Case studies: The 2003 Information Management Project Awards

The following four case studies are drawn from a much broader selection of case studies — well over 100 entries, in fact, spread across 16 categories — put forward as candidates for the Business Intelligence (BI) Awards (2003).

This event marks an important date in the calendar for customer relationship management (CRM) development although not all of the categories are purely CRM related. However, the importance of information to the running of a CRM strategy is now beyond dispute, and the BI Awards are widely recognised as the premier UK industry recognition of excellence and innovation in the management of business information.

Readers should be aware that inclusion of these studies, as noted in the Editorial to this issue, is a new departure for the Journal. New, that is, in that they emerge from a competitive environment and are very much focused on the benefits that technological developments are expected to bring. They are valuable in as much as they are cases that have undergone a referee process, and so carry a good deal more weight than the average sales pitch. There is, nonetheless, a degree to which some of the claims are just that: claims — and the reader should treat them as such. The learning and the interest here is in the approach to problems. Further learning points will be available if, as we hope, we are able to revisit these cases in around a year's time and to report back on how they turned out.

We look forward to doing so.

JOHN OZIMEK
Managing Editor

CASE STUDY I: DEUTSCHE BANK'S *RAPTOR* PROJECT

Introduction

This is a good example of a project that helped analysts — in a fairly specialised activity area — to reduce data and thereby increase insight into what was going on in the equity markets.

Deutsche Bank developed *Raptor* (Real-Time Analytics Platform for Trading and Research), using Inxight StarTree®, to provide analysts with a visual means of focusing on aspects of the market that are most important to their needs. StarTree enables users quickly to 'make better sense' of the market.

The key benefit of this approach was

more informed equity trading. The solution empowers Deutsche Bank analysts by showing patterns in financial data that allow them to market ideas to their clients in a more directed fashion. The increased negotiating power afforded by *Raptor* has been valued at close to $13m annually.

It should be noted that the visual element was a key part of this solution. There are many products out there that purport to reduce data confusion; some manage to do so, however, only by exchanging one form of confusion for another.

The organisation

Deutsche Bank is one of the leading international financial services providers. With 67,700 employees, serving more than 13 million customers in 76 countries worldwide, more than half of the bank's staff work outside Germany. As a modern universal bank, Deutsche Bank offers its customers a broad range of banking services, including account-keeping, cash and securities investment advice, asset management and payments processing as well as corporate finance to support initial public offerings (IPOs) and merger and acquisition (M&A) advice. In addition, the bank has a leading position in international foreign exchange, fixed-income and equities trading.

The challenge

The decision making process for equity trading is becoming increasingly complex, with calls being made on a wider variety of equities, by fewer people, more frequently.

Pre-trade analytic systems are notorious for being visually complex. Integrating the factors vital to pricing and risk management, given the above constraint, requires software that not only provides valid analytics but also allows the user to focus on those aspects of the market that concern them most directly.

To give a simple example, many traders and salespeople in the world of global equities are surrounded by at least four screens, from which they are required to glean the relevant financial information in the instant it is demanded.

Instead of a multiple number of screens, an improved paradigm would be to group the relevant sources of information under one hub, provided that hub allows the mass of information currently displayed to be navigated in an intelligent manner.

Deutsche Bank looked to address these problems and to enable its analysts quickly to 'make sense' of financial data and markets. The company wanted to develop a solution that would allow users to sift through masses of real-time financial information easily, in an intelligent, guided manner. This system would bring novel real-time data mining techniques to bear on the problems of opportunity and risk for equity tradings and would fundamentally change the approach to the visualisation of financial data within global equities.

The solution

In 2002, Deutsche Bank purchased Inxight StarTree®, a solution that provides a unique graphical user interface that is 62.5 per cent faster at navigating large information collections, and developed *Raptor* to reduce the complexity of financial decision making by enabling analysts to make better sense of the wealth of market data available to them. Specific financial problems were addressed by 'views' within *Raptor*: these views can be exported to and shared with other users where appropriate, providing a convenient method to exchange expert information.

> 'In addition to providing the best way for Deutsche Bank analysts to view, analyse and interact with large amounts of real-time financial data on one screen, StarTree also offers a cost-effective means for analysts to better understand how to quickly draw relevant information from that data. StarTree provides the means by which our analysts can assess the significance of events in sectors, countries and stocks with respect to historically observed norms.' (Kerr Hatrick, Head of Analytics, Global Equities, Deutsche Bank)

Using Inxight's StarTree technology, Deutsche Bank's *Raptor* users were able to focus on the features of the market they felt important and export key data to a specified group of users. *Raptor*'s view feature also allowed a particular set of constraints to be applied over a financial hierarchy and has been instrumental in determining which are the most important questions to users. As such, a stock trader now has a view library tailored to what is most useful to him/her, with the views being determined by the group that he/she is associated with.

Raptor not only supplants many of the spreadsheets financial analysts are typically lumbered with, it also works together with a variety of dedicated financial systems and other technology including MS Excel, the Fidessa trading system and online chat systems.

In addition, *Raptor* (with Inxight's StarTree) gave Deutsche Bank's sales force the ability to direct their client-base almost instantaneously, based on its improved market intelligence. The time saved through having the ability to access all relevant market data at one hub results in increased attention to the detail of what a particular client is likely to want.

Information resident in views can also be pushed to other users via alerts. The alerts available within *Raptor* allow text messages to be sent to mobile phones if, for example, a set of real world financial constraints have been satisfied.

The benefits

Raptor has provided tremendous business benefits to Deutsche Bank.

> 'The ability to profit from *Raptor* is largely a by-product of the ability to 'see' a market evolve during the day, and assess whether certain statistically derived boundaries have been breached. This alone has a significant effect on trade idea generation and increases negotiating power.' (Kerr Hatrick, Head of Analytics, Global Equities, Deutsche Bank)

Deutsche Bank's European equity trading business used to be much more divided than it is now. A significant portion of the credit for this improvement is due to *Raptor*. Now, for example, significant events in Germany are clearly visible to traders in Hong Kong or Helsinki, and disparate regions and groups within Deutsche Bank have been brought together.

There is general agreement among Deutsche Bank's clients that *Raptor* provides one of the most innovative, comprehensive and useful ways to visualise pre-trade analytic data. It is exhibited to clients as one of the most advanced pieces of software constructed by Deutsche Bank.

The future

The first phase of the *Raptor* project is complete. The second phase will take six months and is expected to be complete by December 2004.

Currently the software is used daily by over 200 key decision makers within Deutsche Bank offices in London, Paris, Frankfurt, Helsinki, Stockholm, Zurich and Milan. The bank's offices in New York, Hong Kong and Tokyo are using

a prototype expected to be released generally in November, 2004.

Key learning points

The obvious learning from this project is the need to make a mass of confused data less confusing — to extract simple patterns quickly and effectively. However, this project went beyond this first stage to add two further benefits: easy to interpret visual displays; and full-scale and easy integration with other tools used by analysts. Many companies quickly realise the first benefit when implementing new analytical tools. However, a significant sub-set fall at the next hurdle, failing to make information either intelligible or distributable.

CASE STUDY II: SOUTH TYNESIDE HEALTHCARE NHS TRUST/COGNOS

Introduction

Healthcare is one of the few areas where if vital information slips through the net, it can literally be a case of life or death. Over the past few years, performance management has become a key issue for the National Health Service (NHS). More so than ever before, the NHS is open to public scrutiny and each individual healthcare trust must justify its results. As part of this initiative, the British government introduced the idea of foundation hospitals as part of a 'payment by results' scheme. The best performing trusts receive a three-star status and can then aspire to achieve foundation hospital status and greater autonomy.

With each trust responsible for its own management, South Tyneside Healthcare NHS Trust decided to invest in business intelligence (BI) tools to provide a clearer view of its performance and to help with the complex amounts of data that it gathers and holds. After implementing a real-time analysis of key patient data, South Tyneside Healthcare NHS Trust can now obtain a comprehensive overview of performance of its crucial departments. Trust managers receive an instant warning message on their desktops if departments are under-performing and can contact hospital consultants to take immediate action.

The organisation

South Tyneside Healthcare NHS Trust employs 2,500 staff across five sites. All of these people need access to patient and healthcare information in order to do their jobs. Many still rely on spreadsheets to collate data. This is time consuming and mistakes can easily be made.

The challenge

Currently, NHS trusts are expected to produce and justify performance statistics. The South Tyneside Healthcare NHS Trust (the Trust) needed a solution which could instantly produce reports that give a real-time, holistic view of all activity within the hospital, using accurate data to provide useful results. The Trust did not want to use BI as a tool to deliver esoteric statistics on performance and especially wanted to avoid the production of figures just for the sake of it.

The objectives of the project were to ensure that an accurate, real-time view of any activity within the hospital and up-to-date patient records were available and accessible, 24/7. This included critical information, such as all drugs prescribed to patients at the hospital; combining patients' hospital records with their GP records; and the number of babies born in the hospital.

With an accurate set of performance statistics available, the Trust could then begin to address the problem areas, such as the key performance indicators set out as a measure of success by the government. Previously the Trust relied on spreadsheets to store data, which cannot easily be cross-referenced. Information was locked in operational computer systems, and managers had difficulty in analysing information and acting upon it. The Trust wanted a single, unquestionable method of producing all of the data its management needed in order to ensure the best possible service for all of its patients.

> 'Healthcare intelligence is not simply about managing medical records and patient addresses, but also measuring performance quality and reviewing essential business functions. It allows managers and consultants to ensure that each and every patient has accurate records and receives follow-up treatment when necessary.' (Martin Alexander, Head of Information Services, South Tyneside Healthcare NHS Trust)

The project is part of the Trust's programme to deliver electronic patient records, in line with NHS strategy. BI helps the Trust manage activity and improve data quality. Better understanding of activity statistics help the Trust in its drive to achieve and maintain a three-star status (best performing hospitals in the UK). In an earlier review, one of the points made by the Commission for Healthcare Improvement, the performance assessor group, was that the Trust did not make the most of clinical information to improve operational efficiency and improve clinical care.

The solution

The information services (IS) department conducted a thorough review of all BI products on the market and selected Cognos PowerPlay for analysis and Cognos Impromptu for managed reporting. One of the key features the IS team looked for was strong web capability; Cognos was able to provide impressive features within PowerPlay Web and Impromptu Web Reports. These web features, together with compatibility with the Trust's existing Oracle database applications, made Cognos the perfect choice not only to access the huge range of information locked within the system, but also to drill down and analyse specific data.

Cognos software is a major benefit to management of data quality by providing access to data which is usually locked in complex systems. The Trust has over 1,000 desktops and every single one has access to Cognos software through the Trust website. This allows managers and, potentially, consultants to have an instant, accurate view of exactly what is going on anywhere in the hospital.

> 'The amount of data held by healthcare institutions is vast and complex. Previously, we had to rely on spreadsheets and printed reports to collate the information, a process which was time-consuming and had a huge margin for human error, given all of the manual inputting involved. Our implementation partner Bidetime recommended a Cognos solution that allows all of the data to be compiled automatically, reducing reporting time from days to minutes.' (Martin Alexander, Head of Information Services, South Tyneside Healthcare NHS Trust)

IS implemented the solutions across waiting list management and the Accident and Emergency, Radiology and Pharmacy departments with immediate results. Managers are now able to monitor waiting lists with up to the minute information and to analyse staffing levels to monitor performance and manage resources effectively. 'Immediate access to clinical information has transformed the way managers in the Trust make decisions. It's a vital part of delivering modern healthcare,' said Alexander.

The software is currently used by management. The Trust is also training hospital consultants to use the technology so they can benefit from using the solution, regardless of their location. The simplicity of the tools used means that peer-to-peer training allows fast deployment of the technology. For example, after a one hour training session with a member of the IS team, a Trust manager is able to access and use a vast amount of information to enable better decision making.

In addition, the Trust, Cognos and Bidetime worked closely together to provide a tailored, purpose-built metrics management system, so that managers are alerted when performance indicators fall outside of pre-set parameters. Planning to implementation took only eight months and the project was delivered both on time and to budget.

The benefits

Where data inputting and cross-referencing had once been a time-consuming and admin-intensive process, managers now have instant access to current performance statistics and can produce reports in minutes, rather than days. This has radically improved the way the Trust's managers and staff work, making their working day far more productive and effective.

Martin Alexander confirms that the solution 'is so simple to use yet very powerful — developing an electronic health record requires good quality data; visualisation of data is key to good quality management'.

The use of Cognos' technology allows managers throughout the Trust to monitor which departments fall short of their targets and which need more staff on hand at certain times of day. Departments use Cognos Cubes to manage their services better. The measurement parameters involved with a field as complex as healthcare can be simplified so that they are clearly understood by management.

> 'It is this breadth of access to management information, and the resulting ability to change information into knowledge that supports the decision-making process, that is so impressive. Cognos Metrics Manager gives us the corporate view of our operations, while PowerPlay and Impromptu provide direct drill through to operational data that managers need to deliver effective services.' (Mike Robson, Executive Director of Corporate Governance, South Tyneside Healthcare NHS Trust)

The advanced patient record system is playing an integral part in the Trust's strategy to improve performance and prepare for foundation status. The Trust regained its three-star status this year. Although this cannot be fully attributed to the use of Cognos software, the business benefits provided by Cognos Metrics Manager did have a significant impact on the three-star ranking. More importantly, the better management practices, enabled by the use of this software, have had a direct impact on patient care. The Trust is one of the few in the UK to have a surgery waiting list of under nine months — many others are still aiming for 12. Cognos Metrics Manager helps the Trust to monitor key

targets using operational data and to manage its services in a more effective way.

> 'Through better management we can improve services to our clients, which is the most important priority for the Trust.
>
> 'You can have the best operational system in the world, but if you can't get access to your information, how can you be sure it is being used correctly? We chose Cognos because of its excellent Web functionality and its simple end-user interface. With minimal training, our managers have access to a huge mine of operational data. For us, business intelligence is about providing better services and being more efficient. Central to this project's success has been our close relationship with Bidetime who helped us tailor the software to address our specific requirements.' (Martin Alexander, Head of IS, South Tyneside Healthcare NHS Trust)

The future

The Trust, in conjunction with Bidetime, is now trying to create NHS Cognos user groups, to enable them to share their information centrally, rather than just on a local basis.

Key learning points

Points to emerge from this project are similar to those that emerge from the Deutsche Bank exercise. Even though we are now, arguably, some 15 to 20 years past the onset of the information revolution, many organisations are still attempting to manage increasingly complex businesses and services using systems that tend to keep vital data and information in separate silos, rather than easily and centrally available to all users. In the worst cases, bits of data that ought to be linked are held in different formats by different people on incompatible software — so whenever any cross-over between the data sets is sought, it becomes a major and costly exercise to carry out.

There is, therefore, a growing trend towards the sort of 'sweeping up' exercise detailed here, which must, if it is to be successful, be about far more than feeding all the data into one system. Underpinning success is process, system and discipline, ensuring that managers begin to appreciate the importance of data; understand that it needs to be recorded consistently; and see data-related tasks as part of their day-to-day activity, rather than an added chore — like filing — to be done when there is nothing more important to do.

On the plus side, this initiative demonstrates many technical features one would look for: a central web-enabled database with good reporting capabilities and an ability to interface to other packages. Against this are two caveats. First, the case study is written very much from the technological side. Inevitable, perhaps, given that this is likely to have been the place where most was spent. But also, perhaps, an amber flag for the future; however good the technology, without equal emphasis on and investment in the underlying systems and processes, there is a very real chance of long-term failure.

Secondly — an issue on which the project managers need to provide their own separate justification — is a niggling concern that too many eggs are being placed in one basket. By pulling so much information together, the organisation seems to be crossing information that is literally 'life and death', with the more mundane — car parking statistics for the hospital car park, possibly. There is a lot to be said for single information views, but the golden rule is that any such system must work at the rate of the most critical information required in the system. Again, without a closer view of the systems architecture, no further

comment is possible. But a common mistake in marketing systems is to set specifications either too high (everything is able to be produced *now*) or too low (vital information can only be produced intermittently).

In this case, the consequence of some information being even seconds too late could be catastrophic — and so this is a high system risk.

CASE STUDY III: INTERBREW'S CUSTOMER SERVICE REPORTING SYSTEM (CSRS)

Introduction

Implementing new applications is not just about the bottom line. Interbrew UK wanted to improve the work–life balance of its field staff and to move customer service to one view of the customer. This case study demonstrates the impact that implementation of a customer service reporting system (CSRS) has had on Interbrew UK's field staff, customers and management.

The organisation

Although you may not know Interbrew by name, you're probably among the millions of people who regularly enjoy sipping one of their products at your local pub or at home. Interbrew's origins date back to 1366 and it is one of the world's largest brewers. Based in Brussels, Interbrew runs operations in 21 countries, across the Americas, Europe and Asia-Pacific. Interbrew UK markets some of Britain's favourite brands including Stella Artois, Boddingtons and Hoegaarden and has thousands of retail outlets.

The challenge

Ensuring that its end customers — the people drinking in the pub — get quality beer and good customer service is vital to the way Interbrew UK's brands are experienced. Accurate, up-to-date information gathered at retail outlets is the key to continuous quality and success. The system used to acquire this information, and the processes involved, needed to be streamlined.

A further important consideration was the work–life balance for Interbrew UK Beer quality teams who had the task of collecting and collating the mass of information gathered during customer visits.

The system as it existed before CSRS was cumbersome, time consuming, vulnerable to human error and labour intensive. It often took weeks to generate national reports, which, by then, were out of date.

Field executives, from the Beer Quality Team (BQT) visit customers at retail outlets. They used to receive the list of who they had to visit on an MS Excel spreadsheet. At the retail outlets the BQT executives gathered information, often hand-written notes, which was compiled in Lotus Approach spreadsheets and sent to the regional teams to be transferred to a Lotus Approach database. Each region processed the spreadsheets in their Approach database and then exported the data into an MS Access database before the data was again converted into Lotus 123 spreadsheets for distribution to interested parties, and national and regional management.

Interbrew UK was by no means the only company working this way. It

realised, however, that in the lightning fast competitive world of fast moving consumer goods (FMCGs) it needed to change. But the decision to change systems could not be taken lightly. A lot was at stake and any investment had to quickly demonstrate its worth.

The solution

Interbrew UK decided to move customer service to one view of the customer, which could be accessed by all at any time, and to make dynamic online reports available to management and other interested parties.

The areas that CSRS was designed specifically to improve were:

— Organising visits to retail outlets;
— Collating different types of information gathered during visits;
— Generating regional reports;
— Generating national reports; and
— Managing staff resources.

Interbrew UK's Dave Henshall decided to develop a system for the customer service team that would streamline and automate the gathering and processing of information from field executives and the production of reports for management information. This is how the idea for the customer service reporting system was born.

Interbrew UK had an excellent relationship with CDS Ltd following the successful completion of a number of projects including iKnow — Interbrew UK's intranet system. Together with CDS, Interbrew UK worked on the specification for a piece of software that could take the pain out of the laborious process described above.

While a formal approach to system design was adopted, the creative energy that produced the first outline specification was channelled not onto the back of an envelope, but into a rough sketch on the back of a beermat!

A great deal more work was needed before CSRS emerged as a software application — first on the BQT's laptop computers and, more recently, as an application for telephone staff on their PCs. The core elements of the application essentially work as described in the next few sections.

Contact planning

The customer service administration team enters details of retail outlets that require a call from the BQT into CSRS. BQT executives then download their call list. The calls are allocated and schedules worked out on CSRS by the team. During a visit, information is entered on the quality of the product, service and brand. BQT executives can also enter orders from recorded retail outlet managers for promotional items — the usual branded paraphernalia — and hardware, like beer taps.

Account managers can nominate retail outlets for BQT calls. Interbrew's CSRS administrator parses a file with details of the nominated retail outlets into the system. Right from the start the first intelligent features kick in. CSRS recognises different types of information, so, for example, if the postcode of a retail outlet is parsed into the wrong column it is highlighted in red, showing it as unrecognised data. The administrator can then correct or query the information. The type of call is set and it is allocated to a region or zone.

Field-based teams receive an e-mail generated automatically by CSRS to notify them when new retail outlets have been added. The team members then connect online to Interbrew UK's network and run the CSRS application on their computers.

Field-based BQT executives can then assign the new calls to themselves and to their colleagues. If an executive is unavailable, CSRS allows calls to be reassigned to other team members. Each call on the system has a flag to show whether it was assigned, who to and whether it was completed.

Regional managers can also assign calls. The system is flexible enough even to allow them to assign calls to other regions. This feature is particularly useful as it helps manage resources and spread capacity to where it is needed.

After calls are selected from the list, the BQT executive, clicks on a button to synchronise data with the central server. They get their lists of assigned calls. This is all done in real time so double assignment cannot occur. Previously completed calls and data are also uploaded and synchronised so that CSRS users can see whether a call was completed or is still incomplete. This information enables field executives to plan travel and call routes effectively.

Field executives are targeted on the number of calls they make, so it is important to capture the reasons why a call was not completed ie all the required information was not gathered. If, for example, the manager of a retail outlet was not on site when the field executive visited, CSRS marks the call as done but requiring another visit. If the assigned field executive then falls ill, CSRS allows the call to be set for reassignment. It sounds complicated written here but for the user it is a simple task of using drop down menus, tick boxes and reading information displayed in a user-friendly way on screen. The important thing here is that if a field executive is unable to make a call for whatever reason, CSRS can register this and the reason why. Reports can be generated showing sick leave, holidays, training and administrative time — together with comments and the exact details of time, date and year.

Using CSRS, managers have instant access to this information enabling them to cover holiday leave and to manage resources flexibly to make sure productivity is maintained.

Data collection

CSRS works online and offline so that data can be recorded on location and then later uploaded to a central database the next time the BQT connects his or her laptop to the internet. In fact, the BQT executive can go offline and use CSRS anywhere on location. Information managed by CSRS includes brand audits, quality surveys and orders for promotional material.

Again, there is automation and intelligence built into the system: if the retail outlet is not allocated a budget by the account manager the option for ordering promotional items does not appear on the system. CSRS automatically notifies Interbrew UK's suppliers about an order by e-mail, speeding up the process tremendously.

After a day of calling on retail outlets, a BQT field executive will go online in the evening to synchronise CSRS data with the central database. He or she will see a summary of the synchronised data, including the number of calls completed, the number of brand audits, order forms and any recorded time-out booked. Incomplete calls are also brought back. All of the uploaded information can be viewed on the server to check that it has been copied correctly to the database.

Reporting

Reports in HTML and Excel spreadsheet format are generated from the central database and distributed. They are

generated in real time so that the very latest information is available to management. As there is no need for manual data collation: data integrity is preserved from the BQT field executive's input through to the year-end report. Everyone from the chief executive to the regional team managers can view the latest reports from the moment the BQT executive uploads and synchronises his or her data with the central database through the company's intranet.

The beauty of the CSRS reporting system is that it can provide as much or as little detail as required. In a few clicks anything — from the overall productivity of the BQT to the temperature of a pint of Stella measured in a pub earlier in the same day — can be seen. The bottom line is specific measurable information, which affects the end customer's experience of its brands.

There are over 80 different headings in the system, all of which can be queried. An innovative feature allows *ad hoc* reports to be generated using any of these headings so that management can create tailored reports covering issues as diverse as new installations for Hoegaarden beer and staff holidays.

Upgrades

From a software upgrade point of view, CSRS has another useful feature. When a patch (software upgrade) is available, users are automatically notified the moment they go online and the patch can then be downloaded to update the CSRS local copy. The version number will also automatically change. At any time administrators and managers can see which version of CSRS a field executive is running on their laptop.

CSRS's administrative system is dynamic and flexible. Besides being able to access and manage the information stored on the system, every element contained in the menus and headings can be changed. For instance, when Interbrew UK dropped Heineken as one of its brands it was removed using the administration system and the moment users went online their system was updated: Heineken disappeared from the brand menus.

CSRS also has data cleansing built into it. Incorrectly parsed-in data can be removed. The system queries reports and, using a complex data model, checks for discrepancies. If it finds a discrepancy it automatically tries to identify the reason and then generates recommendations to solve the problem and remove the discrepancy.

CSRS technical information

— CSRS runs on Windows NT4 workstations, Windows 2000 and Windows XP.
— It was developed on Windows NT.
— The main platforms are Windows 2000 Advanced Server and an SQL Server 2000.
— CSRS uses both a window- and browser-based interface and is fully integrated with Interbrew UK's intranet.

The benefits

Making sure that the consumer gets quality is an essential part of Interbrew UK's business strategy, and the only way to find out what is happening in the field is to have a reliable and robust system which can deliver meaningful up-to-date information.

CSRS has proven itself an extremely valuable tool. It cost less than £50,000 to get the system up and running and has streamlined and increased the efficiency of business processes.

Besides generating valuable management information, CSRS saves

approximately 80 hours of central administration time each month and it saves field staff two hours reporting time a day. In 2003, 18,000 calls were logged through the application; in 2004, the target is around 40,000.

The system has also increased the accuracy with which business decisions can be made and has delivered a host of other benefits, including improving the work–life balance for Interbrew UK staff. Cost savings have been achieved and customer service enhanced. In short it has had an impact across the board. Most importantly, however, it is playing a vital role in helping Interbrew UK ensure that it has vital information on how consumers experience its brands and has provided the BQT with an invaluable tool to help ensure that the next time you drink a Stella Artois (or any of Interbrew UK's other brands) you get top quality.

The key benefits can be summarised as:

— Improved work/life balance for field executives — better workload control, fairer management of staff, better perceived working relationship.
— Faster, more accurate information throughout the system, leading to better planning and enhanced customer service.
— Major reduction in administration.
— A positive return on investment (ROI) within a few months of going live and a continuing effect on cutting costs and streamlining processes.

Key learning points

This is another success story highlighting what happens when data formerly collected in a range of different places are brought under one roof and collated intelligently. Here, the story focuses much more on the process, since the workload of field sales executives was so intimately tied up with the commodity — data — that they produced, any streamlining in that process had instant and seriously positive effects on their work life.

This is a good example of a tool focused on one activity being used to streamline a number of functions (beyond simple data collection). Thus, although the key role of the CSRS tool is to make data collection faster and more accurate, it has side effects that include better allocation of staff resources, better staff morale and a streamlined ordering process for promotional material.

This is a very positive development. In visiting organisations and reviewing their systems, it is often the field sales system that is the poor relation: large sums are spent on marketing databases and call centres. In some organisations, where field sales is the core function, very good systems have been built; in others, field sales is expected to 'get by' — as was previously the case with Interbrew UK — on a mixture of spreadsheets, access databases and whatever else could be knocked together in the time available.

On the whole, this is a very impressive development, showing just what can be achieved with a comparatively small budget.

CASE STUDY IV: TESCO IMPLEMENTS THE BUSINESS ENGINE NETWORK (BEN) TO GAIN FULL CONTROL OF ITS IT PROJECT PORTFOLIO

Introduction

The larger an organisation, the harder it becomes to ensure that its spend on projects — and IT projects in particular — is rational, effective and mutually supportive.

In smaller companies, where the entirety of the technological development

may be 'known' by one or two senior personnel in the IT department, it is possible to maintain an informal approach. This rapidly becomes difficult and then impossible as the company grows in size — with common failings, including duplication of effort and spend, and the invention of parallel solutions that are incompatiible with one another.

In such a situation, a system is urgently needed to manage the development of systems.

The organisation

Tesco is the market-leading retailer in the UK, with 780 stores. Worldwide, Tesco has over 1,000 stores in ten countries across Europe and South-East Asia. As part of maintaining its number one position, it is vital that Tesco keeps close control of internal resources and how it spends its money.

The challenge

The challenge was to consolidate information resources and feeds, and gain much greater control and real-time visibility of the entire IT project portfolio of up to 200 capital development IT projects, allowing a complete and accurate picture of project expenditure. By integrating and consolidating reporting via the business engine network (BEN), Tesco has not only achieved a better understanding of the status of its ongoing projects, but is also able to make quicker and more effective decisions about how best to allocate resources. This automation of the reporting process also means that Tesco can make more accurate forecasts regarding ongoing IT spend.

The solution

The BEN is a web-based collaborative software solution that provides organisations with the visibility and financial control they need to continually balance their portfolio of projects, people and partners against value, risk and capacity. It is used by over 430 blue chip companies to govern their IT and R&D investments by continuously aligning top-down strategy with bottom-up planning and execution. The benefits include the ability to maximise ROI, control costs and readjust portfolio strategy in the face of changing market conditions.

In March 2003, Tesco completed the roll-out of the BEN to its UK head offices in Hertfordshire and Cardiff. This represented a major overhaul of its IT project management processes and is expected to bring significant budget and planning prioritisation benefits. The BEN is currently being used by more than 1,300 users within Tesco, and this number is anticipated to reach 2,000 within the next 12 months. Tesco has signed a licensing agreement for up to 4,000 users, with the extra seats likely to be deployed through roll-outs to offices in Central Europe and South-East Asia, as well as to other head office groups in the UK.

The project is part of Tesco's corporate strategy to achieve three goals:

1 Align all IT projects with the business. Tesco wanted to ensure it is working on and investing in the most important initiatives — those that have business sponsorship are a clear requirement and will create money for internal customers. With the BEN, Tesco does this as part of its portfolio management process, undertaking a full project portfolio review once every quarter. The BEN is used to provide the information for review, helping management to make the right decisions relevant to prioritising the projects it is implementing, and the

resources — in terms of time and money — invested in those projects. The BEN gives IT management the visibility it needs to have full control over how it spends its IT budget.
2 Streamline processing. The primary reason for investing in the BEN was that Tesco wanted project managers to be more efficient and effective and to save them time so that they can spend more time actually managing projects, rather than administering them.
3 Create *value* for customers, rather than *money* — and not just internal customers; the projects which get prioritised are the ones which create most value for the external customers (ie the people who shop in Tesco stores).

Why now?

The key driver for the deployment of the BEN was a programme dedicated to changing Tesco's internal IT processes. It was soon found that the type of processes that the company wanted to implement could not be supported by its existing toolsets. Also, decision making was made difficult by an inability to prioritise resources across IT projects.

Prior to the implementation of the BEN, Tesco was drawing on a variety of disparate data sources to supply project status information, including Artemis timesheet applications, MS Excel spreadsheets, and MS PowerPoint panelsets. This disconnected approach meant that it was difficult to make accurate forecasts or to have an easily accessed, up-to-date overview of the project portfolio itself. For example, 'actuals' figures used to make forecasts could be up to four weeks out of date.

Tesco was also keen to reduce the need for manual inputting of information and thereby free up the time of its project staff and managers to concentrate on core business objectives and undertake more value-added activities.

An invitation to tender (ITT) was issued to several potential suppliers. Business Engine and the BEN were selected because both the company and product best met a variety of criteria, including specific functionality, technical interoperability with existing Tesco applications and operating system, referenceability of Business Engine customers and the ongoing commercial viability of the company.

Why the BEN?

> 'Automation is one of the major benefits that we've gained from the BEN — project information is now automatically updated through direct links with applications such as our financial system. This has made planning much easier — the accuracy and quality of the BEN's reporting is starting to give us a real feeling of control over exactly how and where the IT budget is being spent.' (Ellen Gladders, IT Programme Office Manager, Tesco)

Why Business Engine?

As well as meeting all of the criteria outlined in the ITT, Business Engine's relationship with Microsoft and tight integration with MS Project was a definite advantage. Specific functionalities that also proved to be decisive factors included: superior timesheet capture; budgeting and financial planning; risk and issue management; and resource forecasting.

The benefits

The BEN provides real-time visibility across Tesco's entire IT project portfolio, allowing a complete and accurate picture of project expenditure. By integrating and consolidating reporting via the BEN,

Tesco not only has a better understanding of the status of its ongoing projects, but is also able to make quicker and more effective decisions about how best to allocate resources.

The BEN functions as a 'project dashboard' for IT project managers and first-tier directors responsible for portfolio management. Its user-friendly interface allows easy access to budgetary information and is a significant aid to making risk and resource related decisions.

> 'Project managers are a very tough crowd to impress, but every week more and more people say how much they appreciate the BEN. It's certainly head and shoulders above our previous system.' (Ellen Gladders, IT Programme Office Manager, Tesco)

The automation of the reporting process also means that Tesco can now make more accurate forecasts regarding ongoing IT spend. Rather than using a 'best guess' approach, the BEN enables real-time information from live feeds to be factored into projections.

Essentially, the implementation of the BEN means that Tesco can respond to change much quicker. Economic conditions and corporate developments mean that the company must be able to quickly review and reassess its commitments and, if necessary, re-allocate resources where they are needed most. For the first time, Tesco's IT project management team has a clear view of where money is being spent.

Key learning points

The complete value of project portfolio management (PPM)

Today, organisations are faced with shrinking budgets and changing business priorities, making the need for rapid decision making more important than ever. Disjointed systems and business processes inhibit the ability of organisations to align their projects, people and budgets with corporate objectives. As a result, changes in corporate strategy and financial priorities can take months for project teams to implement — wasting valuable time, money and resources.

Project portfolio management (PPM) applications address these issues by integrating all project-related information within a single, web-based enterprise solution. Organisations use PPM solutions to better align and manage their projects, people and budgets so that they can achieve greater return on their portfolio of investments.

Fundamentally, PPM is a discipline used to ensure that a correct mix of investment activity is initiated, grouped, funded and managed. Technology assets are categorised as an investment portfolio allowing for:

— Investment organisation
— Prioritisation
— Evaluation
— Decision insight and support
— Balance between timing, current needs and future requirements.

The objectives of an ongoing PPM effort are to allow the organisation to be focused, fast and agile. Achieving these high level goals necessitates a variety of inter-related steps. These include:

— Alignment
— Investment focus
— Governance
— Cost control
— Efficiency.

A variety of benefits are possible for organisations successfully executing PPM initiatives. Chief among these is the expression of value in business terms. Whether it is faster project cycle times

or time-to-market, articulating value is the cure for technological organisations suffering from a lack of respect. Other key benefits include:

— Insight into schedule/budget variance
— ROI calculations
— Increased resource utilisation and reduced headcount
— Extrapolating financial benefits of a project
— Project interventions and results
— Discontinued projects or corrective measures as necessary.

There are five primary value propositions that can be achieved with the implementation of a PPM solution.

1 Align business strategy and execution. Integrate executive guidance (portfolio and financial plans), line sponsorship and project-level execution so that you do the right work.
2 Plan and execute effectively and efficiently. Standardise workflows and automate business processes so that you can do the right work faster.
3 Leverage resources (people, partners, money and assets). Manage resources across the enterprise and around the world so that you use the right resources.
4 Make global teams more productive. Share and reuse information, work products and templates so that you do the work right.
5 Improve visibility and control. Gain organisational transparency so that you can identify and solve problems early.

To aid companies in recognising the importance of achieving value and a measurable ROI, a variety of features and functions must be present in a PPM solution:

— Budget and financial management;
— Business planning and portfolio management;
— Project and resource management; and
— Collaboration and knowledge management.

Budget and financial management

The budget and financial management component of a PPM application should integrate with existing financial and enterprise resource planning (ERP) applications to provide the organisation with real-time project-based budget and financial management capabilities. Easy access to accurate project-based financial information is essential so that the organisation can make better and faster business decisions and invest money for maximum return. Functionality should also be provided to automate traditionally manual processes so that resources previously wasted on redundant data entry and manual analysis of project cost estimates and actual time and expenses can be redeployed.

Benefits that should be enabled by the application include the ability to:

— Align spend with projects of greatest return;
— Utilise project-based budgets to make better decisions;
— Manage project budgets against financial objectives; and
— Make project budgets transparent to sponsor organisations.

Functionality required to deliver the above value and benefits include:

— Project and resource-driven budget and approval process
  • Budget by project, initiative and organisation
  • Budget billable and non-billable projects
  • Budget revenue and expense

- Configure budget rules
- Define multi-year and rolling budgets

— Comprehensive rate management
- Define flexible rates for budget
- Establish multiple rate hierarchies
- Use the same or different rates for actuals

— Integration
- Integrate with third-party general ledger systems, including providing and sponsoring cost centre transactions
- Perform prior period adjustments
- Align budget management with project management

— Charge-backs
- Budget project chargebacks to sponsoring organisations
- Incurred versus budgeted cost charge-backs

— Online Analytical Processing (OLAP) reports
- General ledger cost analysis
- Provider actuals versus total budget
- Project detail cost analysis

— Additional financial management functionality
- Inclusion of capital expenditures in non-labour expenses
- Incremental project funding
- Major expenditure requests
- Real-time data versus historical data views
- View-based (resource, cost centre, or organisation) breakdown of labour components (salary, fringe, etc).

Business planning and portfolio management

The business planning and portfolio management of a PPM application should enable the organisation to define, evaluate and monitor its portfolio of projects for maximum ROI. Organisations should be able to use this functionality to establish the definition, scope, risks and expected return for their portfolio of projects. In addition, they should be able to model new and existing projects to determine the optimum portfolio mix that maximises their investment returns.

Once portfolios are defined and prioritised against corporate objectives, organisations should be able to monitor project portfolios through customisable views. With real-time access into performed project work and planned project resources, organisations should be able to use the PPM application to ensure their portfolios of projects remain aligned with corporate objectives, identify and resolve project risks and resource bottlenecks and proactively make decisions to maximise ROI and minimise time-to-market.

Benefits that should be enabled by the application include the ability to:

— Select the most important projects;
— Establish the right definitions of project success;
— Monitor project performance against objectives;
— Re-align projects when market conditions change; and
— Cancel low priority and failing projects quickly.

Functionalities required to deliver the above value and benefits include:

— 'What-if' scenario modelling
- Compare portfolio plans against current operating plans
- Analyse the impact of new projects on the portfolio
- Drag and drop schedules
- Create multiple versions of project portfolio to compare against supply

— User-defined views
- By project (past, in progress or planned)

  - By resources (staff, skills or budget)
  - By schedule (past, current or projected)
— Multiple criteria-based views
  - Actual versus planned
  - Actual versus budget
  - Actual versus schedule
— OLAP reporting
  - Project work by project type
  - Planned versus actual work
  - Project work by project priority.

Project and resource management

The project and resource management component of a PPM application should provide a single record of all project-related activity so that project stakeholders at all levels are equipped with relevant and actionable information to make better and faster decisions throughout the project management lifecycle. It should enable an organisation to build project plans with speed and precision while utilising fewer and lower cost resources.

Benefits that should be enabled by the application include the ability to:

— Manage project plans to objectives;
— Communicate and monitor work for better results;
— Identify and resolve problems early;
— Manage dependencies across projects;
— Assign the right people to the right projects;
— Fully utilise FTEs and reduce contractor costs;
— Leverage resource talent across your global enterprise; and
— Take advantage of resources in lower cost geographies.

Functionalities required to deliver the above value and benefits include:

— Initiative management
  - Set up unlimited hierarchical relationships initiatives, programmes, and projects
  - Monitor initiative home pages and configurable dashboards
  - Define initiative charters and goals
  - Track initiative risks and issues
  - Run initiative reports
  - Track initiative status
  - View initiative projects at a glance
  - View initiatives in Gantt charts
— Project management
  - Establish customisable project home pages
  - Define project charters and goals
  - Define project team members and stakeholders
  - Plan, assign and monitor tasks, deliverables and milestones
  - Plan and monitor dependences within and across projects
  - Define project impacts and drivers
— Risk and issue management
  - Define and monitor risks and issues
  - Assign issue and risk actions
  - Status issues and risks
  - Identify common risk and issues across projects
— Resource management
  - Define hierarchical skills profiles for resources
  - Request and allocate resources
  - Allocate resources based on weighted proficiencies
— Time and expense
  - Record time and expenses for project tasks
  - Route time and expense approvals
  - Lock approved timesheet data
  - Capture and report non-billable time and expenses
  - Establish user-defined billable hour maximums
  - Report on missing timesheets
  - Configure alerts for timesheets that are overdue or awaiting approval
  - Define timesheet periods
  - Billable versus non-billable time tracking

— Microsoft Project and project server integration
  • Synchronised project task and resource management
  • Integrated OLAP reporting
  • Shared configuration and security administration
  • Configurable field mapping.

Collaboration and knowledge management

The PPM application should have collaboration and knowledge management capabilities that span the processes of portfolio, budget, project, resource and external relationship management. A web-based user interface is necessary to enable organisations to seamlessly collaborate and share project-related information across internal and external project teams.

Benefits that should be enabled by the application include the ability to:

— Establish a single source for all project-related information;
— Empower project teams with relevant and actionable information; and
— Collaborate seamlessly across geographies and business partners.

Functionalities required to deliver the above value and benefits include:

— Customised homepages
  • Organisational, initiative, project and individual views
— Knowledge sharing across the extended enterprise
  • Document management including check-in/check-out and version history
  • Templates of standard documents, plans and budgets
  • Forums for threaded discussions
  • User-configurable views
  • E-mail documents
— Role-based user support
  • IT, R&D, financial and line of business executives
  • Project managers
  • Global project team members
  • Customers
  • Partners
  • Contractors and service providers
— Comprehensive reporting
  • OLAP reports
  • Standard reports
  • Crystal reports
  • Ad-hoc reports
  • PowerPoint charts
— Security administration
  • Password composition and frequency restrictions
  • Exportable login audit log.

It is clear that a PPM solution is rapidly becoming an accepted means of assisting enterprises in achieving alignment between business strategy and execution while improving visibility and control throughout all necessary roles.

CASE STUDY V: BT EXACT: INTELLIGENT BUSINESS ANALYTICS — TURNING DATA INTO BUSINESS BENEFIT

The fifth case study from the BI Awards is slightly different from previous four in that it makes points that are of wider application. However, the same caveats need to be applied to those making use of this paper for guidance: it is a statement of intent — and does not yet report back on reality.

Introduction

Data analysis is at the heart of decision making in many industries today. The complexity of businesses means that in order to measure business performance, managers need to undertake considerable analysis of data gathered in vast quantities on a regular basis. But there is still a significant degree of manual intervention required in the preparation, presentation and analysis of business data.

With the development of an intelligent business analytics (IBA) platform, however, intelligent software technology has produced several novel techniques that replicate the human decision-making process. Until now, businesses have used data analysis tools in a mainly reactive way. However, these latest advances in intelligent software technology are playing an important role in automating the analysis process and enabling not just data analysis experts but also business users to interpret data more easily and quickly.

A team of experts from BT Exact has created an IBA platform and two applications which provide user friendly solutions for monitoring, evaluating and optimising decision making in their day to day business.[1]

The term 'intelligent' is applied to this method of data analysis because expert knowledge is integrated in the analysis process using a new computing paradigm called soft computing.[2]

According Professor Zadeh:

> 'The essence of soft computing is that unlike the traditional, hard computing, soft computing is aimed at an accommodation with the pervasive imprecision of the real world. Thus, the guiding principle of soft computing is: exploit the tolerance for imprecision, uncertainty and partial truth to achieve tractability, robustness, low solution cost and better rapport with reality. In the final analysis, the role model for soft computing is the human mind.'[3]

Knowledge-based methods are used for analysis, while new knowledge is created and communicated by the analysis process. This methodology will require a fundamental sea change in the way data is used in companies — moving from a mainly reactive tool to a proactive one. As with any new developments, it also requires a cultural change — from one in which humans make all the decisions, to one where they rely on a software system to automate certain decisions.

In today's fast-moving and increasingly competitive world, however, those businesses that can turn data into information and act quickly on the findings — taking advantage of intelligent business analytics support systems — are more likely to remain ahead of the pack.

This case study describes British Telecom's (BT's) development of its IBA platform and the creation of two applications — based on the operational needs from within BT business units — that are being used on it.

The organisation

BT is one of Europe's leading providers of telecommunications services. Its principal activities include local, national and international telecommunications services, higher-value broadband and internet products and services, and IT solutions. In the UK, BT serves over 20 million business and residential customers with more than 29 million exchange lines, as well as providing network services to other licensed operators. BT Exact is BT's research, technology and operations business. It aims to help BT and its customers gain maximum advantage from communications technology and to create value and competitive advantage through combining its knowledge of networks and networked applications with its skills

in innovation, change management and IT operations.

The challenge

The key question that motivated the project was: 'How can the latest intelligent software technology be incorporated in business analytics applications more efficiently than before?'

First generation business analytics systems were based on centralised batch processing. The second generation took the form of data warehousing systems based on client/server computing. If the information was not readily available in the warehouse it could not be found easily by business users.

Third generation systems saw the introduction of OLAP, data mining, and web deployment. Packaged analytic applications accelerated deployment, but detailed analysis of data still required specialist skills.

The integration of business analytics into the overall business process is achievable by building a closed loop decision-making system in which the output of business analytics is used by operational managers in the form of recommended actions.

Intelligent business analytics extends this closed loop process to the automatic adjustment of business operations based on decisions made through analysis of available data in real time. Fourth generation business analytics software was a closed-loop enterprise analytic system that can support real-time processing.

Further, instead of focusing on simplicity, many of today's data analysis tools are obsessed with accuracy. They deny the fact that most real world problems cannot be solved with 100 per cent accuracy anyway, and that an imperfect solution — which can be quickly and easily applied — has a much higher benefit.

This is the void that intelligent business analytics seek to fill. BT's IBA platform incorporates the latest intelligent techniques into business analytics applications. The objective was to reduce the skill barrier, reduce development time and cost and take advantage of economies of scale by re-using the platform to develop many applications.

It is aimed at rapid prototyping of applications that require analysis and visualisation of large volumes of data. The platform consists of libraries of standard components for database connectivity, intelligent analysis routines and advanced visualisation components.

The solution

BT's intelligent business analytics platform

In short, a platform was developed to create a software environment where the latest algorithms and architecture developed within industrial or academic research could efficiently be incorporated into real business applications.[4]

The platform has removed some of the bottlenecks in the technology transfer process and has enabled BT Exact's experts to build experimental systems in a fraction of the time taken in the past.

The platform BT created has a plug-in interface for intelligent data analysis (IDA) methods. Depending on the area in which an application based on the platform is deployed, appropriate IDA methods are selected and configured to run automatically without user intervention. IDA goes one step further than today's data mining approaches and considers the suitability of created solutions in terms of their usability, comprehension, simplicity and cost.

The platform draws on soft computing methods — a new branch of artificial intelligence (AI) computing.[5,6] Currently,

business decisions are made mainly by humans and are based on available information. Intelligent decision making is largely an exclusively human trait. However, the latest developments in AI technology have brought us much closer to modelling human reasoning and learning from examples. Soft computing recognises that human reasoning is based on imprecise and uncertain information — an ability that has, until now, been difficult to build into computer programmes.

'Soft computing' is a term coined by Professor Zadeh of the University of California at Berkeley, who is known as the father of fuzzy logic. Soft computing comprises technologies such as fuzzy logic, neural networks, probabilistic computing and evolutionary computation.[7] Its aim is to exploit the tolerance for imprecision, uncertainty, approximate reasoning and partial truth in order to achieve tractability, robustness and low cost solutions. Fuzzy technology uses, for example, simple expressions taken from everyday language to describe relationships between variables.[8]

Using its generic intelligent business anaIytics platform, BT has developed and deployed two applications to run on it: ITEMS (Intelligent Time Estimation and Management System) and DecTOP (decision support and optimisation system).

ITEMS

ITEMS is a web-enabled software system that visualises, explains, predicts and manages the travel patterns of a mobile workforce. Service industries — including telecommunications, gas, water and electricity — have to schedule jobs for large mobile workforces. Successful scheduling requires suitable estimates of inter-job times — mainly determined by travel time. ITEMS is an intelligent travel time estimation and management system for managing mobile workforces.[9] It is used by BT's workforce management system as one of its major operational systems, and has substantially improved the accuracy of travel time estimates for BT engineers.

ITEMS has automated a process that was previously largely manual and quite complex. It has eliminated any manual intervention in the process of updating any models. Manual means cost — automated means less cost and faster response times. Overall, improved estimates have led to improved scheduling of jobs and that has resulted in a ten per cent decrease in actual travel times.

It is not sufficient to simply use routing software — which cannot estimate the time it takes to find a parking space, building location, etc. It is also impossible for technicians to log detailed information about the routes they have taken. They only log their actual travel (inter-job) time. So it is therefore not possible to compare travel data with recommendations from the routing software.

The aim of ITEMS was to design a system that would reduce travel costs for BT's mobile workers and improve their time efficiency — thereby increasing customer satisfaction. BT employs a mobile workforce of around 20,000 customer service engineers across the UK.

In order to manage its resources efficiently and effectively, BT uses a dynamic scheduling system to build proposed sequences of work for field engineers. Typically, an engineer's schedule contains a sequence of time for travel and task.

To generate accurate schedules, the system must have accurate estimates of the task completion time at the customer's site and for the time to travel

from that location to the next. While this system successfully provided the estimates, it did not allow for any events that may cause further delays — such as traffic congestion or parking. As travel time was consistently underestimated, engineers arrived late for their jobs, causing inconvenience to customers.

BT Exact's research found that more reliable travel time estimates were achieved using historical data. Recorded inter-job times reflect the actual travel behaviour of the workforce and automatically indicate features of the geographical areas that the journey covered.

A learning component at the core of ITEMS constantly builds new models to improve the accuracy with which travel times are predicted. It compares the new model with the model currently used by the scheduler and recommends updating the scheduler if the new model performs significantly better. This allows managers to schedule jobs more accurately, so that their workers arrive at their job locations on time — creating huge savings as a result of a reduction in unnecessary travel.

The estimation part of ITEMS uses adaptive local linear models to generate travel time predictions based on straight line distance. The estimation model is based on historical travel data and is updated daily. Thus, the model implicitly takes into account any factor that influenced end-to-end travel time, such as the time it takes to access customers' premises or rush-hours.

ITEMS also contains an explanation facility, that is based on decision trees and neuro fuzzy technology.[10] This displays rule-based information about individual journeys. The rules derived from travel data explain why a certain journey may have made an engineer late. Managers, in turn, can use the information provided by those rules to improve the overall system behaviour.

ITEMS is a web-enabled Java-based software system which, as well as estimating travel times, provides a colour-coded geographical visualisation of travel patterns that managers can use to analyse the travel behaviour of their workforce and determine if improvements are required.

DecTOP

DecTOP is a decision support and optimisation tool.[11] In many organisations, call operators use decision models in the form of a prescribed interview. Based on the answers of a customer, the operator navigates through the decision model to reach an assessment. In order to maintain customer satisfaction and operational excellence, it is very important to constantly monitor the performance of a decision model not only on an overall level but also on the level of individual decisions.

DecTOP represents a decision model in the form of a table. Based on accumulated historic data that reflects decisions and their outcome, DecTOP analyses the accuracy and cost of the complete decision table and individual decisions.

The software enables the user to identify individual decisions of poor performance and to optimise them manually or automatically. The user can study any number of variants of the decision model in parallel and compare their performance.

By changing individual decisions, the user can conduct a 'what-if' analysis. The automatic optimisation of the decision model can be based on accuracy as well as on cost. It can handle multi-stage processes, where the actual impact of a decision is measured via intermediate steps.

DecTOP is used by BT Retail to improve the performance of the telephone fault allocation process. When BT Exact developed the solution for BT Retail, the aim was to develop a tool to help its call centre representatives accurately diagnose reported faults and send the engineer with the most appropriate skills to fix the fault.

While a more accurate fault diagnosis is achieved by asking the customer more questions, this takes more of call centre representatives' time — which reduces their efficiency. If a shorter set of questions results in the wrong diagnosis, an engineer whose skills are inappropriate could be sent to fix the fault. This would result in a wasted journey for the engineer, a delay in the fault being fixed and customer dissatisfaction.

DecTOP's optimisation system monitors the decisions that the call centre staff make. It contrasts those decisions that lead to fault clearance with those where the suggested solution was inappropriate. Each time a decision leads to a solution, the system optimises it so that eventually the system 'learns' the correct solutions.

The system consists of a data warehouse, an optimisation module and a number of visualisation modules. IT is fully configurable for accessing data from all commonly used databases. It is loosely coupled and is designed to work alongside existing analytics applications.

The visualisation modules consists of a strategic analysis module, which displays key performance indicators; a tactical module that enables what-if analysis capability; and an operational module that provides the capability to drill down raw data.

Companies can apply DecTOP's optimisation process not only to fault reporting but to any data they collect as they try to optimise performance in areas such as cost or customer satisfaction.

The tool enables companies to integrate three traditionally separate parts of their business; senior management (strategic decision making); middle management (tactical); and operational work (engine room).

BT has so far used DecTOP to improve accuracy of decisions regarding where the type of fault is in response to a customer query — but it could equally be used to improve the accuracy of decisions made higher up the process chain.

The benefits

ITEMS

BT's workforce management system is now using ITEMS when allocating engineers' work. Through its increased accuracy of travel time predictions, ITEMS is eliminating unnecessary travel, has improved customer satisfaction and brought cost savings to the business. Estimation accuracy has improved by between ten and 30 per cent in some regions. Actual travel time of technicians is down by ten per cent.

DecTOP

DecTOP aims to reduce the average time it takes to clear faults — one of the factors that will play an important part in reducing customer dissatisfaction. DecTOP has enabled BT to achieve faster and more accurate fault diagnosis — resulting in the correct engineer being sent to the fault in the first instance. Based on data collected from 600,000 records, BT's initial results show that DecTOP can increase the accuracy of correct decisions by 13 per cent and reduce the average cost of incorrect decisions by 49 per cent.

It removes the need for manual data sifting and frees up expert resources to work on other things. At the touch of a button you could, for example, specify

your high level strategic goals and DecTOP will optimise the decision stages. This is a major step forward in the automation of the analysis/optimisation process for fault reporting and service provision.

Decisions at an operational and tactical level could be linked to strategic objectives via this tool. So DecTOP enables you to do a 'what-if' assessment on impact and processes, as well as showing how decisions further down the line can be optimised/changed to achieve a company's strategic goals.

DecTOP also brings the benefits of economies of scale as it aims to use the same basic analysis platform across all systems thereby reducing development time and training time for eventual users.

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For more information on the Information Management Awards, please contact Lisa Di Bernado, Elan Conferences Ltd, tel: +44 (0)1707 373701; e-mail: lisa@elanconf.co.uk