

Investing in information technology Where next?

Following a turbulent period for the IT sector, Ian Taylor MP looks at the roles to be played by the sector's major players, explains why the industry needs to respond to the growth of e-commerce and examines the key elements behind future success.

Turbulent times

The information technology industry has been through a rollercoaster ride. In the two years before the year 2000, there was widespread concern about computer systems being unable to handle the date change of the new millennium and therefore giving rise to chaos in both safety-critical and non-critical systems. This resulted in a massive boom for the information technology industry, for not only was software replaced, but hardware also, since older machines in general could not handle the upgraded software. Such a massive replacement of IT infrastructure naturally had to cause a discontinuity in order flow, with a feast to famine in the dearth of orders for the first few years of the new millennium.

Added to this was the misplaced view that the so-called 'new economy', based on trading through information

technology, would quickly replace the 'old economy' of traditional manufacturing and commerce. The feeding frenzy for 'dot.com' companies came swiftly to an end in 2001, when it was realised that change would take much longer to occur, that the laws of economics were not suspended and businesses needed profits to survive. In the California gold rush of the 1850s, very few millionaires were created, but the frenzy served to create the cities, roads, and railroads that allowed prosperity to come later.

The last few years have been analogous for the information technology sector. We now have telecommunications networks with vastly under-utilised capacity (estimated 60%) and the ability to transfer information at very low cost. A few 'dot.coms' are now profitable and showing strong growth. For instance, online dating company Udate was

founded in 1999 and its revenue grew steadily over the last few years to 39 million US dollars in 2002. It has become profitable in 2001 and was acquired by USA Interactive in December 2002 for almost 150 million US dollars. Business and the public are now becoming increasingly receptive to online services, ranging from the downloading of information to booking travel, shopping for consumer goods and paying bills.

The technology sector, however, is still reeling from the disenchantment of investors after the 'internet crash'. Much needs to be done to rebuild confidence, as there can be no question that technology investment remains as critical as ever to wealth creation and the building of a strong economy. Arguably, with expectations of meteoric business growth and massive returns on capital now moderated, there are excellent

opportunities to invest and to create new commercially viable technology companies through mergers and acquisitions.

The technology sector does not exist in isolation but is influenced by a number of forces that have a profound impact on its development and growth. What is the approach of the main players?

Government

Governments influence the IT markets in two ways: first, they are significant users of information and telecommunication technologies themselves (arguably, the third-largest market, with steady growth, independent of economic situation); secondly, they shape the market through policies, regulations and supervision.

The scale of the UK government's intentions regarding IT investment become clear when we examine the Prime Minister's objectives for the e-Envoy's office, which, when set, were:

- to make the UK the best environment in the world for e-commerce by 2002

Table 1 Forecast for e-Government spending in the USA						
e-Government spending	2000	2001	2002	2003	2004	2005
State and local	0.9	1.2	1.5	2.1	2.9	3.9
Federal	0.6	0.8	1.1	1.4	1.8	2.3
Total US Government	1.5	1.9	2.6	3.5	4.7	6.3

All in billions of dollars – totals may not add due to rounding
Source: The Industry Standard

- to ensure that everyone has availability of access to the Internet by 2005
- to make all government services available electronically by 2005, creating a full e-government environment.

Despite these laudable aims, on current evidence the achievement of these objectives seems improbable. A similar agenda is in place rather tenuously in the EU, and formed the subject of the Barcelona 2002 summit meeting.

E-government initiatives to date have tended to focus on providing online information and access to government services. Yet, citizen adoption of these electronic channels is uneven: high in some areas like council tax payments and Inland Revenue filings where high-income citizens with Internet access use these services to save time, but low in areas like social service benefit enrollments, where many low-income citizens lack the means or knowledge to use online channels.

In the UK, providing online access to all services by 2005 is a £2 billion project. Figures for estimated spending by the US administration on e-government are given in Table 1.

In the EU as a whole, e-government expenditure should create around £1.2 billion of licence and maintenance fees by 2005. IT spending in the whole public sector in the European Union is expected to grow from some £32 billion to £47.5 billion in 2004.

Governments are aware of the productivity implications of growth in the information technology industry. Some argue that it has contributed almost 1% per year to reported US growth from 1996–2000.

Industry and the financial sector

Businesses must invest in information technology for five reasons:

- 1 to achieve competitive advantage
- 2 to improve retention of ubiquitous and knowledgeable customers
- 3 to adapt services to new applications and distribution systems
- 4 to protect and enhance market positioning
- 5 to provide complete solutions.

In the process of investing, companies will need to consider trends towards partnering, outsourcing and the need to re-skill employees.

Whoever has information has the power. There has been a steady power shift from producers to distributors to customers. The use of the Internet has enhanced this shift. Specifically, that means that manufacturer will cease to be a seller and instead become a buyer for the customer (see, for example, Peter Drucker, *The Economist*, 3 November, 2001).

Interregnum has a client, Respond (www.respond-uk.co.uk), which has developed a product that allows companies to harness the power of customer feedback to improve the way they do business.

Industry needs to respond to the growing trend for doing business online. For example, recent research states that online banking in Europe is attracting a million users per month, with the total number of e-banking customers in the region forecast to reach 110 million by 2005. Companies such as Amazon and e-Bay are now in strong growth phases and making the transition to profitability. In 2000, the UK Office for National Statistics reported a total of £57 billion in



e-commerce sales, 77.25% of which was in financial services and insurance.

In 2002 the UK continued to see an above-average level of online sales at 4% of total retail volumes (compared with a US total of 1.3%), with a 95% year-on-year increase in business-to-consumer online shopping compared with 2001, and a total of £1 billion in sales in the month of October alone. A number of underlying reasons has contributed to the success of e-commerce sales, such as increased use of broadband, online presence of household names, improving quality and stability of online ventures, diminishing concerns about digital security, and a combination of traffic delays and continuous problems with public transport.

Private equity

The explosive growth in venture capital commitments in the 1990s peaked in 2000. An incredible 70% of all venture capital money raised in the past 20 years in the USA was invested in 1999 and 2000. According to the research firm Venture Economics, venture capital firms raised \$243 billion between 1995 and 2000. However, nearly half of that money was raised for year-2000 funds, just as the investment pace began to slow. Since then, only \$50 billion has been deployed, leaving plenty of capital in venture capital coffers to last through 2003. However, almost 12 000 start-ups raised their last round of finance in 2000 and are likely to come back for more in 2003. This situation should encourage venture capital firms to change their current cautious approach to investment in early stage companies (see the graph in Figure 1). In fact, it is already happening, as in 2002, for every dollar invested in new financings, a little over four dollars was invested in follow-on deals. That can be contrasted to 1999, when one dollar of new financing was accompanied by two and one-half dollars of follow-on.

With the events of the last two years, this over-funding will cause poor returns and an industry shakeout has already

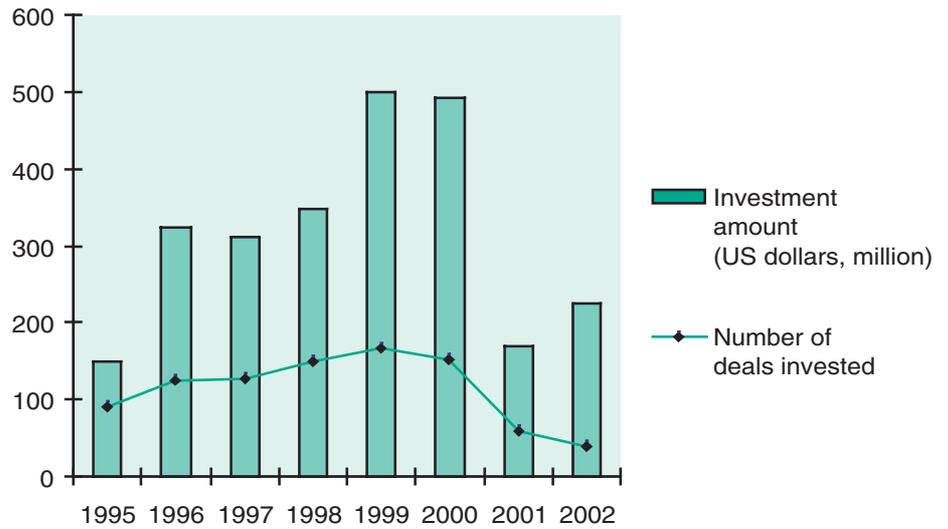


Figure 1 Investment into software start-up/seed companies in 1997-2002 by US venture capital firms (Source: PWC MoneyTree)

begun. In the first half of 2002, there were 140 venture-backed merger-and-acquisition transactions worth a total of \$3.6 billion. That's an average of only \$26 million per deal – a fraction of the total capital that many of the acquired companies previously raised. The information and communications technology sector has collapsed in the stock exchanges, and initial public offering activity has sharply declined, almost to nothing. For the 12 months prior to 30 September 2001, US venture

capital funds were said to be an average of 32.4% down from the same time a year earlier (*Wall Street Journal Europe*, February 22-24).

Yet information technology is still a crucial sector for capital investment. It will not disappear from private capital investment, and now is a good time to return cautiously to the markets. If predictions are accurate, the opportunity for investment in IT in Europe could be disproportionately attractive. Business valuations have

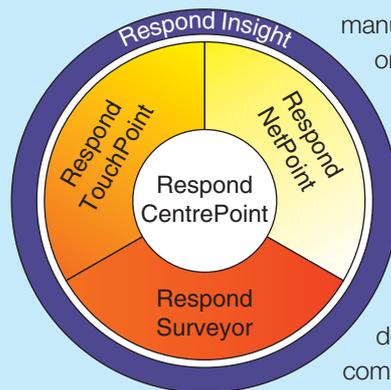


Respond

Respond provides software systems that enable organisations to manage and improve their customer experiences. Its incident and feedback management solutions document, track, analyse and improve customer support systems, process errors and organisational quality and regulatory compliance in the healthcare, financial services, government and manufacturing sectors. More than 1200

organisations worldwide use Respond Customer Experience Management software.

Respond CentrePoint has received *Customer Inter@actions Solutions* magazine's Product of the Year 2001 award in recognition of its contribution to the contact centre/CRM industry. The company also successfully concluded a recent funding round that demonstrated investors' confidence in the company's products and strong business model.



gone from being highly inflated to now being undervalued. However, Europe continues to concentrate on later stages of investment. According to EVCA, over 69% of total funds (€4.3 billion) were invested in buyout stage companies in the third quarter of 2002. In contrast, investment in seed stage companies represented only 0.4% of total funds (€27 million). To remain competitive, the investment community needs to switch its focus to earlier stage investments and facilitate growth of European high-technology companies.

In summary, in each case the outlook for investment is still positive. Government is investing; industry must invest and private equity managers should invest.

Critical success factors

Changes that stimulate growth

Increasingly, the difference in quality of IT usage is not between nations, but between world-class companies and the rest. It is debatable whether future world-class companies need to be large entities or aggregated from smaller units.

The rate of growth of e-commerce and technology will be determined by the degree to which obstacles to growth are tackled. We must see change stimulated in the following areas:

- culture (in government and industry)
- entrepreneurial attitudes
- taxation
- regulation
- skill-sets.

Trust, security and privacy

A key driver for technological demand and application will be confidence and trust amongst users, and increased security within systems. Problems with viruses, electronic fraud and identity theft are increasing. In order to counter these, new infrastructures will be needed for authentication of individuals, validation of information and the issuing and checking of digital certificates by trusted third parties.

Where the European Union is concerned, the issue of privacy also needs to be considered.

After September 11, the need for greater security and the potential impact on privacy have topped the list of concerns for European businesses and citizens. Europe has a strong tradition in privacy legislation and enforcement, with a Data Protection Directive (DPD) that dates back to 1995, but there are still areas that require attention. Although the DPD provides a common framework, the widely different national implementations make compliance difficult for enterprises operating in a variety of European Union (EU) countries. However, the directive needs to evolve to cover privacy implications of new technologies. One example is the impact of electronic communication and, in particular, the use of unsolicited e-mail for advertising purposes and the use of 'cookies' to support user authentication and profiling. (Source: Gartner Group, 2002)

Infrastructure

In the UK there is an increasing trend towards a digital convergence in emerging broadband infrastructure and in regulation by a single body, OFCOM. Yet, broadband infrastructure varies around the EU and the UK has slipped behind. Both government and industry are struggling to find ways to encourage the implementation of broadband infrastructure in a market-driven economy on the brink of recession.

There is also a desperate need for a reorganisation of the burden of telecommunications company debt, which in total in Europe roughly equates to the GDP of Belgium. Debt (via acquisitions and third-generation (3G) licences) means that customers will pay more than expected, and wait longer, for new services to become pervasive. Broadband roll-out, including 3G, has been slowed. 3G licence holders will need to consider carefully proposals to allow them to trade airwave capacity: it might allow them to recoup some of

their costs of building networks, but it could oblige them to open up space to non-licence holders and give rise to yet greater restructuring of the industry. There can be little doubt that further restructuring of the IT industries will occur. The challenges to be faced lie in whether companies can adapt to the changing global market place, for example, in:

- disintegration versus aggregation
- outsourcing and e-exchange between competitors
- accommodating the entrepreneurial spirit
- retaining knowledge workers
- reacting to knowledgeable customers.

R&D and innovation

Between 1995 and 1999, the latest period for which figures are available, the difference between US and European R&D investment more than trebled. By the end of the period, European innovators in industry and government were spending around €76 billion a year less than their US colleagues.

In a document outlining the priorities for the 2002 April summit of heads of state in Barcelona, the EU pledged to increase Europe's state and private investment in research and development by nearly 60%, from the current 1.9% of GDP to 3% within eight years.

Such a rise would bring Europe in line with the US, where R&D investment is 2.6% of GDP and rising fast, and Japan, which already spends 2.9% of its national wealth on research. Will the EU carry out the commitment?

Given that it is responsible for the bulk of R&D spending, can industry also meet the challenge? A recent study by the European Commission showed that businesses' expenditure on R&D in the US is 73% higher than in the EU and grew nearly three times as fast between 1995 and 1999 (*Financial Times*, 25 February 2002).

Research and development, and innovation, will need to be increasingly cross-sectoral. This will create new alliances between institutions of different characters, for example between companies and universities. Also, there will be on-line cooperation between competitors and large and small companies.

Corporate venturing is also important – where large corporates link up with smaller companies to stimulate new ideas, create spin-out companies, and develop intellectual property. This can facilitate technological products and services that may not have a single specific end-use application or a defined market. One example of such a relationship involves RadioScape Ltd. (www.radioscape.com). It has worked closely with Texas Instruments, which has formed a technological alliance and taken a small investment. Royal Bank of Scotland Ventures was the lead investor in a second stage funding round of £17.5 million in 2002. The objectives of corporate venturing remain fundamental to long-term sustainable growth.

With a mass of new companies created in the Internet boom years, there are now great opportunities to bring together and restructure the surviving units to give critical mass and momentum in new business sectors.

On the issue of innovation, there is striking evidence from the US that venture funding has supported a substantial output of innovative activity. Recent evidence suggests that the surge in venture capital investment from the late 1970s in the US brought with it a subsequent rise in patenting rates. It is estimated that venture capital accounted for 8% of industrial innovations in the decade ending 1992. This evidence further suggests that by 1998, venture funding is likely to have accounted for about 14% of US innovative activity.

The strength of the US science base accounts for part of this success: US venture capitalists are feeding off a fertile base of technology emerging

from universities and research institutes. This quantitative finding is borne out by many individual cases of US venture-backed companies that have grown on the back of technology developments and then gone on to support the venture financing of the next generation of enterprises in their sector. The development of Hewlett-Packard and its impact on Silicon Valley is a classic example. UK venture capital has achieved some notable successes among technology investments but has yet to achieve the critical mass of the US venture industry (Myners Report). Yet, there are attempts in the UK (for example, in Scotland and Cambridge) to apply some of the US lessons and these are to be strongly encouraged.

In his recent Budget, Gordon Brown, the UK Chancellor, said that two-thirds of the productivity gap between the UK and the US is due to 'the poorer quality and quantity of innovation'. He highlighted the need to raise research and development spending from 1.9% of the UK GDP to the 2.8% in the USA. He has put great stress on research and development tax credits and appears now to be wedded to importing the equivalent of the US Small Business Investment Company.

In parallel, the government should stimulate growth of local innovative companies and, perhaps, fuel the formation of an IT SME eco-system by creating a carve-out of (say 10%) of all

RadioScape

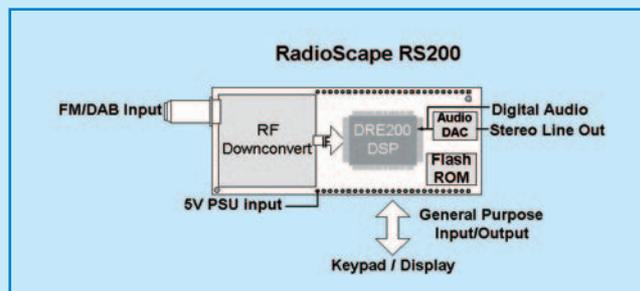
RadioScape is a UK-based developer of software and hardware technology for digital wireless communications systems. The company was founded in 1996 by Dr Gavin Ferris and Peter Florence.



One of the solutions offered by RadioScape is digital audio broadcast (DAB) which is a cost-effective means of delivering attractive multimedia content to mobile devices.

Although the transition from analogue TV and FM radio to digital video broadcasting TV and DAB radio standards is accelerating around the world, the technology is still unfamiliar to manufacturers and much harder to design than an analogue radio.

The RadioScape RS200 module allows manufacturers to make a finished product with the addition of only a few items – power supply, case, speakers or handset, antenna, buttons and display.



RadioScape has already received validation and endorsement of technology from numerous customers, partners and investors that include Psion, Texas Instruments, MathWorks, ntl., Royal Bank of Scotland, Atlas Ventures and others.

Government technology procurements over a minimum threshold (c. £5 million) to be spent by the prime contractor on locally developed innovation.

Venture capital

We must overcome the temptation to make a radical shift up the deal spectrum away from early-stage funding to management buy-outs and management buy-ins. This would leave early stage companies to suffer a lack of finance that would impact on their ability to sell their products – not least causing customer doubts about continuity of supply. The UK venture capital market has traditionally been dominated by later stage capital, and many of the investors who entered the seed-investment sector in 1998–2000 have since withdrawn. The UK compares unfavourably with other countries in the age mix of venture capital investment, though comparisons are not entirely reliable.

Early stage investment requires increasing stress on the fundamentals. Interregnum uses a proprietary methodology known as The Four Pillars of Value®: a small number of fundamental drivers – people; product

or service offerings; customer base; and brand. Over the last few years we have developed a systematic and pragmatic way to assess the value in technology companies using these Four Pillars and based on empirical observation and our experience in the sector. We are now convinced that the myriad of different value elements all stem from these four basic categories, and that no value element comes from anywhere else – other than the vitally important market context or environment in which a company operates. This proven methodology has steered us through the confusion inherent in the marketplace, given us a platform from which to justify our decision-making, and acted as a roadmap in all areas of our business, venture marketing, research and consulting, evaluation of intellectual property assets and venture capital. We analyse and seek suitable investments in inflexion points and discontinuities.

Interregnum's experience has shown that a successful recipe for technology companies is invasive assistance, combined with access to early-stage capital.

Conclusion

If fortune favours the brave, then now is the time to re-examine technology investment: As Michael Parsons wrote in *Red Herring* in January 2002: 'It's embarrassing to look at the portfolios of some major venture capital companies – like going through a friend's wardrobe and reviewing some really bad fashion decisions. You bought this? And you paid how much?'

Like technology investment, sartorial elegance is in the eye of the beholder. But it helps to have a good tailor. The important role that venture capital companies play cannot be underestimated as we strive again to ensure that technology innovation gets the support it needs in this country and beyond. ■

Ian Taylor is the Conservative MP for Esher and Walton and was Minister for Science and Technology in the last Conservative Government. He is a Director of Interregnum plc, a specialist technology venture capital company and merchant bank.



Nanotechnology

A new study by The Royal Academy of Engineering and The Royal Society

The Royal Society and The Royal Academy of Engineering launched a study on nanotechnology on 11 June 2003. The independent study will be carried out by a working group, chaired by Prof Ann Dowling CBE FRS FREng. The membership of the working group, which will be assembled shortly, will reflect the range of disciplines and interests relevant to this study. The working group aims to complete its study by late Spring 2004.

The study intends to:

- define what is meant by nanoscience and nanotechnology and to summarise the current state of scientific knowledge in these fields;
- identify the specific applications of the new technologies, in particular where nanotechnology is already in use, how it might be used in future and the most likely timeframe for such developments;
- assess the potential health, safety and environmental impacts of the applications of nanotechnology (including an indication of the associated uncertainties);

- consider the ethical and social issues surrounding the development of this technology;
- identify areas where regulation needs to be considered.

This study has been commissioned by the UK Government's Office for Science and Technology (OST) in the Department of Trade and Industry.

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