented Orange World is enabled by communications technology. By demonstrating the benefits and viability of the Orange World on a day-to-day basis, communications companies will encourage companies in other industries to adopt the same model, thereby growing the market for their own products and services. Also, as we have already pointed out, organizations in the Orange

World will be able to coexist and collaborate with their counterparts in the Green and the Blue Worlds, especially when these businesses need specialized innovation and skills unavailable within their own organizational structures.

To join the Orange World, communications operators and their suppliers must start preparing today. They should actively embrace the new currency of social networking sites and start exploiting the sites' potential as a tool for developing contacts and clients, and for promoting the operators' services. Indeed, the tech-savvy new generation of employees will expect them to be doing this. One of the key reasons they choose an employer is a prospective company's ability to use advanced technology to bring greater flexibility to their working lives.

Preparing for the millennial generation

A further key consideration that companies must take into account while approaching any of the three scenarios we have described is the need to successfully attract, retain, and develop the millennial talent now entering the workforce. In the next decade, a unique combination of forces will see the global war for up-and-coming talent intensify to unprecedented levels. Whatever world they choose to inhabit, companies must either equip themselves to win this war or face losing competitive edge, innovative momentum, and, ultimately, revenues as the best talent goes elsewhere.

Two factors in particular will serve to intensify the war for talent. One is ongoing demographic shifts resulting from a steady rise in life expectancy and declining birth rates in many parts of the world, especially in developed economies. These changes will lead to a shortage

of younger workers and a need to keep employees working until well past current retirement ages. The other factor is the ongoing rise in remote and flexible working patterns enabled by technology, as prefigured in our description of the Orange World. With location becoming increasingly irrelevant, even local talent will be subject to global competition from other potential employers or clients.

As a result, we believe that by 2020 maintaining the people supply will be the most critical factor driving business success, making the millennials the most powerful generation of workers the world has ever seen. Also, PwC's recent study of more than 4,200 of our own graduate recruits confirms that they have a mind-set, aspirations, and expectations markedly different than those of all previous generations. While our own graduate intake may not be representative of the population as a whole, it will be largely aligned with the type of ambitious, commercially minded, high-achieving millennials whom communications companies will be competing to employ.

Several clear trends emerge from our research, all illustrating key aspects of the Green, Blue, and Orange World scenarios we have described. For example, as in the Orange World, millennials already view their careers in a flexible, global context and expect job mobility. With 80% saying they would like to work abroad and 70% expecting to use other languages during their career, they want the opportunity to experience overseas assignments.

Corporate responsibility is a critical consideration for this generation: 88% say they will choose employers who have corporate social responsibility (CSR) values that reflect their own. Equally significant is the fact that 86%

would consider leaving an employer if its CSR values no longer matched their expectations. Companies that join the Green World must stay in it if they are to keep their employees.

Not everything will change, however, and that reflects the likely emergence of a Blue World. Our research—which found that the majority expect some element of office-based work and only 3% expect to work mainly at home or other locations—debunks the theory that the next generation will reject traditional work practices. Most expect to work regular office hours, and only 18% expect primarily flexible working patterns. And the notion of portfolio careers is not likely to become a reality for this group, as 75% believe they will have between two and five employers in a lifetime.

Some of our findings have profound implications for all three of our world scenarios. One of the most evident is the critical importance millennials attached to training and development, which is the employee benefit they value most highly. Asked to name the most important benefit an employer can provide, three times as many cited training and development as cash bonuses. And 98% believe working with strong coaches and mentors is an important part of their own career and personal development. Together with the findings on CSR, these preferences show that millennials are motivated primarily by issues other than money, a factor that companies will need to recognize in their reward and benefits packages.

Facing up to the future

Overall, our future scenarios and empirical research suggest that the world in 2020 will represent a very different environment for communications companies seeking to identify, recruit, retain, and incentivize talent.

For the millennial generation of employees, it will be a world where many ways of working are on offer. They will have opportunities to experience multiple forms of employment in one or many organizations, and in worlds that differ widely in organizational structure and culture. Depending on their own personalities and preferences, employees will seek to align themselves with organizations and working patterns with the closest fit to their lifestyle, priorities, and ideals. Individuals will also move between worlds over time; for example, many of the skilled, flexible people used by the Orange World will start developing their capabilities by working for Blue World businesses.

For employers, the challenges involved in adapting to the world in 2020 are likely to be even greater than for employees. The competition for talent will continue to intensify, employees' expectations will only expand, and organizations will have to try to overcome these hurdles against the backdrop of an even more competitive global market. Communications operators face particular challenges in addition, given the migration of communications services toward utility status, the industry's need to innovate continually to sustain the value it adds, and the prospect of wide-scale industry consolidation possibly combined with fragmentation of much of the value chain.

To prepare for the future workforce, companies should examine the three scenarios we have outlined and decide which of them will deliver the base of skills and the positioning that offers the greatest long-term success to their business. They should also take a long, hard look at their own employer brand and offer and decide how it needs to change in order to attract the necessary skills within their chosen world.

As companies take these steps, one thing is certain. Decisions being made today already are creating a legacy for the next generation, and they are shaping how organizations will look 10 years from now. In other words, the future has already begun.

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Giant Scabious (Cephalaria gigantea)
with bee collecting nectar



Achieving a symbiotic relationship

Despite the experience of the dotcom bust in the early 2000s, the perception is still widespread that the normal commercial rules do not apply to the Internet. In any other industry, network operators and ISPs would be regarded as key suppliers to online application and content providers, and they would be rewarded accordingly. However, the network neutrality argument supposes that bandwidth should be provided unconditionally to all applications on an equal basis. At first sight, this might appear to protect consumers against ISPs and network operators seeking to degrade or block access to bandwidth-heavy online services. But in fact a regulatory approach based on net neutrality also ultimately risks cutting off the financial lifeblood of innovation on the Internet. As a result, it would result in less, not more, choice for consumers and limit the social, economic, and lifestyle benefits that could be delivered by Internet-based services.

In the authors' view, online application and content providers should stop chasing the false economies that network neutrality offers, and instead collaborate commercially with bandwidth providers to deliver the new, differentiated, high-value services that customers will value and be happy to pay for.

Picture the scene...

An innovative medical software company has invested several million dollars in developing a high-definition, remote medical diagnosis service for use over the Internet. The system presents health authorities and hospitals with a ground-breaking opportunity to remotely diagnose conditions quickly and accurately, thereby improving the quality of patient care and saving money.

For the system to work, however, the application provider needs access to reliable bandwidth of 20 Mbps with very little latency. This does not pose a problem, since the healthcare benefits and cost savings offered by the new remote diagnosis service mean the application provider and ultimately the health authorities and hospitals are happy to pay for the differentiated network service they need.

If the application provider and network operator can conclude a deal in which the application provider can purchase the superior network performance needed to make its product work, then health providers, patients, the developers, the communications operator selling the bandwidth, and ultimately society at large all will benefit.

It sounds like a win/win arrangement. But in a net-neutral world, this type of arrangement has a problem—and therefore so do all the participants in the value chain who stand to benefit from it. Under the concept of net neutrality (see sidebar, “What is network neutrality?”), all Internet traffic must be treated equally,¹ with no priority given to any one application over another. So the communications provider cannot provide the 20 Mbps, low-latency service to the medical application provider unless it makes the same

level of service available to all comers, whether they want and need it or not. That would be hugely expensive—and the service probably would never come to market.

So, strong-form net neutrality throws the viability of our fictional “medical diagnosis service” into doubt². The application provider cannot negotiate with network operators for the required bandwidth and quality of service. Health authorities cannot be sure the service will work when they need it, so they may decide not to buy it. Patients will lose out on the opportunity for rapid, lower-cost, remote diagnoses. The application developer will lose out on revenues that would have rewarded its innovation and helped to fund further innovation in the future. And the communications provider will lose out on the revenues from selling the differentiated bandwidth to support the application—money that would have been invested in a higher capacity, quality-of-service-differentiated network and associated technologies, which, in turn, could drive further innovation.

Breaking the shackles

If you take our fictional example and extrapolate the effects of network neutrality across the Internet as a whole, the negative implications are all too clear. The return on investment in Internet-related innovation—whether focused on applications or network infrastructure—becomes less certain, making other opportunities relatively more attractive for investors. As a result, consumers have more restricted choice, as well as benefiting from less creativity and probably lower quality in the services offered to them. And the Internet’s potential to benefit society’s well-being is not fully realized.

To sum up, an overbearing application of net neutrality is bad news all round. So let’s examine another approach—one that could benefit all parties. Suppose the online medical diagnostic provider was able to negotiate a collaborative commercial deal with network providers to guarantee that the required amount and quality of bandwidth would be made available

What is network neutrality?

Network neutrality is the principle that neither network operators nor Internet service providers (ISPs) should place restrictions on content, sites, platforms, applications connected to the Internet, or most importantly, the level of network service available to each. In effect, this means that irrespective of their needs, their willingness to pay, or the impact on other users, network operators and ISPs must treat all content and applications equally.

For some years, supporters of net neutrality—including providers of bandwidth-heavy online applications and content—have raised concerns that broadband providers could use their infrastructure to block users’ access to Internet applications and content or to degrade their level of service. However, broadband providers point to the fact that online application providers are generating substantial revenues from services that depend on their network infrastructure, but do not pay toward building or maintaining that infrastructure. Moreover, innovative new services that rely on differentiated network quality would not be built because application providers would be precluded from buying the enhanced quality needed.

each time the application is being accessed. The cost of this guarantee could be incorporated into the sale price of the application. As well as buying the right to use the online application, health authorities would be buying certainty that it would work properly over the Internet, irrespective of the time of day or the level of contention for network bandwidth from other users.

Proponents of network neutrality might argue that such a guarantee of bandwidth availability would be anticompetitive because it effectively discriminates against other Internet users. In our view, the benefits far outweigh such considerations. Taking each stakeholder in turn:

- Network operators and ISPs invest in network capacity to meet the willingly paid-for demands of the application provider.
- The innovation and growth of online application developers is not constrained by an inability to negotiate with network operators for the inputs required to make their future services work.
- End users get new and better services and greater choice.

What is more, all this is achieved by letting normal commercial rules apply rather than through costly and restrictive regulation.

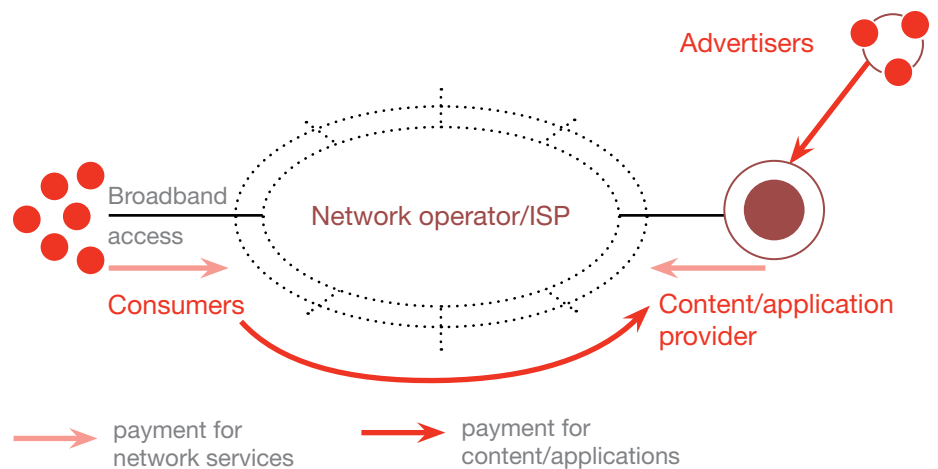
The same principle applies more generally. Network operators could sell different pricing and quality-of-service levels to content and application providers to fulfill the needs of the particular content or application providers. The range and choice of products available to end users would reflect consumers' demands and the value they attach to the products. This situation is illustrated in Figure 1, which depicts the relationships between end users, network operators/ISPs, and content or application providers. The arrows show payments for network services

and payments for content or applications. The figure also contemplates an advertising revenue stream for content and application providers.

In Figure 2, the same relationships and transactions are shown in a world where strict network neutrality rules apply. In this world, networks cannot provide a differentiated network experience to application

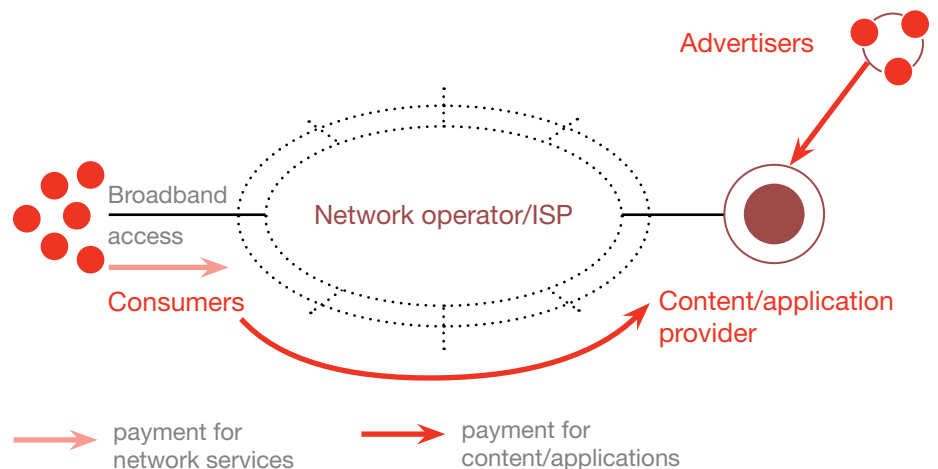
and content providers and so cannot access this revenue stream. Revenues for applications and content are lower because the range and quality of content services and applications which differentiated network service would facilitate and consumers would value are foregone. Advertising revenues, which rely on consumer take-up of these services, therefore, are lower also.

Figure 1: Collaborative relationships stimulate service innovation and value creation



Content/application providers negotiate and pay for differentiated service.

Figure 2: Network neutrality constrains service innovation and value creation



Content/application providers ride for free on ubiquitous grade network.

Navigating the debate

In our view, the type of model shown in Figure 1 would help to unlock the promise of Web 2.0 services, and beyond, on both fixed and wireless networks. However, in looking at how these forms of commercial collaboration and choice might come about, it is first necessary to navigate the twists and turns of the network neutrality debate. What is needed is a way forward that balances the interests of network operators and ISPs with the sometimes competing interests of publishers and Internet applications developers.

To date, the debate has been characterized—especially in the US—by headline-grabbing rhetoric. Stakeholders on both sides accuse each other of stifling access and innovation, or free riding. However, the real issue is the extent to which regulation enables industry players to develop and evolve multiple business models for broadband and Internet services that:

- Support efficient investment decisions on fixed and wireless networks;
- Foster innovation in new services that utilize high-speed and high-quality broadband; and,
- Lead to the provision of wider choice and quality of services for all broadband consumers.

Efforts to foster these capabilities are complicated by the fact that it is impossible to know what new services may emerge and change the way we do business, consume media and communicate with each other. However, we are beginning to glimpse what might be possible through developments such as cloud computing and digital content delivery, both of which require high-quality Internet access.

What is clear is that to optimize investment, innovation, and competition in the fast-expanding marketplace for online services, the shackles of the network neutrality debate need to be broken. Supporters of network neutrality often portray it as a freedom-of-speech issue. But our view is that the core concept of network neutrality is actually an extremely intrusive regulatory restriction on the business models for the Internet, because it prevents network operators and ISPs from offering differentiated prices for differentiated services—which is a fundamental principle of any free market.

Just think of the effect if the same restriction were applied in other sectors. We would not benefit from the choice between first- and second-class post, or from different road toll charges for motorcycles as opposed to heavy-goods lorries. Put simply, market choice would be stunted. With this in mind, it is ironic that support for network neutrality regulation is at its greatest in the US—a country we might have expected to be a natural advocate of entrepreneurial freedom.

Considering this background, there is no need to create strong regulations that demand network neutrality. Instead, we can afford to rely on market forces, since the right model will emerge from the everyday experimentation and competition that come from commercial freedom. Through those means—not through onerous and restrictive regulation—the best outcomes will be realized for consumers, businesses, and the wider economy.

ISPs and network operators: Stifling access and innovation?

In moving to a market-based solution, one key issue to be tackled is the frequent accusation that ISPs and network operators are seeking to stifle end consumers' access—and thereby stifling service innovation on the Internet—through walled gardens, selective access, and variable wholesale and retail pricing.

Such a charge ignores the need for network operators and ISPs to generate a reasonable return on investment while also providing high-quality access. These companies are facing the prospect of an ongoing decline in their current core revenues as they compete with each other for subscribers. At the same time new players have emerged whose business models are based on customers having ready access to the Internet—with examples ranging from location-based services that will find the nearest Chinese restaurant to the growing raft of catch-up and archive TV services.

As such services gather momentum and users, the opportunity cost of bandwidth is rising with increasing broadband penetration and demand for bandwidth, and operators are considering the business case for further investment. Despite ongoing growth in demand for capacity and the degree of contention on networks, operators are facing increasing difficulties in realizing any incremental value from consumers through their current unmetered business model for Internet access. Restricting access to the Internet is not the answer. Network operators and ISPs compete fiercely with each other for subscribers, and a provider that offered only restricted access would be at a major competitive disadvantage.

Online application and content providers: Free riders?

At the same time, the other group of key players in the Internet value chain—content publishers and Internet application developers—are accused of free riding on the large, risky investments that network operators and ISPs have made. The Internet has reduced barriers to entry for existing and new content publishers, and its fostering of an environment of innovation and risk has led to a new breed of online content creators and broadcasters. As already discussed, such companies rely on the availability of bandwidth to generate their revenues but do not pay toward the underlying infrastructure or access services.

However, this lack of payment does not necessarily mean these providers are free riders simply benefiting from the efforts of others. It is undeniable that they are responsible for both stimulating the demand for Internet access and building consumers' willingness to pay for access. Their revenue streams are an increasingly diverse mix of free, advertiser-funded, and pay services. And the optimal business models and levels of demand for different services—B2B or B2C, content streaming, and downloading—are still being explored.

In our view, the competing allegations of companies being stiflers of access on the one hand, or free riders on the other, are obscuring the real issue. ISPs/operators and online content providers need one another. Theirs is essentially the symbiotic, interdependent relationship between producer and distributor. The current standoff over network neutrality is denying consumers a potential explosion in innovation and consumption following investment to enable higher-speed, higher-quality bandwidth and tailoring of the network experience. To

Different jurisdictions, different approaches

The proposed introduction of rules to require the neutrality of the Internet has been a subject of fierce debate, particularly in the United States and more latterly in Europe. Different approaches have emerged in each jurisdiction. However, there is general agreement that the Internet's increasingly pivotal role in peoples' lives and in society as a whole means that operators should not be allowed to cut people off from accessing it or seriously degrade their service levels.

While there are national specifics, the European Commission's current proposals essentially would provide "backstop" protection for users—meaning that network operators and ISPs cannot degrade or block access in an anticompetitive way—but would not extend to full network neutrality. Differentiated quality of service would be allowed subject to a minimum level being available to all.

In contrast, the US is moving much closer to stricter net neutrality, perhaps reflecting the more powerful influence of the online application and search industry. In October 2009, The Federal Communications Commission (FCC) voted to move forward with net neutrality guidelines encapsulated in six rules that formalize practice dating back to 2005 (rules 1-4) and add new strictures (rules 5 and 6):

1. A provider of broadband Internet access service may not prevent any of its users from sending or receiving the lawful content of the user's choice over the Internet.
2. A provider of broadband Internet access service may not prevent any of its users from running the lawful applications or using the lawful services of the user's choice.
3. A provider of broadband Internet access service may not prevent any of its users from connecting to and using on its network the user's choice of lawful devices that do not harm the network.
4. A provider of broadband Internet access service may not deprive any of its users of the user's entitlement to competition among network providers, application providers, service providers, and content providers.
5. A provider of broadband Internet access service must treat lawful content, applications, and services in a non-discriminatory manner.
6. Providers of broadband Internet access service must disclose such information concerning network management and other practices as is reasonably required for users and content, application, and service providers.

These are very general guidelines and their impact will be determined by their interpretation and application. In our opinion, it is rule 5 and its potential to limit commercial arrangements for differentiation between applications by providers of broadband Internet access services that is the most onerous and damaging.

bring consumers the new range of services promised under the auspices of Web 2.0, what is needed is collaboration among network operators, ISPs, publishers, and Internet applications developers.

Toward a new, collaborative model

The issue at the heart of the debate over network neutrality is how to share equitably the value from delivering services over the Internet between the providers of services to end consumers and the providers of access to enable consumption. Both groups are making risky investments and looking for ways to innovate and differentiate their services. In combination, this investment drives consumers' overall willingness to pay for the Internet.

The critical factor is how much of consumers' overall willingness to pay is appropriated by each party:

- Network operators and ISPs are accustomed to the old world where they were both provider of access and provider of service, as was the case with traditional telephony.
- Internet publishers and application developers have never had to consider the resource cost of bandwidth because with consumer demand below supply, capacity has always been plentiful.

Bandwidth is not infinite—a fact highlighted by the problems of contention and access performance that commonly arise with new bandwidth-hungry applications. So Internet publishers and application developers need network operators and ISPs to invest in their networks. And network operators and ISPs need Internet publishers and application developers to continue innovating to drive demand for network access services, and thereby provide the business case for further capital investment.

Aligning these interests sounds like a difficult problem that could require careful consideration and regulation. However, as shown earlier in this article, it is actually no different from any other commercial negotiation in other industries. There may be a useful precedent in the similar set of relationships that have evolved in the pay-TV market, where the interests of providers of access and of service providers are aligned to deliver a compelling range of services, differentiated for the varying demands of consumers. Pay-TV subscribers are offered a wide choice of packages with differing prices that meet their demands. Capacity is managed and investment takes place to meet demand, with competition for consumers driving innovation and quality.

Convergence is a widely used term, but maybe these emerging types of mutually beneficial commercial relationships are the clearest indication that convergence is now a reality. As we move to a new paradigm for the business models on the Internet, we should look carefully at the “old media” models to learn the lessons of how collaboration works between innovative, creative, content-driven companies and the providers of access. For example, there are parallels between the historical growth of the independent television-production industry that supplied compelling content to broadcasters, and Apple's success with the iPhone that spawned a whole industry of third-party application developers.

All participants in the Internet value chain, including application providers and consumers, need to accept that nothing valuable comes for free forever. The Internet is a huge, fast-changing, unpredictable environment in which a wide array of innovative and entrepreneurial forces need to be harnessed and aligned to deliver the highest level of value and benefit. Achieving that model requires

new and innovative commercial arrangements and relationships, but overbearing network neutrality prevents such arrangements from being formed. For everyone to get the most from the Internet, it is time to move away from network neutrality and to embrace a new era of commercial collaboration with the minimum of regulatory intervention.

Endnotes

¹ Setting aside certain traffic shaping and network management required for legitimate operational purposes.

² While in general the FCC intends “that a broadband Internet access service provider may not charge a content, application or service provider for enhanced or prioritized access to the subscribers” it does contemplate dispensation in the case of certain categories of specialized services to enterprise customers—FCC 09-93 NPRM. It is possible that such a dispensation might apply to our medical diagnosis service at least insofar as it relates to the enterprise market.

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Boy on a rubber band ride at a fair.



Developing risk resiliency

In the wake of the global financial crisis and economic downturn, risk management has returned to the top of the boardroom agenda. However, managing risk should be regarded not as an end in itself, but as a means of driving higher performance. For communications operators—facing a complex and fast-changing blend of technological, customer, and regulatory risks—it is especially critical to align and link risk and performance management in a way that creates sustainable value for shareholders. Operators that can achieve “risk resiliency” can make better, risk-informed decisions with greater confidence and clarity even in the wake of economic volatility.

History will judge the underlying causes of the current global financial crisis that has brought volatility and visible, catastrophic business failures. Whatever the storyline ultimately is determined to be, it seems certain that the failure of companies to implement effective risk management practices will emerge as a key contributor. Clearly, organizations took on excessive risk without an understanding of or regard to their ability to sustain themselves should those risks rise unexpectedly.

An explanation of these risk management failures is not to be found in the soundness of the principles or their applicability to complex businesses. Instead, the failure of risk management was in its execution, in the way companies used these principles and embedded this capability into their culture and their decision making. Thus, there is a renewed focus on both improving risk management capability and increasing the emphasis on board and executive oversight of risks.

So, what does this focus mean to the communications industry? The environment is increasingly complex for communications companies: rising competition, changing consumer habits, regulatory uncertainty and change, rate and cost pressure from customers, evolving technologies, and relentless innovation. This dynamic environment creates more pressure on boards and executive management teams to think creatively about how their organizations will navigate challenges and manage risk proactively.

Achieving risk resiliency

One of the errors in risk management in the past was the mistaken notion that risk management should be bolted on or attached to the organization, or that it was simply an oversight function or a department. With the understanding that organizations are in business to create value for their shareholders, the failings of that siloed approach to risk become clearer. To be successful, the risk management capability must become an enabler in driving performance. Organizations that have been successful in establishing a meaningful risk management capability have found that the most effective way to drive that outcome is by integrating risk management and performance to achieve resiliency.

The communications industry is very familiar with this concept of resilience, but most often it has applied the concept in the network operations arena, and often with a different language and focus. Availability and quality of service are key measures for anyone operating network infrastructure. The same core measurements also can be applied to a company's overall financial and operational performance.

To create value, a network must be operational (available) just like the organization that built the network in the first place. To create value, a network must route traffic dynamically, without interruption or degradation (quality). Like the network, the organization must sustain itself, and the services or products it delivers must be of

sufficient quality to attract and retain customers. At the level of the company or the organization, the view of these concepts is similar—unexpected variations (business results) must be managed to “prevent the network from going down” (bankruptcy or business failure).

Technologists and engineers have a myriad of tools, methodologies, and software at their fingertips to monitor the health of their networks. Node performance, network speeds, capacity, and utilization are all important indicators of network health. More granular measures, such as dropped calls or packet failures, user trends, and security monitoring, are widely used also. The engineers who oversee networks may or may not look at these indicators through the lens of risk management. At the core of strong risk management, the principles that form its foundation—event identification, risk assessment, risk response and control activities, among others—also underlie the management of the network.

The ultimate goals of these tools, measurements, and methods are clear: Maintain the performance of the network, ensure quality of service, and sustain availability to customers. Critically important in this industry example is that the efforts to manage the performance also help the network engineers and technologists manage risks.

Well-managed networks adapt and respond to changing circumstances and emerging risks. Risks are identified and assessed, and appropriate response strategies (or configuration changes) are implemented to manage or

mitigate them. The best networks act proactively and intelligently to changing circumstances—rerouting traffic to bypass a crowded network choke point, alerting network managers to needed maintenance or repairs, and maintaining performance and availability even when unexpected events occur. The best networks demonstrate resilience. This important concept, long applied to our network infrastructure, is now being applied to managing risk across the enterprise, and there are important and powerful insights to be gained as a result.

Consider the specific economic trends affecting communications companies today. The fallout from the financial crisis has left many countries facing high unemployment and sluggish (if not collapsed) housing markets. Employment rates and housing starts are both critical corollaries to growth for the industry. And with unemployment high, economic growth constrained, housing markets depressed, competition from alternative technologies increasing, and regulatory uncertainty on the rise, driving growth and delivering value have never been more challenging. In this environment, the margin for error becomes narrower, and the impact of unexpected events can be amplified.

In our network example, the analogy is a crowded network, operating near capacity, with volatile traffic patterns. Under normal operating circumstances, an isolated equipment failure in the network might be a manageable interruption. Under more challenging circumstances, it could trigger catastrophic, system-wide failure.

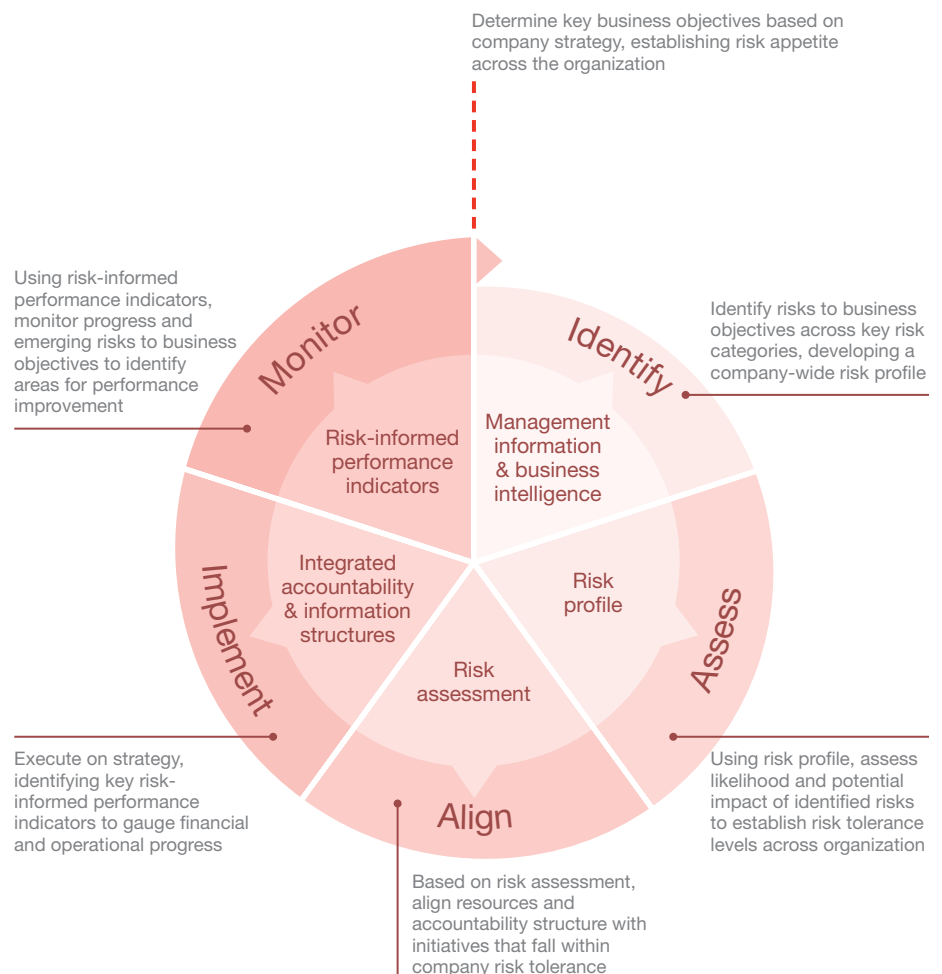
If network management practices reflect the principles underlying risk management, how can a complex and dynamic communications company apply those same principles to the broader strategic risks it faces? Implementing these principles follows the pattern and approach of our network management example. At the company's core, the performance objectives and the risk management capability must be integrated, aligned and measured together—embedding risk-informed decision making to drive performance (see Figure 1).

Integrating risk and performance

Start with strategy

Like a network focused on quality and availability, integrating risk and performance relies on a clear understanding of shared, strategic objectives. Identifying key objectives—laying out the strategy—is a core responsibility of the senior executive team, with appropriate oversight and guidance from the board. The critical first step is to understand strategic objectives and clarify the measurements and

Figure 1: Integrating risk and performance management



planning horizons associated with their achievement. Without the grounding effect of a strategic plan, integrated risk and performance management becomes a theoretical exercise. Grounded in a common cause and rooted in the language of the strategic plan, the executive team and the board can focus on the key strategic risks that matter most, and can provide a framework for the rest of the organization to follow in identifying and assessing other risks throughout the enterprise.

Strategists understand that achieving objectives is about setting clear goals, articulating the steps necessary to achieve them, measuring progress against the goals, and planning for uncertainties along the way. Often, even in the strategy-setting environment, the lens applied to the question of uncertainties is too narrow. Financial measures, the cost of capital, market growth, and product profitability all are important measurements that are commonly considered in the strategic plans of new product launches or acquisitions.

Integrating a view of risk and performance allows for a wider lens on risk, which helps the organization focus not only on the narrowly defined financial measures but also on broader operational and performance measures that will significantly impact the success or failure of an initiative. Once the measures are defined (what does success look like?), the organization can identify the measures that best illuminate the status of key risks.

For a communications company that is building out or upgrading its network, “homes passed” is a critical measure of progress. The target strategic objective may be measured in the millions of homes ultimately passed by the network and the portion of those homes in which the residents select the services offered

by the provider. That important strategic performance measure can serve also as an important risk indicator. Slowing deployment could be the result of specific decisions about capital allocation—and it could also mean performance failures by key contractors or a lack of project management infrastructure appropriate to ensure execution of the plan.

Measuring the progress is key, but so is understanding the risk factors that are creating unexpected variations to the plan. With the likely risk factors appropriately considered in the strategy-setting environment, and with the potential impact of those factors modelled and considered, the organization will enjoy a higher likelihood of achieving the plan. Issues can be managed more aggressively and resolved more quickly because plans were considered and put in place in advance.

Assess and align

Specific strategic steps or initiatives provide a platform for explicit discussion and assessment of risk and integration into defined performance measures for the initiative—but the initiative-focused risks may not fully consider or address strategic risks that impact all the initiatives or plans of the enterprise. In the current environment, one of the most compelling examples of these broader strategic risks is global regulatory change.

While the bulk of regulatory change initiatives has been focused on the financial services environment, regulators around the world also are advancing other agendas that will affect the communications industry, such as consumer protection measures, network neutrality (see article on page 30), and anticompetitive practices. Some of these regulatory framework changes

might have only a nominal impact on communications companies. But others—such as net neutrality—could create a fundamental shift that would have enormous (and potentially catastrophic) impacts on performance and the future profitability of existing business models.

Recognizing such risk is an important first step. Assessing the impact of the various scenarios that could emerge from regulatory change is the second, and more critical, step—and the step that transitions that knowledge from an interesting observation to an actionable insight.

Assessment in this case might involve a focused working session, with key members of the executive team evaluating the financial and customer impact of multiple regulatory scenarios. Modelling these scenarios against business plans and forecasts, key strategic initiatives, and earnings guidance can provide the executive team with better insight on the operating variables affected by various regulatory frameworks. With this insight, management is better able to communicate the impact of the various regulatory proposals to stakeholders, and to proactively explore strategic alternatives (such as product innovation, organizational structure and ownership, transactions, product divestitures or launches) that might help the organization perform better in the face of the regulatory changes.

Modelling scenarios raises another key point about the power of applying risk management principles in the strategy-setting environment. While we define risk resiliency as an organizational capability that enables confident, risk-informed decision making, the resilient organization also enjoys strong and sustainable financial health. To achieve sustainable financial strength, organizations must have a clear understanding of how changes

in the operating environment (such as regulatory or competitive changes) will impact core financial measures and the health of the balance sheet. Developing sufficiently robust models that help management evaluate the impact of various events and scenarios on core measures, such as cash flow and liquidity, will provide executives with the insight necessary to make better decisions and to navigate more confidently the uncertainties and changes in the external environment.

Establish accountability

With assessment complete, the next step is to establish and create clarity on where oversight and accountability lie for managing risks that have been identified. In some sectors, such as financial services, most often the chief risk officers are accountable for risk management and mitigation and they typically are members of the senior executive team. In the communications industry, the capital-intensive nature of the industry and the frequent need for ongoing capital investment often result in chief financial officers having a great deal of accountability for risk management. However, executive ownership of risk management also can rest with business unit leaders or, as discussed above, strategic planning executives.

In the final analysis, company culture and the selected executive's ability to influence his or her peers in the executive suite will be the major factors in the success or failure of a chief risk officer. In contrast, experience suggests that organizations that assign risk oversight responsibilities to less senior executives, who have little clout or narrow scopes of responsibility, likely will fail. C-suite sponsorship and active engagement are critical to driving appropriate accountability.

Driving this accountability also means recognizing that the organization will run out of resources long before it runs out of risks. Risk and performance management provides the framework through which limited resources—talent, capital, or management attention—can be allocated to the areas of highest impact. This also provides the foundation for developing the cultural understanding and organizational capability around the benefit and value of risk management in supporting executive and employee decision making. Getting sustained benefit from this view requires educating, training, and, ultimately, embedding these capabilities throughout the enterprise.

Employees at every level of the organization typically have their individual goals, measurements, and compensation criteria. The compensation and performance analysis of managers and executives is the junction at which risk and performance planning meet. Are performance incentives appropriately aligned to the strategic plan and risk assessment, as established by the senior executive team and the board? Does the board hold the senior executive team accountable by using the same framework of integrated risk and performance measurement? Do incentives encourage the unnecessary or unmeasured taking of risks in pursuit of more easily quantified targets, such as revenue or profitability?

Understanding the risk profile of decisions, and embedding that capability throughout the management team, will allow communications companies to avoid the unchecked risk taking that toppled peer companies in other industries. It also will help companies ensure that executive efforts are directed to pursuits that not only produce the greatest reward, but also do so with a rational and acceptable level of risk.

Implement and monitor

With key risks identified and assessed, management accountability established, and performance and risk criteria integrated at the operating level, implementing risk management practices and monitoring the resulting performance are the steps that remain.

Companies are not in the business of managing risk—they are in the business of taking the right risks to drive performance. Implementing appropriate risk management capability within that performance framework provides the ability to mitigate, manage, or share risks that might otherwise negatively impact or impede performance achievements. Ultimately, that comes down to planning how to address the risks and implementing those plans when circumstances warrant.

Consider how these principles can apply to a communications company experiencing high growth in a number of global markets, including in emerging economies. A typical capital allocation model might simply suggest that investments should be made in territories that offer the highest return. However, an executive team and a board that recognize the range of risks the company faces as it builds out and expands service delivery in these emerging markets might oversee the development of a specific global expansion strategy that considers operating targets, results, and risks. Embedded in the performance plans of the executives overseeing the global expansion would be performance objectives requiring that key risks be identified and measured in relation to their investments and their targeted returns.

The management team, in turn, could use externally available qualitative and quantitative data sources, as well as the knowledge and insight of the management team and staff, to create a weighted risk-scoring model for each of the territories

in which it was operating or had targeted to operate. The dimensions it might consider would be the regulatory framework of the territory, anticorruption laws, other operational or financial compliance requirements, social and political risks, reputational implications, and the prevailing competitive environment. Applying these dimensions to a risk-scoring methodology, the team could better assess opportunities for the risk-adjusted return of further investments in each of these territories. With risk-adjusted return in view, investment choices that are limited by available capital become clearer, and executive performance and compensation plans that might inadvertently incentivize inappropriate risk taking can be modified.

Finally, with plans in place, and a framework of strategic objectives and complementing measurements, the risk team can establish the monitoring process to ensure that the plans and measurement criteria are dynamically maintained and acted upon. Moving from control and transaction-level assurance, where the focus is on whether the right control activities have been designed, to a monitoring mechanism, instead, which determines the health of executive decision making and whether risks were appropriately and explicitly considered and managed, will raise the bar across the organization. Viewing risk monitoring as not just a compliance or oversight function but a strategic enabler that helps executives throughout the enterprise become better at identifying, assessing, and managing risk (in effect, improving organizational competence in risk management) creates an asset that will serve the organization for the long term.

The goal of many organizations as they create and sustain world-class communications networks and deliver innovative services and content to their customers is to create a dynamic platform that responds to ever-changing consumer needs, proactively identifies risks that would interrupt or disable delivery, and evolves rapidly to maintain a sustainable competitive position in their markets. Intelligent, self-monitoring, and self-correcting networks have advanced communications capability rapidly for more than a century. These same principles of risk management and performance integration can and should be applied across your enterprise not only to support sensible hazard avoidance, but also to drive long-term value creation and sustainability.

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Le Pont de Normandie



Perspectives

From the start, all telecommunications companies have operated quite similarly—building and operating networks; providing fixed services first, then mobile, and now broadband. Whenever an operator did something new, the others followed immediately, so that everyone seemed to be advancing at the same pace. A few companies were able to do it a little better, and they have stayed ahead of the pack, but now the others are closing in, and new competition, regulation, and customers are changing the rules.

As communications becomes both ubiquitous and increasingly important to the day-to-day functions of individuals and businesses, operators need to find new ways to grow their business and continue to deliver shareholder value. Achieving those goals will require breaking the mold and changing the way companies innovate, operate, and cooperate. As the following interviews show, companies will take differing paths to reach those goals, and a combination of leadership, focus, and commitment will determine their success.



An interview with: **Didier Bellens** **Belgacom**

In the world of telecommunications, the incumbent operator Belgacom is relatively young. During a history that dates back to 1930, the company has always focused on innovation to fuel its growth. Today, quality, convergence, and innovation are the foundation of the company's strategy for the future. Here, CEO Didier Bellens shares his perspectives on effective competition and the role of regulation in leveling the field; the importance of mobile and the responsibility the industry has to consumers; and how customer satisfaction is an essential part of both growing the business and reducing costs.

Communications Review: Where do you see growth opportunities for Belgacom and for the industry as a whole?

Bellens: You may remember the period of the old PSTN lines and voice over PSTN. It was a great business. At the same time, we developed the fast Internet business, which has been growing and has fueled a lot of growth in the fixed line business. Belgacom has invested a massive amount of money in the network. In 2003, we decided to invest in a VDSL network, fiber to the curb, and today we have one of the five best networks in the world. Based on this investment, we've been able to develop IPTV projects in which we are a worldwide reference in IPTV, which is also a great business.

The story of our business is the evolution of technology. Today, we see the same in mobile. Mobile is a mature business; penetration is above 100% in most European countries, but there is an explosion in the data business and in the development of the enterprise business. The data business in mobile is where we see growth.

Belgacom's strategy reflects our strong belief in convergence between different types of businesses using telecommunications, which means that today we are rather unusual. We have a fantastic network for fixed and for 3G with coverage of more than 90% of the population of Belgium.

Our residential and enterprise businesses provide fully integrated fixed and mobile offerings. That is important, especially to vendors. Approximately 75% of the Belgian population are customers of Belgacom, and approximately 40% of those customers are buying more than two products: fixed line, fast Internet, TV, or mobile. So, via the vendor, what we try to do is up-sell. If we succeed, we have growth; and if we sell more products, we think that we increase our retention of our customers and decrease churn in the short and the medium terms. A big difference between Belgacom and some of our competitors is that we are more advanced than some of our peers in terms of convergence and in being able to up-sell various products.

I don't think that doing mergers and acquisitions [M&A] in Europe will bring growth, because all the countries are highly saturated. What M&A can do is build a larger company, but the synergies are radically limited. If you buy another company at a neutral premium, the premium is not necessarily followed by the value of the synergies — and you don't address the issue of growth.

We have another route to growth: our international carrier business, which had 18% year-over-year growth in 2009. Here, we've done several things. Among them, we've concentrated the business on mobile,

specifically on high-value termination of communication. We've been extremely successful in Africa, the Middle East, and the Far East, where mobile really is the success. Also, we've merged our business with MTN, and by merging we've achieved two things. First, we reduced costs, because this business is one with a lot of cost synergies. Second, we cover Africa deeply in this specific business. Our international carrier business is number four in the world, and I believe that we'll see growth coming from this area.

Communications Review: Would you explain a little more about the carrier services? Do you own capacity for all the traffic?

Bellens: No, not necessarily. We have submarine cables between Europe and India; we also have some in the Far East and the Middle East. Otherwise, we are renting capacity. This business is partly one of owning and partly one of trading minutes. It's all about wholesale. We terminate the calls in various countries. This business is for people who want quality, so we are selling a kind of service level agreement about quality. The customer does not care how a call is transmitted from one country to another. To go from Nigeria to Germany, a call may go via Belgium. We're responsible for the routing.

The business is run on a stand-alone basis. There are three shareholders—MTN, Swisscom, and Belgacom—and we control the majority. There has always been a strong willingness of all the parties to do something and to succeed. We shared the same vision and reasons for entering the relationship: We wanted transformation, and we wanted to grow and to be successful.

Communications Review: Is your fixed and mobile bundle a financial bundle, in other words, buy one product and get the other at a discount? Or are you able to provide an integrated solution of truly unified communications?

Bellens: What we are selling in the bundle is fast fixed Internet plus mobile. Those are two different products and they are not linked. We are looking at unified communications because we strongly believe that whether at work or at home, customers will use a fixed line connection to access the Internet—because, we think, it is more convenient and higher quality and it delivers higher speeds.

An issue on which we are very active is corporate social responsibility, in particular as it relates to consumers' health. We try to explain to the population the way they can combine fixed line and mobile communications. For use inside the home, for example, fixed line is a better solution.

We are enthusiastic about the bundle for fixed and mobile Internet because consumers have lower costs for using the fast fixed Internet at home and use more data only when they are travelling. What is most important for us is the total ARPU [average revenue per user] per household. We don't care whether the customer is using one product or another. We are selling a service to our customers, not a PSTN line. I think we need to

look at service per household, so we focus on developing services, such as a health service for elderly people at home. We'd like to do more with machine-to-machine than we do today, in the corporate and residential markets. I see machine-to-machine communications as a large area of growth, even in highly penetrated markets.

Communications Review: Back to your comment on corporate social responsibility and consumers' health. How much do you push that in the market? One doesn't see it mentioned much in the public domain.

Bellens: The first thing that needs to happen is that the public—and the political world—needs to know that in the debate about electromagnetic fields, you need to consider handsets, and not just antennas. In our shops we put information on all the phones about the specific absorption rate (SAR) to enable customers to make an informed decision when purchasing a new mobile phone. We tackled the issue this way first.

Operators and manufacturers have a responsibility to give warnings and to let people know that the issue is with the handsets. Those developing the handsets should work with us to include information, perhaps warnings that users should alternate SMS and phone calls. We don't know whether or not the risk is real—nobody knows—but to be on the safe side, people should use their mobiles a bit less and maybe say no mobiles for children.

In France and the United States, the quality of the mobile networks is not very good, and the quality is not what we have here in Belgium. I think it's very difficult for people, including the authorities, to see that mobile quality is going down with the new lower emission standards for mobile antennas that replace the existing

standard. To be clear, the existing federal standard was one of the most severe in Europe. To improve the quality of the networks, we have to put up more antennas. To be involved in something that is good for the health of the population, I believe that companies like Belgacom need to be more proactive in getting the support of our governments and eventually gain support at the level of the European Union.

Communications Review: If you look at the market, in certain countries in Europe consolidation is occurring. For instance, in the United Kingdom, there is the joint venture between Orange and T-Mobile. Do you think consolidation inevitably will spread to other markets, and is it on Belgacom's agenda?

Bellens: Market consolidation is inevitable. But first we need in-market consolidation before consolidation can spread across Europe. That's my perception. It seems to me quite reasonable to decrease the number of players in each country and then talk about consolidation in Europe, ending eventually with three or four major players just like in the US. For example, in the UK we have to see what happens with the regulators. But to go from four operators to three seems reasonable in a country like the UK.

I think competition is actually the question, and the competition between the players needs to be real. I would focus more on real competition and on how competition is organized in the market.

In the Belgian market, we have three mobile players. We have competition, but it could be improved with the evolution of termination rates. And we have such an asymmetry with termination rates. We have asymmetry of 59% with BASE [editor's note: the network run by KPN in Belgium], which means

that when we terminate a call on the BASE network we pay 59% more than BASE on our network. This issue should be reviewed. I think that some of the visions of the European Commission are good, at least for Belgium, in the sense of decreasing the termination rate—and decreasing the asymmetry with the rate would help increase competition in the market.

Communications Review: So, you wouldn't see the introduction of a fourth license as a factor of increasing competition in the market?

Bellens: Personally, I think that it's very difficult in such a small market to have four licenses. Remember, the fourth license has been on the table since the launch of 3G, so it is not new. Just like in France, by the way, where nobody was interested in the fourth license. I imagine there are reasons for that.

Now, one may speculate and say that the fourth license could be better. But my message is that instead of concentrating on the number of operators, let's concentrate on the rules of the market so we have the right type of competition in the market. It's clear that asymmetry, one player paying subsidies to another, is just not good for competition because it disrupts the market. That's what we have here in Belgium. So, that's one thing. The second thing is that if you think about consolidation in the market, there will be consolidation in-market, that's for sure. But then you still need to have competition between the players, just like in the US.

Communications Review: It's interesting that to get more competition in the market, you mention that there needs to be symmetry in regulation. In Belgium, one of your main competitors is working with a cable operator to offer bundles. How do you see evolution in the regulation—or the lack thereof—for one of your competitors?

Bellens: It's all about history. We are regulated and cable is not. When I go to my board of directors or to the investors, they all have heard from us the position of Telenet in Flanders and they know that fast Internet service is roughly 50/50 or 55/45 between us and them, respectively. However, to the Belgian regulator, we have 100% market share because we are the only one who is regulated. But everybody in the world—even the consumers in Belgium and especially in Flanders—knows that we don't have 100% because of Telenet.

We're living in a world where there is a discrepancy between what people know and what the law says. But nobody is ready to attack this discrepancy. There should be a level playing field, and I'm very open to discussing the terms of a level playing field. It may be that nobody is regulated or that everybody is regulated the same way.

Cable companies had a monopoly in the distribution of TV, and they had one unique contact with everybody in Belgium. Cable has not been open to competition and still holds the monopolistic position today. So, we try to be smart in developing our network. In IPTV, we are competing successfully with cable, but it's not the same route. In the meantime, cable has developed fast Internet and voice—without rules.

We are doing extremely well in this competitive world, but it is a pity that the competition is not a fair competition. Even lacking fairness, we are still doing well because our strategy is the right strategy, which means that convergence is really the strength of this company.

Communications Review: Are you facing other challenges in the local market?

Bellens: There is the evolution of technology. We have a lot of good relationships with vendors, and the reason is that we have a very good network. The vendors like to work with us and to test new ideas with us. If these new ideas are working here, they can show the results to the world. That relationship is a kind of advantage, but it means that we need to be up to date and we need to invest. We are investing between 10% and 12% of our revenues in capital expenditures every year, which is very reasonable. We are able to do that because we are making the decisions very early and we are investing every year, so we've had no issues with our balance sheet.

Then we have the challenge of new applications. There is a lot of work to do on the smaller applications, for example, toll roads, which is an interesting project. Progress has been stop-and-start for some time, and the project isn't bringing in any money. IPTV is bringing in money every day, which is the idea. It's all about innovation on projects.

The last big challenge of a company like ours is customer satisfaction, which is a major area of focus for us. We've always had teams dedicated to that but we have one specific team trying new ways to succeed. In the past, the focus was on having all the information in one place; today, it's really on care and ease. For instance, we want to get it right the first time with every customer. That doesn't always happen, so we have to track our interactions with customers and understand not just why we sometimes do not succeed but also with which customers.

We now capture all information; we know early churn and normal churn. We have statistics about customers who are going to churn, and for them we have a specific marketing approach. We are investing a lot in everything related to customer satisfaction, in improving the call centers, and in improving the contact between our people and customers. Having said that, the feedback on our customer-facing employees is rather positive, and the customers feel that they are doing their job with dedication.

Customer satisfaction, if it improves, also decreases costs to the company. And if we decrease the cost, we go beyond cutting headcount. It gives us more power because I can send these people to attack the market. Headcount reductions typically don't work because you try to work with fewer people but can't, and then it is a constant fight to not have the business asking for outsourcing. If you outsource, you don't make your figures.

Didier Bellens was appointed Belgacom's president and chief executive officer in March 2003. His mandate was renewed in March 2009 for a six-year term. Prior to joining Belgacom, he was CEO of the RTL Group from 2000-2003, and previously was Managing Director at the Brussels Lambert Group from 1992-2000.

Mr. Bellens is a member of the board of directors of Belgacom ICS, the Telindus Group, Proximus, Scarlet SA and Tango. He is also a member of the board of directors of AXA Belgium, VOKA (the Flemish Chamber of Commerce and Industry) and is on the steering committee of the FEB (Federation of Enterprises in Belgium). In addition, he serves as independent chairman of the Appointments and Remuneration Committee, and as independent director of the board of directors of the Compagnie Immobilière de Belgique. He is also advisor to CV Capital Partners and member of the International Advisory Council of the New York Stock Exchange.

Mr. Bellens is also a member of the board of directors of the Erasmus Foundation and the ULB Foundation, and serves as vice chairman of the Solvay Business School's Consultative Council.

Mr. Bellens holds a degree in management engineering from the Solvay Business School (ULB).

For more information, visit the company's Web site at www.belgacom.com.



An interview with:
Lars Nyberg
TeliaSonera

The shared values of TeliaSonera are to add value, show respect, and make it happen. Since joining the company in 2007, Lars Nyberg, president and CEO, has been living these values and leading a journey of change within the organization. Here, he shares his thoughts on how his company—and the industry—must do things differently in order to stay competitive and keep up with the increasing dependence placed on communications around the world. From the certainty of unlimited bandwidth demand to the death of flat fee pricing and a commitment to the role of telco as conduit, he presents some alternative ideas to those that are often written about in the industry today.

Communications Review:

How has TeliaSonera been weathering the current economic storm, and what actions are you taking to sustain and grow your business beyond the recovery?

Nyberg: Most of us in the group management joined TeliaSonera over the last couple of years, and we are on a journey to change the company. It was already a good company when we joined, but it could be more efficient, more fun to work in, and more successful for our shareholders. I think we are well on the way to improving.

There are three things I believe an operator has to do well to succeed in this industry. First, you must have a cost-competitive organization because telecommunications is a commoditized business. You cannot have structurally higher costs than your competitors or you're going to lose. Second is the quality of the network. Fundamentally, customers hate dropped calls and want the network to work all the time. Telecom services are becoming so crucial for society that, basically, people don't accept interruptions any more.

Those first two things are table stakes, meaning that if you don't have them, you lose. However, if you have them, you don't necessarily win.

The third thing—which determines the winner and, therefore, is the most difficult—is a superior customer experience. Whenever

customers deal with us, they should say, "This is better than I expected." There shouldn't be any problems, but if there are, we fix them the first time. If we fix them fast, people will think it is great to be a customer of our company.

Now, that is very hard to do because it requires everybody in the company to be involved. When I joined TeliaSonera, a lot of people said, our customer service people are not well trained. Well, they are the least of my problems. The biggest problem I have is when the network is down or when we release a product that doesn't work or is not available for delivery when we said it would be. The person who ends up taking the phone call is clearly not the problem.

So, the whole company has to rally around this idea, and I see some signs that it's starting to get traction, which is very encouraging. If we succeed on this last point, it's very hard for a competitor to copy.

When I arrived at TeliaSonera, our costs were structurally higher than those of our competitors, so we have been saving and undertaking efficiency measures over the last 24 months. Those measures had nothing to do with the current economic situation; it was based on an analysis of structural costs and just happened to coincide with the downturn. Because of this, we were, perhaps, better prepared for the downturn than others were.

We have reduced costs dramatically in our home markets, Sweden and Finland. Yet, we have areas, such as Eurasia, where we actually have increased costs as we have invested money and grown the business. We had a strong performance in 2009, and shareholder returns were pretty good. Revenue was flat, basically, which is probably one of the best top lines in the industry as most of our peers had declining revenues. Our results are due to the cost savings, which were not only opex [operating expenditure] but also the cost of goods sold. So, our margins have improved, and our EBITDA [earnings before interest, taxes, depreciation, and amortization] margin has improved quite substantially.

Sales in our Baltic markets were down by between 15% and 30% during the year. Our Eurasia business, which in 2007 grew between 20% and 25%, continued to grow, but at a single-digit rate. We did very well in Sweden throughout the year, growing our business, particularly on the mobile side. I can conclude the year by saying we have gained market share in Sweden, which is amazing because we had approximately 40% market share last year. Now we have approximately 42% market share.

Communications Review:

So, the market share that you've been capturing has been at the expense of what? Other mobile operators? Fixed line operators?

Nyberg: I attribute the gain to focus by the local management. This is not just a one-year event; it started a couple of years ago, and it's amazing. For the industry as a whole, we've seen exploding volumes of mobile data, so mobile broadband has been a major success in this country and the Baltic countries, too.

We are also seeing a flow from fixed to mobile. But let me make a point here—and this is a very strategic and important point. We believe that the appetite for bandwidth is unlimited. It's a very important assumption, and when I argue this case I use the example of memory and microprocessor capacity. As Moore's Law states, every 18 months microprocessor speed doubles in capacity, but the cost stays the same. That's how it has worked for 30 years.

The same thing is happening in the telecoms industry. We're going to fill the bandwidth in our networks with new applications. Not us, because we are not a content provider; we are a telecom operator, and that's what we are good at. We will provide capacity and quality, and other people will create interesting applications that everyone will have. More and more communication is taking place online, for business as well as pleasure, and therefore the appetite for bandwidth is unlimited.

Out of this come two conclusions.

The first conclusion is that you had better have a fixed network because it is practically impossible to provide one gigabit—or even 100 megabit—per second over the mobile network.

Today, in theory, we can provide 100 megabits per second [Mbps] over the 4G network that we introduced at the end of last year. But if we take one cell and we connect more than one person, it won't deliver 100 Mbps in practice. It will be up to 10 times faster than what we can achieve today by turbo 3G, but it won't be 100 Mbps. If customers want to download one HDTV film and watch another movie in high definition, 50 Mbps won't be sufficient.

People want more than what we can provide over the mobile network. Therefore, the fixed network is going to be the natural carrier of telecommunication services to fixed points like homes and offices.

The second conclusion is that the flat fee philosophy that was introduced for mobile broadband a couple years ago has to give in or give up. The flat fee basically means that everyone pays the same price, but one user may use a thousand times more data than another user does. If there are too many people using at that rate, it will bring down the network. In the spring of last year, TeliaSonera introduced a fee in mobile data for which users have to pay more once they surpass a certain level of usage per month. Users can get more, but they have to pay more. All our competitors followed suit.

Now, the suppliers—Ericsson, Huawei, Nokia Siemens—have to follow Moore's Law. They have to provide the infrastructure that doubles the capacity every 18 months at the same cost. Once they double the capacity, I can provide six gigabytes for the three-gigabyte fee and still make the same kind of money. I cannot afford to double the investment to give double the capacity, as customers are not going to pay double the price.

Communications Review: A lot of telcos have found themselves with customers that fall into different strata, including some that they don't necessarily want as customers now. Another issue is that often telcos don't know the value of customers and the cost of serving them. What is TeliaSonera doing in the area of customer profitability?

Nyberg: We are not as good at that as we would like to be. We can give a rule of thumb on the value, but we have work to do. However, having said that, there is an inherent weakness in this discussion, which is that the big shank of the cost to serve is shared, and deciding how to split it is hard from an accounting standpoint.

Another option is to look at product profitability. For me, that is a bigger problem because at TeliaSonera we don't seem to put any products to end of life. Like most operators, we tend to keep products alive until the last customer says, "I don't want it any more." We can't afford that—it's too expensive. Telcos have to prune the product portfolio actively, on a regular basis, and move the last customers to alternative products. We have a lot of work to do in this area.

That is an example of the journey I'm talking about. The journey really is about values, attitudes, and behaviors that have to change; we need to be more businesslike, be more customer focused, be faster, be more fact based. I talk about performance and consequence management, about holding people accountable, particularly the managers and senior management and CEOs. When you tell people they're accountable, you also have to tell them that they are allowed to make mistakes. If they are not allowed to make a mistake, we

end up with scared people. Scared people don't make decisions at all. I used to say, you can make mistakes but you can't make the same mistake twice. I think we are faster at making decisions now.

Communications Review:

Strategically, TeliaSonera is in the process of extending its reach, and each of the emerging markets that you've chosen is one that is growing. To what extent is there opportunity to drive synergies across these regions?

Nyberg: The last market we entered was Nepal, just over a year ago. Market penetration at that time was 16%. It probably is 19% to 20% now, and 28 million people live there. That's a great example of a market we want to be in, and we strive to be number one in this market. Another of our Eurasian markets is Uzbekistan, where we are number two and still aiming for the number one position. I hope that we will get close to double-digit growth there. In a normalized year, we should have double-digit growth. However, the Eurasian markets are affected by the economic downturn. Many are dependent on oil, and their currencies are not that stable. On the one hand, it is a tough time to be in some markets—but strategically and structurally, it's absolutely the right place to be in combination with our mature markets.

There has been a lot of discussion in the last 10 years about consolidation within our industry, which hasn't happened to the extent that everybody expected. The reason is that the synergies are not easy to identify and materialize. When I was chairman and CEO of NCR Corporation in the United States, whenever we considered buying one of our competitors, we could

calculate the synergies because they had an identical set up to ours: x number of factories, sales people in every country, and so forth. Because we had the same structure, we could merge them together and then we wouldn't need all the sales people, we wouldn't need six factories, and so we could reduce both.

In telecoms, the problem is that if I buy something in, say, France, what synergies will we have in mobile? Just the network. Well, my mobile network is physically in Sweden, and we can't use the French network to communicate in Sweden. So, the synergies we start talking about are back-office synergies, like billing and other computer systems and purchasing. TeliaSonera is in 20 countries, and as we've been talking about doing this ourselves internally, we have been struggling. It's not that easy to have one invoicing system for 20 countries, and I don't know if it will ever happen.

I'll give you one example of what I'm pushing for right now as a step in this direction. We have some suppliers who are suggesting that we outsource our network to them. They claim they can run it cheaper than we can because they have the volume. Now, I happen to believe that network management is one of our core competencies, so therefore I am not eager to outsource my core competence to one of my suppliers. However, do we really need one supervisory station per country? Physically, today, the Swedish mobile network is monitored from Sundsvall in Sweden. The Norwegian network is monitored from Oslo. The Finnish network is monitored from Finland. Do we really need to have three of those, or could we do it from one place for several countries? So, I believe there are synergies, and we will pursue them.

Communications Review:

There are two main strands to telecom regulation: One is to bring prices down, and the other is ubiquity of service. Some people are saying that regulators should be forcing operators to do more because society is dependent on communication, and, therefore, communications companies have a role to play in things like education and helping to alleviate poverty by enabling commerce to take place in parts of the world where it can't otherwise. What's your response to that?

Nyberg: Regulation has become more of a political issue. However, as long as we are a publicly traded company, we will run the business for one main purpose, and that's profit and return to our shareholders. If you want us to be something else, then you have to change the set up.

I think there are some fundamental issues that have been accepted by the regulators. If we talk Sweden for a moment, as an ex-monopoly, TeliaSonera does not have a responsibility to provide telecommunications services to the entire population of Sweden. We are a publicly traded company that acts for profit. If we don't want to invest in a certain part of Sweden, we're not forced to—and that's a good thing.

However, as a citizen of Sweden, I think that telecommunications should be available to everybody. The same quality or capacity will not be available to everybody, though, because it's not viable financially. The same is true for houses. If you choose to live in the mountains up north in Sweden, you won't have all the benefits that you have in Stockholm and you won't have all the negatives of Stockholm either. It's your choice.

What I am concerned about in Sweden, particularly, is the current discussion about the regulation of fiber. I understand that because 15 years ago we were the only operator with a network, we got regulated. I believe we should try to provide equal access to that network as long as we get paid for it so that my shareholders get a return. However, now there's a discussion in Sweden about regulating fiber and talk of regulating only TeliaSonera. We own less than half the fiber in the ground, so why should only we be regulated?

We need a fiber network in all 20 countries where we operate. If we are going to provide one gigabit per second to people, we need that technology. But somebody will have to pay for it. In Sweden, the state has said it is not willing to pay for any of the fiber. I think we are one of the few players that could do it, but we're not going to do it if there is unfavorable regulation. We will put that money somewhere else, and that will be really bad for the country because the country needs this.

Communications Review:
What are your views on competition in your more established markets? Do you anticipate threats from emerging operators elsewhere in the world or from disruptive players?

Nyberg: I don't think anybody in their right mind would try to get into Sweden, Finland, Norway, or Denmark. In Sweden, for instance, we have four operators and nine million people.

The issue of disruptive players was the big debate in the industry when I joined TeliaSonera. I went to Davos a couple of years ago, and people were talking about terrible threats from Google, how they would take over our business, and so on. I never understood it and I still don't understand why they would. Some of my peers argued that because of that threat, we should invest a lot of money in content, and some operators have done so.

We have decided we are not going to be in the content business. We operate the pipes and we're good at it. I don't think that Google could unseat us as the operator, or put so much pressure on us that we would have to sell capacity at prices that wouldn't generate any return to our shareholders. I don't think it will happen, so I'm not participating in the content war. I just hope that others will create many applications that we all will love to use; and I hope that the applications consume a lot of bandwidth, because it is the traffic in the networks on which we make money.

Communications Review:
But in that model, do you think there has to be some kind of revenue sharing arrangement between yourselves and the content providers?

Nyberg: If the content provider would like me to invoice for content, then I could do that and probably would want some money for the service. I don't expect, with the model I talked about, that we would get any significant share of the content revenue or the advertising revenue. Take Google. Google makes most of its money from advertising and will not be sending me any money just because somebody uses my line to look at Google and get exposed to advertisements. Google's not going to share any revenue with me, and I'm not going to share any revenue with them. The person who looks at Google over my line will have to pay for the line somehow, and that's why flat fee pricing plans will change.

Fees will be structured similarly to the way electricity is sold in most countries, that is, the customer pays a fixed amount for being connected to the grid and then pays for the kilowatts used. If you live in your own house and you pay for heating, you learn pretty quickly that heating the house to 24° C costs more money than heating it to 18° C, and you have a kilowatt counter that you

can look at to check consumption. In the case of telecoms, I think that eventually customers will pay for different functions, such as IPTV, voice, and so forth. Operators will need to provide a way for the end user to know how much data has been consumed. In this scenario, I think people will learn quickly that voice costs next to nothing, as it consumes very little capacity, and that downloading an HD movie costs a lot compared to voice.

There are other services we might get involved in, but not as a content provider. Security is an example. I cannot provide security, but I could form an arrangement with a security firm and make an offer to them such that we provide the telecoms and they provide the reaction force when something happens. A better example—one that's actually working today—is IPTV. We provide IPTV but we don't produce films or TV; we aggregate TV channels and films. We are the biggest movie rental company in Sweden today. Why? Because it's convenient for customers.

Communications Review:
Many chief executives say that a big issue for them is to get the best people in the right places. Do you see that as a challenge for your company?

Nyberg: We've been extremely fortunate to have so many people wanting to join us on this journey. We have changed 60% of the group management and close to 25% of the next level down. We are able to attract the best people in the market because the company is well known, because we are publicly saying we are on a journey and we're going to make this company more successful—and a lot of people seem to be excited about that. The challenge for us right now is Eurasia. We have relatively few people in this organization who have experience in doing business in that part of the world, and that's a problem.

One of the top 10 issues in our journey is to change the way we treat people, train people, and judge people. We call it talent and performance management, and we haven't done that in a professional way for years in this company. We have been making an effort over the last 15 months to get a better-than-normal talent management process in place. There is a lot of young talent in this company but we don't identify them early enough; we don't see them, we don't centralize that discussion, and we don't have the same processes throughout the company, so it doesn't come natural for those people to be selected—or at least given opportunities to do—and to advance.

We regularly conduct a survey, the employee commitment score, in which we ask employees the same questions every year. We want people in the organization to feel that we are on a journey and making progress and that they can contribute, because if two of us at the management level agree that we are making progress but nobody else believes in the company, that doesn't help much.

In 2007, 60% of our employees said, "Yes, I am committed." In 2009, we had 68% agreement. Very few companies have that level of commitment. Our target for 2010 was 67% agreement, and we reached 68% last year. When we add Eurasia, the actual number was 72%, which is fantastic. This tells me that the whole company thinks we are on a journey and making progress. I believe that success breeds success, and if I want to have the world-class customer experience that I mentioned, everybody has to help—otherwise, it won't fly. This is my best indicator that it might just happen.

Lars Nyberg became president and chief executive officer of TeliaSonera in September 2007. In addition, he is chairman of the board of directors of DataCard Corp. and a member of the board of directors of Autoliv Inc.

Between 1995 and 2003, Mr. Nyberg was chairman and chief executive officer of NCR Corp., and afterwards he served as non-executive chairman until 2005. Prior to joining NCR, he held several executive positions within Philips in Sweden, Great Britain, and the Netherlands and was a member of the Philips Group Management Committee.

Mr. Nyberg holds a bachelor's degree in business administration and economics from the University of Stockholm.

For more information, visit the company's Web site at www.teliasonera.com.

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2009 North American Wireless Industry Survey

This year's survey provides a framework to understand the current and emerging trends in the wireless communications sector and addresses general financial accounting and reporting practices. Emphasis is shifting from customer experience to price, which will have management rethinking a key component of their business strategy: The definition of a profitable customer and the resulting implications for their business model and cost structure. The results of this survey reflect the participation of nine companies including five of the largest US wireless operators and two Canadian wireless companies. To read or download the PDF file, visit www.pwc.com/us/communications and click on the publications page.

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Part of a series of discussion papers addressing topical accounting and financial reporting issues in the telecom sector, this paper considers the accounting issues related to impairment tests under IAS 36 Impairment of Assets in the telecommunications industry, including: an introduction to the relevant IFRS pronouncements; examination of the procedures required when conducting impairment tests (particularly in relation to goodwill); explanation of the major financial statement disclosures related to impairment testing; and, relevant examples from the industry. To read or download the PDF file, visit www.pwc.com/infocomm and click on Publications.

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