new directions:

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Welcome to new directions:

Welcome to our latest edition of **new directions:** our journal for leaders, innovators and change agents within European businesses. Our objective is to share with readers, summaries of new thinking on business improvement and innovation together with relevant Codexx activities.

Inside this issue

"Making major change is painful to an organisation… organisations would rather postpone the 'misery of change' until another time."

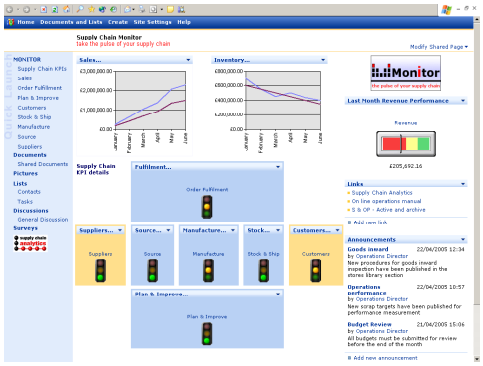
"Doing something different' is much more challenging as it requires working 'out of the box'."

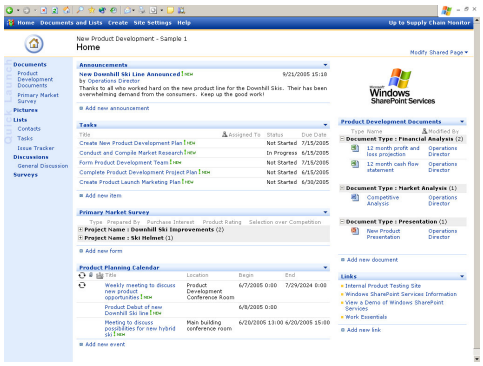
Painting with data - Visualize your business

As business activities become more complex and ever faster, company personnel struggle to keep pace with what is happening and making the right decisions as to when and how to take action. Increasingly companies have plenty of data, but struggle to make sense of it. Data Visualization is becoming an important area for many, as was recently pointed out in the Financial Times:

"T-Mobile, along with thousands of other companies, is trying to ensure it can see the wood despite the trees amid ever-expanding forests of data. An important weapon in this battle is data visualization software, which converts numerical data from spreadsheets and tables into pictorial, graphic or animated form, encapsulating the old adage that a picture is worth 1,000 words. Armed with this technology, companies can abstract meaning from a huge flow of constantly changing statistics, but can also drill down to greater detail if necessary. "The volume of information that people have to manage just keeps growing," says Dan London, a US-based partner at Accenture. The key to data visualization is understanding the limitations of the human brain. Business decisions usually involve assessing different qualitative and quantitative information, and that can be difficult to do when looking at rows of figures". *(Source: Clearer views of the data mountain", Financial Times, August 17 2005).*

Technology to provide data visualization has been around for a number of years, but software solutions such as Cognos and Business Objects have been expensive and too complex to implement for many companies. However new applications, based on intranet technology are now becoming available and they offer much promise.





What is needed is graphical presentation tools that help summarise the data and allow people to visualise the information - as the saying goes "a picture paints a thousand words".

This has been a primary feature of Business Intelligence (BI) software for sometime now. These packages, as well as generating static reports, typically provide interactive analysis facilities that allow users to "slice-and-dice" the data, getting answers to questions quickly, and based on timely data. However, in many cases the deployment of BI solutions has been limited to a single department or a small number of "super users" for a variety of reasons (e.g. software and implementation costs, technical issues, staff skills).

The latest developments in BI software, from Microsoft, provide web-based user interfaces for simpler deployment to a larger group of users. When combined with portal technology, a wide variety of information can be presented in a form that is readily understood and meets the users requirements. Making information more readily available in this way also helps to empower staff at all levels of company

Although most BI software provides a generic toolkit, which must be used to build the reports and analysis specific to a companies' requirements, there are now 'templated' solutions which help reduce the implementation timescale and cost. Microsoft provide a number of 'starter for ten' templates for common business processes. Our partner,

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Supply Chain Analytics, has developed one such solution, MONITOR, a dashboard for Supply Chain Management. The starting point for users is a graphical view of all the supply chain functions, which brings together data and information from all the different sources available in a company (e.g. databases, spreadsheets, documents, etc). Having this "helicopter view" of the business allows decision makers to quickly see what is going on, and where further investigation or action is required. Familiar browser navigation also allows more detailed analysis facilities to understand individual business functions, thus helping to support better decision making.

Without visualization tools the ability to get meaningful business information is likely to get more difficult. Consequently, this type of information sharing solution is now being implemented in a variety of different types of company, as they endeavour to gain greater value from their data to provide a competitive edge.

Dave Carter is a Senior Technology Associate with Codexx

Dr Raj Rajgopal

Manufacturing challenges for UK companies: an interview with Dr Raj Rajagopal, Chief Executive BOC Edwards

With sales of around £800 million, BOC Edwards is a leading supplier to the world's most advanced industries including semiconductor, compound semiconductor, chemical, pharmaceutical, metallurgy, scientific instrumentation and research and development. The semiconductor industry is one of the most innovative on the planet and BOC Edwards is one of its most innovative suppliers. Traditionally known for its vacuum and electronic gases technology, BOC Edwards now offers a broad range of products and services for its semiconductor customers as well as other high technology growth industries. Innovation gives BOC Edwards a strong competitive edge, whether it is developing the products and services demanded by its high technology customers or producing effective solutions for a host of other markets. BOC Edwards designs its products in the UK, with major manufacturing in the UK and also manufacturing operations in the USA, Japan and the Czech Republic and has received a number of awards for its design and manufacturing practices. We interviewed Dr Rajagopal on his views as to maintaining manufacturing competitiveness.

"With sales of around £800 million, BOC Edwards is a leading supplier to the world's most advanced industries."

1. Why do you believe that manufacturing is important for the UK – many people consider that it is inevitable that we will become a service economy?

Just like manufacturing, many higher value services, are subject to global competition. The UK therefore needs a balanced economy focusing on those areas that will continue to retain a sustainable competitive advantage into the future. This includes manufacturing, especially in those sectors that require local activity or rely on advanced technology to offset higher labour costs. Additionally, manufacturing contributes more than its fair share to exports and is more defensible against low wage arbitrage than many service sectors. According to UK government data, Manufacturing creates 20 % of national output, employs nearly 10 % of the total population of the UK and provides the majority of our exports.

"Manufacturing contributes more than its fair share to exports and is more defensible against low wage arbitrage than many service sectors."

2. What do you consider to be the reasons for the UK's manufacturing decline and is it reversible?

The major reasons for decline in UK manufacturing at a rate faster than other developed economies are historical. These include post-war complacency and neglect of the basics, resulting in low levels of effective investment, poor industrial relations and erosion in relative productivity. While industries that have declined terminally or disappeared are unlikely to be revived, the rate of decline could be slowed or even reversed through concerted action from all the interested groups acting together. These groups would include business leadership, the trade unions, the professional institutions, academia and the Government. The Government's manufacturing strategy provides quite a good framework for the types of issues that need action including macroeconomic stability, investment, education and infrastructure. However, in my view it seriously underplays the importance of high calibre management.

"BOC Edwards owes its success to long-term, sustained focus on the basics of manufacturing business; identification of customer needs and their profitable fulfilment through investment in appropriate capabilities."

3. BOC Edwards is a recognized world leader in its business, indeed it is the market leader in a number of its sectors - how has it done this when so many UK manufacturers have not?

BOC Edwards owes its success to long-term, sustained focus on the basics of manufacturing business; identification of customer needs and their profitable fulfilment through investment in appropriate capabilities. There is nothing unique in this approach or in the characteristics of BOC Edwards business that cannot be applied to other UK businesses.

4. What do you believe to be the main steps that UK manufacturers must take to remain globally competitive?

I have covered some of my response in the previous question. One critical issue that often does not get sufficient emphasis is management of manufacturing enterprise I am concerned that we do not attract, retain and develop sufficient high calibre management into our manufacturing businesses to remain globally competitive. Although we do not educate enough science and technology graduates to satisfy the future needs of an advanced technology economy,

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few of those we do educate choose to follow careers in manufacturing. This is due to the unattractive picture portrayed by manufacturing industry including reward job interest and career prospects. Along with some other leading manufacturing companies, BOC Edwards aims to recruit and train and retain excellent manufacturing management although this has proved to be challenging.

"To UK manufacturing businesses, China presents opportunity as well as threat, as the USA did at the turn of the last century, as Japan did some years ago."

5. In 2004, China exploded onto the global scene, how do you see its impact over the next decade?

Much has been written about China in this context and I do not really have any unique insight, other than having spent much time in Asia Pacific as part of my job. To UK manufacturing businesses, China presents opportunity as well as threat, as the USA did at the turn of the last century, as Japan did some years ago and thus cannot be ignored. However I do not subscribe to the theory that all manufacturing will eventually migrate to China or that there is some unique characteristic that makes the Chinese better than others at manufacturing. At present, they have relatively low labour costs although not necessarily lower production costs in every sector. In the future there will be some Chinese companies that are globally competitive while the size of China's population will make it an attractive market in many sectors.

6. Describe your vision of what a thriving UK manufacturing sector would look like in 2020.

With the level of volatility in business today, I find even short term forecasting difficult, let alone 15 years into the future! However, I believe one scenario for a successful UK manufacturing sector will have two distinct types of industry. One type will be businesses that need to be local, due to reasons such as regulations, transport costs or responsiveness and could range from the building trade to fashion products. The other will be globally competitive high technology manufacturing businesses that could range from pharmaceutical to aerospace, instrumentation and, of course vacuum technology.

"Many of the highest calibre graduates do not go into manufacturing, preferring instead the financial sector and consulting. We, the manufacturing industry, have to attract these engineers back to manufacturing."

7. Lastly, how do you consider the role and skills of the engineer need to change to best support a modern manufacturing industry?

Given the scenario described above and indeed for it to materialise we will need engineers who are themselves globally competitive in appropriate fields and are recruited, trained and paid suitably. We will also need managers of manufacturing enterprise, probably engineers, who are also attracted, developed and rewarded appropriately. Many of the highest calibre graduates do not go into manufacturing, preferring instead the financial sector and consulting. We, the manufacturing industry, have to attract these engineers back to manufacturing. We need to ensure engineering graduates understand the business and economic framework they operate in to provide context for their professional contributions. We must also ensure that graduates understand manufacturing realities on the shopfloor including people skills and processes.

Dr Raj Rajagopal was interviewed by Alastair Ross, Director of Codexx

Dr. Rajagopal is chief executive of BOC Edwards and an executive director of BOC Group plc. He has a degree in Mechanical Engineering from the Indian Institute of Technology, Madras and an MSc and PhD from the University of Manchester. He has been with the BOC Group since 1981. This interview is also published on the website for the IEE Manufacturing Professional Network - http://www.iee.org/OnComms/PN/manufacturing/FrontPage.cfm

Innovation in professional services

With Professional Services now generating more than twice the UK GDP of manufacturing (32% v 15% in 2003), having moved from a position of near parity 5 years ago, the UK economy is fundamentally changing and the importance of professional services to 'UK Ltd' is crucial.

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However most professional service organisations lack robust processes for many key activities, such as innovation. A study by the UK Council for Science and Technology in 2003 found that: *"Services account for the major part of UK output and less is known about how they are produced. Without a clear view about how services work, and how service providers innovate it is not possible to understand how well they are suited by framework conditions for operation in the UK and by Government programmes for supporting business innovation"* This sums up the issues for many service companies who lack clarity in their strategy, offerings and enabling processes.

Professional Service companies, such as accountants, lawyers and consultants, generate revenue and profit through selling the skills of their people and the intellectual capital that the sum of their people and expertise represents. Professional Services companies are starting to look at the lessons and practices they can learn from industry to improve their businesses. One key area is that of Innovation, where forward-thinking companies are beginning to look at how they can create new services and improve their business processes to enable competitive differentiation. For many professional service companies this has been rather ad hoc to date. Leading companies recognise that this is no longer adequate, faced by new entrants from low cost countries and other sectors, the potential applications of the

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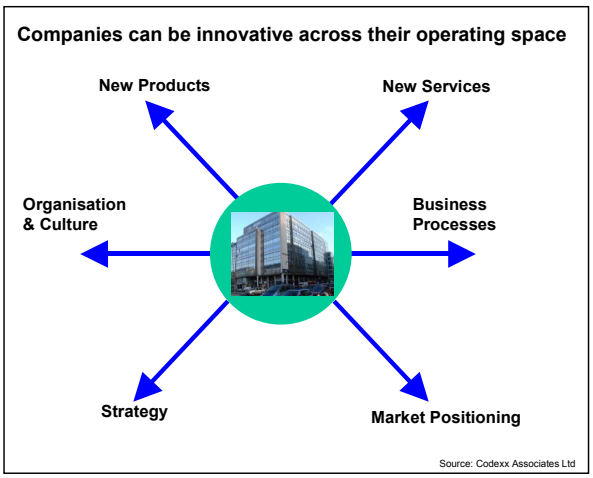

Internet and the increase in customer knowledge and sophistication. The Legal Sector is one such area where there is a need for major change to deal with these megatrends. A study by the American Bar Association in 2001 concluded: *"The practice of law and the administration of justice are at the brink of change of an unprecedented and exponential kind and magnitude… We must be willing and able to discard old paradigms and engender and embrace manifest change."* These required changes include implementing new customer-centric processes and products, cutting costs through the application of IT and re-engineering and putting in place systems and a culture for sustainable innovation.

"The Legal Sector is one such area where there is a need for major change to deal with these megatrends."

We have worked with a number of professional service companies who are seeking to bring in new practices in these key areas. Service companies have the advantage of being able to learn from the successful practices in industrial companies, but have the challenge of implementing process thinking into cultures where this has not been usual. We recently interviewed Professor John Bessant of Imperial College London for his views on Innovation in this sector.

Q: What do you consider to be the difference between Product and Services innovation?

"Services innovation is much quicker than Product innovation. It's also much easier to copy service offerings than for products. But brand can help maintain service loyalty. Coutts, the banker, embraced Information Technology, but kept the value of personalisation. If you trust a Professional Services firm and they innovate, this cements the relationship. In product companies, innovation in the product leads innovation in the process for making it. Whilst in services companies, it's the other way round. The advantage of process innovation for services companies is that it is less visible and thus less easy for competitors to copy. Leading service organisations are taking tried and tested techniques from industry such as process improvement and six sigma and rolling them out in their own organisations".

"Services innovation is much quicker than Product innovation. It's also much easier to copy service offerings than for products."

Q: Do you see a growth in interest in innovation in Professional Services?

"It's slow and patchy. Innovation affects everyone, even though traditional models for innovation are product based. Think of on-line conveyancing, it took away the mystique of this service. People saw that they could do this for themselves. Many Professional Service firms are ripe for disruption as they play by the rules. There are major opportunities for disintermediation. For many services an alternative way of framing the problem is there. I'd be worried if I was a Professional Services firms and didn't have an innovation group, asking questions such as 'How could our business be destroyed?' Our faith in many Professionals such as lawyers or stockbrokers is diminishing. Look at stock broking – disintermediation has hit this hard – people now see that they can do that. There's an accelerating trend for users to get much more involved in innovation - the 'democratisation of innovation'. If Professional Services companies are not out with their customers 'walking in their shoes' they are in danger. Customers are increasingly disloyal. If you don't understand your customers because you don't do enough listening, you are in danger".

"I'd be worried if I was a Professional Services firms and didn't have an innovation group, asking questions such as 'How could our business be destroyed?"

So the 'times they are a changing' for Professional Services and companies need to wake up to this and take action, whilst margins and market share make the required changes less painful to implement. Digby Jones, head of the CBI, observed in 2003 that *"The UK will never again compete on cost alone. Our future success lies with a highly skilled workforce providing innovative, high-value goods and services that command a premium in global markets."* This is as true of professional service firms as it is for manufacturers. After all, it is much easier to digitise and move intellectual property offshore than it is a factory….

John Bessant is Professor of Innovation and Technology Management at Imperial College, London and directs the Innovation Leadership Centre. His areas of research includes the management of discontinuous innovation, strategies for developing high involvement innovation and enabling effective inter-firm collaboration and learning in product and process innovation.

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Codexx helps businesses improve and innovate through the application of new thinking and best practices. We do this through light-touch, but high-impact interventions, using a network of leading academics and business professionals.

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