CHAPTER 12

GLOBALISATION, INNOVATION AND TWENTY-FIRST CENTURY ORGANISATIONAL TRENDS

SECTION 12.1 Globalisation
> Global IT business strategies
> Global enterprise architectures
> Global information issues
> Global systems development

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Employability Skills

ACS: Group 1: Ethics/social implications/ professional practice; Interpersonal communications

AACSB: Communication abilities; Use of information technology; Multicultural and diversity understanding (including group and individual dynamics in organisations); Reflective thinking

IS2002: Business fundamentals; Analytical and critical thinking; Technology; Interpersonal, communication and team skills; Technology-enabled information systems

DEST: Communication; Planning and organising; Teamwork; Technology; Problem solving

What's in IT for me?

Have you ever dreamed of travelling to exotic cities like Paris, Tokyo, Rio de Janeiro or Cairo? In the past, the closest many people ever got to working in such cities was in their dreams. Today, the situation has changed. Most major companies cite global expansion as a link to future growth. A recent study noted that 91 per cent of the companies doing business globally believe it is important to send employees on assignments in other countries.

If a career in global business has crossed your mind, this chapter will help you understand the impacts of competing in a global world. Population figures in December 2008 show that Australia and New Zealand have a combined market of about 25 million people[1], however, there are nearly 76 billion potential customers in the 193 countries that make up the global market. You, the business student, should be familiar with the potential of global business, including its many benefits and challenges. The demand for students with training in global business is almost certain to grow as the number of businesses competing in global markets increases.

Case Study

Globalisation—Australia takes on the world!

Peter Blakey, Massey University

Liquid Animation

Liquid Animation is a Brisbane-based, digital entertainment company which produces classic style animation series and educational multimedia resources in all formats including the Internet, high definition television, film and video. The company has three areas of focus: Commercial Animation Services, Liquid Toons and Youthealth.com.

This dynamic company run by four brothers began in 1999 with web design in their lounge room and has now grown into a business employing 35 people. In January 2001 Liquid Animation were awarded the 'Golden Pixie' award by US publication *Animation Magazine* for the best traditional animation on the web. In April 2001 Liquid Animation signed a contract with a US production company to produce three episodes and the title sequence for a new animation series for Disney Channel.

Approximately 60 per cent of Liquid Animation's business and revenue come from exports to the United States, but the UK and Asia are high on the agenda for the future. They are currently working on an exciting range of projects including 3D special effects for *Duck Dodgers* for Warner Brothers Animation, and the 2D television series *The Eggs*. They have recently completed a music video entitled 'Sunsets' for Australian rock band Powderfinger.

Religion, language and infrastructure are the types of cultural issues Liquid Animation needs to consider for their major markets but they have not had to alter their product yet. Fortunately they have not faced trade barriers in any markets.

The Long Tall Clothing Company

This Melbourne company specialises in tall women's clothing. Sue (who is 1.9 metres tall) opened her Blackburn shop in November 1995 following years of frustration trying to find good quality clothes that fit well. In the first year Sue designed and sewed all the garments herself until she found a local manufacturer who was willing to make the small numbers needed at that time. Production increased over time with the introduction of mail-order facilities following publicity on television lifestyle programs and in women's magazines.

Sue's website, www.longtallclothing.com.au, was set up in 1997. The company's target market in Melbourne is limited, and therefore the company uses the Internet to overcome this barrier by reaching new markets across Australia and overseas. The online sales also help to smooth out the peaks and troughs of the fashion industry, and the company sells to customers in Europe, Asia, the Pacific and North America from orders placed on their website. In June 2002, they opened a Melbourne showroom, where customers could

try the garments on, two days per week. The showroom closed in January 2009 due to declining showroom sales; however, Internet orders remain strong. The majority of the company's customers are from either interstate or overseas, or have been regulars for many years. Typically, they are either unable or don't need to visit the showroom, and happily purchase their favourite garments online.

With a good quality product, the Internet now allows businesses to sell directly to customers all around the world. But they must have something that no one else has, or the product needs to be better than those available elsewhere. Sue would consider selling through shops overseas in addition to direct sales to customers, but only on her terms.

Although the Long Tall Clothing Company's garments are designed for the Australian market, they do not need to make any adjustments to their designs for the overseas market. The only extra things needed are detailed size charts (often Australian sizes are different from overseas sizes), clear prices in US dollars and a clear postage and refund policy.

HotBods Creatures

Susy Griffiths made the initial HotBods creatures for her daughter and then developed the business to fill a gap in the market—for a reheatable child's comforter and companion. Her company, HotBods Creatures, began trading in 1996 from a home-based office with a staff of just two. The company launched its first HotBods Bears through the Parents, Babies and Children's Expo in Western Australia, New South Wales and Victoria. The response was overwhelming and, as word of the product spread, so did distribution. Since then HotBods has grown to employ 12 people in the company's 320 square metre warehouse and offices, and an additional 35 sewing contractors. By December 1997, over 30 000 HotBods creatures had been sold in Australia alone. This range of cuddly, wheat-filled and scented creatures are designed to be used as lovable warm comforters and therapeutic heat or chill packs. In 2005 Nimovera (Pty) Ltd, based in Perth, acquired the HotBods business.

Over 80 per cent of HotBods Creatures' production is for export and 75 per cent of their revenue comes from exports to Japan, France, England, America, Canada, Malaysia, Hong Kong, Singapore, Saudi Arabia and New Zealand. The HotBods Creatures head office, warehouse and distribution centre is now based in Perth, Western Australia, and the company directly controls the manufacture of its products, both locally and overseas.

Susy recognised customer service as a key driver in HotBods' export success, so the company operates eight incoming phone lines with messages on hold, a 24-hour ordering service and a five-day worldwide delivery option. They also use the Internet for most correspondence with overseas customers, including orders.

The company's ongoing research in Australia and overseas showed that the initial target market, children, weren't the only ones using the bears. Adults were buying HotBods for themselves and as gifts for friends to be used as a therapeutic aid for muscular aches or for tension and headaches. On the basis of this research, Susy set about developing and targeting the product to a new, broader market. To suit the needs of their Japanese customers Susy developed smaller and cuter designs, adopted specially dyed pastel colours and used towelling and velvet fabrics.

Case Study

QUESTIONS TO FOLLOW

HotBods Creatures uses distributors in each country so that they are fully represented in similar outlets overseas and also to protect the product and help with future development of the market.

Computer Design Marine

Computer Design Marine offers world leading vessel construction systems for a range of aluminium powerboats from 4-metre pleasure craft to 20-metre professional work boats. Phil Curran, a naval architect, developed his speciality, his unique use of computer design and Internet technology six years ago. His traditional business, which began 25 years ago, would have folded if he had not joined the computer age. He developed his unique VCS software to protect his computer-aided designs (CAD) from his major threat, theft of intellectual property.

The Internet is also Computer Design Marine's main marketing tool. Customers browse through photos and details of vessels on the site and then email the office. As about 90 per cent of sales are to overseas customers, after-sales advice and consultation is largely conducted over the Internet, including inspections of work via digital photos. This Australian export business has an annual turnover of about $1 million dollars. While Australian ship-building is famous for its high speed boats, Computer Design Marine has recognised that their advantage lies in smart use of design technology. They use all features of the commercial CAD package, pushing software to its potential, to remain ahead of their competitors.

Unlike traditional shipbuilders, Computer Design Marine has a core staff of only four in Perth and employs contract designers located in other parts of Australia and New Zealand. Buyers can construct the boats themselves from the supplied software or contract out the work. In Western Australia there is a program in some TAFE colleges and schools using 4.3-metre dinghy kits for skills training. Ports of presence include Indonesia (Jakarta), Japan (Kobe and Tokyo), Malaysia (Port Klang), New Zealand (Auckland), Portugal (Lisbon), Thailand (Bangkok) and the United Kingdom (Southampton).[2]

Introduction

Whether they are in Berlin or Bombay, Kuala Lumpur or Kansas City, San Francisco or Seoul, organisations around the globe are developing new business models to operate competitively in a digital economy. These models are structured, yet agile; global, yet local; and they concentrate on maximising the risk-adjusted return from both knowledge and technology assets.[3]

Globalisation and working in an international global economy are integral parts of business today. Fortune 500 companies to single-person businesses are now competing globally and international developments affect all forms of business.

12.1 GLOBALISATION

LEARNING OUTCOMES

> Explain the cultural, political and geo-economic challenges facing global businesses.
> Describe the four global IT business drivers that should be included in all IT strategies.
> Describe governance and compliance and the associated frameworks an organisation can implement.
> Identify why an organisation would need to understand global enterprise architectures when expanding operations abroad.
> Explain the many different global information issues an organisation might encounter as it conducts business abroad.
> Identify global system development issues organisations should understand before building a global system.

GLOBALISATION

According to Thomas Friedman, the world is flat! Businesses are strategising and operating on a global playing field. Traditional forms of business are simply not good enough in a global environment. The Internet is changing business in many ways (see Table 12.1). To succeed in a global business environment, cultural, political and geo-economic (geographic and economic) business challenges must be confronted.

Industry	Business changes due to technology
Travel	Travel site Expedia.com is now the biggest leisure-travel agency, with higher profit margins than even American Express. Thirteen per cent of traditional travel agencies closed in 2002 because of their inability to compete with online travel.
Entertainment	The illegal downloading of music and videos is impacting on the music entertainment industries, not only in royalties but in employment of those who service the industry such as in music shops, CD copying industries and even the musicians themselves. The Australian music industry estimates 1 billion songs were illegally traded by Australians in 2007.[4] This is a worldwide phenomenon with worldwide impact. In late 2008, the Entertainment Retailers Association (United Kingdom) claimed that the illegal downloading of films, TV programs and music could mean the loss of 30 000 British jobs.[5]

TABLE 12.1
The Internet's impact on business

Industry	Business changes due to technology
	Then there is radio, which has found a new following through broadcasting programs in real time or delayed over the Internet, or only available over the Internet. Others have found fame through sites such as YouTube. Amber Lee Ettinger's song 'I Got a Crush … On Obama' had been downloaded over 13 million times between its launch in June 2007 and February 2009.[6] Ettinger has been interviewed by major US television networks, is making more YouTube videos and is looking towards Hollywood.[7]
Electronics	Using the Internet to link suppliers and customers, Dell dictates industry profits. Dell's 2009 third quarter financial statement shows that revenue is slightly down as global IT spending slows. However, their share prices have increased by 9 per cent and their revenue is US$15.2 billion.[8]
Financial services	Nearly every public e-finance company makes money: an online presence is expected of your bank and in more and more instances is the only way to manage your accounts. Online banking works out cheaper than over the counter as transaction charges are lower.[9]
Retail	eBay is the world's largest online marketplace where practically anyone can sell practically anything at anytime.[10] It is listed at number 19 on Netcraft.com's most visited web sites (13 of the top 20 are Google applications, for example, Google Search, Google Mail, iGoogle, Google Images, Google Docs).[11] Online shopping is getting more and more popular ever day. New Zealand's TradeMe website is the most visited website in New Zealand and is ranked 1455th globally.[12]
Education and training	There is a proliferation of fully online education and training courses in Australia and New Zealand (as there are across the globe). The ability to study from home or have access to learning material wherever you have Internet access is saving billions of dollars in trainer fees as well as making education and training available to anyone, anywhere with Internet access.
Charities	Non-government organisations across the globe reach out to the world, sometimes from remote villages with little if any electricity, and use the Internet to promote themselves and advertise for volunteers who would otherwise never have heard of them. VOLSET is one such organisation. Once they had access to the Internet, generated email addresses and created a website, they found more people were volunteering. Additionally, using the Internet, VOLSET found information about numerous funding opportunities that were available to them which they'd previously not known about.[13]

Cultural business challenges

Cultural business challenges include differences in languages, cultural interests, religions, customs, social attitudes and political philosophies. Global businesses must be sensitive to such cultural differences. McDonald's, a truly global brand, has many consumers of their products from a range of cultures and countries. A quick look at the US website for McDonald's reveals just how many.[14] There are often different websites for different countries—but not for different cultures within the one country. No company has the budget to create a separate website for every subculture, nor for every variant within the one culture. A company should ask a few key questions when creating a global website:

> Will the site require new navigational logic to accommodate cultural preferences?

> Will content be translated? If so, into how many languages?

> Will multi-lingual efforts be included in the main site or will it be a separate site, perhaps with a country-specific domain?

> Which country will the server be located in to support local user needs?

> What legal ramifications might occur by having the website targeted at a particular country, such as laws on competitive behaviours, treatment of children or privacy?[15]

Political business challenges

Political business challenges include the numerous rules and regulations surrounding data transfers across national boundaries, especially personal information, tax implications, hardware and software importing, and exporting and trade agreements. For security, there are high levels of concerns over information storage, transmission, and access and identity verification. For privacy and the protection of personal information, there are even stronger concerns about consolidation of information, unauthorised access and sharing without permission.[16]

Information sharing has political implications; for example, the sharing of child abuse information across Australian states and territories is being considered by the Australian government. The government plans to override privacy concerns and share information between Centrelink and state child welfare agencies to stop child 'neglect' moving between states. Until recently, Centrelink has only made information available when there was a serious, imminent risk to a child.[17]

Global geo-economic business challenges

Geo-economic refers to the effects of geography on the economic realities of international business activities. Even with the Internet, telecommunications and air travel, the sheer physical distances covering the globe make it difficult to operate multi-national business. Flying IT specialists into remote sites is costly, communicating in real time across the globe's 24 time zones is challenging and finding quality telecommunication services in every country is difficult. Skilled labour supplies, cost of living and labour costs also differ among the various countries. When developing global business strategies, all of these geo-economic challenges must be addressed.

Understanding the cultural, political and geo-economic business challenges is a good start to understanding global business, but the problems facing managers run far deeper. The remainder of this section focuses on business management issues that are central to all global business. Business managers must understand four primary areas—global IT business strategies, global enterprise architectures, global information issues and global systems development—when running multi-national companies (see Figure 12.1).
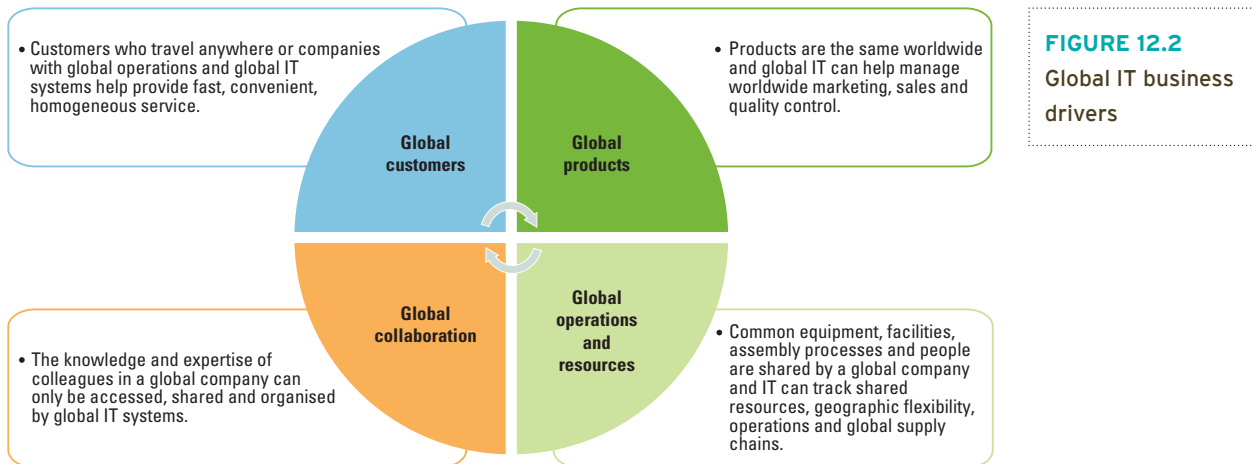
FIGURE 12.1
Global IT business management areas

Global IT business strategies

Global enterprise architectures

Global IT business management areas

Global systems development

Global information issues
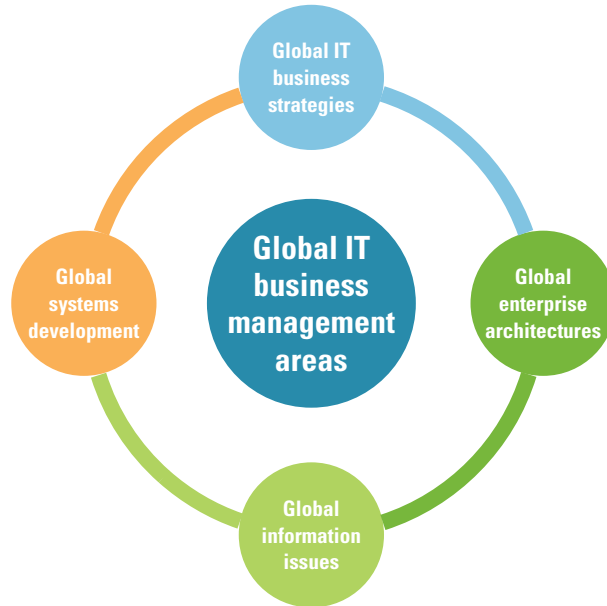
GLOBAL IT BUSINESS STRATEGIES

Global IT business strategies must include detailed information on the application of information technology across the organisation. IT systems depend on global business drivers such as the nature of the industry, competitive factors and environmental forces. For example, airlines and hotels have global customers who travel extensively and expect the same service regardless of location. Organisations require global IT systems that can provide fast, convenient service to all international employees who are servicing these customers. When a high-end hotel customer checks into a hotel in Asia, he or she expects to receive the same high-end service as he or she would receive in a hotel in Chicago or London. Figure 12.2 displays the global IT business drivers that should be included in all IT strategies.

Many global IT systems, such as finance, accounting and operations management, have been in operation for years. Most multi-national companies have global financial budgeting and cash management. As global operations expand and global competition heats up, pressure increases for companies to install global e-business applications for customers, suppliers and employees. Examples include portals and websites geared toward customer service and supply chain management. In the past, such systems relied

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FIGURE 12.2
Global IT business drivers

- Customers who travel anywhere or companies with global operations and global IT systems help provide fast, convenient, homogeneous service.

Global customers

- Products are the same worldwide and global IT can help manage worldwide marketing, sales and quality control.

Global products

Global collaboration

Global operations and resources

- The knowledge and expertise of colleagues in a global company can only be accessed, shared and organised by global IT systems.

- Common equipment, facilities, assembly processes and people are shared by a global company and IT can track shared resources, geographic flexibility, operations and global supply chains.

almost exclusively on privately constructed or government-owned telecommunications networks. But the explosive business use of the Internet, intranets and extranets for electronic commerce has made such applications more feasible for global companies.

Governance and compliance

One fast-growing key area for all global business strategies includes governance and compliance. **Governance** is a method or system of government for management or control. **Compliance** is the act of conforming, acquiescing or yielding. In the well-regimented and competitive business world of today, formal IT governance and compliance is a must for virtually every company, whether domestic and global. Key drivers for governance and compliance include financial and technological regulations as well as pressure from shareholders and customers.

Organisations today are subject to many regulations governing data retention, confidential information, financial accountability and recovery from disasters. By implementing IT governance, organisations have the internal controls they need to meet the core guidelines of many of these regulations, such as the US's *Sarbanes-Oxley Act* of 2002.

IT governance essentially places structure around how organisations align IT strategy with business strategy, ensuring that companies stay on track to achieve their strategies and goals and implementing good ways to measure IT's performance. Governance makes sure that all stakeholders' interests are considered and that processes provide measurable results. IT governance should answer key questions, including how the IT department is functioning overall, what key metrics management requires and what return the business is getting from its IT investment. Figure 12.3 displays the five key areas of focus according to the IT Governance Institute in the US.[18]
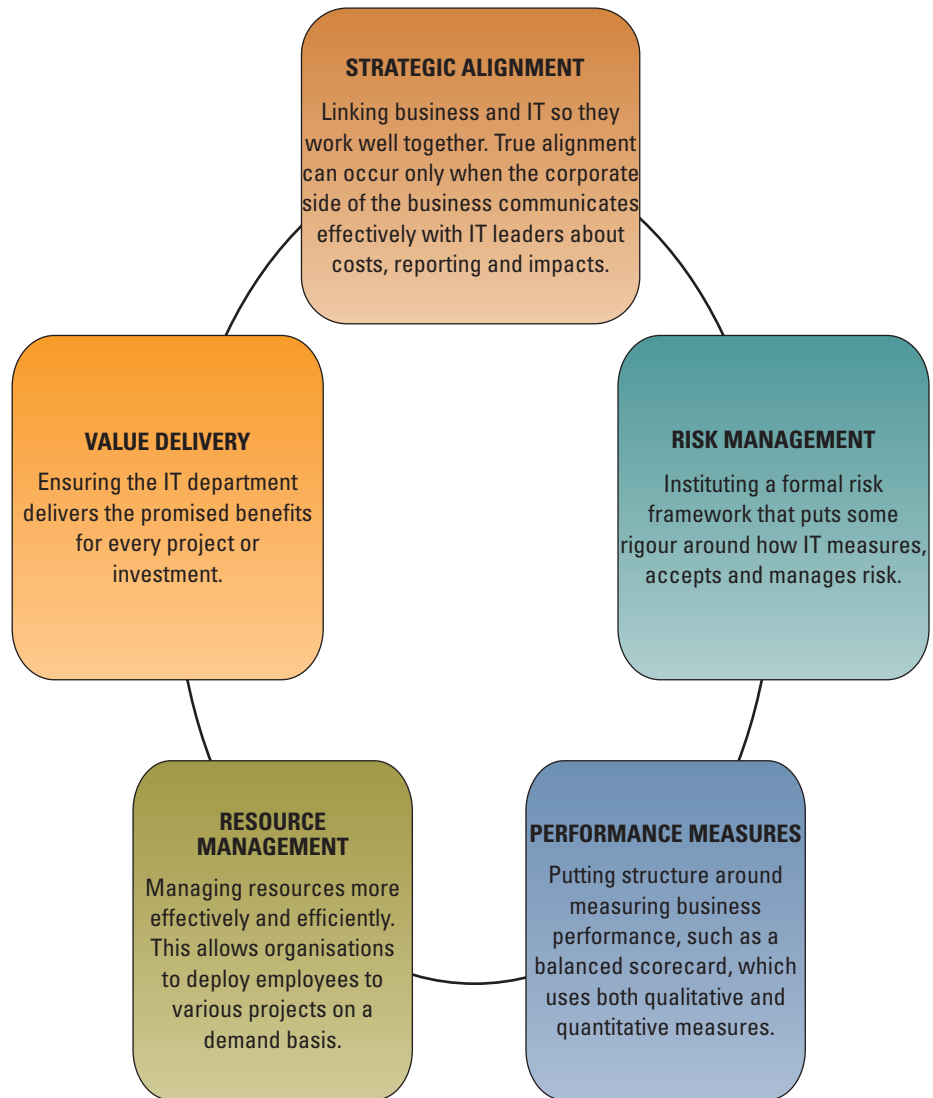
Organisations can follow a few different IT governance frameworks, including:

> **CoBIT: Information Systems Audit and Control Association (ISACA)** is a set of guidelines and supporting tools for IT governance that is accepted worldwide and generally used by auditors and companies as a way to integrate technology to implement

FIGURE 12.3
IT Governance
Institute five focus
areas

STRATEGIC ALIGNMENT

Linking business and IT so they work well together. True alignment can occur only when the corporate side of the business communicates effectively with IT leaders about costs, reporting and impacts.

VALUE DELIVERY

Ensuring the IT department delivers the promised benefits for every project or investment.

RISK MANAGEMENT

Instituting a formal risk framework that puts some rigour around how IT measures, accepts and manages risk.

RESOURCE MANAGEMENT

Managing resources more effectively and efficiently. This allows organisations to deploy employees to various projects on a demand basis.

PERFORMANCE MEASURES

Putting structure around measuring business performance, such as a balanced scorecard, which uses both qualitative and quantitative measures.

controls and meet specific business objectives. Rockwell Automation Asia Pacific implemented policies and procedures that drew from CoBIT and other governance frameworks to ensure all its Asia-Pacific offices (Australia, New Zealand, India, Singapore, Hong Kong, China, Taiwan, Japan and South Korea) were compliant with *Sarbanes-Oxley* requirements.[19]

> **ITIL:** The **Information Technology Infrastructure Library (ITIL)** is a framework provided by the government of the United Kingdom and offers eight sets of management procedures: (1) service delivery, (2) service support, (3) service management, (4) information and communication technology (ICT) infrastructure

management, (5) software asset management, (6) business perspective, (7) security management and (8) application management. ITIL is a good fit for organisations concerned about operations. During 2008, the Australian Nuclear Science and Technology Organisation (ANSTO) implemented an ITIL deployment to improve internal IT services and performance.[20]

> **COSO:** Developed by the **Committee of Sponsoring Organizations of the Treadway Commission (COSO)**, this framework is key for evaluating internal controls such as human resources, logistics, information technology, risk, legal, marketing and sales, operations, financial functions, procurement and reporting. The COSO framework consists of eight interrelated components: internal environment; objective setting; event identification; risk assessment; risk response; control activities; information and communication; monitoring.[21] This is a more business-general framework, that is, less IT-specific.

> **CMMI:** Created by a group from government, industry and Carnegie Mellon University's Software Engineering Institute, the **Capability Maturity Model Integration method (CMMI)** is a process improvement approach that contains 22 process areas. It is divided into appraisal, evaluation and structure. CMMI is particularly well suited to organisations that need help with application development, life cycle issues and improving the delivery of products throughout the life cycle.[22]

GLOBAL ENTERPRISE ARCHITECTURES

An **enterprise architecture** includes the plans for how an organisation will build, deploy, use and share its data, processes and IT assets. An organisation must manage its global enterprise architecture to support its global business operations. Management of a global enterprise architecture is not only technically complex, but also has major political and cultural implications. For example, hardware choices are difficult in some countries because of high prices, high tariffs, import restrictions, long lead times for government approvals, lack of local service or replacement parts and lack of documentation tailored to local conditions. Software choices also present issues; for example, European data standards differ from American or Asian standards, even when purchased from the same vendor. Some software vendors also refuse to offer service and support in countries that disregard software licensing and copyright agreements.

The Internet and the World Wide Web are critical to international business. This interconnected matrix of computers, information and networks that reaches tens of millions of users in hundreds of countries is a business environment free of traditional boundaries and limits. Linking to online global businesses offers companies unprecedented potential for expanding markets, reducing costs and improving profit margins at a price that is typically a small percentage of the corporate communications budget. The Internet provides an interactive channel for direct communication and data exchange with customers, suppliers, distributors, manufacturers, product developers, financial backers, information providers—in fact, with all parties involved in an international organisation.[23]
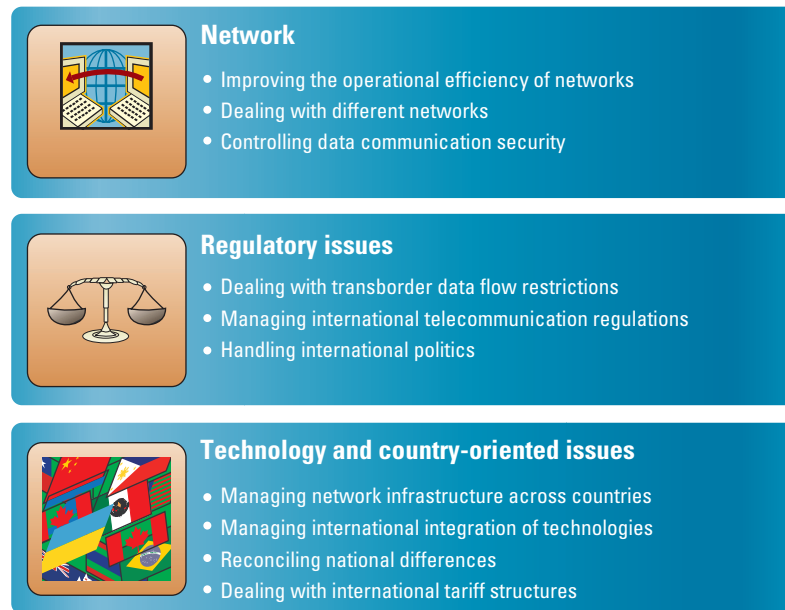
The Paris-based organisation Reporters Without Borders notes that 45 countries restrict their citizens' access to the Internet. 'At its most fundamental, the struggle between Internet censorship and openness at the national level revolves around three main means: controlling the conduits, filtering the flows, and punishing the purveyors. In countries such as Burma, Libya, North Korea, Syria, and the countries of Central Asia and the Caucasus, Internet access is either banned or subject to tight limitations through government-controlled ISPs. These countries face a lose-lose struggle against the information age. By denying or limiting Internet access, they stymie a major engine of economic growth. But by easing access, they expose their citizenry to ideas potentially destabilising to the status quo. Either way, many people will get access to the electronic information they want. In Syria, for example, people go to Lebanon for the weekend to retrieve their email', said Virgini Locussol, Reporters Without Borders desk officer for the Middle East and North Africa.[24]

Figure 12.4 displays the top 10 international telecommunication issues as reported by the IT executives at 300 Fortune 500 multi-national companies. Political issues dominate the listing over technology issues, clearly emphasising their importance in the management of global enterprise architectures.[25]

FIGURE 12.4

Top 10 telecommunication issues

Network
- Improving the operational efficiency of networks
- Dealing with different networks
- Controlling data communication security

Regulatory issues
- Dealing with transborder data flow restrictions
- Managing international telecommunication regulations
- Handling international politics

Technology and country-oriented issues
- Managing network infrastructure across countries
- Managing international integration of technologies
- Reconciling national differences
- Dealing with international tariff structures

Estimating the operational expenses associated with international IT operations is another global challenge. Companies with global business operations usually establish or contract with systems integrators for additional IT facilities for their subsidiaries in other countries. These IT facilities must meet local and regional computing needs and even help balance global computing workloads through communications satellite links. However, offshore IT facilities can pose major problems in headquarters support, hardware and software acquisition, maintenance and security. This is why many global companies prefer

to outsource these facilities to application service providers or systems integrators such as IBM or Accenture to manage overseas operations. Managing global enterprise architectures, including Internet, intranet, extranet and other telecommunication networks, is a key global IT challenge for the twenty-first century.

GLOBAL INFORMATION ISSUES

While many consumer gadgets and software applications can benefit a company—for instance, by helping employees get their jobs done more efficiently—the security implications are legion, said Ken Silva, chief security officer at VeriSign, which specialises in network security software. 'When we bolt those things onto corporate networks, we open up holes in the environment.'[26] In November 2008, the US Defense Department banned the use of portable storage devices ... but it had done so too late. Twenty-nine-years-old Chris Ogle from Whangerei, New Zealand got more than he bargained for when he bought an MP3 player from an Oklahoma second-hand shop for US$18. When Ogle hooked up the player he discovered a playlist he could never have imagined: the device contained 60 files in all, including the names and personal details of American soldiers.[27]

With war and terrorist attacks in many people's minds, security is a hot topic. For businesses, too, security concerns are widespread. Increasingly opening up their networks and applications to customers, partners and suppliers using an ever more diverse set of computing devices and networks, businesses can benefit from deploying the latest advances in security technologies. These benefits include fewer disruptions to organisational systems, increased productivity of employees and greater advances in administration, authorisation and authentication techniques.

Businesses must have the appropriate levels of authentication, access control and encryption in place to ensure (1) that only authorised individuals can gain access to the network, (2) that they have access to only those applications for which they are entitled and (3) that information cannot be understood or altered while in transit. Figure 12.5 displays the results of a recent survey concerning both the level of physical security integration and the current security practices used by most organisations (see chapter 4 for more on information security).[28]

Security breaches not only inconvenience business users and their customers and partners, but can also cost millions of dollars in lost revenues or lost market capitalisation. The business cost of inadequate security does not stop at inconvenience and loss of revenues or market valuation. It can even force a business out of existence. For example, in early 2002 British Internet service provider Cloud-Nine Communications was the victim of a distributed denial-of-service (DDoS) attack that forced the company to close operations and to eventually transfer over 2500 customers to a rival organisation. While disruptive technologies can help a company to gain competitive advantage and market share (and avoid real business disruptions), lack of security can have the opposite effect, causing profitable companies to lose market share or even their entire business within hours or days of an attack.[29]

It is now more important than ever for an organisation to have well-rehearsed and frequently updated processes and procedures to insure against a variety of adverse

Is the organisation's
physical security integrated
with IT security?

Best security practices used today
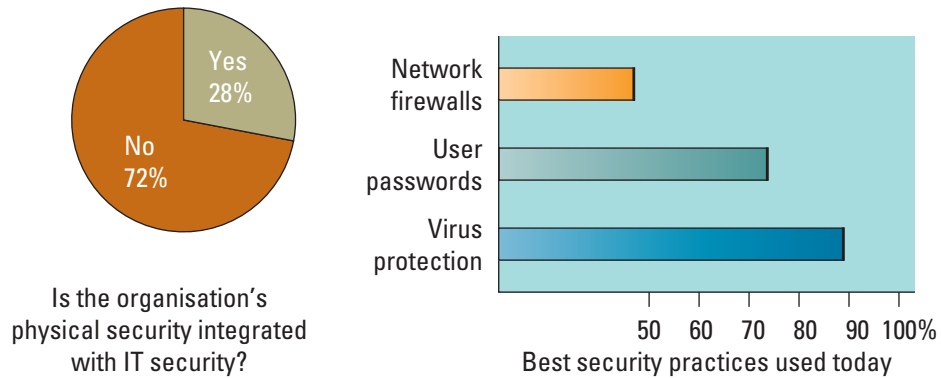
scenarios—Internet email and denial-of-service attacks from worms and viruses, loss of communications, loss of documents, password and information theft, fire, flood, physical attacks on property and even terrorist attacks.

Rather than fight the trend, some companies are experimenting with giving employees more choice regarding the technology they use—so long as they accept more responsibility for it. In 2005, BP began a pilot project that gives employees about US$1000 to spend on productivity-enhancing tools in addition to standard-issue equipment, according to a report from the Leading Edge Forum. But before they can participate, employees must pass a test of their computer literacy skills.[30]

The company takes other steps to give employees free rein while mitigating risk. BP cordons off its network by letting employees link to the Internet via consumer connections, from outside the firewall, in the case of its 18 000 laptops. At the same time it beefs up security on those machines. This lets employees safely experiment with software such as Amazon's on-demand computing and storage services. According to a *Business Week* review of a number of surveys, enterprises are increasing their IT security budgets in 2009 despite cuts in overall IT budgets. IT experts are expecting security issues to grow in 2009 as a result of the economic uncertainty. They report that the 'insider' threat is more of a security issue than any global IT invasion.[31]

De-perimeterisation occurs when an organisation moves employees outside its firewall, a growing movement to change the way corporations address technology security. In a business world where many employees are off-site or on the road, or where businesses increasingly must collaborate with partners and customers, some say it's not practical to rely on a hardened perimeter of firewalls. Instead, proponents of de-perimeterisation say companies should focus on beefing up security in end-user devices and an organisation's critical information assets.[32]

Information privacy

For many years, global data access issues have been the subject of political controversy and technology barriers in global business environments. These issues have become more prevalent with the growth of the Internet and the expansion of e-businesses. **Transborder data flows (TDF)** occur when business data flows across international boundaries over the telecommunications networks of global information systems. Many countries view TDF

as violating their national sovereignty because transborder data flows avoid customs duties and regulations for the import or export of goods and services. Others view transborder data flows as violating their laws to protect the local IT industry from competition or their labour regulations from protecting local jobs. In many cases, the data flow issues that seem particularly politically sensitive are those that affect the movement out of a country of personal data in e-business and human resource applications.[33]

Many countries, especially those in the European Union (EU), may view transborder data flows as a violation of their privacy legislation since, in many cases, data about individuals are being moved out of the country without stringent privacy safeguards. Table 12.1 presents Principle 9 of the National Privacy Principles (Australia) of the *Privacy Act 1988*.

Principle 9, dealing with transborder data flows, states:

An organisation in Australia or an external Territory may transfer personal information about an individual to someone (other than the organisation or the individual) who is in a foreign country only if:
– the organisation reasonably believes that the recipient is subject to a law or contract with similar privacy principles as Australia;
– the individual consents to the transfer;
– the transfer is necessary for the performance of a contract;
– the transfer is necessary for the conclusion of a contract;

– all of the following apply:
  > benefit the individual;
  > impractical to obtain content of the individual;
  > or if practicable, the individual would likely give consent;

– the organisation ensures that the information will not be used or disclosed by the recipient inconsistently with the National Privacy Principles.

TABLE 12.1
Principle 9 of the National Privacy Principles (Australia)[34]

Information privacy concerns the legal right or general expectation of individuals, groups or institutions to determine for themselves when and to what extent information about them is communicated to others. In essence, information privacy is about how personal information is collected and shared. To facilitate information privacy, many countries have established legislation to protect the collection and sharing of personal information. However, this legislation varies greatly around the globe.

Europe

On one end of the spectrum lie the EU nations with their strong information privacy laws. Most notably, all member countries of the European Union adhere to a directive on the protection of personal data. A directive is a legislative act of the European Union that requires member states to achieve a particular result without dictating the means of how to achieve that result.

The directive on the protection of personal data grants EU members the following rights:

> the right to know the source of personal data processing and the purposes of such processing;

> the right to access and/or rectify inaccuracies in one's own personal data;

> the right to disallow the use of personal data.

These rights are based on key principles pertaining to the collection or storage of personal data. The directive defines personal data to cover both facts and opinions about an individual. Any organisation processing personal data of a person living in the European Union must comply with these key principles as outlined in the directive; these state that the data must be:

> fairly and lawfully processed;

> processed for limited purposes;

> adequate, relevant and not excessive;

> accurate;

> not kept longer than necessary;

> processed in accordance with the data subject's rights;

> not transferred to countries without adequate protection.

This last right restricts the flow of personal information outside the European Union by permitting its transfer to only countries that provide an 'adequate' level of privacy protection—adequate in the sense that these other countries have to offer a level of privacy protection equivalent to that of the European Union. When first implemented, this part of the directive caused some concerns since countries outside the EU had much weaker privacy protection laws. Organisations in the United States were greatly concerned because they were at a legal risk if the personal data of EU citizens were transferred to computer servers in the United States—a likely scenario in today's global world of e-business. This led to extensive negotiations. The result was the establishment of a 'safe harbour' program in the United States. This program provides a framework for US organisations to show evidence of compliance with the EU directive. In this way, American companies can self-declare their compliance with the key principles of the directive and do business with EU nations without worrying about EU citizens suing them.

The United States

On the other end of the spectrum lies the United States, where information privacy is not highly legislated nor regulated. There is no all-encompassing law that regulates the use of personal data or information. In many cases, access to public information is considered culturally acceptable, such as obtaining credit reports for employment or housing purposes. The reason for this may be historical. In the United States, the First Amendment protects free speech and in many instances the protection of privacy might conflict with this amendment.

There are some exceptions. Though very few states recognise an individual's right to privacy, California's constitution protects an inalienable right to privacy. The California legislature has enacted several pieces of legislation aimed at protecting citizen information privacy. For example, California's *Online Privacy Protection Act,* established in 2003, requires commercial websites or online services that collect personal information of California residents to clearly post a privacy policy on the website or online service and to comply with this policy. Other nationwide exceptions include the *Children's Online Privacy Protection Act* (COPPA) and *the Health Insurance Portability and Accountability Act* (HIPAA).[35]

COPPA is a federal law established in 1998 that applies to the collection of personal information from American children who are under 13 years of age. The act outlines what a website should include in its privacy policy, how to seek consent from a parent or guardian and the responsibilities a website operator has to protect children's online safety and privacy. This law applies to any website that is perceived to be targeting American children. For example, if a toy company established in Canada wanted to sell toys in the United States, the company's website should have to comply with the collection and use of information as outlined in COPPA. To show compliance requires a substantial amount of paperwork. As a result, many websites disallow underage users from joining online communities and websites. Not complying with COPPA can be costly. In September 2006, the website Xanga, an online community, was fined US$1 million for violating COPPA legislation.

HIPAA was enacted by the US Congress in 1996. Provisions in HIPAA establish national standards for the electronic data interchange of health care-related transactions between health care providers, insurance plans and employers. Embedded in these standards are rules for the handling and protection of personal health care information.

Australia

Australia's privacy laws follow the European model very closely. Australia as a nation is quite concerned about protecting the personal information of its citizens. Its primary privacy law is the *Privacy Act 1988.* The purpose of the Act is to make provision to protect the privacy of individuals with respect to how their personal information is collected, used or disclosed by an organisation. This is most important today, especially in the private sector, when information technology increasingly facilitates the collection and free flow of information. Table 12.2 displays Australia's National Privacy Principles (based on the *Privacy Act 1988*) which are used as the keys to information privacy.

GLOBAL SYSTEMS DEVELOPMENT

It is extremely difficult to develop a domestic information system, but the added complexity of developing a global information system quadruples the effort. Global information systems must support a diverse base of customers, users, products, languages, currencies, laws and so on. Developing efficient, effective and responsive information systems for multiple countries, differing cultures and global e-businesses is an enormous challenge for any organisation. Managers should expect conflicts over local versus global system requirements and difficulties in agreeing on common system features. For the project to succeed, the development environment should promote involvement and ownership by all local system users.

TABLE 12.2

The ten National Privacy Principles (Australia)[36]

Principle 1: Collection
Principle 2: Use and disclosure
Principle 3: Data quality
Principle 4: Data security
Principle 5: Openness
Principle 6: Access and correction
Principle 7: Identifiers
Principle 8: Anonymity
Principle 9: Transborder data flows
Principle 10: Sensitive information

One of the most important global information systems development issues is the global standardisation of data definitions. Common data definitions are necessary for sharing information among the parts of an international business. Differences in language, culture and technology platforms can make global data standardisation quite difficult. For example, what Australians call a 'sale' may be called 'an order booked' in the United Kingdom, an 'order scheduled' in Germany and an 'order produced' in France. These are all referring to the exact same business event, but could cause problems if global employees have different versions of the data definition. Businesses are moving ahead to standardise data definitions and business processes. Many organisations are implementing corporate wikis where all global employees can post and maintain common business definitions.

Organisations can use several strategies to solve some of the problems that arise in global information systems development. First is transforming and customising an information system used by the home office into a global application. This ensures the system uses the established business processes and supports the primary needs of the end users. Second is setting up a multi-national development team with key people from several subsidiaries to ensure that the system design meets the needs of all local sites as well as corporate headquarters. Third, an organisation could use centres of excellence where an entire system might be assigned for development to a particular subsidiary based on its expertise in the business or technical dimensions needed for successful development. A final approach that has rapidly become a major development option is to outsource the development work to global or offshore development countries that have the required skills and experience to build global information systems. All of these approaches require development team collaboration and managerial oversight to meet the global needs of the business.

Integrating global systems

Information technology has penetrated the heart of organisations and will stay there in the future. The IT industry is one of the most dynamic in the global economy. As an industry, it not only creates millions of high-level jobs, but also helps organisations to be more efficient and effective, which in turn stimulates innovation. The integration of business and technology has allowed organisations to increase their share of the global economy, transform the way they conduct business and become more efficient and effective (see Figure 12.6).
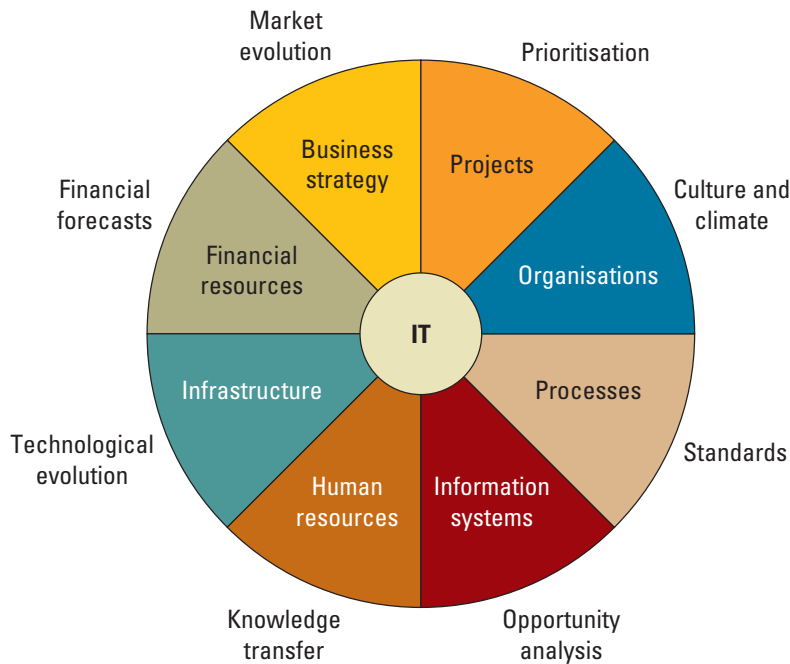
The past few years have produced a confluence of events that has reshaped the global economy. Around the world, free-market competition has flourished and a new globally interdependent financial system has emerged. Reflecting these changes, core business relationships and models are dramatically changing, including shifts from:

> product-centricity to customer-centricity;

> mass production to mass customisation;

> the value in material things to the value of knowledge and intelligence.

In concert with these trends, a new series of business success factors and challenges has emerged that is helping to determine marketplace winners and losers:

> organisation agility, often supported by a 'plug and play' IT infrastructure (with a flexible and adaptable applications architecture);

> a focus on core competencies and processes;

> a re-definition of the value chain;

> instantaneous business response;

> the ability to scale resources and infrastructure across geographic boundaries.

These developments add up to an environment that is vastly more complex than even five years ago. This in turn has resulted in organisations increasingly embracing new business models. The new environment requires organisations to focus externally on

their business processes and integration architectures. The virtually integrated business model will cause a sharp increase in the number of business partners and the closeness of integration between them.

Never before have IT investments played such a critical role in business success. As business strategies continue to evolve, the distinction between 'the business' and IT will virtually disappear.

Case Study

?

Globalisation—Australia takes on the world!

1 Compare and contrast the points of similarity with the four case studies discussed at the beginning of this chapters.

2 Has the globalisation of e-commerce illustrated by the above case studies increased the opportunities available for other Australian companies? Why or why not?

3 Given the example of the Long Tall Clothing Company, would it appear that consumers prefer to purchase goods such as clothing over the Internet?

4 Describe one innovation that each of the above companies have made that has ensured their success.

12.2 TWENTY-FIRST CENTURY ORGANISATIONAL TRENDS

LEARNING OUTCOMES

> Explain the six best practices of innovation.
> Identify how energy consumption and recycling IT equipment can lead to greener IT.
> Describe the three ways organisations can use social networking.
> Explain virtual worlds and virtual workforces and their impact on business.

TWENTY-FIRST CENTURY ORGANISATION AC TRENDS

Many people have no idea how they would get any work done on business trips if they did not have a laptop or a mobile device that allows access to email and the Internet. They simply cannot remember how they lived without their BlackBerry, iPhone or similar device. Their mobile phones might as well be surgically attached to their ears, they are so crucial to their jobs. It is hard to conceive getting through the day without Googles or, for many, without text messaging or Facebook to stay in touch with an extended network of colleagues. In just a decade or less, technology has done a number on the way we work.

And in the next decade, the relentless march of computer power and Internet connection speeds will bring more profound changes to work than anything seen so far. Consider just a few of the breakthroughs technology visionaries think will occur in coming years. Picture Apple's slick iPhone shrunk to the size of a credit card. Then imagine it connecting not only to contacts on the latest social network, but also to billions of pea-sized wireless sensors attached to buildings, streets, retail products and clothes—all simultaneously sending data over the Internet. This will allow tracking and managing more than static information; users will be able to track events in the physical world, from production on a factory floor to colleagues' whereabouts to how customers are using products. All that information will be much easier to view and analyse, using hand and arm gestures to control commands, and viewing results with special glasses that make it seem as if the user is gazing at a life-size screen. Just imagine producing detailed prototypes of product or design ideas via a 3D printer that creates plastic models from computerised specifications as easily as a paper printer spews out reports today.[37]

Products, services and ideas that were once only in science fiction films and shows such as *The Minority Report* and *Star Trek* are now here—not only are they real, but many of them have been around for some time. Organisations are facing technological changes and challenges more extensive and far reaching in their implications than anything since the modern industrial revolution occurred in the early 1900s. Organisations that want to survive in the twenty-first century must recognise these technological changes and challenges, carry out required organisational changes in the face of them, and learn to operate in an entirely different way. Today's organisations focus on defending and safeguarding their existing market positions in addition to targeting new market growth. The primary changes and challenges organisations are focusing on in the twenty-first century include:

> innovation: finding new;

> social entrepreneurship: going green;

> social networks: who's who;

> virtual worlds: it's a whole new world.

INNOVATION: FINDING NEW

In the past, a company primarily focused on operational excellence, now innovation is driving the wheels of IT. **Innovation** is the introduction of new equipment or methods. The current impetus to innovate comes from the need to cut costs, while still creating a competitive advantage. Fundamental shifts in technology will make it possible for businesses to realise IT's promise of technology-enabled innovation, responsiveness and speed.

Surfers from around the world converge on Maverick's at Pillar Point, just a few miles from San Francisco, to challenge each other on the big waves that have made this a legendary surfing destination. The Mavericks Surf Contest brings together the world's very best surfers to take on the 6 to 12 metre swell. The invitees have only 24 hours' notice before they are expected to compete.[38] Surfers from as far away as Australia, Brazil and

South Africa scramble to make their way to this invitation-only competition. It is magical to watch these athletes ride the waves with an ease and grace that make it all seem so natural.

Beneath the surface, though, is a different story, one that contains important lessons for business executives. While all attention is on the athletes riding their surfboards, the technology and techniques used to master big-wave surfing have evolved over decades, driven by dedicated, perhaps even obsessed, groups of athletes and craftspeople. Executives can gain significant insight into the innovation process by looking at this sport and following the six best practices of innovation (see Figure 12.7).[39]

Find your relevant edge

First, to push performance levels, organisations must find the relevant edge. In the case of big-wave surfers, there has been an ever-expanding search for the breaks that would produce bigger and rougher waves to test new surfboard designs and surfing practices.

Following the lead of surfers, business executives need to find relevant edges that will test and push their current performance. For example, companies making diesel engines and power generators should be actively engaged in finding ways to more effectively serve lower-income customers in remote rural areas of emerging economies. These demanding customers could prompt significant innovation in both product design and distribution processes in an effort to deliver greater value at lower cost. The innovations resulting from these efforts on the edge could lead to significant improvements in product lines. The wind-up computer is a good example. This computer, released in mid-2005, was the brainchild of Nicholas Negroponte of the Massachusetts Institute of Technology (MIT). Negroponte's not-for-profit group, One Laptop Per Child, in conjunction with MIT, plan to distribute up to 15 million units to children in Brazil, China, Egypt, South Africa and Thailand.[40]

Assemble innovation hothouses

Second, attract motivated groups of people to these edges to work together around challenging performance issues. In the late 1950s, Waimea Bay, on the north shore of Oahu, became the test bed for athletes seeking to push the boundaries of big-wave surfing. In the isolation of the north shore, dedicated surfers spent eight to 10 hours each day, every day, challenging themselves and each other on the big waves. The real advances in surfing technology and practices occurred at the breaks where surfers gathered and formed deep relationships over extended periods. They learned rapidly from each other and pushed each other to go to the next level.

Large companies have become very adept at establishing remote outposts in places like Beijing, Hyderabad, Haifa and St Petersburg to attract local talent and push forward challenging research and development projects. Often, though, these outposts either become disconnected from their parent companies or fail to establish deep links with other leading-edge participants in the area. The key challenge is to connect such company-owned facilities more effectively with their local environments as well as with each other

FIGURE 12.7
Six best practices of innovation

through challenging and sustained innovation initiatives that build long-term, trust-based relationships. Performance improvement generally comes first in the form of tacit knowledge that is difficult to express and communicate more broadly. People have to be there to gain access to this tacit knowledge.

Reward risk takers

Third, recognise that the people who are likely to be attracted to the edge are big risk takers. This is a key reason the edge becomes such a fertile ground for innovation. It attracts people who are not afraid to take risks and to learn from their experiences. They relentlessly seek new challenges. Executives need to be thoughtful about how to attract these people, provide them with environments to support risk taking and reward them for both successes and failures.

Celebrate diversity

Fourth, recognise that the edge fosters not just risk taking, but very different cultures that are also edgy. The advances in big-wave surfing did not come from the casual surfers but from those who developed an entire lifestyle and culture, fostered by intense and even obsessive concentration on pushing the envelope. Executives need to find ways to protect and honor these edgy cultures, whether they are inhabited by tattooed web designers or the next generation of employees who learned how to innovate as members of guilds in World of Warcraft.

Look around

Fifth, find ways to appropriate insights from adjacent disciplines and even more remote areas of activity. Early advances in surfing technology came from the aerospace industry because some of the employees in this industry were also avid surfers. Some of surfer Laird Hamilton's greatest insights came from his experiences as an expert windsurfer and his colleagues' experiences with snowboarding. By attracting diverse backgrounds and experiences to the edge, executives can foster creative breakthroughs.

Mix practitioners and developers

Sixth, bring users and developers of technology close together. It is no accident that the most innovative surfers also tended to be expert shapers of surfboards. These people not only designed surfboards but also shaped the materials into the finished product and then took them out to life-threatening breaks to test and refine them. They were relentless tinkerers, integrating experience, intuition and craft to come up with creative new boards. Technology and practice are intimately linked. Very little performance improvement comes directly out of the technology itself. It is only when seasoned practitioners engage with the technology, especially in close-knit communities, and evolve their practices to better use it, that the real performance breakthroughs occur. One of the many innovations in the world today is the multitude of imaginative ways of using mobile phone technology. This can only come about through cooperation between users and developers. The Grameen Foundation, through their Application Laboratory,[41] has developed a number of applications for the mobile phone to assist micro-businesses and health workers in developing countries, such as Uganda.

SOCIAL ENTREPRENEURSHIP: GOING GREEN

Social responsibility implies that an entity whether it is a government, corporation, organisation, or individual has a responsibility to society. **Corporate policy** is a dimension of social responsibility that refers to the position a company takes on social and political issues. **Corporate responsibility** is a dimension of social responsibility that includes everything from hiring minority workers to making safe products. **Sustainable, or 'green', IT** describes the manufacture, management, use and disposal of information technology in a way that minimises damage to the environment, which is a critical part of a corporation's responsibility. As a result, the term has many different meanings, depending on whether you are a manufacturer, manager, or user of technology. This section covers energy consumption, recycling IT equipment and greener IT.

Energy consumption

As a threat to operations and the bottom line, corporate computing's fast-growing power consumption is forcing companies to adopt green energy practices. Engineers at Hewlett-Packard made a startling realisation about the servers running the company's computing systems. Surging power consumption, along with rising energy costs, will soon make it more expensive to keep a server going for a year than to acquire one in the first place. Left unchecked, costs like these interfere with HP's goal of cutting energy consumption 15 per cent by 2010.[42]

When HP began constructing a new 4645-square-metre building to house high-powered computers, it sought advice from Pacific Gas & Electric (PG&E). By following the California power company's recommendations, HP will save US$1 million a year in power costs for that data centre alone, PG&E says.

Like HP, companies across the globe are adding equipment to keep up with surging computing needs—and then are forced to make substantial changes to curtail the leap in costs associated with running the big buildings, or data centres, housing all that gear. 'Data centres use 50 times the energy per square foot than an office [does]', said Mark Bramfitt, principal program manager at PG&E.[43] A 2008 survey conducted by IBM found that one out of two SMEs reported that energy had been their largest cost increase over the past two years. For those in the food and hospitality industry, energy was their largest cost (see Figure 12.8), with one in three companies believing their IT accounts for 10–15 per cent of their total energy costs.[44]
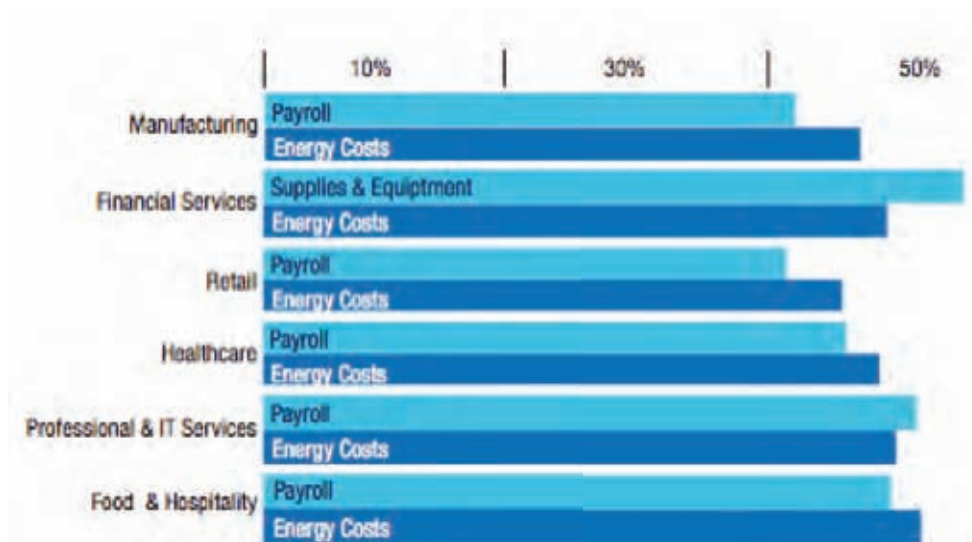
FIGURE 12.8
The rising cost of energy

Industry experts say the power consumption of data centres is doubling every five years or so, making them one of the fastest-growing drags on energy in the United States. Figure 12.9 displays data centre energy use breakdown.[45]
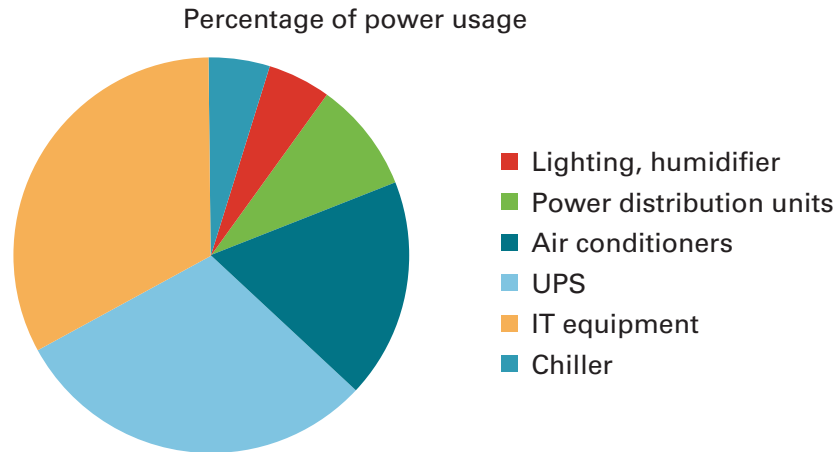
With demand for computer power exploding, energy consumption by data centres doubled between 2000 and 2006 and could double again by 2011. So the pressure is on tech companies, utilities and builders to come up with new ways of cutting energy consumption. Here are some of the ways they are responding.

Throughput computing

A decade ago, the computer chip industry had a single focus: making the digital brains of computers process data ever faster. But Sun Microsystems chip architect Marc Tremblay

FIGURE 12.9
Breakdown of power usage in the typical data centre

Percentage of power usage

- Lighting, humidifier
- Power distribution units
- Air conditioners
- UPS
- IT equipment
- Chiller

saw a fatal flaw in that strategy. Faster chips would run hotter and eventually they would burn out. So he designed what's known as a multi-core chip, which has several processors on a single sliver of silicon, each of them running cooler and sucking less energy but collectively getting more work done. He also enabled each processor to perform more than one task at a time. The processors on Sun's Niagara server computers, based on Tremblay's designs, consumed just 70 watts of power, about one-third of a conventional microprocessor.[46]

Virtualisation

It used to be possible to run only one application at a time on a given server. That meant if the application was not needed at any given time, the server just was not being used. Analysts estimate only 10 to 20 per cent of the capability of a typical server is used. **Virtualisation** is a framework of dividing the resources of a computer into multiple execution environments. Virtualisation software allows IT managers to easily load multiple programs on a single machine and move programs from one computer to another on the fly to make maximum use of a cluster of servers. This significantly reduces energy use because fewer servers are needed. Virtualisation software has been used for decades on mainframe computers, but it only became popular on PC servers recently.[47]

Smart cooling

Hewlett-Packard Research Fellow Chandrakant Patel came up with a new approach to data centre energy use: think of the data centre as one giant machine. Out of that came HP's Dynamic Smart Cooling technology. Thousands of heat sensors monitor temperatures and software directs the air-conditioning system to put the big chill on the places that need it most. Projected energy savings: 20 to 45 per cent.[48]

Alternative energy sources

Web search giant Google, which operates some of the largest data centres in the world, has committed to using cutting-edge technologies to power and cool its data centres, including wind and solar power. It's already using wind to power a data centre in the Netherlands, and there's speculation it may tap wind for a major new facility in Council Bluffs, Iowa.[49]

Biology meets chips

IBM researcher Bruno Michel and his team at IBM Zurich Research Laboratory are applying biological principles to deal with the heat problem in computing. Just as the human vascular system cools our bodies, Michel is designing devices that cool chips using liquid delivered through capillary-like circulation systems. Typically, the processors in server computers are air-cooled; chilled air is blown over metal caps on top of the chips, where tiny fins dissipate heat. One of Michel's inventions is a metal cap that fits over a processor and sprays jets of water out of 50 000 nozzles into microscopic channels etched in the metal. The channels behave like capillaries, circulating the liquid efficiently and cutting the energy required to pump the water.[50]

Government involvement

The European Union has imposed limits on carbon emissions. Since 2005, the Emission Trading Scheme has required 12 000 iron, steel, glass and power plants to buy CO_2 permits, which allows them to emit the gas into the atmosphere. If a company exceeds its limit, it can buy unused permits from other companies that have successfully cut their emissions. If they are unable to buy spare permits, however, they are fined for every excess ton of CO_2. Because IT contributes to the total carbon emissions in a company, carbon cap and trade or tax laws will impact how technology is managed.[51]

Recycle IT equipment

Sustainable IT disposal refers to the safe disposal of IT assets at the end of their life cycle. It ensures that **e-waste**, or old computer equipment, does not end up in landfill, where the toxic substances it contains can leach into groundwater, among other problems. Many of the major hardware manufacturers offer take-back programs, so IT departments do not have to take responsibility for disposal. For example, Dell and Sony will take back any of their products for free and Toshiba will take back its laptops. Apple charges a fee, but will waive it if you are purchasing a new product. HP also will charge you, but will give you a credit toward future HP purchases. Numerous countries now have laws requiring that e-waste be recycled. Zero Waste is a charitable New Zealand organisation dedicated towards 'zero waste and sustainable New Zealand'.[52] The Ark Computers[53] is another organisation leading the way in disposal of computer equipment, though they have a focus on refurbishing the computers for distribution to children in New Zealand or for the World Computer Exchange.[54]

Complying with e-waste regulations should become easier for IT managers due to new manufacturing regulations. The EU Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, which took effect on 1 July 2006, restricts the use of six hazardous materials in the manufacture

of certain electronics: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ether (the last two are flame retardants used in plastics). Such requirements reduce the toxicity of electronics and thus the e-waste they produce.[55]

Ian Kiernan, Clean Up Australia's chairman, explains that e-waste is a growing environmental concern. In fact this type of waste is growing at three times the rate of general waste in Australia. In 2006, there were 1.6 million computers in Australian landfill, with another 7.1 million in storage. Companies such as IBM have introduced a 'de-manufacture' policy to recycle, extract raw materials, refurbish or destroy computer equipment that is no longer required by their customers. Their 'green' actions have reduced the amount of assets sent to them to destroy and resulted in less than 1 per cent ending up in landfill.[56]

According to *National Geographic's The Green Guide*, 50 to 80 per cent of recycled electronics end up in developing nations, where many are disassembled by untrained workers without the proper equipment. This exposes them to toxic substances such as mercury, cadmium and lead. If the equipment is left in landfill, those same toxins end up in water sources. Australia seems to be lacking in its e-waste regulations, other than the three Rs (reduce, reuse and recycle), there has been a lack of regulatory framework in this area. However, as of late 2008, the Environment Protection Authority was developing a new regulatory framework for waste management that will involve an environmental protection policy.[57] New Zealand's e-waste regulations are similarly still in their infancy. However, companies such as Telecom New Zealand are taking the issue seriously and are working towards meeting EU regulations, at the same time as developing regulations with the Ministry of Environment.[58]

Greener IT

At Sun Microsystems, OpenWork, the company's telecommuting program, provides employees with shared office space, home equipment and subsidies for DSL and electricity, according to Dave Douglas, vice president of Eco Responsibility at Sun. More than 56 per cent of Sun's employees are currently in the program. 'In the last five years we have cut our office space by one-sixth and have saved over US$60 million a year on space and power', Douglas said. Sun also saves an estimated 29 000 tonnes of CO_2 per year due to reduced employee commuting. That is equivalent to taking 5694 cars off the road for one year, according to the EPA's carbon calculator.[59]

Dow Chemical's process control automation system will shut a plant down if it is not compliant with air and water emissions requirements. Dow also uses a monitoring system to measure the air and water emissions at its plants and is deploying an environmental reporting system to manage reporting of this data to state and federal authorities, said CIO and Chief Sustainability Officer David Kepler.

IT systems can also help save energy by controlling heat and air-conditioning in office buildings. Wireless sensors can be used to measure airflow and room occupancy. If the occupancy sensors (which turn lights on and off when people enter or leave a room) are networked to airflow sensors, the amount of air-conditioning used when people are not in

a room can be reduced, said Kepler. 'The basic idea is to collect data on how the facility is using energy and use that information to define patterns that can help change what you are doing and reduce operating costs.'

To keep up with its explosive growth, Google is building data centres off the beaten path, in places like The Dalles, Oregon; Lenoir, North Carolina; Mount Holly, South Carolina and Council Bluffs, Iowa. The Dalles, a town of about 12 000, provided the perfect location for Google, with its hydroelectric dam, affordable land and a 15-year tax incentive. An industrial-strength power grid connects the dam to Google's complex, where massive cooling systems rise above two data centre buildings. Google spends approximately US$600 million to build a major data centre, requiring a staff of 100 to 200 operate it. Figure 12.10 displays the current ways companies are choosing to go green.[60]

Respondents by Percentage
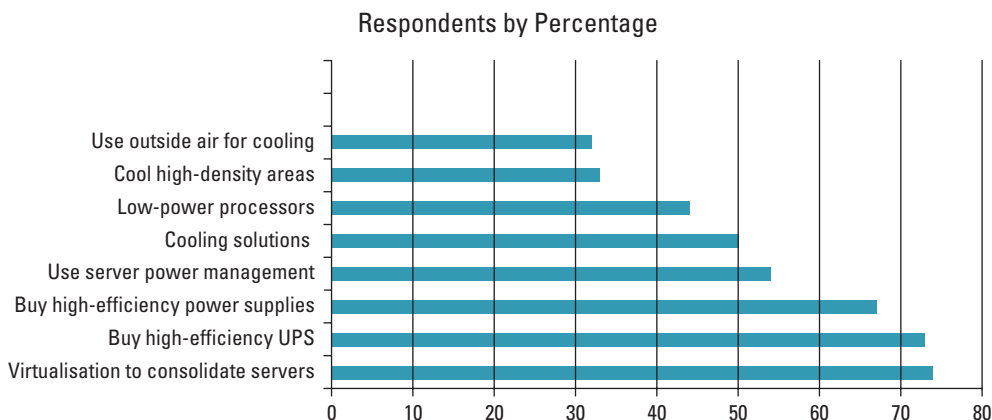
FIGURE 12.10
Ways to go green

SOCIAL NETWORKS: WHO'S WHO

Encover Chief Executive Officer Chip Overstreet was on the hunt for a new vice president for sales. He had homed in on a promising candidate and dispensed with the glowing but unsurprising remarks from references. Now it was time to dig for any dirt. So he logged on to LinkedIn, an online business network. 'I did 11 back-door checks on this guy and found people he had worked with at five of his last six companies', said Overstreet, whose firm sells and manages service contracts for manufacturers. 'It was incredibly powerful.'

So powerful, in fact, that more than a dozen sites like LinkedIn have cropped up in recent years. They are responding to a growing impulse among web users to build ties, communities and networks online, fuelling the popularity of sites such as News Corporation's MySpace. [61]

According to a March 2009 Nielsen report, two-thirds of the world's Internet population visit social networking or blogging sites, with an average of one in every 11 minutes spent online at a social networking site.[62]

Online social networking is on the increase. Social networking website MySpace. com attracted more than 114 million global visitors age 15 and older in June 2007

alone, representing a 72 per cent increase on the previous year's figures. Facebook.com experienced even stronger growth during that same time frame, jumping 270 per cent to 52.2 million visitors. Bebo.com (up 172 per cent to 18.2 million visitors) and Tagged.com (up 774 per cent to 13.2 million visitors) also increased by orders of magnitude.[63]

Corporations and smaller businesses have not embraced online business networks with nearly the same rigour as children, teenagers and young adults who have flocked to social sites. Yet companies are steadily overcoming reservations and using the sites and related technology to craft potentially powerful business tools. There are three types of social networking an organisation can implement:

> passive search;

> boomerangs;

> marketing networks.

Passive search

Recruiters at Microsoft and Starbucks, for instance, troll online networks such as LinkedIn for potential job candidates. Goldman Sachs and Deloitte run their own online alumni networks for hiring back former workers and strengthening bonds with alumni-cum-possible clients. And companies such as Intuit have created customer networks to build brand loyalty.

Many companies are wary of online networks. Executives do not have time to field the possible influx of requests from acquaintances on business networks. Employees may be dismayed to learn their workplace uses email monitoring software to help sales associates target pitches. Companies considering building online communities for advertising, branding or marketing will need to cede some degree of control over content.

None of those concerns are holding back Carmen Hudson, manager of enterprise staffing at Starbucks, who said she swears by LinkedIn. 'It's one of the best things for finding mid-level executives', she said.

The holy grail in recruiting is finding so-called passive candidates, people who are happy and productive working for other companies. LinkedIn, with its 6.7 million members, is a virtual Rolodex of these types. Hudson says she has hired three or four people as a result of connections through LinkedIn. 'We've started asking our hiring managers to sign up on LinkedIn and help introduce us to their contacts', she says. 'People have concerns about privacy, but once we explain how we use it and how careful we would be with their contacts, they're usually willing to do it.'

Boomerangs

Headhunters and human resources departments are taking note. 'LinkedIn is a tremendous tool for recruiters', said Bill Vick, the author of *LinkedIn for Recruiting*. So are sites such as Ryze, Spoke, OpenBc and Ecademy. Many companies are turning to social networks and related technology to stay in touch with former employees. Consulting firm

Deloitte strives to maintain ties with ex-workers and has had a formal alumni-relations program for years. It bolstered those efforts through using the business networking services provider SelectMinds to launch an online alumni network.

Ex-Deloitte employees can go to the site to browse 900 postings for jobs at a range of companies. They can also peruse open positions at Deloitte. The online network is an extension of an offline program that includes networking receptions and seminars.

Deloitte makes no bones about its aim to use the network to lure back some former employees, or so-called boomerangs. 'Last year, 20 per cent of our experienced hires were boomerangs', said Karen Palvisak, a national leader of alumni relations for Deloitte.

Boomerangs cost less to train than new hires and they tend to hit the ground running. As the labour market tightens, alumni become an increasingly attractive source of talent. Last year, 13 per cent of employees who had previously been made redundant were rehired by their former employers, according to a survey by Right Management Consultants of more than 14 000 displaced employees at 4900 organisations.

Marketing networks

Business-oriented networks help executives find employees, and they're increasingly useful in other areas, such as sales and marketing. When Campbell Soup Co. asked independent location booker Marilyn Jenett to select a castle in Europe for a promotion, she put a note on business networking site Ryze, offering a finder's fee to anyone who could suggest the right place.

Jenett got seven responses, including one pointing her to Eastnor Castle. She was so pleased with the location that she booked it again for another event. Jenett said Ryze also helped her develop another small business, a personal mentoring program called Feel Free to Prosper.

Social networks also help forge community with, and among, would-be customers. The RatBags web site (www.ratbags.org.au) is not only a social space for Triumph motorbike enthusiasts to plan rides, but a place to find Triumph-sponsored events, official information and a trading post for anything Triumph-related.

VIRTUAL WORLDS: IT'S A WHOLE NEW WORLD

Virtual is the theme of Web 2.0. Two primary types of virtual must be considered when looking at the twenty-first century world. This includes virtual worlds and virtual workforces. For example, the Australian Broadcasting Commission (ABC) built a virtual library for readers and librarians (www.abc.net.au/services/secondlife).

In the midst of the sprawling online virtual world Second Life, a new edifice surfaced; the digitised headquarters of *Wired* magazine on a half-hectare lot. Garish neon-pink sliding doors lead to a conference room shaped like a Shuttle PC where as many as 50 people can sit on chairs that resemble circuit breakers and watch a screen that looks like a graphics card. *Wired*, meanwhile, unveiled its building in Second Life to kick off a package of stories on the game published on 17 October 2006. The company expects to use its new

FIGURE 12.11
Second Life is the world's leading 3D virtual word environment

Have a look at ABC Island

The Librarians discussion on ABC Island

virtual building to let writers chat with one another and to host three or four virtual Q&A events a month with real-world as well as Second Life notables, says Chris Baker, senior associate editor at *Wired* magazine. 'It's kind of a toe in the water for us', he said, adding that *Wired* is also actively looking to set up in other virtual worlds as well. 'We are still not sure how to make use of this space; this is the test case.'

Wired's virtual headquarters are right next to the offices of CNET Networks, which recently unveiled its own five-storey office in Second Life. The building is an exact replica of the company's glass-and-brick headquarters in San Francisco and is set amid vast lawns overlooking Second Life's blue ocean.

Big media's land grab is well under way in Second Life, the online realm where real people, under the guise of avatars, mill and mingle and, in some cases, make a living. The game's audience, swiftly approaching 1 million, is growing at about 38 per cent month by month, according to its creator, Linden Lab. The outfit added 200 000 to 250 000 new players—many of them the coveted younger early adopters—in one month alone. 'Second Life is almost a phenomenon like YouTube, it's reached critical mass', said *Wired*'s Baker.

Like so many other companies already setting up shop in Second Life, news organisations and other media outlets do not want to be left behind. As the virtual world grows up, it will get more attractive to companies that want to send a multimedia message. 'Everyone's been searching for the killer broadband offering, and this is it', said Justin Bovington, CEO of Rivers Run Red, which helps companies like BBC Radio One create events and design buildings inside Second Life.

Companies as varied as Adidas, Sun Microsystems and Toyota want to promote their products and ensure their brands are getting exposure amid the consumers, many of
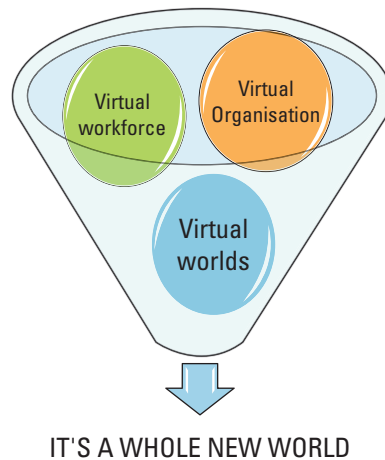
IT'S A WHOLE NEW WORLD

them young, who are spending increasingly long stretches not just on the Internet, but also immersed in virtual worlds. In-game advertising revenue in the United States was expected to rise from US$186 million in 2005 to US$875 million in 2009, according to Yankee Group.[64]

Media companies even face competition from virtual upstarts inside Second Life, including 'New World Notes' and 'SL Herald'. Reuters commissioned its longtime tech reporter, Adam Pasick, to cover Second Life full-time and act as Reuters' Second Life bureau chief. Pasick's avatar sports a green shirt, a grim businesslike expression and a press badge. One of his first stories reported on a US congressional committee's investigation of online virtual economies like Second Life and Vivendi Universal's World of Warcraft, and how virtual assets and income received in the games should be taxed.

Another Reuters story is an interview with the virtual president of Second Life's most popular bank, Ginko Financial. The Reuters site also offers a variety of market information, such as the exchange rate between the Linden dollar, a currency used in Second Life, and the US dollar. Another table tracks the number of US dollars (US$404 063, at recent count) spent by players on Second Life in the past 24 hours. 'Second Life is a really hot economy', said Pasick, who, in the game, goes under the name of Adam Reuters. 'It was a natural for Reuters.' 'Second Life offers numerous features and options for businesses, and is a canvas that allows companies to do what they want to do in Second Life', said David Fleck, Linden's vice president of marketing. The following are a few examples of how businesses are using Second Life to compete in the global economy.[65]

Sun Microsystems

Sun Microsystems held a Second Life press conference with John Gage, chief scientist at Sun. The company created an area called Sun Pavilion, where a video blog of all of Sun's activities will be streamed. There were 60 avatars at the press conference—in Second Life terms, that's a full house.[66]

Warner Bros. Records

Warner Bros. promoted singer Regina Spektor's fourth album, *Begin to Hope*, by building a chic Manhattan loft within Second Life. As Spektor's music played, the loft's lighting and décor changed to roughly illustrate the song lyrics—a new marketing experience that was part video game, part music video.[67]

The Australian Broadcasting Commission (ABC)

ABC Island in Second Life is a dynamic and distinctively Australian destination providing visitors with opportunities to design, create and showcase objects, discover a hidden underground music club, listen to Indigenous stories, wander round an environmentally friendly eco house, experience ABC audio and video in a social environment and attend live screenings and concerts.[68]

Lego

Lego regularly visits university and corporate campuses to host events where new types of robots are built using Lego's popular Mindstorm Robotics Inventions kits. Recently, Lego hosted one such Big Robot on Campus gathering in Second Life, drawing robot makers from different locales to meet in cyberspace.[69]

Adidas

Adidas is working on selling virtual gym shoes in Second Life. The company hopes to test-market styles before rolling them out in the real world, tracking which colour combos or designs prove popular among Second Lifers.[70]

Pharmatopia

A consortium of universities has developed a Virtual Practice Environment (VPE) in Second Life for virtual learning in pharmacy-related content. The VPE provides a dynamic, flexible and adaptable space that can be configured to create a sense of immersion for students in a variety of healthcare and practice settings.[71]

Dartmouth College

Educational institutions such as Dartmouth College in the US are increasingly becoming a presence in the virtual world. In a Second Life version of Hanover, New Hampshire, where Dartmouth is located, the school's Institute for Security Technology Studies conducts emergency-response exercises in the virtual space.[72]

Virtual workforce

Sunday morning and Tuesday afternoon are becoming completely the same, said KLM Chief Information Officer Boet Kreiken. At the same time, employees throughout organisations are becoming much more comfortable with a range of technologies.

In years past, employees might have had only a PC at home. Today they may juggle a network linking several PCs, printers and backup devices connected to a high-speed Internet connection—in addition to a set-top box, gaming console, high-definition TV and all manner of other web-based services such as Facebook, Twitter, YouTube and

News Corporation's MySpace. The benefits for businesses include lower costs and greater productivity, but figuring out how to communicate with off-site employees is crucial.

Traffic surrounding Microsoft headquarters in Redmond, Washington, has become so congested that Washington State Governor Chris Gregoire nearly missed a 9 am speech at the company's main campus. Roads leading to the software maker simply were not designed to handle the 35 000 commuters who report for work there each day. The gridlock that greeted Gregoire was just the latest reminder that Microsoft needs to tackle its commuter crisis—and quickly.

Microsoft has embarked on a program aimed at getting more employees to work from home and other off-site locales, joining the growing ranks of companies to catch the virtual-workplace wave. About 17 per cent of the US workforce in 2009 was expected to get its job done at a home office more than two days per week, said Charlie Grantham, executive producer of consulting firm Work Design Collaborative. That is up from 11 per cent in 2004.[73]

Letting employees work from outside the office keeps cars off the road, plus the practice can foster employee retention, boost worker productivity and slash real estate costs. At IBM, about 42 per cent of the company's 330 000 employees work on the road, from home or at a client location, saving the computer company about US$100 million in real estate-related expenses a year.

For all the benefits of freeing workers from the office, drawbacks abound. First, not everyone wants to leave. Some fear they will step off the corporate ladder, while others need a busy environment to stay productive. Some managers are reluctant to scatter employees because keeping tabs on a virtual workforce can be harder than managing those close at hand. Some virtual workers can feel lonely, isolated or deprived of vital training and mentoring. And communication breakdowns can impede innovation, trust, job satisfaction and performance.

Obstacles like these have prompted IBM, Sun Microsystems and other companies to seek a host of creative solutions to the problems that virtual work presents. Some turn to a combination of mobile devices, email, instant messaging and collaboration software to help colleagues stay in touch.

Tools for the virtual workforce

Mobility and wireless capabilities are the tools of the virtual workforce and include:

> **Mobile commerce (m-commerce)**, the ability to purchase goods and services through a wireless Internet-enabled device.

> **Telematics**, the blending of computers and wireless telecommunications technologies with the goal of efficiently conveying information over vast networks to improve business operations. The most notable example of telematics may be the Internet itself, since it depends on a number of computer networks connected globally through telecommunication devices.

> **Electronic tagging**, a technique for identifying and tracking assets and individuals via technologies such as radio frequency identification and smart cards.

Other companies, including Microsoft, Adobe and Lotus Corporation, also specialise in online conferencing and collaboration software that makes it easier for people in different locations to work together and conduct meetings. At Groove Networks, the company set a policy that if one person was participating virtually in a meeting, then everyone would sit in their offices and the entire meeting would be virtual, ensuring everyone was on a level playing field. Another way to bridge the physical distance is to provide a worker with the tools needed to stay connected to colleagues.

For the virtual worker, a laptop, high-speed Internet access and a personal digital assistant or mobile phone are required. But some companies go an extra mile to outfit virtual employees. IBM provides a universal messaging service that lets executives give a single phone number to clients and colleagues. The service then forwards calls to wherever that executive might be located, at home, on a mobile phone or in a so-called e-mobility centre, one of the temporary offices set up by IBM in locations around the world. Patrick Boyle, director of health care and life-sciences sales at IBM, spends about half his time travelling, working from taxis, airport lounges, planes and coffee shops. He is also a frequent user of e-mobility centres and considers headsets an essential tool of the trade.

Case Study

Globalisation—Australia takes on the world!

5 Discuss how the Long Tall Clothing Company celebrates diversity in their approach to doing business across the world.

6 All of these companies are twenty-first century companies which exhibit one or more of the characteristics discussed in this section. Analyse each company to discover which they are.

7 Explain how any or all of the companies mentioned in the opening case study could use social networking to increase their market penetration and hence sales.

8 What difference does it make to any of these companies that they are situated in Australia? Are there any distinct advantages or disadvantages?

SUMMARY OF KEY THEMES

Whether you aspire to be an entrepreneur, manager, or other type of business leader, it is increasingly important to think globally in planning your career. As this chapter points out, global markets offer many opportunities yet are laced with significant challenges and complexities including cultural, political and geoeconomic issues, such as:

> global business strategies;

> global enterprise architectures;

> global information issues;

> global systems development.

Developing a global business perspective will help you reap the potential of global markets. New trends for the twenty-first century include:

> innovation: finding new;

> social entrepreneurship: going green;

> social networks: who's who;

> virtual worlds: it's a whole new world.

🐝 Business Link One

Tata's Nano US$2500 Car

The announcement by Tata Motors of its newest car, the Nano, priced at US$2500, was revealing on many levels. The announcement generated extensive coverage and commentary, but just about everyone missed the Nano's real significance, which goes far beyond the car itself.

At about US$2500 retail, the Nano is the most inexpensive car in the world. Its closest competitor, the Maruti 800, made in India by Maruti Udyog, sells for roughly twice as much. To put this in perspective, the price of the entire Nano car is roughly equivalent to the price of a DVD player option in a luxury Western car. The low price point has left other auto companies scrambling to catch up.

Thinking outside the patent box

How could Tata Motors make a car so inexpensively? It started by looking at everything from scratch, applying what some analysts have described as 'Gandhian engineering' principles—deep frugality with a willingness to challenge conventional wisdom. A lot of features that Western consumers take for granted—air-conditioning, power brakes, radios, etc.—are missing from the entry-level model.

More fundamentally, the engineers worked to do more with less. The car is smaller in overall dimensions than the Maruti, but it offers about 20 per cent more seating capacity as a result of design choices such as putting the wheels at the extreme edges of the car. The Nano is also much lighter than comparable models as a result of efforts to reduce the amount of steel in the car (including the use of an aluminum engine) and the use of lightweight steel where possible. The car currently meets all Indian emission, pollution and safety standards, though it only attains a maximum speed of about 100 kilometres per hour. The fuel efficiency is attractive—4.7 litres per 100 kilometres.

Hearing all this, many Western executives doubt that this new car represents real innovation. Too often, when they think of innovation, they focus on product innovation using breakthrough technologies; often, specifically, on patents. Tata Motors has filed for 34 patents associated with the design of the Nano, which contrasts with the roughly 280 patents awarded to General Motors (GM) every year. Admittedly that figure tallies all of GM's research efforts, but if innovation is measured only in terms of patents, no wonder the Nano is not of much interest to Western executives. Measuring progress solely by patent creation misses a key dimension of innovation: some of the most valuable innovations take existing, patented components and remix them in ways that more effectively serve the needs of large numbers of customers.

A modular design revolution

But even this broader perspective fails to capture other significant dimensions of innovation. In fact, Tata Motors itself did not draw a lot of attention to what is perhaps

the most innovative aspect of the Nano: its modular design. The Nano is constructed of components that can be built and shipped separately to be assembled in a variety of locations. In effect, the Nano is being sold in kits that are distributed, assembled and serviced by local entrepreneurs. As Ratan Tata, chairman of the Tata group of companies, observed in an interview with *The Times* of London: 'A bunch of entrepreneurs could establish an assembly operation and Tata Motors would train their people, would oversee their quality assurance and they would become satellite assembly operations for us. So we would create entrepreneurs across the country that would produce the car. We would produce the mass items and ship it to them as kits. That is my idea of dispersing wealth. The service person would be like an insurance agent who would be trained, have a cell phone and scooter and would be assigned to a set of customers.'

In fact, Tata envisions going even further, providing the tools for local mechanics to assemble the car in existing garages, or even in new garages created to cater to remote rural customers. With the exception of Manjeet Kripalani, *BusinessWeek*'s India bureau chief, few have focused on this breakthrough element of the Nano innovation.

This is part of a broader pattern of innovation emerging in India in a variety of markets, ranging from diesel engines and agricultural products to financial services. While most of the companies pursuing this type of innovation are Indian, the US engineering firm Cummins (CMI) demonstrates that Western companies can also harness this approach and apply it effectively. In 2000 Cummins designed innovative 'gensets' (generation sets) to enter the lower end of the power generator market in India. These modular sets were explicitly designed to lower distribution costs and make it easy for distributors and customers to tailor the product for highly variable customer environments. Using this approach, Cummins captured a leading position in the Indian market and now actively exports these new products to Africa, Latin America and the Middle East.

Lessons executives should learn

What are the broader lessons that Western executives should learn from this innovation story? Emerging markets are a fertile ground for innovation. The challenge of reaching dispersed, low-income consumers in emerging markets often spurs significant innovation. Western executives should be careful about compartmentalising the impact of these innovations on the edge of the global economy. These innovations will become the basis for 'attacker' strategies that can be used to challenge incumbents in more developed economies. What is initially on the edge soon comes to the core. Several lessons executives should learn are:

> Find ways to help customers and others on the edge to tinker with your products. Modular and open product designs help engage large numbers of motivated users in tailoring and pushing the performance boundaries of your products, leading to significant insight into unmet customer needs and creative approaches to addressing those needs.

> › Pay attention to institutional innovation. Western executives often become too narrowly focused on product or process innovation. Far higher returns may come from investing in institutional innovation—redefining the roles and relationships that bring together independent entities to deliver more value to the market. Tata is innovating in all three dimensions simultaneously.

> › Rethink distribution models. In our relentless quest for operating efficiency, we have gone for more standardisation and fewer business partners in our efforts to reach customers. As customers gain more power, they will demand more tailoring and value-added service to meet their needs. Companies that innovate on this dimension are likely to be richly rewarded.[74]

Questions

1 How can cultural and political issues affect Tata Motor's Nano car?

2 How would governance and compliance affect Tata Motors?

3 Identify the different global system development issues Tata Motors might encounter as it deploys its Nano.

4 How did Tata Motors use innovation to develop the Nano?

5 How could Tata Motors use social networking to increase business?

6 How could Tata Motors use virtual worlds such as Second Life to improve operations and increase sales?

Business Link Two

Collective innovation

Open innovation has been a hot management phrase for the past five years. So far, though, these collaborations have generally been focused on small-scale research and development or on technology ventures between giant global brands and smaller partners. Think Procter & Gamble's collaborations with universities and suppliers or IBM's embrace of an open-source software language that both saves the company money and provides it with a new revenue stream.

But what if you brought together design heads from some of the world's biggest global brands with the aim of stimulating innovation? That was the premise of the fifth annual Raymond conference in Rotterdam, attended by 17 design managers from companies as diverse as Heineken, Philips, Lego, Airbus and Hewlett-Packard. Designers

are accustomed to working with external consultants and customers, but Raymond's aim is different: fostering co-operation between design teams at big global companies in radically different markets.

The conference is the brainchild of two Dutch design companies: Park Advanced Design Management and Eden, an interactive-experience design firm. Tired of attending crowded conferences dominated by endless speeches, they decided to start an invitation-only event where designers from non-competing companies could freely share ideas with the aim of finding new ways to get more and better products out faster.

'Everyone talks about open innovation, but the design department is the place within a company most open to doing it', said Tim Selders, Raymond co-founder and Park director. Designers, especially those involved in corporate branding and product or service design, are accustomed to working with external partners and customers. 'It's about finding new ways for companies to share design processes, resources and tools', Selders said.

An imaginary global firm

A recent Raymond conference followed an unusual format that led to some surprising insights and even a few potential commercial collaborations. Holed up together in a room for nearly two days, the attendees were asked to imagine they were part of a new global design company called design-Inc.com, with a team of some 1200 designers.

Their mission, they were informed in a video presentation by the unseen 'Raymond' (think Charlie from *Charlie's Angels*), was to deliver the best, fastest and most inexpensive design solutions for a broad range of businesses across a variety of industries: medical, retail, toys, sports equipment and clothing.

To do this, they had to figure out how to motivate staff to keep innovation fresh, which design tools and processes to use, how to benchmark their performance and how to share knowledge of trends, materials and technologies among designers. 'Although we're all from different backgrounds and industries, we all face similar problems and we all have different ways of solving them', said Loe Limpens, a design manager for Dutch supermarket chain Albert Heijn.

The spirit of a collective company

The process worked by asking six designers at a time to sit around a fictitious boardroom table to throw around ideas on how the new company would operate. Each board member was asked to contribute to the discussion on the three broad themes. While the participants brought their own experience to the exercise, the idea was to shed their own backgrounds in the spirit of creating a new company that would benefit from their collective expertise.

The experience got designers to break free from their own corporate silos and look at their businesses from another industry's perspective. So Clive Grinyer, director of product design at Orange France Telecom, was able to get designers from fashion retailer Mexx to see the mobile phone as more than just a fashion accessory. Instead of thinking in terms of a

designer-branded phone, he said, a mobile phone company such as Orange could provide a fashion brand with access to a customer blog on street fashion, for instance, enabling both companies to get more detailed consumer insight from a target customer group. 'These kinds of ideas may not pan out, but it's a great test-bed for innovation', Grinyer said.

On the second day of Raymond, designers created a marketplace, taking turns manning their own stalls, where they listed what they were willing to give another designer and what they would like to receive. Philippe Picaud, head of design at French sports retailer Decathlon, invited designers from other companies such as Lego and high-end stroller manufacturer Bugaboo to visit his team (comprising 120 designers) in Lille to get a closer look at the company's internal design processes—including sharing some of the key metrics and processes he uses internally to measure design effectiveness. 'These tools show design's added value to management, but they also act as an education tool for designers to better understand a company's values and what measurements drive management', Picaud said.

Picaud has used design to help transform Decathlon from a retailer that sold other sporting brands such as Nike and Adidas to a company where 60 per cent of sales now come from Decathlon's 15 private-label brands. He'd like to send some of his designers to other companies on short-term exchanges. These, he said, 'are a way for my team to get new ideas and develop new ways of dealing with various design problems'.

Design-led companies such as Decathlon and Lego boast an impressive track record of innovation. But even they believe opening up their studios to other companies has real potential benefits. Lego's design director, Torsten Bjorn, plans to visit some of the design departments of companies that were at Raymond with the aim of seeing how they integrate different design functions. 'We all have different cultures and processes, and sharing our experience can inspire you to think and work in a different way', he said.

Stretching the mind of design

It's a point of view shared by most of the participants. Orange's Grinyer offered to share online branding tools with designers from other industries. 'When Orange and France Telecom's broadband provider Wanadoo came together we learned how to control 20 different websites within 20 different countries', he said. In exchange, Grinyer 'bought' knowledge of Picaud's design metrics system. 'This way I can go back and show management just how valuable my website tools are', he joked.

For others, such as Trevor Withell, director of innovation for Bugaboo, the main benefit of this open innovation exchange was discovering new ways to motivate his design team. 'For designers, motivation isn't all about money', he said. He thinks the best way to keep designers motivated and innovation flowing is to open them up to new ideas and experiences. So he planned to send one of his head designers to a totally different type of company, such as a heavy engineering firm, to 'really stretch the mind'.

While Raymond reinforced the almost unlimited potential of open innovation in design, participants conceded the concept is not without challenges. As James

Woudhuysen, professor of forecasting and innovation at De Montfort University in Leicester, England—who acted as an adviser at the event—points out, such ventures take time, money and management commitment to develop and can lead to disputes about intellectual property. Still, Raymond showed open innovation is possible. 'Getting 17 of the world's top corporate design directors in one room around a program of collaboration rather than egoism is already an achievement', Woudhuysen said. 'To get, within two days, six agreements for pairs of design directors to embark on common projects is an even bigger success.'[75]

Questions

1   Explain how the six best practices of innovation work at the Raymond conference.

2   How could social networking influence innovation?

3   How could innovation help create new forms of green IT?

4   How could a virtual world help innovation?

5   How could virtual workforces take advantage of innovation to create new products?

6   What ethical issues might a company find when pursing innovation?

7   If you were running a global innovation initiative what global issues might you encounter?

Business Link Three

Confusing carbon

Revised and updated by Peter Blakey, Massey University

To help shoppers make green choices, companies are slapping carbon labels on products. But even if the public can interpret the information, will it help reduce greenhouse gas emissions?

Next time you are in a shoe store, pick up a pair of clogs or leather walking shoes from Timberland. Inside, right by the heel, you will find a single number that tells you how 'green' the shoe is. This number is explained in a card in the shoe box that provides a 0 to 10 carbon rating. A zero means less than 2.5 kilograms of carbon and other greenhouse gases were emitted when the shoe was produced and shipped. And a 10? That is a whopping 100 kilograms, roughly equal to the carbon released if you drive a car 386 kilometres.

There is a simple premise behind the new labelling. Everyday activities, whether making pancakes or jetting across the sky, are linked to the combustion of fuel, which

releases gases that contribute to global warming. Timberland believes climate-conscious shoppers will buy shoes that help them cut their carbon count. And those same customers will feel more loyal to the brand because Timberland respects their wishes. Sixty different Timberland products sport such numbers. They reflect both the 'carbon footprint' of the shoes and other factors, such as the quantities of harmful chemicals used to make them. By 2010, Timberland plans to put the labels on all its shoes and clothing and other companies are set to follow its lead. The goal, said Timberland CEO Jeffrey Swartz, is 'to arm consumers with as much information as we can'.

But will shoppers really be able to interpret such information? And even if the tags catch on, will they make a difference in reducing greenhouse gases?

Experts are divided on these questions. Climate scholars point out that it is almost impossible to distil into a single number the intricacies of carbon chemistry, manufacturing processes, supply chains—and how they all affect global warming. And the very idea of doing so is controversial. UK-based Tesco, the world's third-largest retailer, has announced plans to make public how much carbon is released in the production, transport and consumption of all 70 000 products on its supermarket shelves. The plan immediately drew howls of protests from manufacturers, who thought the burden of measuring emissions would land on their shoulders. Global environmental groups declared labels a distraction from more important corporate efforts to improve energy efficiency. Shoppers, meanwhile, seemed confused by the first such tags that appeared on store shelves, except when they were part of a larger education campaign. 'It requires leadership, commitment and pressure to make something like this happen', said Edgar Blanco, a research associate at the Massachusetts Institute of Technology who has studied carbon labels. 'The truth is, no one knows how to educate consumers about this, or how it will work.' The sceptics certainly have a point. Yet many shoppers are eager to understand how their own activities affect the environment. In a survey last summer by AccountAbility, a non-profit that advises corporations and governments on sustainable business practices, nearly half of 2734 US and British consumers polled said they wanted to know which products caused the least harm.

Pioneers like Tesco understand they are in the midst of a Europe-wide crackdown on greenhouse gas emissions and that if they don't act on reducing carbon, they could get slammed with punitive regulations. Since 2005 major carbon emitters such as power plants and oil refineries within the European Union have been forced to curtail greenhouse gases. A climate change bill will make Britain the first country in the world to introduce legally binding CO_2 reduction targets. The new law, aimed at lowering Britain's emissions 20 per cent by 2010, will extend the cap on carbon to large, non-energy-intensive businesses such as retailers, hotel chains and banks. Retailer Marks & Spencer, for one, has an ambitious plan to become carbon-neutral and send zero waste to landfills by 2012.

Carbon labels were a logical outgrowth of the crackdown on greenhouse gases, which is also playing out across the US. Timberland, for example, is pushing other shoemakers to

agree on an industry standard. But companies heading down this path might learn from the challenges encountered by the pioneers.

The highest hurdle is simply obtaining an accurate carbon count on different goods, a laborious process that may initially cost $10 000 or more per item. In most countries, each manufacturer figures out for itself how to gather the data that become the number on the label. Britain is trying to hash out a national standard for measuring the greenhouse gas associated with each product and service, working with the Carbon Trust, a government-funded non-profit. That should bring down the cost of counting carbon over time.

Even with a standard, counting can involve mind-boggling complexity. Unilever, a top supplier of household products to Tesco, operates 260 factories in 70 countries and works with more than 10 000 subcontractors. With a supply chain like that, even labelling a line of packaged noodles is a chore. Say Unilever decides to shift production of the noodles from Poland to South Wales to save money. Because of fuel consumption and other factors, that change has a big impact on the carbon tally, even though the same recipe is used. Unilever worries that Tesco may ask it to recalculate the carbon footprint for such products each time it moves production, which might be as often as once a week. If asked, 'we couldn't do it', said Gavin Neath, Unilever's senior vice president for global corporate responsibility. 'Our supply chain is constantly changing.'

Tesco admits there are difficulties to work out. Said David North, Tesco's director of government affairs, 'We have to bring suppliers with us on this journey. It is early days'. Once the labels are in place, companies find, it's hard to tell if consumers get the point. In a survey PepsiCo commissioned from researchers Populus, half of the 1000 people interviewed said they were more likely to buy a product with a carbon label. But such numbers, while well-intentioned, may not convey much. 'What does it mean to say a bag of chips contains 75 grams of carbon?' asks Steve Howard, CEO of the Climate Group in London. 'I have a PhD in environmental physics and it doesn't mean a thing to me.'

There's another complication in labelling products: by focusing consumers' attention on this one issue, the retailer risks undercutting other store programs that are also socially responsible. When Tesco unveiled its carbon program, as an interim step it put little plane stickers on products that were air-freighted, to alert shoppers that more fuel was burned in transport than for goods shipped by boat or truck. That prompted protests from governments of developing countries, including Uganda and Kenya, which felt Tesco's plans unfairly punished producers there. 'The moment consumers looked at this sticker, they would stigmatise those products', said Abraham Barno, agricultural attaché at Kenya's embassy in Britain. Tesco has promised to work with developing countries to promote their products.

Despite the controversy surrounding labelling and the challenges in counting the carbon, defenders say there are big side-benefits. In times of US$100-per-barrel oil, most companies want to be more energy efficient and calculating a carbon footprint is one of the best ways to find where energy is wasted in the production and distribution network.[76]

Questions

1   How can companies help reduce carbon emissions?

2   How can finding alternative energy sources help reduce IT energy consumption?

3   How can labelling IT equipment green help promote green initiatives?

4   Why do global organisations need to be concerned with green or social entrepreneurship initiatives?

5   What ethical issues are associated with green technology?

Making Business Decisions

1. Transforming an organisation

Your college has asked you to help develop a proposal for a new training course titled 'Building a twenty-first century organisation.' Use the materials in this text, the Internet and any other resources to outline the content that you would suggest the course cover. Be sure to include your reasons why the material should be covered and the order in which it should be covered.

2. Buying green

You have recently been hired by Exclusive Recycling, an IT recycling company. The company is paid to pick up organisational IT equipment and safely dispose of the waste. After working for the company for a few weeks you realise that the company does not dispose of the majority of the equipment, instead it fixes or upgrades the equipment and then sells it on eBay. The firms paying to have their IT equipment recycled are not aware of this practice. Do you believe Exclusive Recycling is acting ethically? Why or why not?

3. Running the glove

Running IT is a collaborative social networking site for runners. It has tremendous success in the United States and has over 10 million members who use the site to pick runs, find running partners, register for marathons, discuss apparel and so on. Running IT has hired you to help develop global websites in Oceania (Australia and New Zealand), Europe and Asia. What advice do you have for Running IT when it comes to expanding globally?

4. Building alternatives

IBM plans to invest US$1 billion a year in products and services that will help reduce IT power consumption in data centres. By using new techniques, within the next three years IBM plans to double the computing capacity of its data centres—more than 743 000 square metres

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worldwide—without increasing power consumption. Explain why all organisations should be interested in similar plans.

Apply Your Knowledge

1. Connecting Components

Components of a solid enterprise architecture include everything from documentation to business concepts to software and hardware. Deciding which components to implement and how to implement them can be a challenge. New IT components are released daily and business needs continually change. An enterprise architecture that meets your organisation's needs today may not meet those needs tomorrow. Building an enterprise architecture that is scalable, flexible, available, accessible and reliable is key to your organisation's success.

Project Focus

You are the enterprise architect of a large clothing company called Xedous. You are responsible for developing the initial enterprise architecture. Create a list of questions you will need answered to develop your architecture. Below are examples of a few questions you might ask.

> What are the company's growth expectations?
> Will systems be able to handle additional users?
> How long will information be stored in the systems?
> How much customer history must be stored?
> What are the organisation's business hours?
> What are the organisation's backup requirements?

2. Virtually there

Virtual Emma is the nickname of Emma Pascoe, an executive assistant at CSL who works in Melbourne, even though she's physically located in Sydney. Emma uses a so-called tele-presence system, which provides real-time video-conferencing on 165-centimetre high-definition plasma screens. A life-sized screen that shows her working at her desk 1000 kilometres away in Sydney now sits in her cubicle in Melbourne. But she can see and interact with her boss, Senior Vice President Martin De Beer, and co-workers say it's almost like she's really there. Although these systems cost upwards of $100 000 today, another five to 10 years of chip and Internet connection price (and speed) improvements could make systems like this common—and further erode the geographical limitations of any job that doesn't absolutely require physical presence.

Project Focus

Virtual Emma is the first of many uses for the tele-presence system. You have been hired by First Corporation as the vice president of new business and your boss, Mark Wallburg, has asked you to develop other uses for tele-presence systems. Be sure to compile your ideas in a PowerPoint presentation highlighting your ideas, including pictures or diagrams indicating how the system will work and look.

3. Virtual work

Nearly every business that wants to look remotely hip is opening an outlet in Second Life, the online virtual world where people can interact via computer-generated avatars, or graphic representations of themselves. But a few companies are starting to go further, taking real work, not just marketing, into these strange new worlds.

Project Focus

LivingLive is a start-up consulting company specialising in virtual worlds. You are a new employee and your boss would like you to spend a few hours familiarising yourself with virtual worlds and how businesses are competing in this new environment. Search the Internet and find several examples of current companies that are using virtual worlds in new and exciting ways to promote, change and enhance business.

4.Experimenting virtually

Virtual worlds like Second Life are not just for games. Companies are experimenting with virtual environments for everything from training exercises, to meeting spaces for remote workers and university education.

Project Focus

Industry analysts and developers of virtual worlds believe that by immersing users in an interactive environment that allows for social interactions, virtual worlds have the potential to succeed where other collaborative technologies, like teleconferencing, have failed. Phone-based meetings begin and end abruptly. In a virtual world, conversations between employees can continue within the virtual space—just like they do in company hallways after a meeting ends. Explain the value added by using a virtual world for interactive demonstrations and training. What other businesses in the twenty-first century could use virtual worlds for demonstrations and training?

5. IT gets its say

CIOs need to speak good business language to sell IT's strategic benefits. It is no secret that the most successful companies today are the ones that deliver the right products and services faster, more efficiently, more securely and more cost-effectively than their competitors, and the key to that is a practical implementation of enterprise technology to improve business performance. IT executives and managers therefore must speak the languages of business to articulate how technology can solve business problems.

Project Focus

CIOs of tomorrow will focus on a number of changing dynamics: enabling the business to grow versus just optimising performance; saying yes instead of no; allowing open innovation rather than closed, traditional research and development practices; creating a culture of strategic growth and innovation; and empowering the customer to make decisions that drive a heightened value proposition for both the customer and supplier. You have been charged with creating a slogan for your company that explains the correlation of business and IT. A few examples include:

> IT should no longer be viewed as just an enabler of somebody else's business strategy.

> The distinction between technology and business is antediluvian—it's gone.

Create a slogan that you can use to explain to your employees the importance of business and IT.

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