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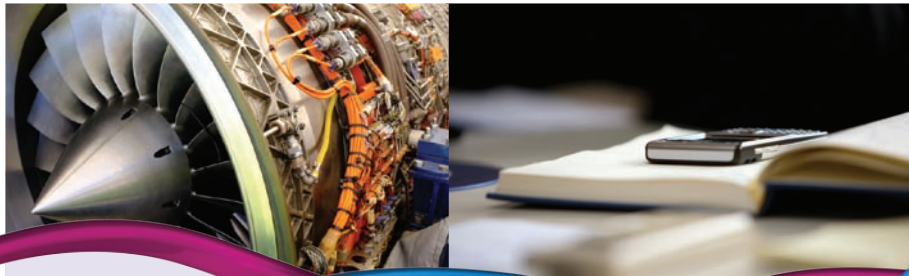

Innovation in technology-based companies: reinventing the business ecosystem

A summary of a meeting organised by the Royal Academy of Engineering

19 July 2012 at 3 Carlton House Terrace, London SW1Y 5DG

Innovation in technology-based companies: reinventing the business ecosystem

This report is a summary of proceedings of a meeting organised by the Royal Academy of Engineering in July 2012. The meeting was attended by members of the professional engineering institutions, Fellows of the Royal Academy of Engineering and representatives of industry, government and other relevant organisations. The report reflects the discussions that took place at this meeting, but it should be noted that while the conclusions and recommendations reflect the majority opinion, they do not necessarily represent the policies of the organisations involved.

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Foreword

Innovation in business processes by technology-focused companies is transforming the way that they, and their partners across the business ecosystem, operate. On 19 July 2012, the Royal Academy of Engineering invited representatives from industry and academia to debate how innovation is changing the face of business and to identify ways in which UK firms can build on the country's strong track record of engineering innovation.

Leading business academics and senior managers of technology-based companies discussed the latest theories on business innovation, illustrated by up-to-date examples of how leading firms have adapted their business models to stay competitive.

Sir John Parker GBE FREng, President of the Royal Academy of Engineering, chaired the event, which drew out the following common themes and widely acknowledged conditions for successful business innovation:

- Understanding where innovation comes from and the underlying reasons for customer behaviour are key to improving business processes and adapting to change
- The use of technologies such as sensors and sophisticated data processing provides companies with the tools to understand customers, thereby improving products and services at a quicker pace than ever before

- The most successful organisations embed innovation in all parts of the business chain (for example, sometimes the most effective ideas come from people at the customer frontline and this is often forgotten when investing heavily in research and development centres)
- Emerging economies are not just competitors for UK plc; they are also a source of talent, investment and markets for UK companies. Collaboration should continue to be encouraged
- For any of the above to happen it is crucial to recognise the role of leadership in setting a vision, set of values, culture and ambition
- Ultimately, technology-based companies are part of a wider system and it is important to look at all parts of the system in order to provide the best products and services.

Leading business academics speaking at the meeting were Professor Tim Baines, Professor of Operations Strategy, Aston Business School; Professor Dr Ivanka Visjnic, Business Models Research Lead, Cambridge Service Alliance and Professor Simon Collinson, Professor of International Business and Innovation and Director of Research for School of International Business and Strategy, Henley Business School.

Speakers from leading technology companies were Jeni Mundy FREng, Director, Products and Innovation, Vodafone Global Enterprise; James Baker, Managing Director, BAE Systems Advanced Technology Centre and Paul Martynenko, Vice President and Technical Executive, IBM Europe.

This event was part of a series on innovation, which also includes innovation in construction, automotive technologies and biomedical engineering.

One of the UK government's key priorities is to rebalance the economy and manufacturing is vital to this aim.

Operations strategy: systems engineering and servitization in the business process for technology-based companies

As presented by Professor Tim Baines
Professor of Operations Strategy, Aston Business School

Innovation has been taking place in the manufacturing industry for many years. One of the UK government's key priorities is to rebalance the economy and manufacturing is vital to this aim. Manufacturers themselves are using services to balance their own economies.

Being part of a balanced economy is not only about manufacturing products. Rebalancing the economy is about improving industry, which includes providing both products and services. It is important for industry to take a more holistic approach and to work across barriers.

Servitization

Servitization is the adoption of a services-led approach to manufacturing and the process through which it is achieved.

All manufacturing companies provide services in some way or another, but at different levels:

- Base level: the product and spare parts. All manufacturers provide these services to an extent.
- Intermediate level: scheduled maintenance, repair, overhaul, in-field service. This is about exploiting the production-based competencies of the manufacturer.
- Advanced level: includes risk and revenue-sharing with clients or creating revenue through the use of contracts and subcontracts.

Servitization isn't new to manufacturing. Some of the earliest examples were seen in the 1880s; however, it was Rolls-Royce and their 'Power by the Hour' services pioneered in the 1960s that popularised it. Rolls-Royce now earns close to 50 per cent of its revenue through services. It is only recently that academics have begun to further explore how manufacturing companies can compete through services.

There are many different models of servitization, which make it a complex concept. Questions often asked include:

- Is servitization a new concept?
- Does servitization simply mean adding services to products?
- Are products only a platform for delivering services?
- Does servitization mean relinquishing manufacturing activities?
- Is servitization all about information and communication technologies?
- Can servitization generate greater revenues and profits for the manufacturer?

Professor Baines has been working with Caterpillar and Alstom trains, who, among others, use servitization to improve their businesses. His research has found that:

- Servitization is not necessarily about new business models. Business models might be new to a particular manufacturing company but they are not necessarily new business models for the industry.
- In servitization, the competitor of the manufacturer can often become the customer; for example Alstom took over maintenance repair projects on its trains that were previously carried out by British Rail.
- Financial outcomes are not simple. The revenue of a manufacturer generally increases by taking on services the customer may previously have carried out; however, it tends to decrease as more complex services are provided.
- The ultimate aim when most companies invest in servitization is delivering capability. If they don't provide the capability there will be severe penalties for example Alstom are fined £600 per minute for each train delayed.
- The most successful companies provide solutions rather than products.

It is important to recognise that demand and supply of services are parts of a manufacturing system. Services should not be viewed in isolation.

Characteristics of a traditional factory without active service provision (based on the Ford production system):

- Centralisation
- Integration
- Focus on planning and control of material flow
- Emphasis on cost, quality and delivery of products
- Organisation: staff who are technically excellent, analytical and dependable
- Reactivity, for example to demands for after-sales support.

Characteristics of a service delivery system implemented by a manufacturer:

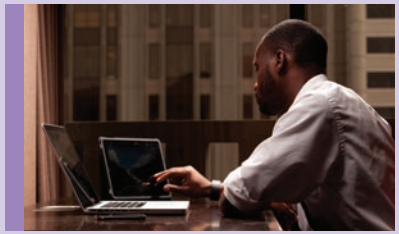
- Facilities that are co-located and distributed for example Alstom has moved its facilities from one central location to six bases around the UK.
- Vertically integrated within supply chains – such as a policy of internally sourcing manufactured products ranging from computer systems to coffee machines
- Exploiting ICT for remote asset monitoring, for example, analysis of data to improve products and services

- Business and manufacturing processes that are proactive and integrated with customers
- Performance measurement systems replicating those of customers (that the customers would use in their own processes)
- Staff that are service-centric, flexible, skilled in relationships and resilient.

Factors involved in the process of servitization will come together as part of a complex system. We now know that:

- Well established examples of servitization do exist.
- To succeed the manufacturer needs to view itself as a services provider.
- The product platform is critically important. Services are essential to sell the product for example smart phones and tablet computers need the apps that make them successful products.
- Servitization is key to generating great products. A manufacturer servicing a product, is able to design and redesign it to ensure that issues associated with the product do not continue.
- Servitization can generate greater profits, though they decrease as a proportion of revenue if the whole system is not in place to push those lines of servitization and its benefits back into the system.
- ICT is key, but only as a component in a tightly integrated system.

Aston Business School is now working with 400 SMEs to help them create servitisation systems and help their business journey.



Case study: how high-tech firm Vodafone has continued to innovate its business model

As presented by Jeni Mundy FREng
Director, Products and Innovation, Vodafone Global Enterprise

The economic imperative

In 2008, around US $30 trillion was lost in economic value to the world due to the economic crash. When a change like that happens, businesses will be affected in areas that may not have previously been explored.

In 2012, businesses are still feeling the pressure. As a result new business models have begun to appear, with businesses taking advantage of emerging technologies and establishing businesses in different ways.

The balance of growth is shifting in a number of different areas, particularly towards Asia and emerging economies, where there is much more activity than in Western economies. Now more than ever, if businesses want to compete in the global marketplace, they need to continue to drive their costs down while continuing to grow their business and deliver a better product or service at a lower cost.

Generational imperative

In the next few years a new generation of skilled workers is set to arrive on the world market from emerging economies.

The new working generation coming through will not expect to work in the same way the current and previous working generations did. 'Generation flux' will want many things done differently: for example, the nine-to-five working day will soon be history and already is so in many companies; flexible working will be commonplace as will working a "whole life" instead of "nine-to-five" then life outside work.

"The future is still so much bigger than the past."
Sir Tim Berners-Lee FREng

The era of super-mobility

People are talking less, yet communicating more than ever. The average length of the phone call has halved since 2007. Meanwhile, the world has seen a dramatic increase in the use of text, social networking and email.

In 2011, combined shipments of mobile and tablet devices overtook those of desktop computers. By 2015, mobile internet will connect 15 billion devices and 2.5 billion people around the world and an estimated 1.3 billion mobile workers will work remotely. We are now in an era of super-mobility and mobile working is increasingly becoming a normal trend.

Machine to machine connection

The era of super-mobility is not only about connecting people; it is also about machine to machine communication (connecting 'things') and there is a value in that connectivity for businesses. The value of machine-to-machine generated business is predicted to be worth €750 billion by 2020 with around 2.3 billion wireless machine-to-machine connections expected around the world by this point.

Using mobile machine-to-machine technology, BMW is connecting cars to communicate and support the driver. Sensors monitor all things happening in the car. If there is a problem, the car will inform BMW and communicate that there is a problem; if there's an accident the car will inform BMW who in turn will contact emergency services. The real-time information that comes from machine-to-machine communication is essential to modern supply chains. For example, Rolls-Royce would need to have the correct parts available as well as the data behind an engine malfunction in Singapore before the engine arrives for emergency servicing in Sydney .

Some capabilities like machine-to-machine communication can be exploited in different ways in different countries; the underlying capability is transferable but deployment and application of the data generated differ.

Opportunities of super-mobility?

Mobile health technologies (m-Health) will result in better patient care and help to keep an ageing population out of hospitals. For example, patients could post health diaries to a portal on the web, giving the exact information their GP needs to know. The GP can then access this information and take action outside the home if needed. M-Health can be a simple but very powerful technology.

A new "technocracy" will result. The new generation of workers have different expectations of mobility and being able to use the tools they already have for example "I've got this great piece of technology at home or in my bag, I should be able to use it for work." Businesses need to be prepared to be flexible but will find an equilibrium between staff behaviour and business goals. There will be a stronger focus on output rather than particular hours and places.

The communications industry providing the tools to help businesses

Mobile technology and its tools will help cut costs for businesses and provide tools to help them grow sustainably. Vodafone sees it as vital to its own business to help other businesses cut costs through its technology, providing them with the tools to grow sustainably and be more productive.

> Mobile technology and its tools will help cut costs for businesses and provide tools to help them grow sustainably.

1Net

Vodafone has targeted its 1Net service to SMEs, particularly those which are mobile by definition, such as plumbers, through connecting fixed landlines to mobile lines. This has resulted in businesses making more orders per month simply because they can answer their phone with customers dialling a landline but reaching the proprietor anytime and anywhere. Customers are more encouraged to dial a fixed local line rather than a mobile or 0800 number. With 1Net they are able to dial a local line and reach the business no matter where they are. So far, 1.8 million users across Europe are using services like 1Net, resulting in increased revenue of around €1 billion per year.

The internet, which led to the digitalisation of many key services, has revolutionised retail, travel and tourism, finance, communication and more recently education, healthcare, government and public services.

Innovating the business model to compete in the world of complex services

As presented by Dr Ivanka Visnjic
Business Models Research Lead, Cambridge Service Alliance

The Cambridge Service Alliance is a partnership of Cambridge University, BAE Systems, IBM and Caterpillar. They aim to promote research on complex service systems in the area of business models, service support and engineering along with information and analytics. The partners involved have a collective interest in understanding better the future for complex services. Dr Visnjic's research is on how service providers use business model innovation to deliver sustainable growth.

Technology

The case for the role of technology in services is easy to make.

The way we obtain key services has changed drastically over the last 10 -15 years. The internet, which led to the digitalisation of many key services, has revolutionised retail, travel and tourism, finance, communication and more recently education, healthcare, government and public services. The question still remains about how this technology is helpful in complex service sectors such as utilities, transportation, aerospace and defence.

The case for innovation in complex services had been made by the more recent trend of instrumentalisation of services. Sensors, mobile phones and digital cameras have been used to monitor services and help to change the way that we anticipate their delivery, as well as to help them be delivered more effectively.

In 2001 there were 60 million transistors for every one person; in 2010 there were approximately one billion transistors per person helping to create a wealth of data that can improve products and services through better knowledge of their use.

Organisations that operate as part of a wider system, sharing knowledge and partnering with others, are seen to be more successful in an increasingly global marketplace. It has been said that companies which operate as part of that system, rather than as individual units, contribute much more to the economy.

Becoming a complex service provider

The Cambridge Service Alliance recently reviewed 12 companies, two from each of the following sectors: rail, utilities, defence, the public sector, IT and professional services, to identify commonalities within and across sectors.

Observations from the Cambridge Service Alliance suggest that companies who operated in more of an "ecosystem" were more likely to innovate and create value. This was led by increased use of ICT which leads to greater coordination with others and more demand for customisation and specialised solutions for clients.

Cambridge Service Alliance found that irrespective of differences, all 12 service providers have been through the same three basic business model changes:

1 Extension of the value proposition (service portfolio, length of services, the value of what can be expected by the customer) is a result of the customer becoming more demanding and companies becoming more collaborative with their customers
2 Innovation of the value of delivery: once the service provider moves from basic services, such as ad-hoc maintenance, to something more complex, it has a better grasp over the value delivery systems and how best that service can be delivered
3 Once the service provider becomes responsible for a more diverse set of services it sees the opening up of the value delivery system (the end to end system that collaborates to deliver value to customers) as one service provider cannot be responsible for the delivery of all services within the system.

Less apparent is the risk involved in the process of extending the value proposition and partnering with others in the value delivery system to provide a complex service.

All companies went through a challenging transition to providing services. They went from a world of products, outputs, transactions, suppliers and elements to complex models that included providing solutions, outcomes, relationships, network partners and business ecosystems. They found that services are not easy to scale, the costs are high and profit margins will be compressed; that services often involve long-term commitment and performance-based contracts; and that they were most successful when multiple parties cooperated to ensure delivery of the services involved.

One of the most important factors in service innovation was that companies found their business became more about understanding underlying customer needs and finding the best way to meet them. By looking at the underlying need, companies look beyond their core competencies to other parts of the wider service.

Result-oriented services

The Cambridge Service Alliance has seen a rise in what is known as result-oriented services. This is when companies take on more collaboration with external partners and providers to offer services outside their initial service offering.

A result-oriented service model generally involves moving from services as processes to services as outcomes. There is a large amount of operational, performance and financial risk involved.

Complex service provider example: rail industry

Customer expectations are increasingly encouraging the train manufacturers to become the train solution providers- to own the train, to provide maintenance, depot development, train painting (through external parties) and so on. This creates opportunities to create value for the train manufacturer. For example, once the service provider has control over maintenance it is able to gather data from the process of maintenance to improve the performance of the train.

Some level of partnership is required with external parties in order to provide this complex service. For example, a train solution provider needs to partner with construction engineering company to develop a depot where he will service the trains.

In order to become accountable for train availability for an extended period of time (eg 20 years), the provider has to take the risk that partners will be able to deliver on time and that finances will remain stable, that the trains, in their right number, are delivered on time and that the train operator who no longer owns the train is incentivised to keep the train in good condition.

Case study: "To remain competitive, we need to innovate a new way of doing business"

As presented by James Baker
Managing Director - BAE Systems Advanced Technology Centre

BAE Systems operates in the defence and aerospace sector. Its aim is to deliver world-leading capability to the Armed Forces. Its Advanced Technology Centre has a yearly turnover of approximately £45 million, has over 370 employees and relationships with more than 60 academic institutions.

For BAE Systems, much of its technology is not necessarily new; the business models associated with a product pull it through to market.

A Type 45 Destroyer (warship) is a system in itself. It has immense capability, designed and manufactured over many years with development on a global scale. Many inventions and innovations are included within a Type 45 Destroyer. They cannot be exported and only six will be procured in the UK.

Defence technology typically operates in a closed innovation model. Due to current economic conditions, the industry needs to embrace technology and new ideas within a global supply chain. Being part of a wider business ecosystem is about partnership and collaboration.

BAE Systems' current business model is about doing things in new or different ways through collaborating on common problems to identify common solutions. There are many people outside the organisation in other companies who are able to help BAE Systems innovate, for example, Dyson or Proctor and Gamble.

Open innovation is about the utilisation of skilled workers across the global supply chain. There is a need to forge genuine and beneficial relationships across industries, markets, SMEs and academia.

To meet challenges in a troubled economic climate, companies need to drive pace, be agile and quick to respond to change.

Wildcat is an advanced autonomous technology development vehicle. The technology behind Wildcat has been in existence for a long time. Scientists spent five years developing and creating the vehicle for defence purposes. It has since been handed over to Oxford University to use as a testbed for continued research into robotics and driverless cars.

BAE Systems has invested heavily in service innovation. For example, with the Typhoon Jet, the customer wanted it to be in service rather than to receive spare parts to repair the engine as going back to base to do so was often not an option when troops needed to complete their mission.

Technology partnerships – BAE Systems and UK Sport

BAE Systems has partnered with UK Sport to provide technical engineering support to UK sporting activities. The partnership looked to understand what athletes do and how they operate, then build or adapt technology to work with that base.

UK Sport wanted Amy Williams to excel in Vancouver's 2010 Winter Olympics and began to review the way she and other athletes use the skeleton bobsleigh. The bobsleigh was traditionally made and welded using conventional materials and manufacturing. BAE Systems looked at the human element involved in the sport and changed how the bobsleigh was manufactured through applying what they learned. Williams went on to break the world record by 0.5 of a second. Applying defence-based technology and academic research created the improved bobsleigh.

Williams' skeleton bobsleigh was an example of using diversity of thought to pull different ideas together and use these to make impact and difference. Technology that came from aerospace and defence, working with academia, helped Amy Williams to win the gold medal. BAE Systems have acknowledged that while they have contributed towards UK sporting success, it is crucial to prioritise the brilliant athlete and the team behind them.

> Due to current economic conditions, the industry needs to embrace technology and new ideas within a global supply chain, being part of a wider business ecosystem is about partnership and collaboration.

> ...400 emerging cities will generate nearly 40% of global growth by 2025...

The impact of global value chains and what the UK can learn from developing markets

As presented by Professor Simon Collinson
Professor of International Business and Innovation and Director of Research for School of International Business and Strategy, Henley Business School

Global value chains and emerging economies provide new market opportunities and sources for future competitors for UK companies. It is important to remember that and the UK has centuries of experience of operating in a diverse global marketplace.

Geography and innovation

There has been an immense shift in the location of innovation towards emerging economies. This is commensurate with the input of talent, knowledge, expertise and the acknowledgement that these economies are evolving and present significant market opportunities. It is no longer about lower production costs.

According to McKinsey and Co, 400 emerging cities will generate nearly 40% of global growth by 2025 (McKinsey Global Institute, 'Urban world: mapping the economic power of cities' March 2011). It is important to remember that these economies have readily available skilled talent.

Key challenges for British firms operating in the global marketplace are:

- To reposition within global value chains
- To develop complementarities with competitors
- To internationalise more: UK firms are very international but need to continue to seek new markets.

Local for local and local for global: locally driven innovation in developing markets

The term 'local for local' is about responding to differences in demand needs and being able to respond quickly to those.

Professor Collinson studied 20 of the world's largest multinational firms (such as Vodafone, Rolls-Royce and GlaxoSmithKline) that currently have bases in China and how they have improved their innovation with joint venture partners in China. He found that companies were learning from new markets to innovate differently. For example, Caterpillar was not able to use its traditional business model in China as there was no market for its premium product, which came with a finance scheme to allow it to be purchased with a loan. Most excavators in China are bought with cash; therefore there was little appetite for Caterpillar's business model. Caterpillar changed the products it was marketing in China to ones that were lower cost without a finance scheme attached, thereby changing its business model entirely to succeed in the Chinese market.

Ensuring the geography of the innovation is correct means:

1 Configuring the products and services (price, level of quality, features) to specific markets and consumers
2 Gaining access to inputs (knowledge and expertise, talent, creativity, from the best locations, thereby balancing cost and quality
3 Structuring the multinational organisation to connect (1) and (2)
4 Continually adapting the above factors (1), (2) and (3) in response to changing competitive opportunities and threats. The challenge is to manage input and output adaptively, responsively.

"Frugal innovation responds to limitations in resources, whether financial, material or institutional and, using a range of methods, turns these constraints into an advantage. Through minimising the use of resources in development, production and delivery, or by leveraging them in new ways, frugal innovation results in dramatically lower cost products and services. Successful frugal innovations are not only low cost, but outperform the alternative, and can be made available at a large scale."

Nesta, 'Our frugal future: Lessons from India's innovation system', July 2012.

Frugal innovation

Innovation in the global marketplace is not always about devising the best technology. Frugal innovation is on the increase with the rise in emerging markets. It is not necessarily about low cost but innovation that is fit for purpose and which meets the needs of the market it is provided for.

Some types of innovation are more appropriate to certain contexts and this has been particularly true for frugal innovation. We are seeing a resurgence of what was termed 'appropriate technology' in the 1970s, a type of product or component built in a way that is situated well within low cost markets.

GE healthcare in India employs thousands of people and exports frugal innovation solutions from there. The GE Mac 400 ultra-portable ECG machine, for example, is lightweight, battery-operated and therefore ideal for rural areas in India. GE is continually producing products made in India that are exported as frugal innovation solutions to other markets.

Some organisations have found it useful to adopt thinking behind frugal innovation when thinking about the customer needs when looking at value. It is about understanding what the real need is, then fitting the technologies and collaborations together to do that.

Foreign Direct Investment

Nine out of ten cars made in the UK are now exported. Facts like this make the UK more attractive to inward investment and remain vital to our economic health.

We are seeing a change in the foreign direct investors that are investing in UK companies. Traditional investment partners were American, French and German but they are now more likely to be Brazilian, Chinese or Indian. Investment in research and development has increased dramatically. The new investors are not looking to employ labour. The new wave of investors is looking to acquire techniques and ownership of technologies (tap into our capability), then to produce them in their own economies.

"A nation's technological competitiveness determines its place and future in international competition."

PRC President Hu Jintao (speech in 2010)

Why are Chinese firms investing more in Europe?

In the six months to the end of March 2011, Chinese businesses invested close to $64.3bn in Europe through acquisitions, trade deals and loan agreements; more than double the amount over the previous 11 quarters (Financial Times, 26/4/2011).

Their strategic aims are to move up the value chain, transfer technology and know-how back to China (resource seeking) and seek new markets through capturing European customer bases.

What are the implications for the UK?

- China is making strategic acquisitions in engineering and manufacturing: machinery, technology, materials and specialised components, along with expertise.
- There may be less employment in UK manufacturing as Chinese firms are able to tap into a large labour force in China.

In 2005 IBM stopped producing PCs and in the process of overhauling its business model, acquired 130 other companies over the last 10 years.

Case study: How a business can continue to evolve in an increasingly globalised world

As presented by Paul Martynenko
Vice President and Technical Executive, IBM in Europe

You have to invest in local talent to achieve strong local business.

Globalisation is an excellent way of finding out who your next leaders and competition will be.

IBM is truly global. It has more than 400,000 staff spread across more than 170 countries.

IBM is engaging new clients and new markets. It held a Smarter Cities conference in Berlin which hosted 340 reps from 130 cities in 30 countries, discussing better ways of delivering energy, education, and transport to cities. This event was followed by conferences in New York City, Ho Chi Minh City, and nearly 100 smaller conferences around the world in different nations. Focused on smart cities, participants found that by 2050 70% of the world's population will live in cities, with a projected 37 mega cities by 2025, and all will be competing for intelligence, wealth creators, and differentiation.

The organisation is continually adapting to changes in the marketplace in an industry where the time from innovation to commoditisation is very short. It recognised that in order to compete at the global scale it operates on, IBM needed to move continually up the value chain with the right innovation and skills in place.

In 2005 IBM stopped producing PCs and in the process of overhauling its business model, acquired 130 other companies over the last 10 years. To expand alongside the growth markets IBM decided to focus on three key product delivery areas: smarter

planet, business analytics, and cloud computing. The company continually seeks to create higher value solutions, ranging from smarter analytics software to fraud detection software.

Growth in emerging markets

Some economists say that the growth markets are the biggest thing to happen to the world economy since the industrial revolution.

Growth in emerging economies is not about low labour costs. IBM views its employees, no matter where they are based, as highly capable and well-trained and recognises that the company needs to make the best use of their talent in order to achieve substantial returns on investment.

The company has built new research labs in Australia, China, India and Brazil along with a smart cities research centre based in Dublin (their investment is not only in growth markets).

The company is resourced through a globally integrated enterprise. Previously, it acted as separate companies with their own vertical systems (HR, finance etc), now it has been turned into one corporation that has horizontal systems, easily able to move centres to be flexible eg their global HR systems are managed from one centre rather than in each base.

It sources industry skills from where they are in most supply and has new global delivery centres sourced out of Argentina and Costa Rica. It is continually attempting to anticipate the ease with which it can change the manufacturing lines and place them at a better cost, taking services and placing them in the right place with the right skills; thereby turning enterprise into a globally integrated enterprise.

If organisations want to take part in growth markets, ideally they should invest there. Through sharing services, integrated support processes and integrated operating models, IBM is not just taking what it can from growth markets, but also supporting them through having the same access to the same services anywhere in the world.

Branch office in a box

IBM transformed the company's intranet into a social networking site. More than 400,000 staff, spread all over the world, can't easily meet in person but with a robust online platform this doesn't matter. It resulted in interconnected skills being connected to the rest of the world.

To streamline its services, IBM went from 128 CIOs to one, 155 data centres to five, 16,000 applications to 4,500. This required rigorous control, management and pursuit, and used IBM equipment to virtualise its IT.

Leadership of such a large and diverse population can't be done by one person. IBM acknowledged that the company can't allow each country base to make their own decisions. It needed themes, global orientation, and engagement with the professional. Through IBM's values every IBM-er is dedicated to every client's success along with innovation that matters to their company and the world, incorporating trust and personal responsibility in all relationships.

It doesn't matter where the skills are based as they can now be accessed anywhere within IBM. This gives IBM's professionals the opportunity to play in different markets, talk to different markets and contribute to different societies.

Through IBM's values every IBM-er is dedicated to every client's success along with innovation that matters to their company and the world, incorporating trust and personal responsibility in all relationships.

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