A new convergence?

Information technology, management and business services

Working document

version 1.0 30 Dec 2005

Prepared by Andrew Bibby
andrew@andrewbibby.com

Introduction

"I am a strategy consultant and I know nothing about hardware and software".

This quote, from a Financial Times article published in late 2005[1], would be unremarkable were it not for one crucial fact: that the member of staff to whom the remark is attributed works for IBM.

The question, therefore, is an obvious one. What is the company which has embodied the history of the IT industry for so long doing employing someone (no doubt on a very good salary) who is happy to admit to being technologically ignorant?

The answer to this riddle – or at least the answer offered by IBM – goes to the heart of the issues investigated in this background report. The suggestion is that the IT industry is undergoing a transformation which is turning it, step by step, into something rather different from what it was in the past, so that increasingly what were once 'IT companies' recreate themselves as 'business services companies'.

If this argument is accepted, a growing number of professional workers in IT will increasingly be undertaking work closely resembling the work being undertaken by professional workers in non-IT companies. There will be, effectively, a form of convergence between companies with an IT background and those offering business consultancy services of other kinds.

The IT industry has certainly changed fundamentally in the past. At one stage, the big prizes were to be had for companies engaged in hardware design and manufacture. This changed, as hardware became increasingly mass-produced and commoditised, and the emphasis shifted to software. The rise of Microsoft symbolised this era. More recently, the emphasis has shifted again, as IT companies increasingly generate income from delivering services – everything from advising companies on what software and hardware they require, planning and implementing the technological fixes necessary, to providing technical support when things go wrong.

When IBM says, therefore, that it is “fundamentally different from what it was a few years ago”[2] it is in part simply reflecting the widespread changes which the whole IT sector have experienced.

However IBM is claiming something more than this. It maintains not only that services will become an increasingly important part of its revenue stream in the years ahead, but that the services it delivers will move away from being IT-focused. The technology will become simply the mechanism for delivering business needs, not an end in itself.

For IBM, there are “new opportunities [which] involve doing new kinds of work for clients – work that is deeper and more complex, and for which traditional IT companies have not typically competed”[3]. Much of its current business strategy (on which its acquisitions and disposals policy is based, and its human resources policy towards its existing workforce) is predicated on this conviction.

The issue to consider is the extent to which IBM’s strategy really does represent the future of the IT sector. All companies like to claim, as the popular American business jargon puts it, to be ‘thinking out of the box’ but is it the case that IT companies need literally to think *beyond* the box? To what extent can we really expect the future of IT companies to be in the delivery of business services, rather than in the supply of hardware and software? This report will attempt to consider the evidence.

IBM – a new paradigm for IT companies?

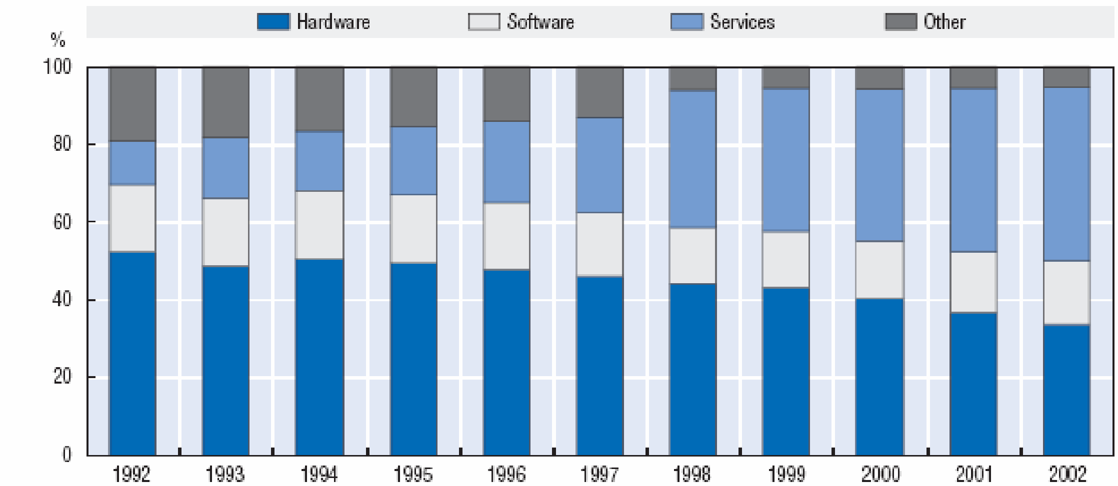
It is worth beginning by looking a little more closely at IBM.

Two recent events can be said to have symbolic status as indicators of IBM's current strategy. The first of these was the acquisition by the company in 2002 of the consultancy wing of the international accountancy company PricewaterhouseCoopers. PwC Consulting had been the world's largest professional services business. In IBM's own words, it brought 'bedrock business and industry expertise' to the company's portfolio of technology skills[4].

The second event was the sale in 2004-5 of the company's Personal Computing division to the Chinese company Lenovo. With this move IBM shed itself of what had once been a major part of its IT business, indeed a strategic area which had helped the company survive the shift from mainframe computing a decade earlier.

The PwC Consulting acquisition and Lenovo disposal are part of a broader process of restructuring which has seen IBM buy 38 companies in the past five years and also dispose of its hard disc drives, displays and memory chips businesses. IBM's CEO Sam Palmisano talks of the need for "constant reinvention of the base business". He has recently claimed "We have essentially created a new services business around a set of technology assets"[5].

In fact, this process of change has been under way at IBM for a lengthy period of time. The OECD has pointed out that, although IBM is still officially classified by the US Securities Exchange Commission as a business producing 'Computer and office equipment', the importance of hardware has declined considerably over the past decade. At the same time, the contribution which services makes to total revenue has increased in ten years from only about 10% to approaching 50%. The following table, which shows IBM revenue from hardware, software, services and other sales for the years 1992 to 2002, is taken from the OECD Information Technology Outlook report for 2004.



Source: OECD, compiled from annual reports and SEC filings.

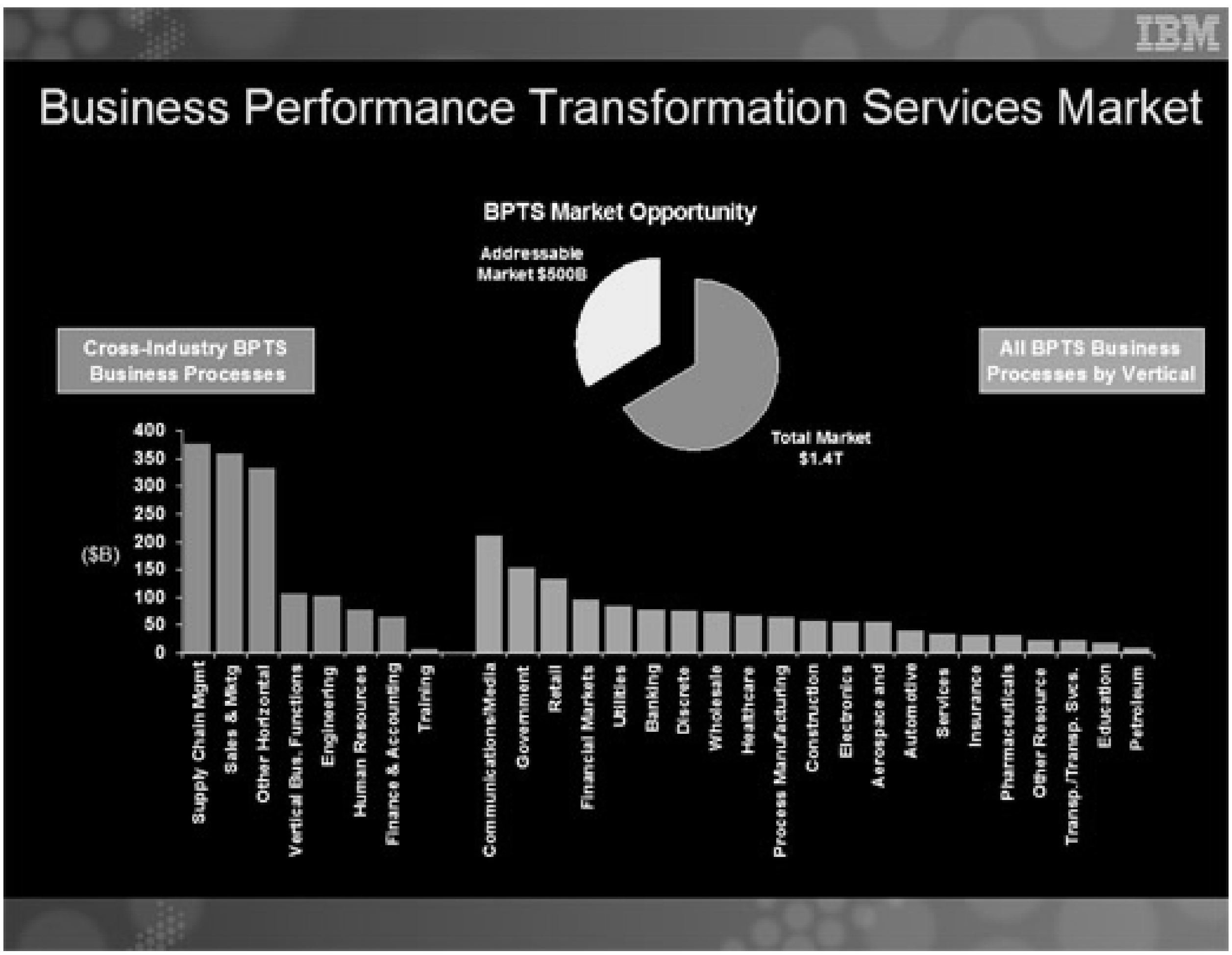
IBM's present strategy has been spelled out by the company on numerous occasions in the past two or three years, but nowhere more comprehensively than in the glossy brochure for investors which IBM produced in 2004 entitled *Understanding Our Company.* (The fact that IBM rather curiously called this document a 'prospectus', the term normally used in relation to share issues in new companies, suggests the importance it was trying to attach to it). The theme of this report is, as the introduction puts it, the "significant growth opportunities beyond the traditional IT industry" which IBM hopes to take advantage of. The report continues:

"These new opportunities lie in what the world's companies and institutions spend on sales, general and administrative costs (SG&A), as well as some costs of goods sold, and research and development (R&D). Industry analyst IDC estimates that companies spend $23.6 trillion on these business processes annually. Of that $1.4 trillion is currently being spent with third parties…

"Some of that $1.4 trillion is in areas such as supply chain management, engineering design services, human resource management, after-sales services and customer care, business operations and processes that are critically dependent on information technology, or that can be radically transformed and improved through the application of IT…

“Within this $1.4 trillion marketplace, we see opportunity in excess of $500 billion that can be addressed by both IT and non-IT companies – provided they have the right combination of expertise, advanced technology and the ability to deliver both with adequate scale.”

IBM has labelled the areas of company operations where it is hoping to intervene as ‘business performance transformation services’ which it defines as “the application of technology to transform a client’s business processes and, in some cases, operate those processes for them”.   It has identified supply chain management and sales/marketing as the two most important areas. It has also claimed that the communications/media sector, government and the retail industry are the most valuable sectors[6].



At present, revenue from BPTS-type work comes in to IBM in one of four ways, from its delivery of strategy and change consulting services, from the provision of software for business performance management, from engineering and technology services, and finally from outsourcing deals (‘business transformation outsourcing’). IBM says that this BPTS work is growing in revenue by about 45% a year at present. On the other hand, in 2004 it comprised only about $3 billion of the $46 billion which the company earns from what it calls Global Services and of the overall company revenue of $96 billion.[7] Despite the rhetoric, therefore, it is worth remembering that at present many other parts of IBM’s operations are much more important to its overall business.

IBM's strategy and the general IT sector

IBM's decision to develop its business consultancy capability through the acquisition of PwC Consulting is not unique among IT companies. Before IBM, the most notable example was Capgemini's acquisition in 2000 of the consultancy arm of another international accountancy company, Ernst and Young.

Moving in the other direction, from traditional consultancy towards IT, has been Accenture, formerly the consulting wing of ill-fated Arthur Andersen. Accenture has developed its competencies in the IT arena and can now claim to be operating, at least in part, within the broad IT sector.

EDS has also brought in management consultancy expertise, in its case through the take over of the long-established US-based management consultancy company A T Kearney as long ago as 1995. (Nevertheless, the story here is rather different, since A T Kearney is currently planning to separate itself from its parent IT company to recreate itself once again as a partner-owned consultancy.)

On a more modest scale, Novell owns the global management consultancy Celerant, though the subsidiary is encouraged to operate relatively autonomously. ACS recently announced its intention of acquiring the HR consulting and outsourcing business from Mellon Financial Corp.

One step down from full-scale acquisitions of consultancy companies have been the establishment of strategic alliances and partnerships between IT companies and professional business service companies. One example is CSC's alliance with HR specialist Aon, to strengthen the two companies' share of the market in HR business process outsourcing. In a similar agreement, EDS has established Excellerate HRO as a partnership with Towers Perrin, again with the HR outsourcing business in view.

The large number of mergers and acquisitions recently within the IT sector is seen by analysts as a trend likely to continue. IDC, for example, sees this as directly linked to attempts by IT companies to position themselves for a changed future, one where clients are looking for business transformation rather than simply for IT tools. “The consolidation and restructuring isn’t done,” it suggested in its predictions for the industry for 2006[8].

IDC certainly appears to share with IBM its belief that the IT industry is in the middle of a major period of transformation, with companies trying to seek growth beyond traditional IT product and services markets by offering high-value business services[9]. IDC identifies IBM as the prime example of this trend, but also mentions Accenture, ACS, CSC, EDS and HP among others as following a similar path.

IDC also identifies some of the risks inherent in this strategy:

“Attempting to cross over from IT products and services leadership to business service leadership is a high-risk, high-reward strategy… Picking the right segments and entry strategies is among the highest-risk business decisions. Risks also lie in the high costs required to develop business process expertise and operating capabilities, as well as the challenge of transforming a strong technology brand into a credible business services brand…

“The development of a broad range of business services – done at a scale that has a chance of success – is a bet-the-company type of decision[10].”

Nevertheless, IDC clearly believes this is a correct strategy: “It is a necessary one to provide the larger IT suppliers with good growth ‘headroom’ for the next decade and beyond,” it concludes.

To be successful in this strategy, however, IT firms have to persuade client and potential client companies of two things: firstly, that they are in need of ‘business performance transformation’ and secondly that they should look to firms who have made their reputations as IT specialists for this broader business consultancy. Perhaps not surprisingly, a considerable number of IT firms have tried to develop an extensive new language and research framework to support this new role.

IBM, as well as the term ‘business performance transformation services’, talks of ‘on demand’ business, to suggest the sort of progressive company which knows the value of buying BPTS advice. IBM’s 2004 annual report includes the following (somewhat esoteric) explanation of the phrase: “IBM defines an on demand business as an enterprise whose business processes are responsive to any demand, opportunity or threat; integrated end-to-end across the company; and capable of integrating fluidly across extended business ecosystems of partners, suppliers and clients”[11].

Other IT companies use their own terms. HP, for example, has come up with the term ‘adaptive enterprise’ (“business and IT synchronized to capitalize on change”[12]). EDS talks of the ‘agile enterprise’. CSC prefers to discuss companies who practise ‘result-driven computing’. Definitions may vary slightly, but the principle behind this rhetoric is the same: these are the cutting-edge companies which know how to anticipate the future (and who, in the process, appreciate the assistance of IT-backed business consultancy).

One other aspect of IBM’s current strategy deserves a mention, and this is the emphasis which it places on open source software and non-proprietary standards as a means to achieve its declared goals. IBM claims that the IT industry, in moving towards open standards, is engaged in a radical departure from past practice; it also claims that companies which innovate using open standards are advantaged over rivals which continue to use proprietary standards[13].

Given the fact that IBM lost software dominance to Microsoft early in the PC era, such an approach might seem predictable. However, it is interesting that IDC seems to share a similar perspective. IDC’s predictions for the IT industry in 2006 suggest that community-based innovations based on open source software (and particularly on Web-delivered services) are likely to become increasingly important for market leadership. IT companies that insist on going it alone with their own standards will suffer, it argues.[14]

Business outsourcing

Changes in the IT sector have to be considered in conjunction with the current significant business interest in outsourcing, since the two are closely linked.

The use of outsourcing in an operational context has been a feature of business life for very many years. To give a somewhat flippant example, few companies choose to employ their own window cleaners. However in recent years many aspects of a business which were previously carried out automatically in-house have increasingly been subject to pressure to outsource.

Conventionally, outsourcing is supposed to work by identifying non-core components of one business which constitute the core business of other companies, who are therefore better suited to undertaking these tasks. The aim is tactical, the objective being usually to bring about cost savings and to improve business efficiency.

IT provision has been one area of business where outsourcing has, of course, been particularly strongly developed, and the IT sector has long experience of negotiating arrangements with client companies who want to outsource their IT hardware, software and systems to a specialist technology company

Recently, there has been a trend to move beyond tactical outsourcing towards something altogether more fundamental, addressing the underlying way that the business is structured. It is this new emphasis on strategic outsourcing of major business processes which is particularly attractive to IT companies. The opportunity appears to be opening up to deliver not just the technological tools but also the full business expertise to run significant areas of a business previously handled in-house.

Various names have been given to describe this type of strategic outsourcing. Capgemini, for example, likes to talk about ‘transformational outsourcing’. The company has set out the claimed differences between traditional and ‘transformational’ outsourcing as follows[15]

Traditional outsourcing	Transformational outsourcing
Tactical	Strategic
Operational focus	Business focus
Focus on cutting costs	Focus on creating value
Impose control	Manage uncertainty
Objective is to offload non-core functions	Objective is a business change

Capgemini could also have added a further distinction: the extra revenue which can be generated from higher-value consultancy-linked transformational outsourcing.

Despite the neatness of this sort of schema, however, it is not easy to know to what extent business is really being tempted towards transformational outsourcing arrangements. In practice, the lines are blurred and even large business process outsourcing (BPO) deals tend to be strongly driven by the desire by companies to save costs rather than any wish to see their business structures re-engineered. Furthermore, whilst the theoretical case for 'transformational outsourcing' can appear plausible the practical implementation of such a strategy raises a host of difficult questions. Given the sometimes uneasy relationship between client and supplier in relatively small-scale tactical outsourcing deals, it is by no means clear how many companies have either the will or the expertise to manage more fundamental outsourcing partnerships.

Nevertheless, outsourcing is today's business fashion and is a vital source of revenue for many IT companies. Outsourcing is particularly developed in government and the finance industry, but also in sectors such as manufacturing and telecommunications. IDC reports that the top hundred outsourcing deals in 2004 in the European region alone were between them worth $42 billion. Nine outsourcing deals were each worth more than $1 billion.

IDC also produces a league table which shows the 2004 rankings of companies, in terms of the total value of European outsourcing deals. (IBM Global Services's normal position at the head of the table was lost for 2004, since Siemens won a particularly large contract with the BBC during the year.)

ranking	Company	total value of deals ($ billion), 2004	number of outsourcing deals in top 100, 2004
1	SBS	$ 5.7 billion	8
2	IBM	4.7	14
3	HP	2.9	10
4	Atos Origin	2.4	6
5	Capita	2.3	7
6	xChanging	2.2	2
7	Capgemini	2.2	2
8	CSC	1.9	4

Source: IDC, 2005[16]

Though it is not the primary theme of this report, discussion of outsourcing inevitably raises the issue of offshoring, that is to say the relocation of work to regions of the world where costs are lower. In the IT field India has established a very strong lead, with its total IT sector now worth an estimated $28 bn. Of this total, business process outsourcing is responsible for about one-fifth, or about $5.6 bn[17]. (For more information on the Indian IT sector and UNI's work with the Indian IT Professionals Forums, see recent publications from UNI IBITS. For a trade union perspective on the issues raised by the 'offshore' phenomenon see the UNI report *The Global Mobility Revolution: Global sourcing of work.*)

It is worth noting however that offshore outsourcing, whilst a growing trend, remains in overall terms a relatively small component of the overall IT services market[18].

The evidence of recent years, including the signing of some very significant $1 bn+ outsourcing deals, suggests that the outsourcing bandwagon is continuing to roll strongly. However, it is also perhaps the case that the beginnings of a backlash can be detected. A Financial Times article in December 2005, for example, suggested that "the post-outsourcing age is drawing closer", warning companies that "one of the most important issues in outsourcing is knowing when to stop"[19].

A necessary caveat

At this point, therefore, it is necessary to pause and take stock. To what extent can we follow the lead of IBM and others in portraying the future for the IT industry as one where IT itself ceases to hold centre-stage, becoming simply an enabling tool in a broader process of business transformation? Is the work of IT professionals and non-IT professionals really increasingly converging?

IDC, as mentioned above, warned that IBM's strategy is a high-risk one. The question therefore is whether the strategy is correct – or whether, bluntly, in a few years' time IBM will be finding itself a new CEO and quietly changing direction.

Not everyone in the IT sector accepts IBM's strategic approach unquestioningly. In an enlightening interview in October 2005, Hewlett-Packard's CEO Mark Hurd accepted the importance of services as a revenue source but was clearly unconvinced by the full-bloodied IBM approach:

"The services business is an important business to us. I think the strategic debate will be how far up the stack we go from a service perspective. Some competitors are all the way up. BPO (Business Process Outsourcing) is a very broad category that encompasses everything from 'I'm going to outsource your HR' to 'I'm going to be your executive compensation consultant'. And, like it or not, at HP we're technologists at heart, we're not executive comp consultants… So we're going to stay very focused on service as it relates to technology."

Elsewhere in the same interview, Mark Hurd also implicitly criticised IBM's decision to sell its PC business to Lenovo[20].

Another major IT player, Dell, has also publicly accepted the importance to the company's growth of developing its services business, which has increased rapidly in recent months. Nevertheless, the company has also made it clear that it will stay focused on addressing IT needs, rather than broader business needs. Services remains less than 10% of the firm's revenue[21].

EDS, as mentioned above, is about to separate from its consultancy arm AT Kearney. This development has been assessed by one of AT Kearney's vice presidents as follows: "We realised early on that clients could not get full benefit of our consultancy unless we could also offer an IT wrapping. It's still the right answer, but you no longer need to buy consultancy and IT in one place, in fact it's probably not in the client's interest.[22]"

IBM's strategy - and by implication those of other IT companies which have been tempted down the same route - has had one of its most sceptical appraisals to date in a full-page feature in the Financial Times in May 2005. Under the headline *Is Big Blue fading again?* the newspaper's reporter scrutinised the record of the company's current CEO and his emphasis on business process transformation services:

"If Mr Palmisano hoped he could help IBM once more become a growth stock by redefining its market, he has so far been disappointed… …the more likely explanation is that investors understand what Mr Palmisano is trying to achieve but doubt his ability to succeed.

"One reason is that the $500bn market opportunity [claimed by IBM for BPTS] does not yet exist…. Mr Palmisano is also up against the law of large numbers. With annual revenues of $100bn, IBM must create the equivalent of a Fortune 500 company each year in order to grow at an annual rate of even 5 per cent.

"The mishmash of services classified as BPTS may one day fulfil this requirement but not for a while… A further question is whether IBM has the skills to change from IT stalwart into a trusted business partner than chief executives will call upon to re-engineer and run large chunks of their organisations."[23]

The Financial Times article does not entirely paint a negative picture, however. It accepts that IBM is a well-run business which has demonstrated in the past an ability to innovate and shift into more profitable areas of work and it points out that some industry analysts are backing the company to deliver on its promises.

The Financial Times' conclusion, in fact, can usefully serve as one for us too. The verdict is an open one: it is not yet clear whether the IBM vision is correct or not. It will take time, perhaps a number of years, before the future shape of the IT industry emerges more clearly.

Employment in the IT sector

It is not necessary to accept in full IBM-style arguments about the future of IT, however, to know that the IT sector is going through a process of transformation, and that this process of change is a painful one for many who work in the industry.

IBM itself in May 2005 announced cuts of up to 13,000 jobs, mostly in Europe where a complete restructure of the company is underway. The company has taken the axe to its Europe/Middle East/Africa headquarters in Paris, where 5000 people worked; two new EMEA regional offices, in Zurich and Madrid, are planned to have only about 200 employees each. The May announcement followed earlier cuts in Germany announced in March.

In the light of these developments, perhaps more attention should have been paid to the paragraph in IBM's 2004 'prospectus' which made the following statement: "Like many industries before it – agriculture, manufacturing, telecommunications, the building of skyscrapers and bridges – the IT services industry is increasingly moving from a predominantly labor-based business model toward one that leverages automation and reusable assets"[24].

IBM was joined a short time later by HP which announced in September the loss of 14,500 jobs globally, of which 6,000 were in Europe. Other IT companies have also been making employees redundant. Capgemini, for example, announced 1,500 job cuts in 2004, on top of 8,000 already lost since 2001.

There is a terrible sense here of *déjà vu* for those whose memories in the IT sector go back ten years to the restructuring period of the early 1990s – and who also recall that this shakeout was followed by an acute shortage of skilled IT staff. Have we been here before?

Trade union frustration at these developments is hardly surprising, given that much of the IT industry remains internationally hostile to social dialogue. This is particularly aggravating within Europe where, despite UNI's best efforts over many years, the mechanisms still do not exist for any sort of formal social partnership. This means that the strategic arrangements are not in place for unions to contribute to longer-term debate over the future of the sector.

Unions necessarily respond in defence of jobs when companies attempt to impose redundancies, especially when compulsory redundancies are threatened. However, clearly unions too need to have a longer-term approach which anticipates strategic changes in the IT sector. The analyst Gartner in a recent briefing note *IT workforce management: prepare for a future unlike the past*[25] suggests that there are four key forces driving changes in the IT workforce.

The first of these is what it calls *global sourcing*: As Gartner puts it, "Companies are proving that certain IT skills, knowledge bases and services can be competitively extracted, reconstructed and delivered across borders, time zones and business entities.. Assumptions around job protection – through higher education, specialised skills and intrinsic intellectual value – have been exploded. IT professionals in Asia and other areas that are now booking will be squeezed as other countries compete for global revenue".

The second factor identified is *IT automation:* "The emergence of virtual and standardized infrastructures – that is, the IT factory of the future – will halve the number of IT operation jobs in the next 10 to 15 years. Some IT jobs will be consumed by tools."

Thirdly, Gartner talks of *Business reconfiguration:* "Companies will continue to reconfigure themselves – with greater frequency, most likely – as they pursue the elusive targets of business agility and organizational effectiveness. Many will do so clumsily.. frequently without orchestrating the numerous changes affecting people".

Finally, Gartner identifies *Consumer IT, services and behaviours* which, it says, will challenge the esotericism of IT organizations. "IT professionals must learn to design services and products that are intuitive, personalized, technically transparent and simply supported," it warns.

Gartner's most recent in-depth analysis of the industry[26] suggests that by 2010 six out of ten IT professionals will take on business-facing roles. Pure IT knowledge will no longer be enough, and a new breed of IT professional will also need strong leadership ability, knowledge of industries outside IT and knowledge of business processes.

Gartner's analysis may make uncomfortable reading, but it also helps focus discussion on how unions can shape their responses. To an extent, this work has already begun. One example is in respect to the actual and potential loss of jobs through work relocation to lower-cost offshore destinations where unions have been engaging in pro-active work to prevent a 'race to the bottom' developing in IT. The link between UNI and affiliate unions and IT professionals in India organising through the ITPF is a model of the sort of international union partnership which can help to reduce the risks of this sort of development weakening employment rights and conditions in both developed and developing countries. Admittedly this sort of initiative is still only small-scale and much more ideally needs to be done.

In respect to the more general tendencies which Gartner notes which would require IT professionals to move from a more 'techie' approach to a more business-sensitive attitude, here it is hard to disagree with the wide range of industry observers who stress the need for adequate education and (re)training for staff[27]. The fact that lifelong learning has been a key union emphasis for many years does not reduce the relevance or validity of the demand.

IBM's emphasis on business performance transformation services suggests that professionals in IT-based consultancy companies will rapidly come to resemble their colleagues in non-IT based companies. However even if IBM's position is overstated, it is clear that IT-enabled services, rather than hardware or software delivery, will be increasingly important for the whole sector. This obviously requires an IT workforce which is adequately equipped with new skills and competencies. There is a need to prepare now to help existing professionals in the industry to be able to acquire the skills they will need.

Our conclusion can be, therefore, that – though the *extent* of the convergence between IT and non-IT professionals' work can be subject to debate and disagreement – there seems little doubt that coming years will bring some element of convergence. After all, there was a time when non-IT specialists would not have dreamed of handling computers themselves; today, every professional worker is expected to be able to handle a spreadsheet, make a powerpoint presentation, or process a text document. As professionals outside IT become increasingly IT skilled, IT professionals will equally have to develop other, generic, business skills. As Gartner put it, the IT industry and those who work in it certainly do need to 'prepare for a future unlike the past'.

Appendix

Top IT equipment and systems firms

Company	Country/ economy	Revenue 2003	Employees 2002
IBM	United States	86,902	315,889
Hewlett Packard	United States	71,256	141,000
Toshiba	Japan	47,944	176,398
NEC	Japan	41,090	141,909
Fujitsu	Japan	38,480	170,111
Dell Computer	United States	35,404	39,100
Sun Microsystems	United States	11,434	39,100
Hon Hai Precision	Chinese Taipei	7,428	9,000
Seagate	Cayman	6,486	45,779
Apple Computer	United States	6,210	10,211
Total		352,634	1,088,497

Top IT services firms

Company	Country	Revenue 2003	Employees 2002
EDS	United States	21,731	137,000
Tech Data	United States	15,739	8,000
Accenture	Bermuda	13,397	75,000
CSC	United States	11,347	90,000
First Data	United States	8,129	29,000
ADP	United States	7,147	40,000
CapGemini Ernst and Young	France	6,632	52,683
SAIC	United States	5,903	40,000
Unisys	United States	5,709	36,400
Affiliated Computer Services	United States	3,787	36,200
Total		99,520	544,283

Top 10 software firms

Company	Country	Revenue 2003	Employees 2002
Microsoft	United States	32,187	50,500
Oracle	United States	9,475	40,650
SAP	Germany	9,044	29,374

Softbank	Japan	3,449	6,865
CA	United States	3,116	17,500
Electronic Arts	United States	2,504	4,270
Peoplesoft	United States	1,941	8,293
Intuit	United States	1,651	6,500
Veritas Software	United States	1,579	5,647
Amdocs	United States	1,427	9,400
Total		66,372	178,999

Top 10 electronics and components firms

Company	Country	Revenue 2003	Employees 2002
Siemens	Germany	85,894	426,000
Hitachi	Japan	67,157	306,989
Sony	Japan	63,353	168,000
Matsushita	Japan	62,744	291,232
Samsung	Korea	47,613	173,000
Mitsubishi	Japan	30,848	116,192
Philips	Netherlands	29,947	170,000
Intel	USA	28,527	78,700
Canon	Japan	25,760	97,802
Sanyo	Japan	19,856	80,500
Total		461,700	1,908,415

Source: OECD Information Technology Outlook 2004

Note: 2003 revenues based on financial year reported in 2003 or most recent four quarters. Revenue is US$ millions.

[1] Geoffrey Nairn, IT Companies muscle in on consultants, Financial Times November 21 2005
[2] Understanding the Company, an IBM Prospectus, published 2004, ftp://ftp.software.ibm.com/annualreport/2004/2004_ibm_prospectus.pdf
[3] Understanding the Company, an IBM Prospectus, published 2004, ftp://ftp.software.ibm.com/annualreport/2004/2004_ibm_prospectus.pdf
[4] IBM Investor Relations, Understanding Business Performance Transformation Services, August 24 2005
[5] IBM Investors' briefing May 20 2005. Opening presentation by Sam Palmisano http://www.ibm.com/investor/events/inv_day0505/presentation/inv_day0505prepared.pdf
[6] IBM Investors' briefing May 2005. Presentation by John Joyce, senior vice president. http://www.ibm.com/investor/events/inv_day0505/#
[7] IBM Investors' briefing May 20 2005. Opening presentation by Sam Palmisano http://www.ibm.com/investor/events/inv_day0505/presentation/inv_day0505prepared.pdf
[8] IDC Predictions 2006: It's Gut-Check Time as Disruptive Business Models Gain Traction, e-newsletter, 2005
[9] IDC, Capturing Growth out of the IT Box, e-newsletter, February 2005
[10] ibid
[11] IBM Annual Report 2004, management discussion
[12] Ann Livermore, Adaptive Enterprise, presentation at HP World August 16 2004
[13] Understanding the Company, an IBM Prospectus, published 2004, ftp://ftp.software.ibm.com/annualreport/2004/2004_ibm_prospectus.pdf
[14] IDC Predictions 2006: It's Gut-Check Time as Disruptive Business Models Gain Traction, e-newsletter, 2005
[15] Transformational Outsourcing; Helping companies adapt to a volatile future, An IDC White Paper sponsored by Cap Gemini Ernst and Young, 2002
[16] IDC, IDC's Top 100 European Outsourcing Deals of 2004, published September 2005
[17] www.nasscom.org Facts and Figures
[18] See Frank Gens, IDC e-newsletter, Offshoring US IT services, Oct 2004
[19] Morgen Witzel, Life beyond outsourcing: customer service comes home, Financial Times, December 12 2005
[20] Mastermind Keynote interview, Gartner symposium, October 18 2005
[21] Summit strategies, Can professional services drive Dell's Scalable Enterprise Vision? Marker strategy report, June 2005
[22] Geoffrey Nairn, IT Companies muscle in on consultants, Financial Times November 21 2005
[23] Simon London, Is Big Blue fading again? Costs are being cut but new profit areas are hard to find. Financial Times, May 9 2005
[24] Understanding the Company, an IBM Prospectus, published 2004, ftp://ftp.software.ibm.com/annualreport/2004/2004_ibm_prospectus.pdf
[25] Diane Morello, IT Workforce Management: Prepare for a Future unlike the Past, Gartner, March 9 2005
[26] Diane Morello, Gartner, The IT Professional outlook: Where will we go from here?, 14 September 2005
[27] See for example Richard Peynot, Europe's Services Firms Seek Outsourcing Success, Forrester, September 12 2005: "Service providers need to effectively manage employee competencies. The increase in the number of specialist outsourcing staff that a service provider needs requires coordinated effort around education and training."