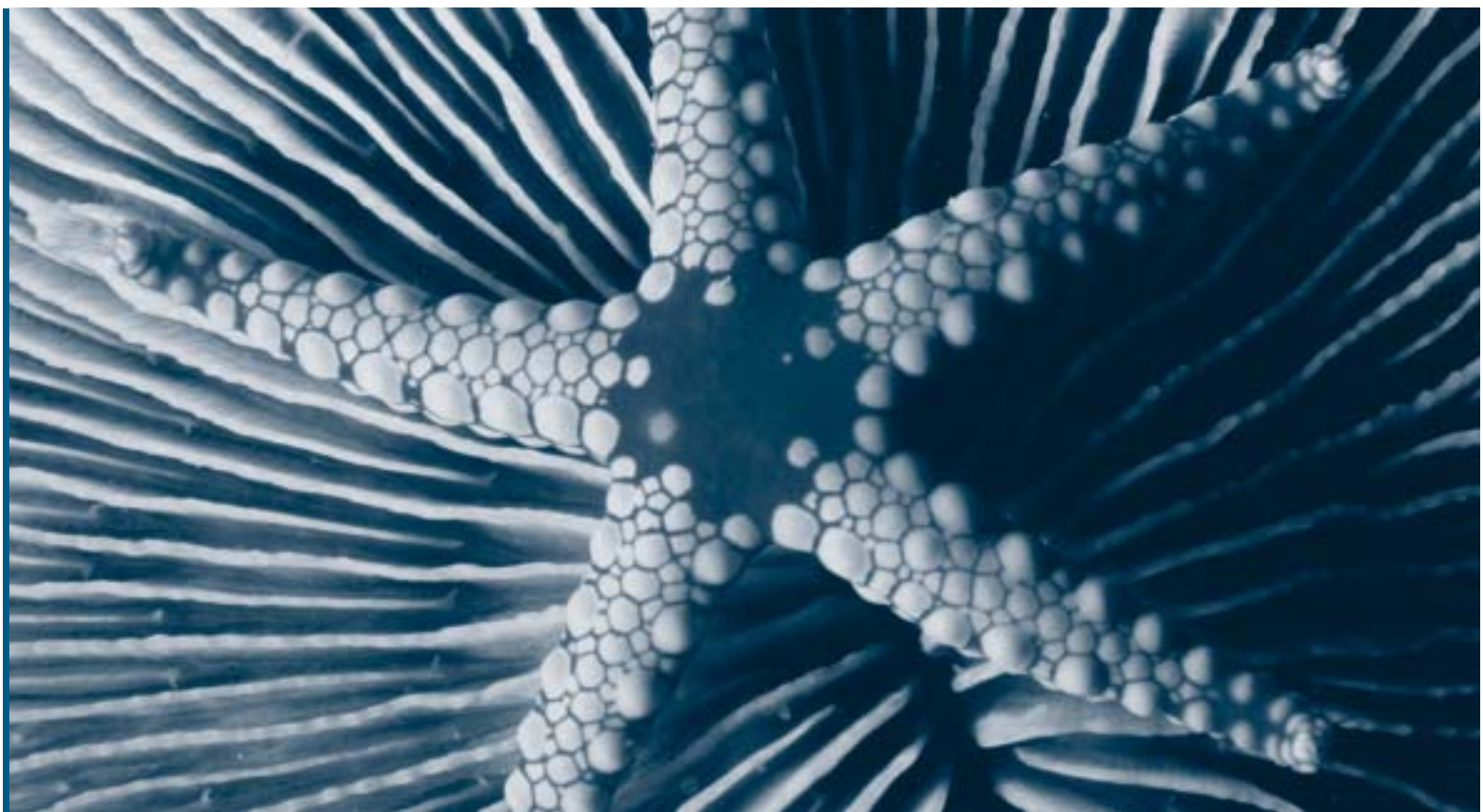




# Benchmark of IT Strategy 2006

The annual appraisal of IT strategy in the UK





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# NCC Benchmark of IT Strategy 2006

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### Management Structure

There have been some significant changes in the senior management structure since the 2001 Survey of IT Decision Makers. The proportion of respondents reporting an IT Director representing the IT function at Board level has fallen from 27% to 21%. Those reporting a "Director for IT and Other Areas" has risen from 34% to 59%. The proportion of respondents who reported no formal representation for IT at Board level has fallen from 39% to 21%. Responses on other issues suggest that the "Director for IT and Other Areas" is not normally an "IT professional". In some organisations this may be the traditional structure of IT reporting through the Finance Director, because 45% of the IT Managers and 17% of the IT Directors who responded reported to their Finance Director. However, in other organisations it will represent the trend to assign the IT portfolio to a Board level director with strong business experience, to help to ensure that IT projects deliver business benefits.

### The Pace of IT Adoption and the Demand for IT

Respondents were presented with a scale describing the pace of IT adoption and asked to indicate where on the scale their organisation was, and where they felt it ought to be – they were asked to complete a similar process for the source of demand for IT in their organisation.

Over half of the respondents felt that the pace of IT in their organisation was too slow – only 7% felt it was too fast. Similarly over half of the respondents felt that the source of demand for IT applications in their organisation was too IT driven and only 17% felt that it was too business driven.

There was a strong correlation between the pace of IT adoption and the source of demand for IT applications. Organisations that were more user driven in their demand for IT tended to report a more aggressive pace of IT adoption – those that were more IT driven tended to report a more conservative pace of IT adoption.

There was also a correlation with the management structure. Organisations with an IT Director at Board level tended to report a faster pace of IT adoption, but also to be more IT driven. Those with a Director for IT and Other Areas at Board level tended to report a slower pace of IT adoption but to be more user driven.

Comparing respondents' adoption of specific IT applications, there was evidence to suggest that their assessments of the pace of IT adoption in their organisation were actually borne out by comparison with other responding organisations. Those who assessed their pace of IT adoption as conservative, tended to have progressed to a lesser extent in the implementation of a wide range of key applications.

### Roles, Strategy and Problems

Respondents were asked about the role of IT function, procedures for developing IT strategy, and the problems associated with the development and implementation of IT strategy.

95% of respondents described "maintaining and developing the IT infrastructure" as a major role of the IT function but only 34% cited "identifying and engineering change in business processes". Organisations with an aggressive pace of IT adoption and organisations with an IT Director at Board level were more likely to identify the proactive roles, such as "identifying and engineering change in business processes", as a major part of their remit.

"Lack of involvement/commitment of senior managers", was the most significant problem hindering the development of an IT strategy. 45% of all respondents cited it as a major problem, but, in organisations where the pace of IT adoption was conservative, three-quarters of the respondents said it was as a major problem.

"Budget limitations" and the difficulties associated with "implementing necessary organisational changes" were the two issues most commonly cited as major problems with the implementation of IT strategy. The proportion of respondents who indicated that "implementing necessary organisational changes" is a major problem has increased from 32% in the 2001 survey to 48% in the 2006 survey. Over the same period, the proportion of respondents citing "IT skills shortages" as a major problem has fallen from 37% to 19%.

### Applications and Technologies

80% of organisations have started development or have plans to develop EDM and Workflow applications. Organisations in the Finance & Business Services sector were most likely to report existing widespread implementation of these applications. However, they are under development or planned in the majority of organisations across all industry sectors, particularly the Government sector. CRM shows a similar picture, with 80% planning to implement it but only 15% reporting complete implementation.

The fastest growth area in the communications technologies that were listed is for Voice over IP. Over 70% of organisations have undertaken some VoIP development and a further 13% indicate that they plan to do so.

The great majority of organisations have already established mobile / remote access facilities, although many indicated that these facilities are not yet fully implemented. The availability of secure fast remote access is seen as a key strategic technology or major significance by nearly 70% of respondents.

Enterprise Application Integration (EAI) is currently implemented to some extent by 20% of respondents with a further 30% having made initial developments or planning them. Nearly 80% of those who have undertaken some EAI development indicated that they expect it to be a key strategic technology or one of major significance. A similar pattern was observed for Service Oriented Architecture (SOA).



### Benchmark of IT Strategy

The Benchmark of IT Strategy, together with its sister publication the Benchmark of IT Spending, is an annual investigation of trends and events in IT user organisations in the UK. It has been carried out by NCC for the past 25 years.

This year's strategy survey returned to a number of key issues that were addressed in the NCC's Survey of IT Decision Makers in 2001. This was done mainly because these are important issues in their own right, but also to investigate whether the responses on these issues have changed over the past five years.

#### The survey investigated:

- ▶ *The position in the corporate management structure of those responsible for formulating and implementing IT strategy*
- ▶ *Their perception of the pace of IT adoption and the forces driving the adoption of IT in their organisation*
- ▶ *Their perspective on the role of the IT function and the challenges that they experience in formulating and implementing IT strategy*

#### And in our regular review of current activities:

- ▶ *The extent to which specific applications and technologies are currently planned or implemented.*

### Survey Methodology

The survey was carried out entirely online, using a questionnaire developed by NCC's survey research team and hosted on NCC's website. Where the questionnaire was repeating questions asked in the Survey of IT Decision Makers the original wording was retained to maximise comparability. The Head of IT in NCC member organisations and other organisations that have recently contacted NCC was invited by email to complete the survey during January and February 2006.

In addition to the online survey, telephone case studies were carried out to investigate organisations' experiences of workflow applications and mobile or remote access technology. These case studies were carried out with respondents to NCC's Benchmark of IT Spending 2005 and to the Benchmark of IT Strategy 2006

surveys, who indicated that they had recently implemented workflow or remote access applications.

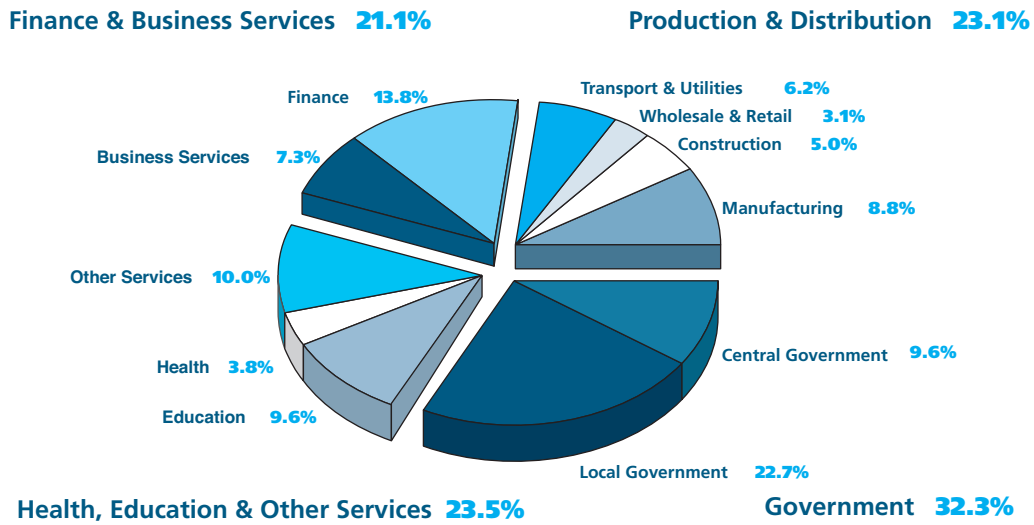
### The Respondents

Responses were received from 288 organisations. After excluding responses from IT supplier organisations, this report is based on 260 responses. NCC would like to thank all of those who gave their time to respond to the survey.

There is an electronic version of this report, which contains a data appendix with tables which show the figures on which all of the graphics are based and identifies the number of responses used for each analysis. If you would like to obtain the electronic version please email [surveys@ncc.co.uk](mailto:surveys@ncc.co.uk).

Figure Respondents by Industry Sector

2.1



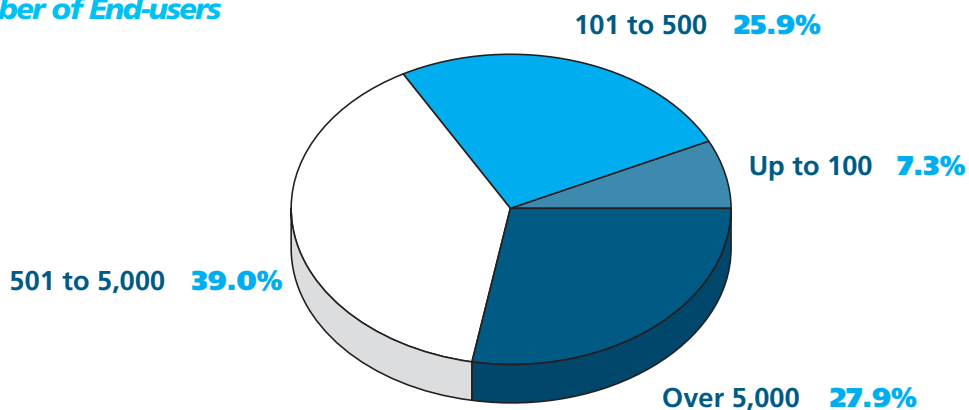
The respondents represent a wide range of different types of organisations, which place different demands on their IT function. In most of the analyses by industry sector the broad split into Production and Distribution (23.1%), Finance and Business Services, (21.1%) Health, Education and Other Services (23.5%) and Government (32.3%) is used. Responses from the IT Supplier sector have been excluded from this report.

The breakdown of responses by sector is quite dissimilar to the 2001 survey, with a much larger response from the Government sector (32% compared with 9%) and a smaller response from the Distribution and Services sectors. Where direct comparisons with the earlier survey are made, the impact of differences in industry breakdown are allowed for.

Figure Respondents by Size of Organisation

2.2

Number of End-users



Size is a key determinant of many of the organisational issues that are considered in this survey. The respondents are predominantly medium and large sized organisations, with over two-thirds reporting more than 500 end-users. Larger organisations tend to have a relatively long history of computerisation, more sophisticated systems in place and a legacy of existing systems that may need to be accommodated by new applications.

The distribution of responses by size of organisation is also significantly different from the earlier survey, when nearly one-third of the organisations reported fewer than 100 end-users. Where comparisons with the previous survey are made, this difference in the samples is taken into account.



### Premise

The IT function needs an effective voice at the highest level of management. If it is not properly represented at this level it will be much more difficult to co-ordinate IT Strategy and Business Strategy effectively. It will also be more difficult to secure the overall commitment to organisational change that is necessary to gain the business benefits from many applications. One way of helping to achieve this effective voice is to ensure that the top management structure reflects this requirement.

### Respondents were asked:

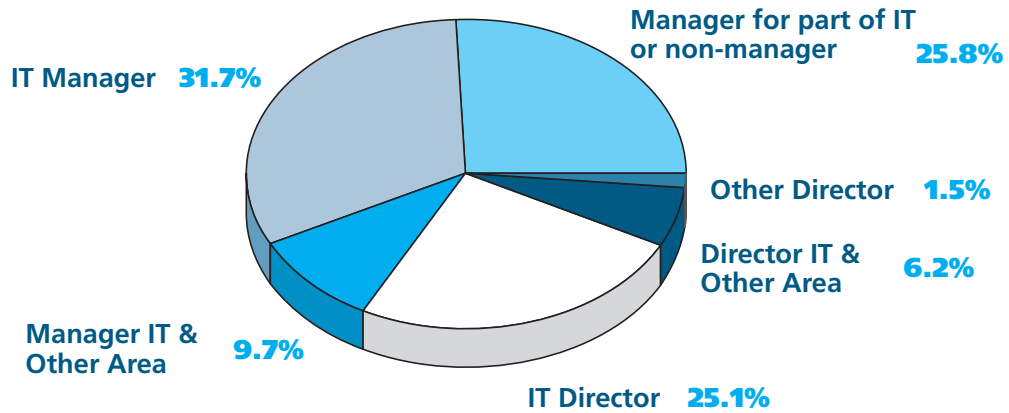
- ▶ *What is your own position in the management hierarchy?*
- ▶ *Who do you report to?*
- ▶ *At what management level is the most senior "IT professional" in your organisation?*
- ▶ *How is the IT function represented on the Board in your organisation?*

### Findings

- ▶ *Only 21% of respondents reported an IT Director representing the IT function on the Board of their organisation – five years ago this figure was 27%.*
- ▶ *59% reported a Director responsible for "IT and Other Areas" - this is significantly more than five years ago when only 34% reported a non-IT director with specific responsibility for IT at Board level.*
- ▶ *Only half of the IT Directors that responded to the survey, report directly to the Chief Executive or to the Board – the remainder report to the Finance Director 18% or another director.*
- ▶ *Nearly half of the IT Managers that responded reported to the Finance Director.*
- ▶ *Half of the organisations reported a senior "IT professional" at Director level, although this individual did not necessarily represent IT on the main Board of Directors.*
- ▶ *Finance and Business Services were most likely to report an IT Director representing the IT function at Board level.*
- ▶ *Smaller organisations were most likely to report no formal IT representation at Board level.*

Figure Respondents by Management Status

3.1



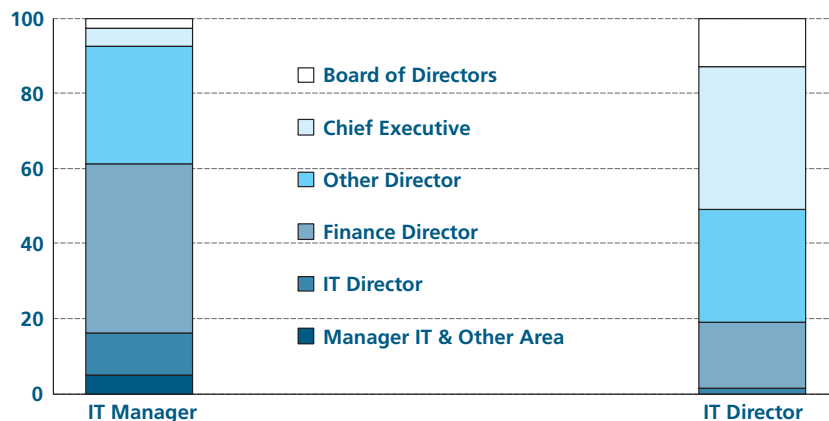
Part of this survey is essentially an opinion survey of IT decision makers, and many of the issues that it is addressing relate to the impact of the IT management structure on the process of defining and implementing IT strategy. For both of these reasons it is important to have a view on the respondents' position in the IT management structure.

Three-quarters of the respondents to the survey are either the IT Manager or a Manager with some responsibility for the overall management of the IT function. Two key positions are IT Manager 32% and IT Director 25%.

The other significant group are those who are manager for part of IT within their organisation – this includes some managers in large organisations who are effectively the manager of IT in their own part of the organisation, but are part of a larger organisation for some issues.

Figure The Reporting Path for Heads of IT

3.2 IT Manager vs IT Director



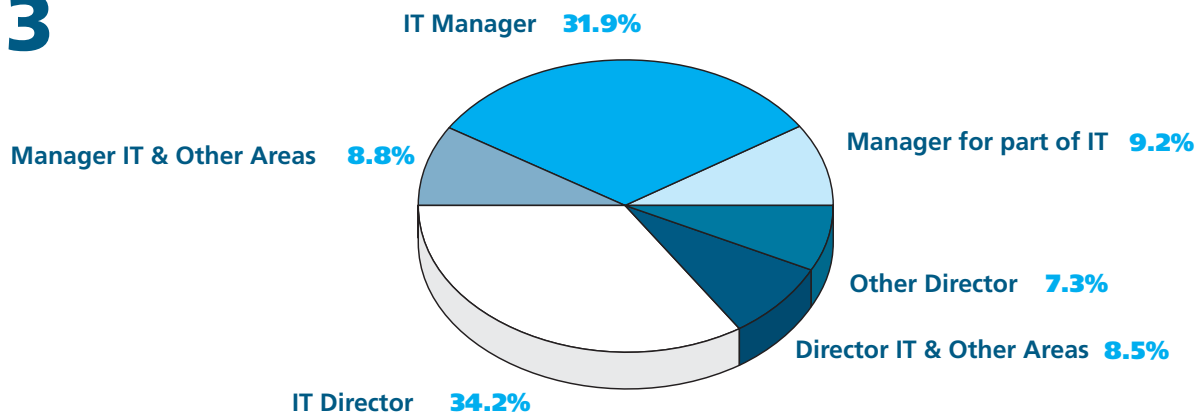
Nearly half of the IT Managers who responded report to the Finance Director in their organisation, with a further 31% reporting to an "Other Director" and less than 10% reporting to the Board or the CEO. However, this probably gives a biased picture since the "Head of IT" was the target respondent in our survey. In many other organisations the IT Manager would not be regarded as the "Head of IT" so we would tend to receive fewer responses from IT Managers who reported to an IT Director or to another more senior IT role.

Even when we received responses from IT Directors, only 51% reported directly to the Chief Executive or the Board. Just under half reported to an "Other Director" or to a Finance Director.



Figure 3.3 Management Status of the Most Senior IT Professional\*

3.3



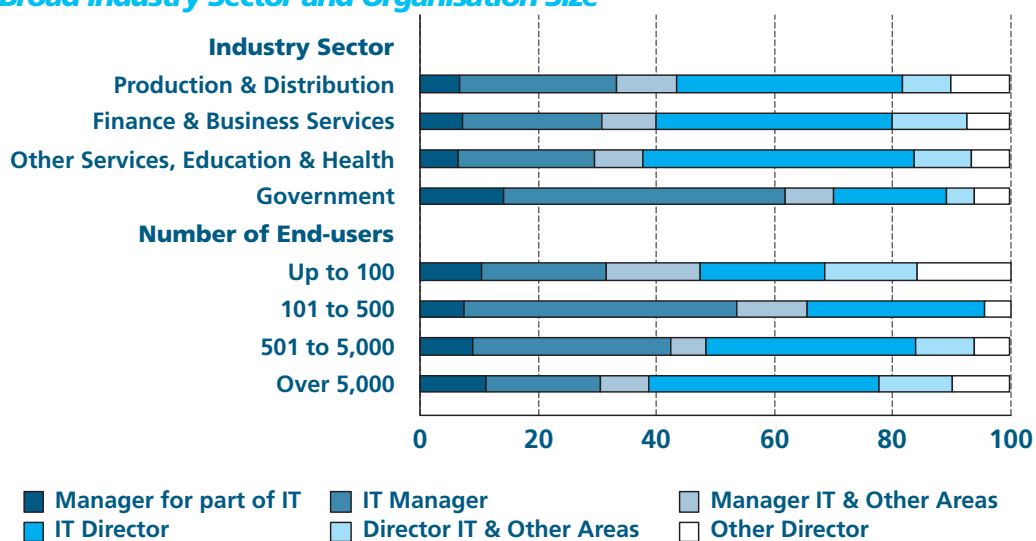
\*Defined as an individual who has a significant technical background in IT.

Respondents were asked to describe the management status of the most senior "IT professional" within their organisation. IT professional was defined in the questionnaire as an individual with "a significant technical background in IT". For 84% of the respondents the most senior IT professional in the organisations was also the most senior IT professional in the IT function. Only 15% of respondents identified an IT professional in a senior role outside the IT function.

Possibly more crucial is the fact that half of the respondents identified a senior IT professional at director level. The importance of having IT experience at the highest levels of the organisation is something of a moot point. One of the case studies, for example, highlights a failing IT project which was brought back on course by the appointment of a senior director without IT experience to ensure that the business goals of the project were achieved. However, other things being equal, a senior presence with a clear appreciation of IT issues does seem to impact the respondents' perceptions of some of the major problems of determining and implementing IT strategy.

Figure 3.4 Management Status of the Most Senior IT Professional by Broad Industry Sector and Organisation Size

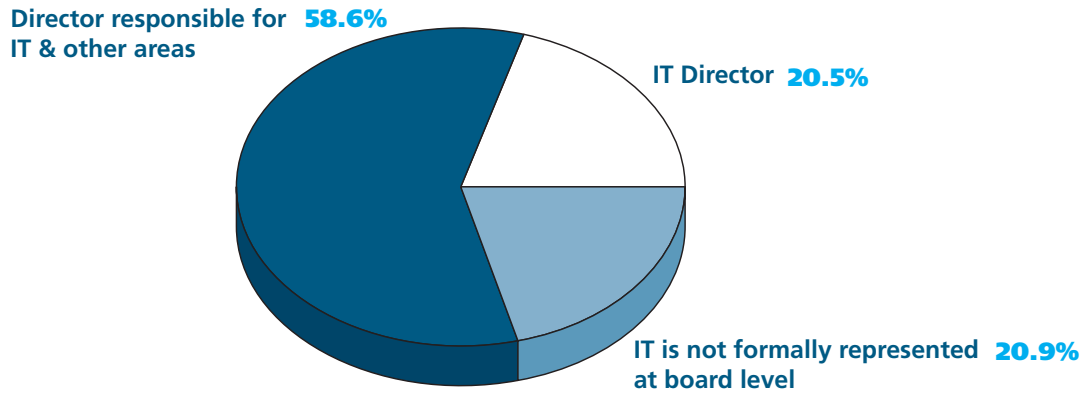
3.4



Comparing industry sectors, the most noticeable feature is the Government sector, where over 60% of respondents indicated that the most senior IT professional was the IT manager. This is partly due to the particular management structure within the government sector. With the exception of the smallest organisations with under 100 end-users, there appears to be a correlation between size of organisation and the presence of IT professionals as Directors of IT as well as Directors in non-IT specific roles.

Figure 3.5 IT Representation at Board Level

3.5

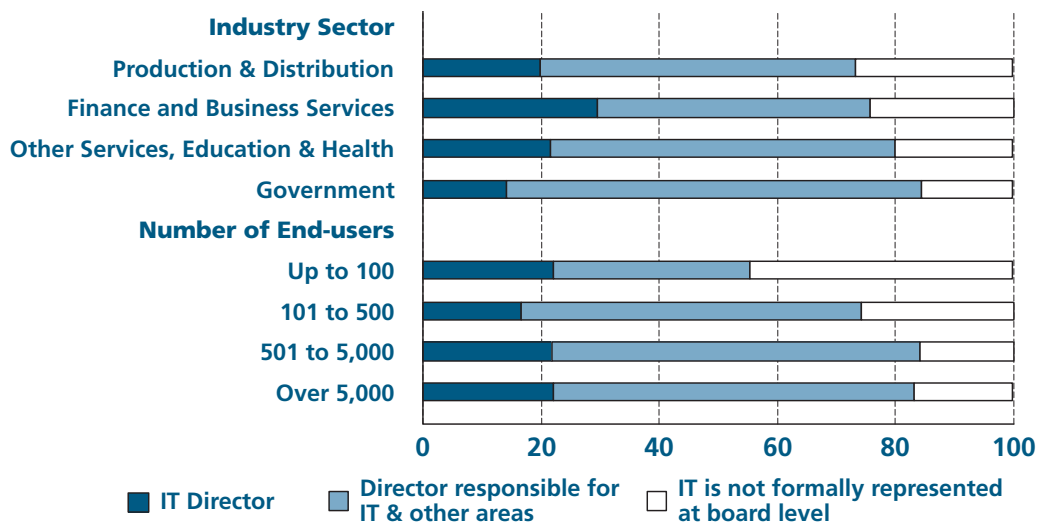


Just under 21% of respondents reported an IT Director representing the IT function at Board level. This is somewhat lower than five years ago, when the figure was 27%, and the difference is surprising given the larger average size of organisation in this survey. The proportion of organisations where respondents indicated that IT was not formally represented at Board level has fallen even more dramatically, from 39% to 21%. Most significant however, is the rapid growth in the numbers reporting a Director responsible for "IT and Other Areas" representing IT on the board from 34% to 59%.

There is also strong evidence from the survey to indicate that this non-IT Director is not normally an IT professional. In organisations where a Director of IT and Other Areas represents the IT function at Board level, only 20% of respondents identified an "IT professional" at Board level. When an IT Director represents the function at Board level this rises to 89%. It seems likely that at least part of this change is due to the acceptance of the need for a high level business champion for IT. The role of this individual is to ensure that IT applications with significant business implications actually achieve the business benefits that are intended.

Figure 3.6 IT Representation at Board Level by Broad Industry Sector and Organisation Size

3.6



The Finance and Business Services sector was the most likely to report an IT Director at Board level (30%) while the Government sector was least likely to report an IT Director (14%) and most likely to report a Director with responsibility for IT and Other Areas (70%). There was no significant difference in the proportion of organisations with IT Directors at Board level comparing organisations of different sizes. But it was noticeable that nearly half of the organisations with under 100 end-users reported no formal representative for IT at Board level.



### Premise

Some organisations are rapid, early adopters of new IT applications while others are slower, late adopters. In some organisations the business case drives the implementation of new IT applications, while in others it is the IT function which drives the business to accept the benefits of new IT applications.

Respondents were presented with one scale describing “the pace of IT adoption” and one describing the “source of demand for IT”. They were asked to indicate where they felt their organisation was on each scale and where they felt their organisation should be.

#### The scale for the pace of IT adoption was:

- A *Aggressive introduction of new IT technologies and applications to provide competitive edge or to change business processes*
- B *Somewhere between A and C*
- C *IT technologies and applications are assessed for their contribution to a range of corporate goals, including productivity, quality and customer service*
- D *Somewhere between C and E*
- E *Relatively conservative adoption of IT technologies and applications - IT is usually justified on the basis of relatively short-term cost savings*

#### The scale for the source of demand for IT was:

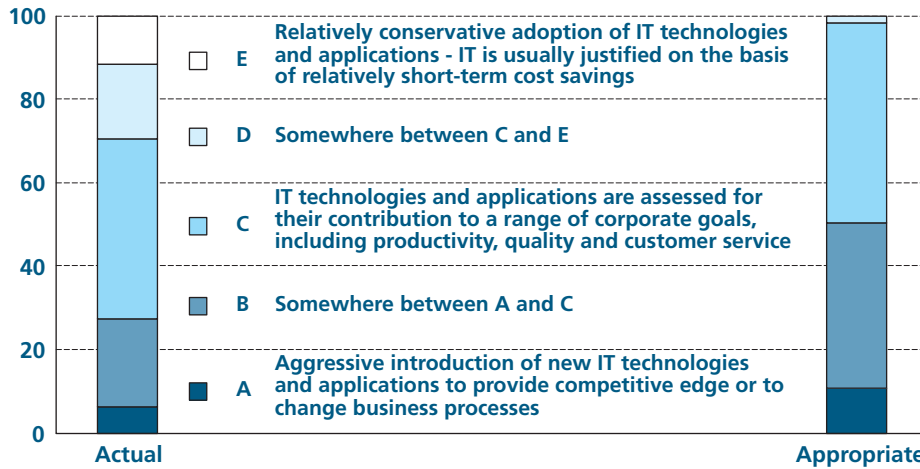
- A *New IT technologies and applications are driven by the business plan and the demands of end-users*
- B *Somewhere between A and C*
- C *IT strategy and business strategy are determined simultaneously by an iterative process of communication between the IT function and senior managers*
- D *Somewhere between C and E*
- E *New IT technologies and applications are identified by the IT function and ‘sold’ to the rest of the organisation*

### Findings

- ▶ *Over half of the respondents indicated that the “actual” pace of IT adoption was slower than the “appropriate” pace of IT adoption – i.e. that the pace of IT adoption was too slow.*
- ▶ *Organisations from the Government sector and Finance & Business Services and those with an IT Director at Board Level were more likely to report a faster pace of IT adoption.*
- ▶ *Over half of the respondents indicated that the “actual” source of demand for IT was more “IT driven” than the “appropriate” source of demand for IT – i.e. that the demand for IT was too “IT driven”.*
- ▶ *Organisations from the Government sector and Finance & Business Services and those with a Director responsible for IT and Other Areas at Board level tended to report a more business driven demand for IT.*
- ▶ *There is a strong correlation between organisations which are fast IT adopters and organisations where the demand for IT is business driven.*

Figure 4.1 The Pace of Adoption of IT in the Organisation

4.1 Actual vs Appropriate

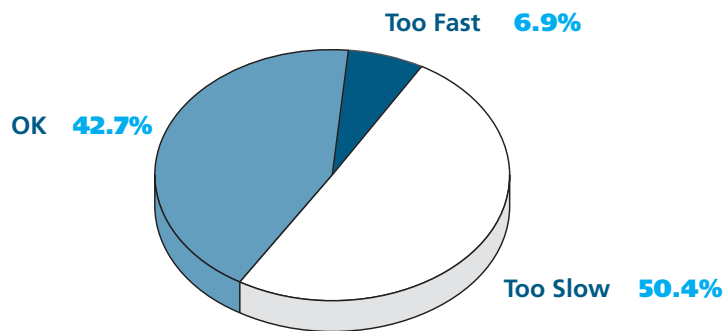


In assessing the actual pace of IT adoption in their organisation, nearly 45% of the respondents placed their organisations at the centre of the scale, suggesting a pragmatic, application-by-application approach to IT adoption, but one which is prepared to consider non-cost items in the justification process. However, nearly 30% indicated that their organisation was more cautious than this, with a greater emphasis on cost-savings as the major justification for IT innovation.

In their assessment of the appropriate pace of IT adoption, respondents were far more likely to favour a more aggressive approach. Although only 11% were prepared to endorse the most aggressive stance, nearly 40% favoured a pace of IT adoption that gave more emphasis to changing business processes and achieving competitive edge. None of the respondents favoured the conservative pace of IT adoption.

Figure 4.2 Actual Pace of IT Adoption vs Appropriate Pace of IT Adoption

4.2



Just over half of the respondents felt that the actual pace of IT adoption in their organisation was slower than the appropriate one. This is very similar to the findings of the 2001 survey when the figure was 49%.

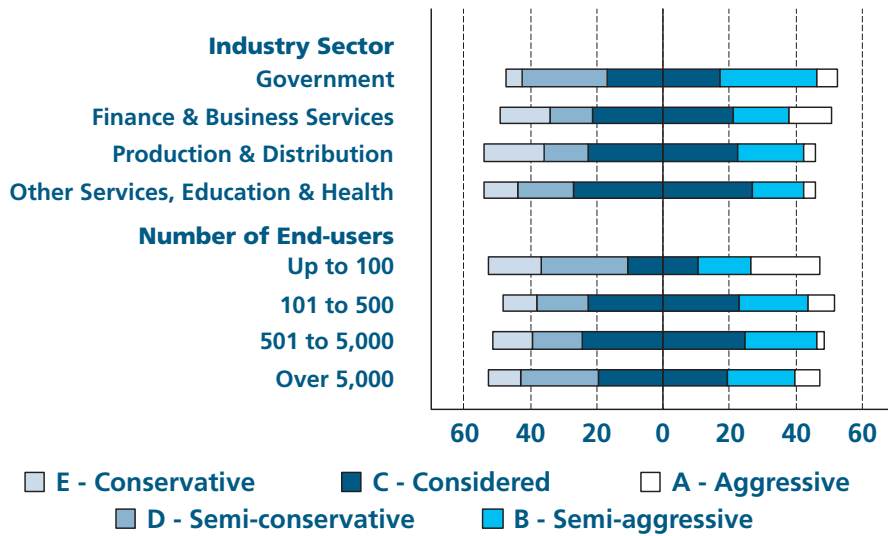
The situation was similar for all industry sectors and all sizes of organisation although the smallest organisations (63%) and the Production and Distribution sector (57%) were most likely to indicate that IT adoption was too slow.

A small number of respondents indicated that they felt that the pace of IT adoption was too fast. Interestingly, of these half were local government organisations and a further 30% were public service organisations. Both areas have been the subject of public sector IT initiatives.



Figure 4.3 Actual Pace of IT Adoption by Industry Sector and Organisation Size

# 4.3



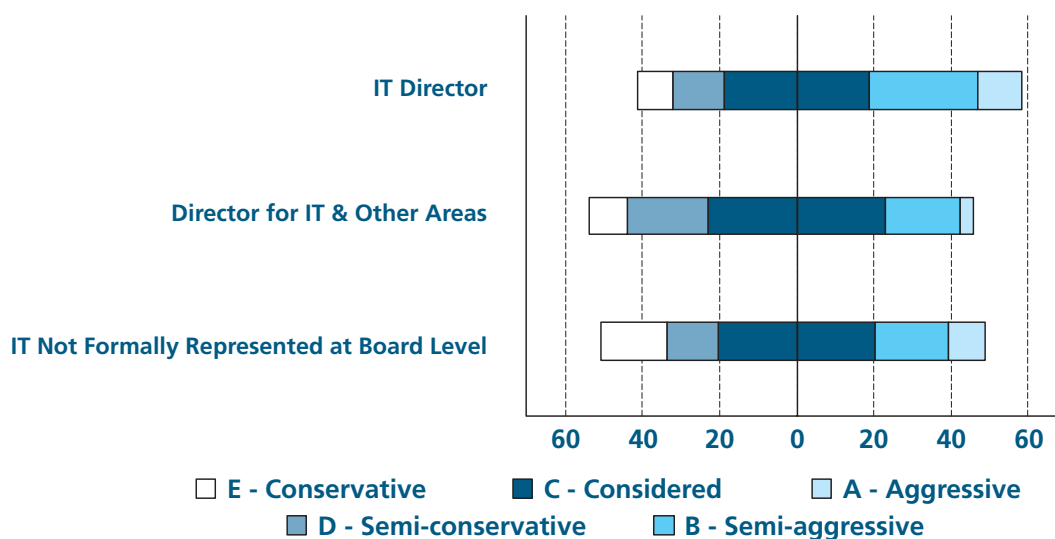
There are only rather small differences in the perceived pace of IT adoption between the different industry sectors and different sizes of organisation.

Small organisations (21%) and Finance & Business Services (13%) were most likely to report an outright aggressive approach. The Government sector was most likely to report a somewhat aggressive approach with 35% of respondents indicating that their approach tended towards the aggressive.

At the other end of the scale the Production & Distribution sector (18%) was most likely to report a predominantly conservative and cost-conscious approach to IT adoption.

Figure 4.4 Actual Pace of IT Adoption by IT Function's Representation at Board Level

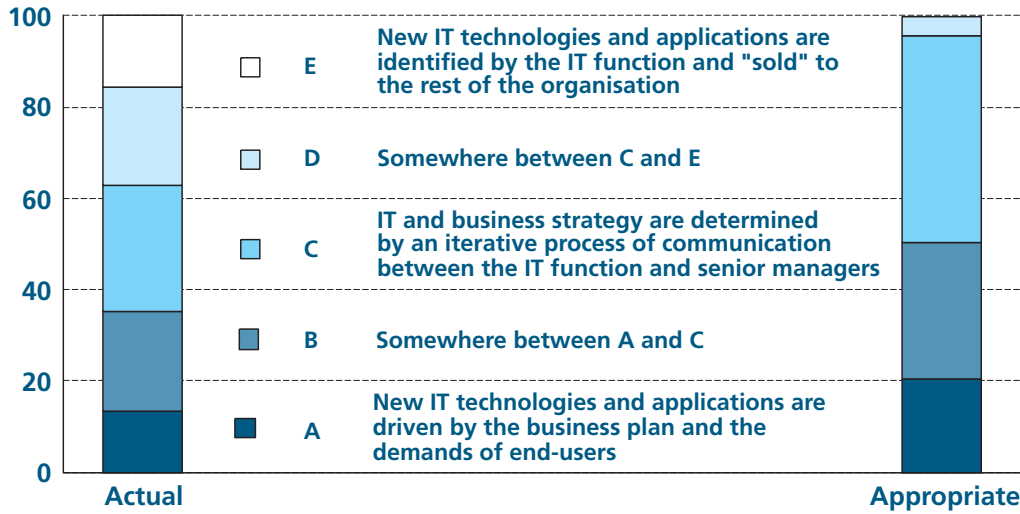
# 4.4



The analysis of pace of IT adoption by the IT function's representation at Board level shows that respondents in organisations with an IT Director at Board level are far more likely to report an aggressive or somewhat aggressive approach to IT adoption. More surprising is the fact that those organisations with a Director for IT and Other Areas at Board level are less likely to adopt an aggressive approach to IT adoption than those organisations with no formal IT representation at Board level. If the role of the Director for IT and Other Areas is to ensure that the organisation effectively absorbs new IT applications and obtains the full business benefits, it may be necessary to slow the pace of IT adoption to achieve this.

Figure 4.5 The Source of Demand for New IT in the Organisation

4.5 Actual vs Appropriate



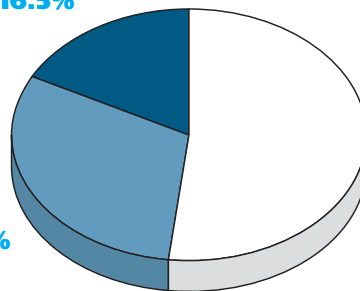
Respondents were quite evenly spread across the scale describing the source of demand for IT in their organisation. Once again the largest single group (28%) was the centre of the scale, where IT strategy and business strategy are determined by an iterative process between IT and senior managers. However, 16% of respondents felt that the IT function drives the demand for new developments in their organisation and a further 22% felt that the IT function is somewhat responsible for driving new IT developments.

Once again there is a marked contrast between the perceived state and the respondents' view of the "appropriate" state of affairs. None of the respondents felt that IT should be responsible for selling IT to the organisation and over 50% felt that the business plan and end-user demand should be the main driver for new applications, at least to some extent.

Figure 4.6 Actual Source of Demand for IT vs Appropriate Source of Demand for IT

4.6

Too Business Driven 16.5%



Too IT Driven 50.4%

OK 33.1%

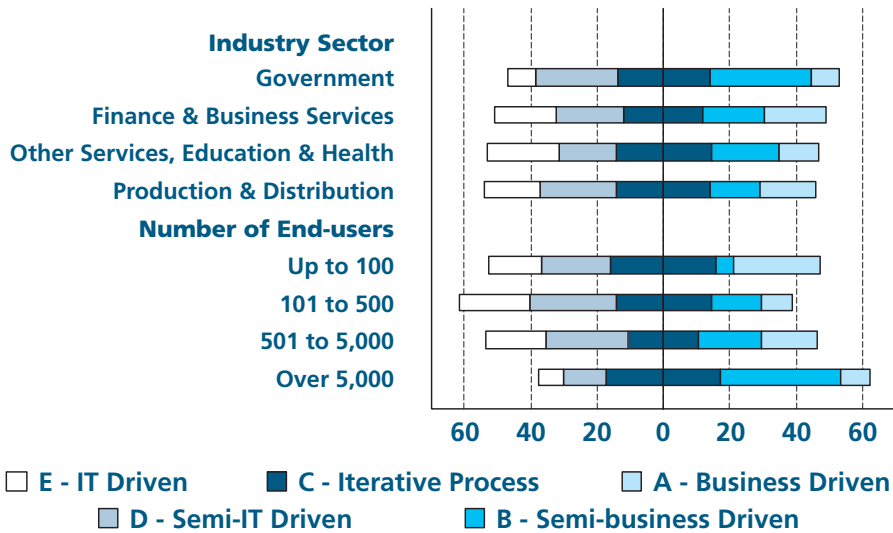
Comparing respondent's views on the actual and appropriate source of demand for IT, over half of the respondents indicated that the demand for IT is too IT driven within their organisation. Once again this is very similar to the findings from the 2001 survey.

It is interesting to note, however, that a substantial minority of 17% indicated that the demand for IT was too business driven. If the concept of demand for IT being "too business driven" is a difficult one to envisage, it is worth remembering that the views in this survey are those of IT professionals who are charged with applying new technology to complex business processes, often in a changing business environment and a changing technology environment.



Figure 4.7 Actual Source of Demand for IT Applications by Industry Sector and Organisation Size

4.7

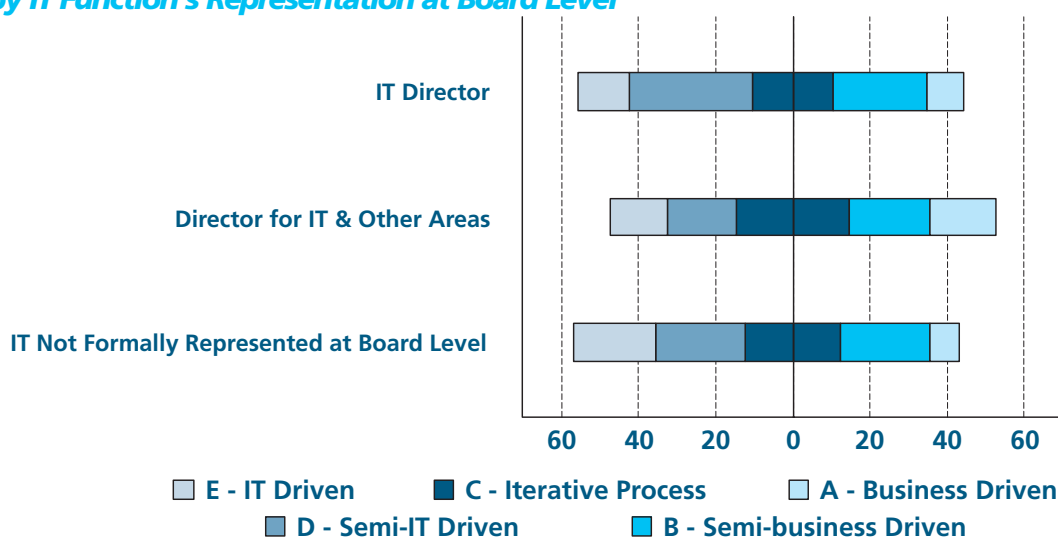


The Government sector and Finance & Business Services were most likely to report a relatively business driven demand for IT. 19% of Finance & Business Services organisations indicated that the demand for IT was driven by the business plan and the demands of end-users.

There were quite strong indications of a correlation between the size of organisation and the source of demand for IT. Larger organisations were more likely to report a business driven demand for IT and smaller ones were more likely to report an IT driven approach.

Figure 4.8 Actual Source of Demand for IT Applications by IT Function's Representation at Board Level

4.8

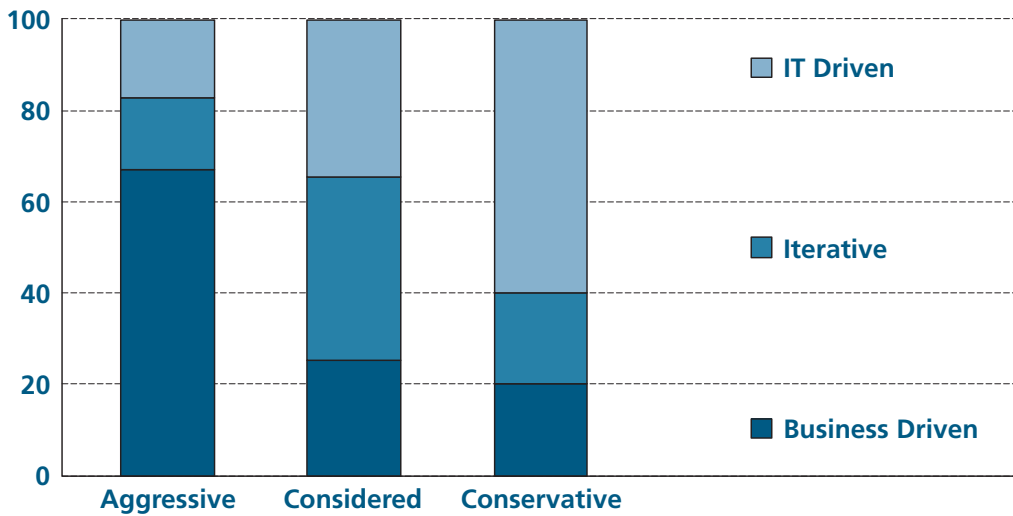


Organisations reporting a Director for IT and Other Areas representing IT at Board level were more likely to report a business driven demand for IT than organisations with an IT Director representing IT at Board level. Not surprisingly those organisations with no IT representation at Board level were least likely to report a business driven demand for IT applications.

It is not possible to identify the direction of cause and effect here, but it certainly appears that the more business driven organisations are more likely to have a non-IT director responsible for driving IT, at least at the Board level.

Figure 4.9 Actual Source of Demand for IT Applications by Actual Pace of IT Adoption

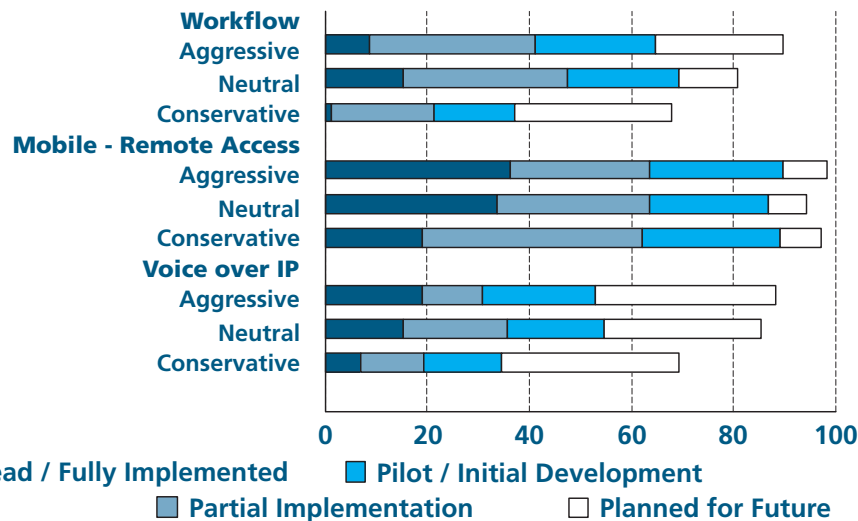
4.9



There is a very strong correlation between respondents' perception of the pace of IT adoption and the source of demand for IT applications. Two-thirds of those who indicated an aggressive pace of IT adoption indicated that the source of demand for IT was relatively business driven. Conversely 60% of those who reported a conservative pace of IT adoption reported a largely IT driven source of demand for IT applications.

Figure 4.10 Current Status of Selected Applications by Pace of IT Adoption

4.10



Respondents' assessments of their pace of IT adoption were not intended to be an absolute measure but an assessment of how the respondents feel that their organisation compares with other similar organisations or possibly with their own organisation in an ideal world.

However, it is interesting to note that there is a correlation between the respondents' assessment of their pace of IT adoption and their assessment of the extent to which many of the key applications and technologies have been implemented. This is true for most of the current mainstream applications and technologies particularly comparing "conservative" IT adopters with "neutral" and "aggressive" IT adopters.



## Conclusion

The strong correlation between a rapid pace of IT adoption and a business driven demand for IT is not surprising, but it seems to contradict the earlier observations about the correlations between different types of representation at Board level and the pace of IT adoption and the source of demand for IT.

Organisations with a Director for IT and Other Areas representing the IT function at Board level tended to report a somewhat slower pace of IT adoption than those with an IT Director. At the same time, organisations with a Director for IT and Other Areas at Board level tended to report a more business driven demand for IT in the organisation. This doesn't square up with a strong correlation between the pace of IT adoption and a business driven demand for IT and requires an explanation. One feasible explanation is to introduce another variable, call it organisation culture.

**Organisation A** has a culture that is highly receptive to new technology. Senior management demonstrates the top level commitment to IT by appointing an IT Director at Board level. The IT Director is involved in the development of business strategy and IT strategy and IT can "sell" both the idea and the implications of new applications relatively easily. The pace of IT adoption is rapid but IT strategy may not always appear to be business driven.

**Organisation B** has a culture that is not receptive to new technology. A forward looking senior management team realises that new technology implies business change and that business change has to be driven by business managers. A Director of IT and Other Areas is appointed to drive business change and the process of business change determines the IT strategy and the pace of IT adoption. IT strategy is predominantly business driven but the pace of IT adoption may not be as fast as in organisation A.

**Organisation C** also has a culture that is not receptive to new technology. A backward looking senior management have as little to do with new technology and IT strategy as possible. It is left to the IT Manager to try to identify the business strategy and to define an appropriate IT strategy. This will be supported by senior management if it shows short term cost savings and by end-users if it leaves their working environment unchanged. IT has to drive any new technology and the pace of IT adoption will be conservative.

## 05

## Roles, Strategy and Problems



## Premise

Organisations that are more aggressive in their adoption of IT or more business driven in their approach have a different view of the role of the IT function, and experience different problems in the development and implementation of IT strategy.

## Respondents were asked about:

- ▶ *The role of the IT function*
- ▶ *Procedures for facilitating the IT strategic planning process*
- ▶ *Problems experienced in developing IT strategy*
- ▶ *Problems experienced in implementing IT strategy*

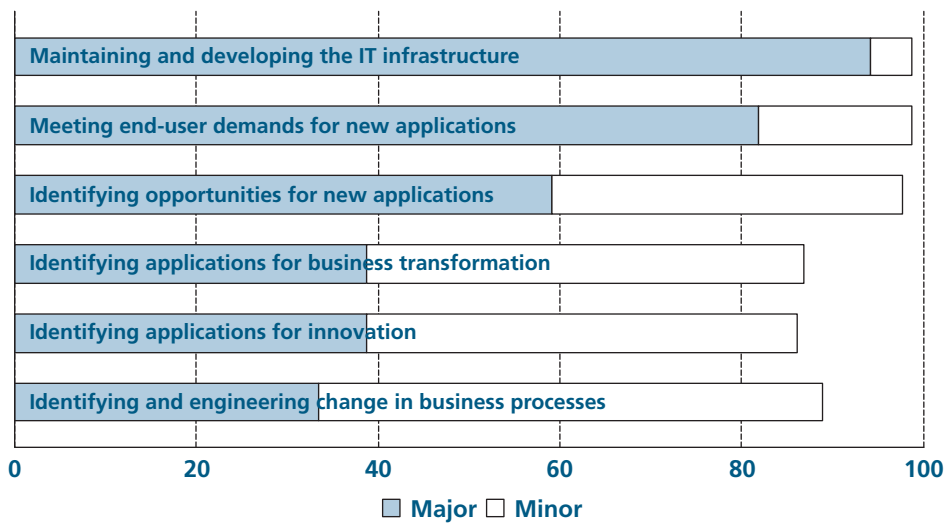
## Findings

- ▶ *95% of respondents cited maintaining and developing the IT infrastructure as a major role of the IT function in their organisation, but only 34% cited identifying and engineering change in business processes.*
- ▶ *Organisations which reported an aggressive pace of IT adoption and organisations with an IT Director at Board level were more likely to identify the proactive roles, such as identifying and engineering change in business processes, as a major part of their remit.*
- ▶ *Just over half of the respondents reported a standing committee of senior IT and user managers responsible for IT strategy, but they were more common in the largest organisations, and in those with a Director for IT and Other Areas at Board level.*
- ▶ *Lack of involvement/commitment of senior managers, was the most common major problem hindering the development of an IT strategy, cited as a major problem by 45% of respondents.*
- ▶ *Three-quarters of the respondents in organisations where the pace of IT adoption was conservative cited lack of involvement/commitment of senior managers as a major problem.*
- ▶ *Budget limitations (48%) and implementing necessary organisational changes (48%) were the two issues most commonly cited as major problems with the implementation of IT strategy.*
- ▶ *Respondents who indicated that the pace of IT adoption in their organisation was too slow were more likely to cite a number of implementation issues as major problems, particularly involving senior management in implementation issues and implementing necessary organisational changes.*
- ▶ *The proportion of respondents citing implementing necessary organisational changes as a major problem has increased from 32% in the 2001 survey to 48% in the 2006 survey.*
- ▶ *The proportion of respondents citing IT skills shortages as a major implementation problem has fallen from 37% in 2001 to only 19% in 2006.*



Figure 5.1 Roles of the IT Function

# 5.1

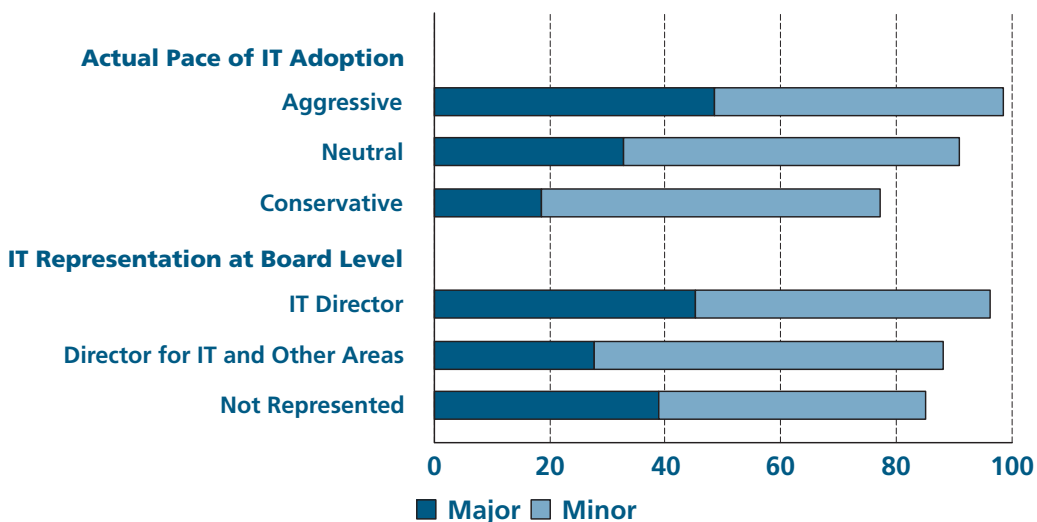


IT's operational role is a primary concern for most respondents. Being responsive to the requests of end-users is also seen as a major role by most, with no obvious pattern as to why some would not regard it as a major role.

The other potential roles of the IT function that were listed in the questionnaire generated a more muted response, although most respondents indicated that they were at least minor roles. The role of "identifying and engineering change in business processes" was only identified by one-third of the respondents as a major role of the IT function.

Figure 5.2 Identifying and Engineering Change in Business Processes by Pace of IT and Representation at Board Level

# 5.2

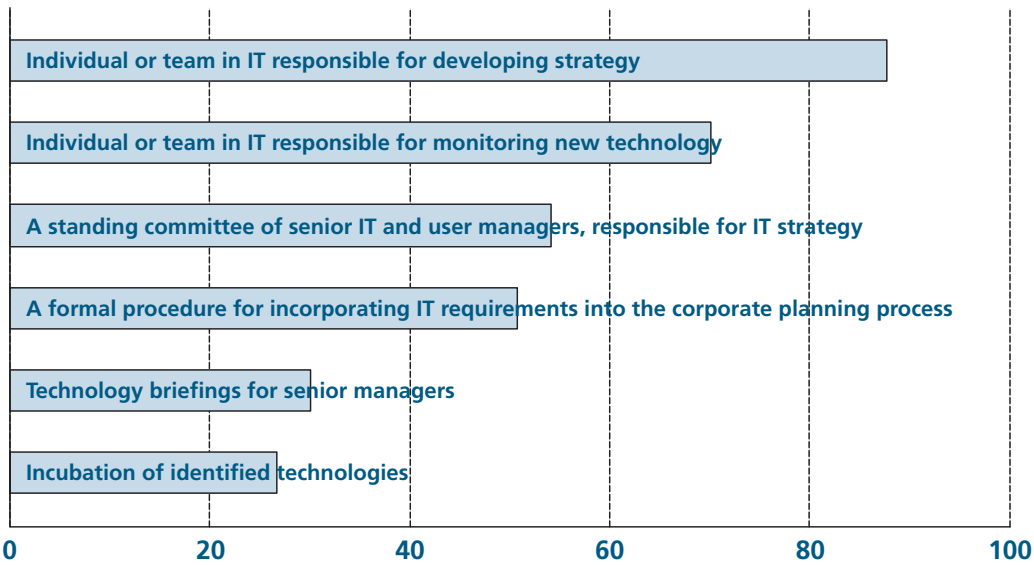


Not surprisingly, all of the roles associated with a proactive "identifying" role for the IT function were more often cited by the respondents from organisations with a more aggressive pace of IT adoption. Nearly 60% of the aggressive IT adopters saw "identifying applications for innovation" as a major role for IT, compared with only 17% of the conservative IT adopters.

For "identifying and engineering change in business processes" there is also a correlation with the IT representation at Board level. The organisations with an IT Director at Board level were most likely to cite this as a major role (45%), followed by those organisations where IT is not formally represented at Board level (39%). The least likely are those organisations where IT is represented at Board level by a Director for IT and Other Areas (28%). In many of these organisations it seems likely that the responsibility for engineering change in business processes is likely to be defined, but lies outside the role of the traditional IT function.

Figure 5.3 Strategies to Facilitate IT Strategic Planning

5.3

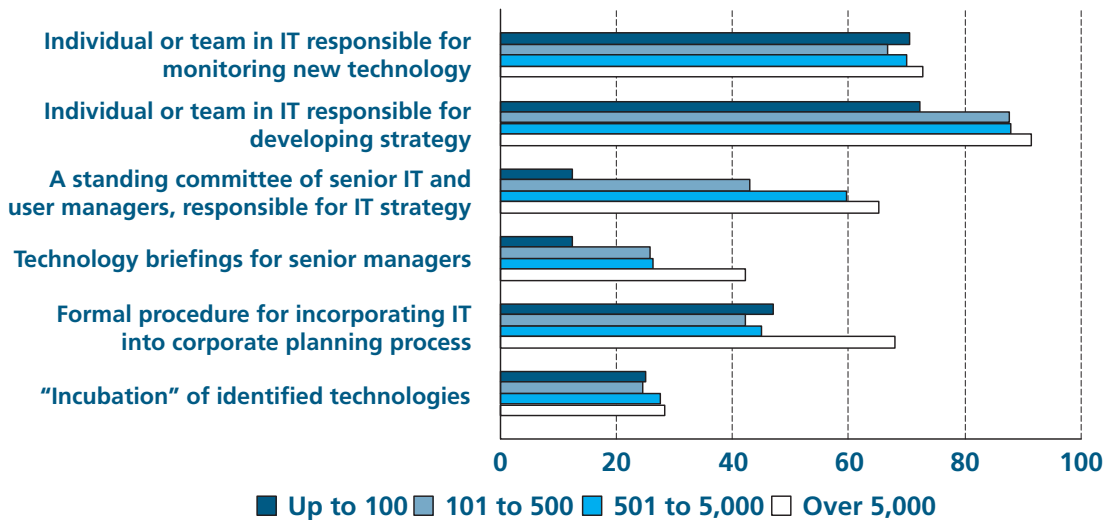


Respondents cited a variety of strategies for facilitating the IT strategic planning process, but the strategies that are internal to the IT function (such as “an individual or team in IT responsible for monitoring technology” and “an individual or team in IT responsible for developing strategy”) are more common than those which require the involvement of senior managers or end-users.

Once again the position of IT in the management structure correlated quite strongly with some of these strategies. “A standing committee of senior IT and user managers responsible for IT strategy” was reported by 63% of organisations where IT is represented at Board level by a Director for IT and Other Areas, but only in 43% of those with an IT Director at Board level, and only 39% of those with no formal IT representation on the Board.

Figure 5.4 Procedures for Facilitating IT Strategic Planning by Size of Organisation

5.4



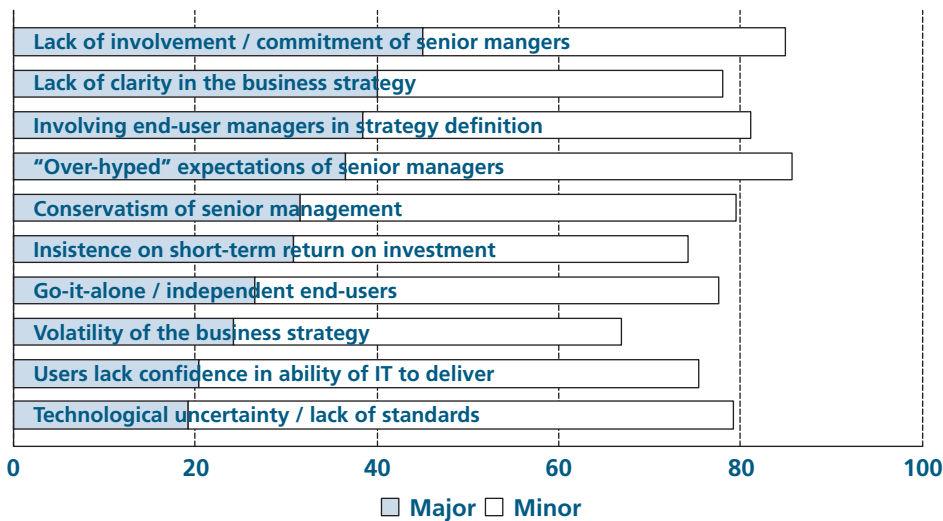
Size of organisation is another factor which affects the types of strategies that are used for facilitating IT strategic planning. Its effect is most noticeable for strategies which involve senior managers or user managers in some form of communication or consultation process.

It was also noticeable that these strategies were much less common in organisations where the IT function is not formally represented at Board level, although, if anything, their presence would be even more valuable in these organisations.



Figure 5.5 Problems for the Development of IT Strategy

# 5.5



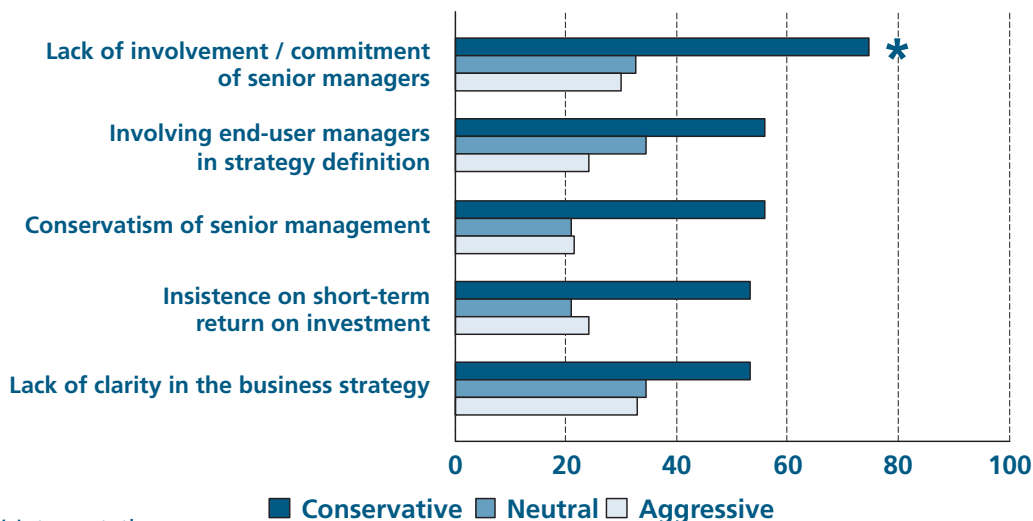
The majority of the respondents identified quite strongly with all of the potential problems for developing IT strategy that were cited in the questionnaire. Looking at the frequency with which they were cited as a "major problem" provides a better insight into the problems.

The most frequently cited problem was "lack of involvement/commitment of senior managers", which was cited as a major problem by 45% of all respondents. It was also cited by 54% of those organisations where IT is not formally represented at the Board level, and by 57% of respondents from the Government sector.

Other notable variations included 33% of Finance & Business respondents citing "volatility of the business strategy" as a major problem and 36% of respondents with over 5,000 end-users citing "go-it-alone / independent end-users".

Figure 5.6 Top 5 Major Problems for Developing IT Strategy by Pace of IT Adoption

# 5.6



\* Interpretation

75% of respondents in organisations where the pace of IT adoption was conservative, indicated that "lack of involvement / commitment of senior managers" was a major problem for the development of IT strategy.

There is a very strong correlation between the pace of IT adoption and the major problems reported by respondents in the development of the IT strategy. Conservative adopters were far more likely to report most of these problems as major problems, but particularly those concerned with the relationship between the IT function and senior management.

For the aggressive adopters, and for those who were neither aggressive nor conservative, "lack of clarity in the business strategy" was most often cited as a major problem for the development of IT strategy.

Respondents were invited to describe any additional factors which hindered the development of IT strategy in their organisation. Several respondents from the Government sector were clearly disenchanted with the impact of central government directives:

- ▶ *Government setting targets at short notice*
- ▶ *Government direction - conflicting priorities & messages*

The NHS respondents were also feeling the impact of control from an authority outside their own organisation:

- ▶ *Volatility of National NHS IT Strategy*

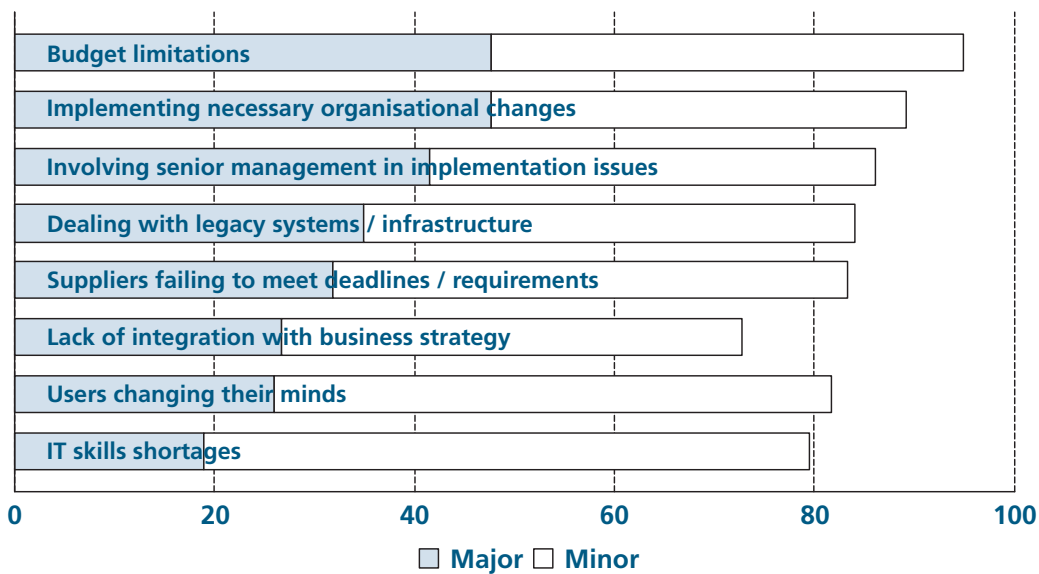
- ▶ *Continual NHS reorganisations*
- ▶ *Inconsistency in National strategies & policies*

Some of the other comments suggest an alarming lack of communication or a gulf in understanding between the respondent and the senior management in the organisation:

- ▶ *IT waits for guidance but directors lack IT knowledge to identify the possible*
- ▶ *Lack of desire by business managers to change*
- ▶ *Lack of agreement in the senior team*

Figure 5.7 Problems for the Implementation of IT Strategy

5.7



Once again most of the respondents identified to some extent with all of the potential problems for the implementation of IT strategy that were cited in the survey. The analysis focuses on those cited as major problems.

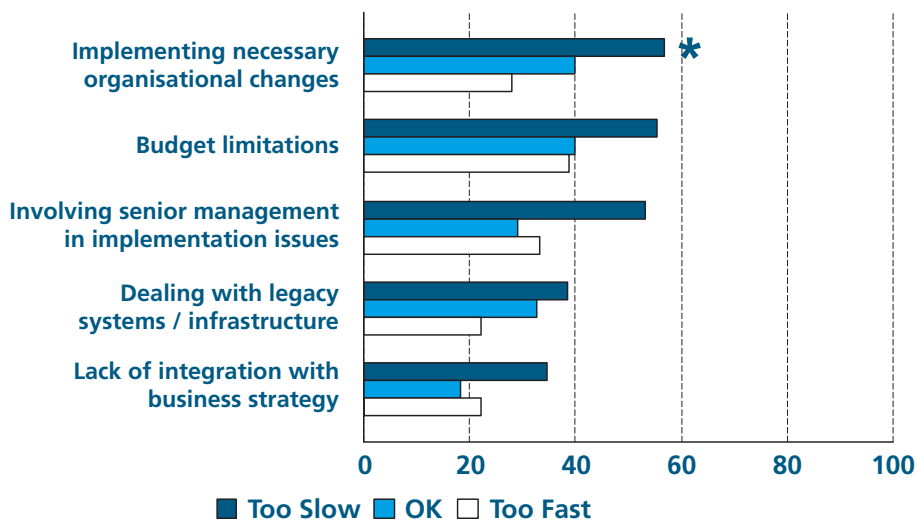
In the 2001 survey “budget limitations” was cited most often as a major problem for implementation. It is still the most frequently cited as a major problem. However, it now shares the top spot with “implementing necessary organisational changes”, which was cited as a major problem by 48% of respondents in this survey, compared with only 32% in 2001. “Involving senior management in implementation issues” was also cited more frequently as a major problem since the earlier survey (42% in 2006 compared with 29% in 2001).

One issue has moved right down the list of implementation problems since 2001. “IT skills shortages” was cited as a major problem by 37% of respondents in 2001, but by only 19% in the current survey.



Figure 5.8 Top 5 Major Problems for Implementing IT Strategy by Preferred Pace of IT Adoption

5.8



\* Interpretation

57% of respondents in organisations where the actual pace of IT adoption was slower than the appropriate pace indicated that "implementing necessary organisational changes" was a major problem for the implementation of IT strategy.

Respondents from organisations where the actual pace of IT adoption was slower than the appropriate pace (i.e. those adopting IT too slowly) were more likely to cite most, although not all, of the potential implementation issues as major problems. Once again the difference was most marked for those issues involving the input of senior management.

The difference in responses between organisations where the pace of IT adoption was "too fast" and those where it was "OK" were less consistent. For example, the respondents from organisations where the pace of IT adoption was too fast were significantly more likely to cite the issue of "suppliers failing to meet deadlines" as a major problem (50%) compared with only 32% overall.

Other problems for the implementation of IT strategy that were raised by respondents tended to focus on lack of resources of one kind or another:

- ▶ *Size of team (too small)*
- ▶ *Lack of time for project management to purchase and introduce new systems*
- ▶ *Getting business managers to engage with IT*
- ▶ *Availability of suitable business resources for change*

### Conclusion

There is a strong correlation between the problems experienced in trying to develop and implement IT strategy and the perceived pace of IT adoption reported by respondents. This correlation is particularly strong for problems that relate to the involvement of senior management in the process of developing and implementing IT strategy. It is also quite strong for problems that relate to engineering change in the business to take advantage of new technology.

As information technology permeates a wider and wider range of business activities, organisations that fail to give the top level business support to the development and implementation of IT strategy will find it increasingly difficult to obtain the benefits from new applications.



Respondents were asked to assess the potential significance and to describe the extent to which they had implemented a wide range of technologies and applications. For the purposes of the analysis they have been grouped into:

- ▶ **Information applications comprising:** ERP (Enterprise Resource Planning); CRM (Customer Relationship Management); Workflow / collaborative applications; EDM (Electronic Document Management); Knowledge management
- ▶ **Communications technologies comprising:** Mobile - Remote Access; User Authentication; Mobile email; Teleworking Home-based working; Voice over IP; WiFi; Radio Frequency Identification (RFID)
- ▶ **Systems technologies comprising:** Enterprise Application Integration (EAI); Virtualization Technologies; Linux; Service Oriented Architecture (SOA); Asynchronous Javascript And XML (AJAX); Utility Computing; GRID Technology

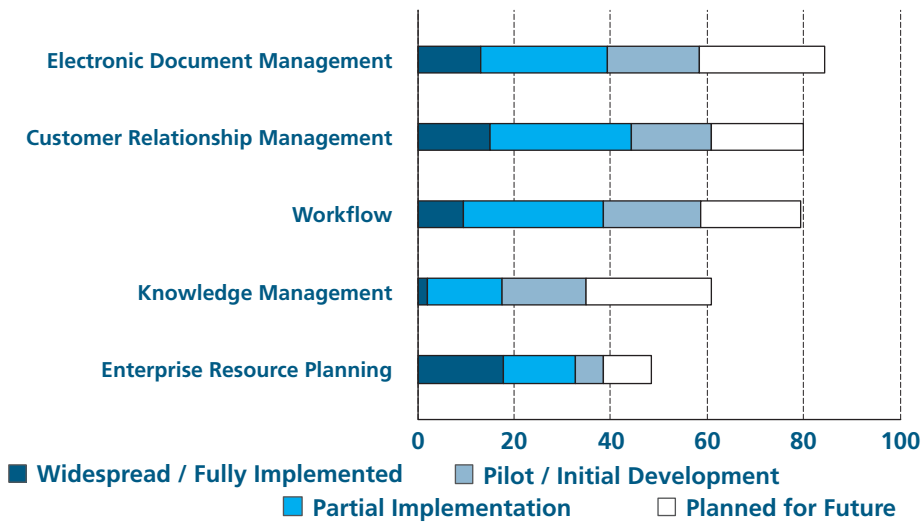
### Findings

- ▶ *EDM and Workflow are a part of the current IT strategy in around 80% of the responding organisations, with around 60% already having significant or at least initial developments under way.*
- ▶ *However, both EDM and Workflow were “partially implemented”, at the “pilot stage” or “planned” in around 70% of organisations so they both represent a substantial area of work in progress.*
- ▶ *The situation for CRM is very similar, with 80% of respondents reporting at least a plan to implement, but only 15% reporting complete implementation.*
- ▶ *ERP is generally better established where it is part of the IT strategy, but fewer organisations have plans to expand into ERP in the future.*
- ▶ *The Finance & Business Services sector has led the way in the implementation of Workflow, EDM and CRM applications and was most likely to report complete implementation of all of these applications.*
- ▶ *Rapid growth of EDM, Workflow and CRM is predicted from the Government sector where a large proportion already have partial implementation or initial developments. Over 90% of Government sector respondents have EDM and CRM under development or planned and the equivalent figure for Workflow is 89%.*
- ▶ *Mobile – Remote Access is very widespread, with just under 90% of respondents reporting at least initial developments in this area.*
- ▶ *Mobile email systems are also widespread – currently implemented to some extent in over 70% of responding organisations and planned in a further 13%.*
- ▶ *The fastest growth area in the communications technologies that were listed is VoIP, which is already being used to some extent by 49% of respondents, with a further 33% indicating that they plan to implement it.*
- ▶ *Many of the systems technologies that were cited in the questionnaire have not yet been assessed by the majority of respondents.*
- ▶ *EAI has been implemented to some extent by 20% of respondents and a further 30% are undertaking pilot developments or have plans.*
- ▶ *A large proportion of those that are implementing or planning EAI, and to a lesser extent SOA, expect them to be key strategic technologies or of major significance.*



Figure 6.1 Current Status of Information Applications

6.1



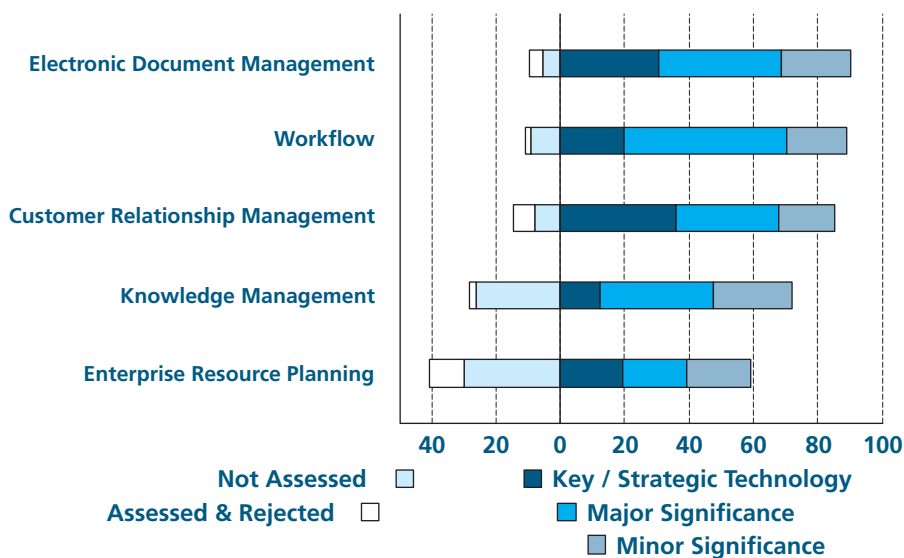
EDM, CRM and Workflow are already part of the IT strategy in almost 80% of the responding organisations. In nearly 60% development is at least at the initial development stage and in a further 20% there are plans to adopt these technologies in the future.

Over 60% of respondents also have a strategy relating to knowledge management, although in this case fewer than 20% have proceeded beyond initial or pilot developments. Only 2% of respondents described their development of knowledge management as "widespread / fully implemented".

ERP tends to be more advanced where it has been implemented at all, but over half of the respondents have no current plans to implement ERP.

Figure 6.2 Potential Significance of Information Applications

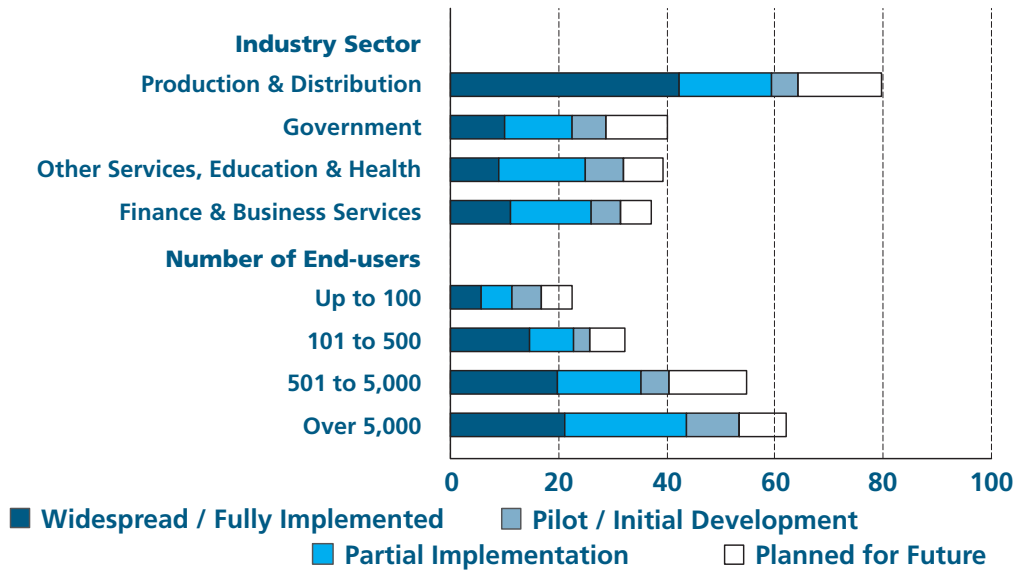
6.2



36% of respondents indicated that CRM will be a key strategic technology and a further 32% indicated that it will be of major significance in the future. 90% of respondents expect that they will implement some CRM application in the future. A similar pattern exists for both EDM and Workflow suggesting a very significant development effort in these areas over the next few years.

Figure 6.3 Current Status of Enterprise Resource Planning

6.3

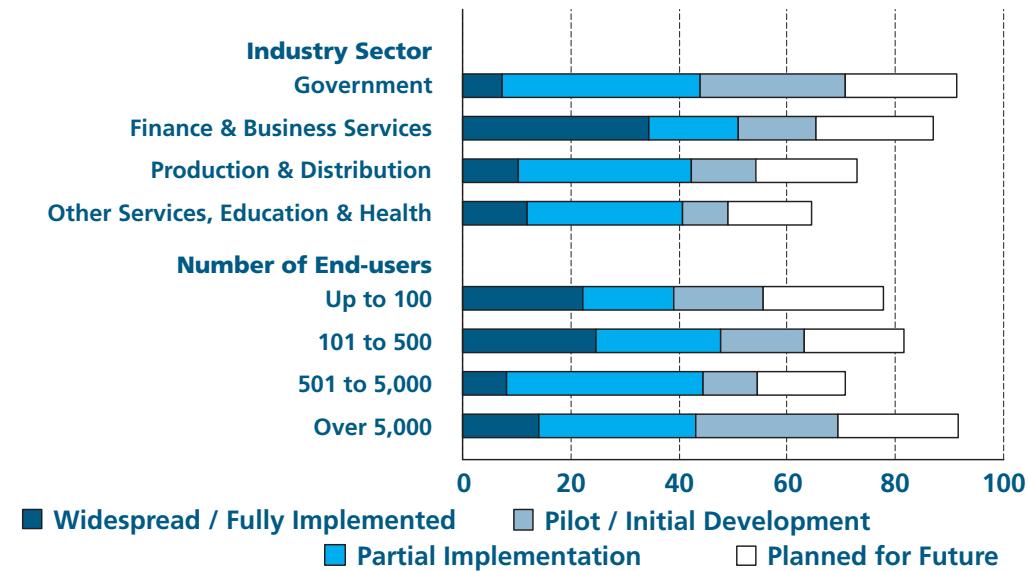


The current status of ERP shows its very strong presence in the Production & Distribution sectors with over 40% indicating that it is “widespread / fully implemented” and a further 22% indicating that it is currently under development or partially implemented. The other sectors are much less likely to be using or contemplating the implementation of ERP, although even in these sectors there is a significant current user base.

There is a strong correlation with organisation size in the current and planned use of ERP. Just a quarter of the organisations with 100 to 500 end-users have any current ERP, compared with over half of the organisations with over 5,000 end-users.

Figure 6.4 Current Status of Customer Relationship Management

6.4



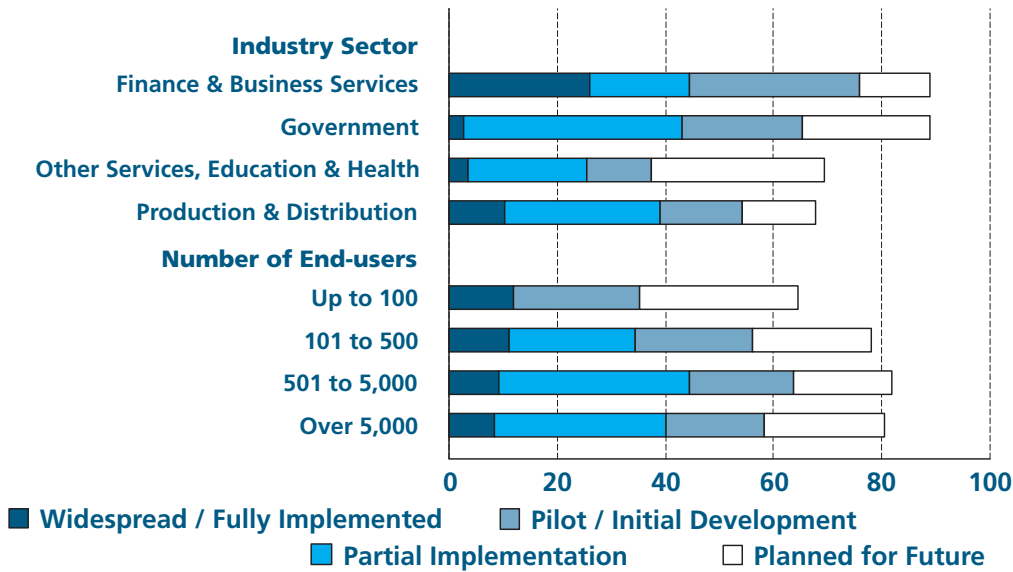
Over 90% of the Government sector respondents are developing or have plans to develop CRM applications, although as yet only 7% reported that their current systems were “widespread / fully implemented”. Just under 90% of the Finance and Business Services sector are also developing or have plans to develop CRM and in this sector many more have reached an advanced stage of development. 35% indicated that their CRM is “widespread / fully implemented” and a further 16% indicated that it is partially implemented.

There is some correlation between the current or planned use of CRM and the size of organisation, but interestingly, the smaller organisations are more likely to report widespread or complete implementation of their CRM systems.



Figure 6.5 Current Status of Workflow

# 6.5

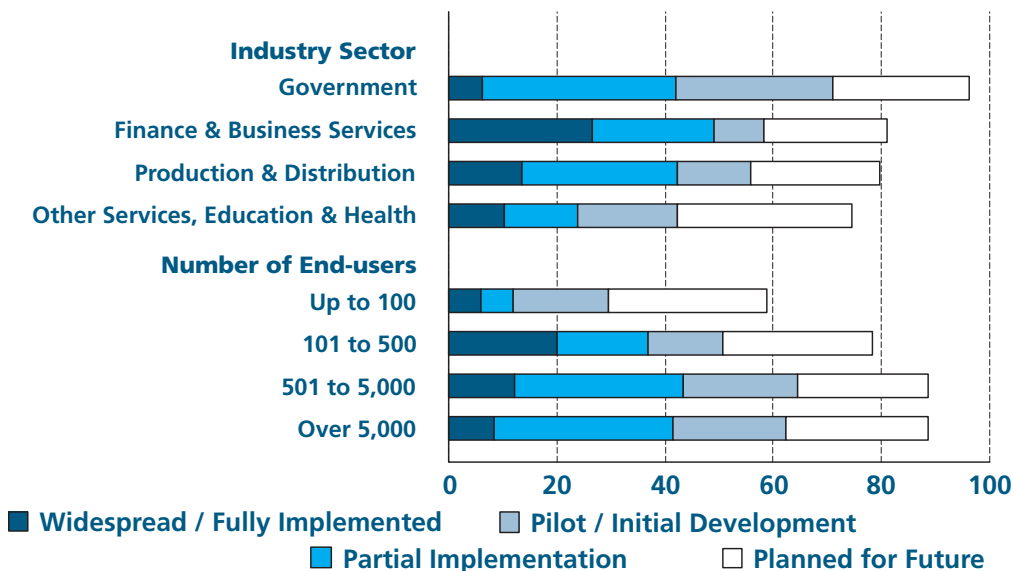


Workflow is an application that is applicable to virtually all organisations and is the next stage of automation for many administrative and managerial activities. The organisational implications are usually very significant so, although it has been available in some form for at least ten years, it is not surprising that relatively few organisations reported widespread or fully implemented workflow. The exception to this is the Finance & Business Services sector, where a quarter of the respondents have completed their workflow developments and a further 19% have made significant advances.

Over two-thirds of the Government sector respondents have developed some workflow applications and a further 24% have plans to do so.

Figure 6.6 Current Status of Electronic Document Management

# 6.6



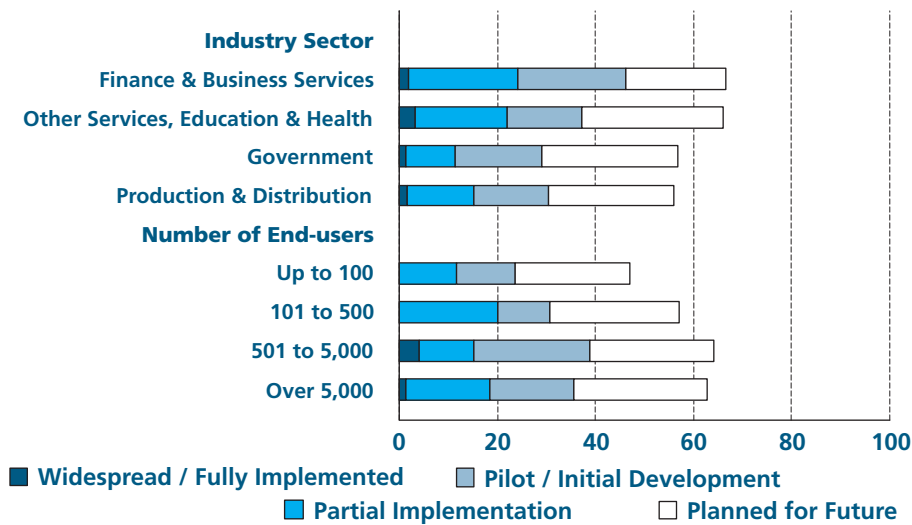
In many organisations EDM and Workflow have accompanied each other and the pattern of current or planned use of EDM matches that of Workflow quite closely. 96% of Government respondents have started developments or plan to do so, although relatively few have completed their implementation (6%).

Once again it is the Finance & Business Services sector which leads the way, with 26% of respondents reporting "widespread / fully implemented" EDM and a further 24% reporting partial implementation.

There is also a quite strong correlation between the size of organisation and proposed EDM use.

Figure 6.7 Current Status of Knowledge Management

6.7



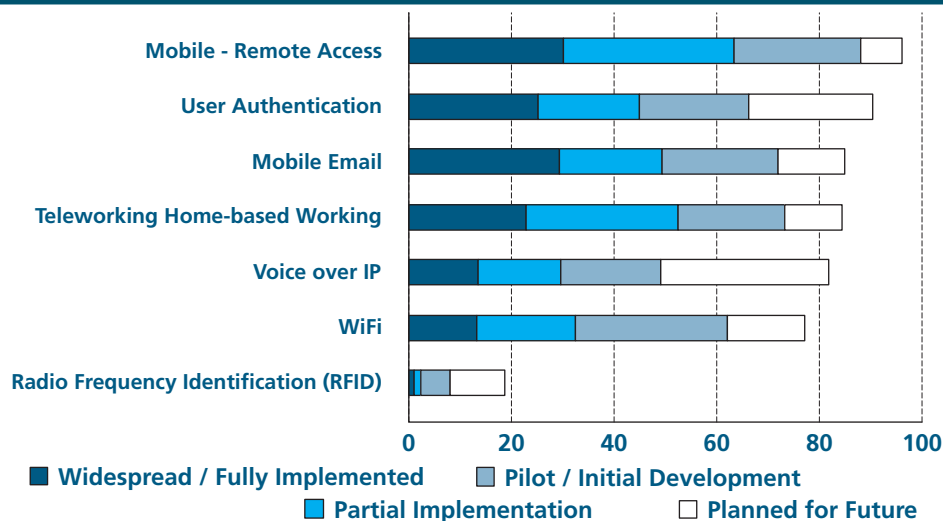
35% of respondents indicated some form of Knowledge Management (KM) development, a figure which is marginally lower than the 39% who indicated some KM development in the 2001 survey. For all of the other information applications, the percentage of respondents who have begun actual developments has increased since 2001.

KM is the most complex of the information applications to develop and to implement because it addresses higher level administrative and managerial activities. If there is a natural order of implementation for information applications then knowledge management is likely to be at the end of that order rather than the beginning.

Nevertheless, KM is still least on the development agenda for over 60% of the responding organisations, with Finance & Business Services once again leading the way. Over 45% of the Finance & Business Services respondents indicated some degree of KM development with a further 20% reporting plans for the future.

Figure 6.8 Current Status of Communications Technologies

6.8



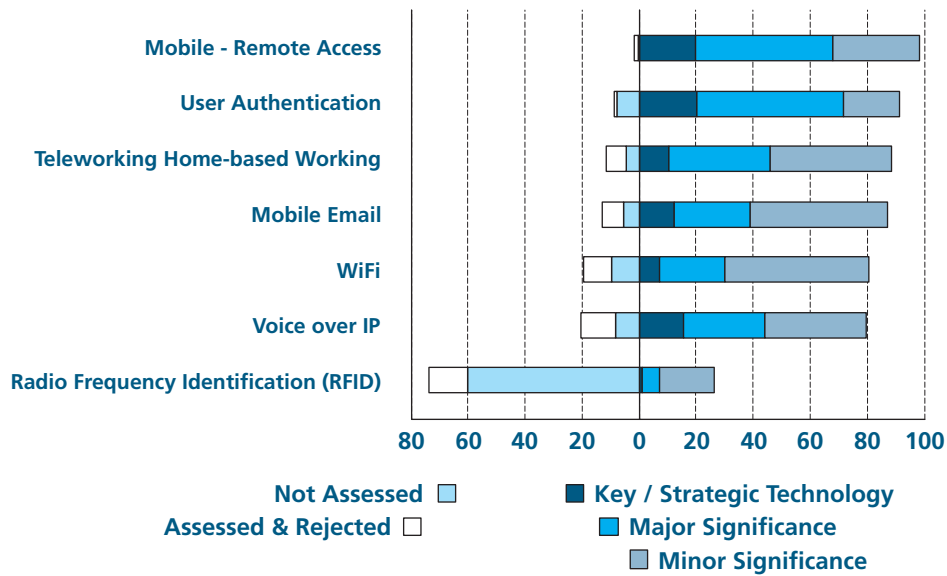
With the exception of RFID, all of the communications and networking technologies cited in the questionnaire were already widely used. The widespread availability of broadband has enhanced the possibilities and reduced the cost of remote access from small offices and home-based staff. Mobile technology, particularly email systems such as Blackberry, has also grown very rapidly and is forecast by respondents to grow further in future. The growth in all forms of external access to corporate networks is also driving respondents to enhance security and simplify the procedures for user authentication.

The fastest growth area is VoIP, which is already being used to some extent by 49% of respondents, with a further 33% indicating that they plan to implement it.



Figure 6.9 Potential Significance of Communications Technologies

6.9

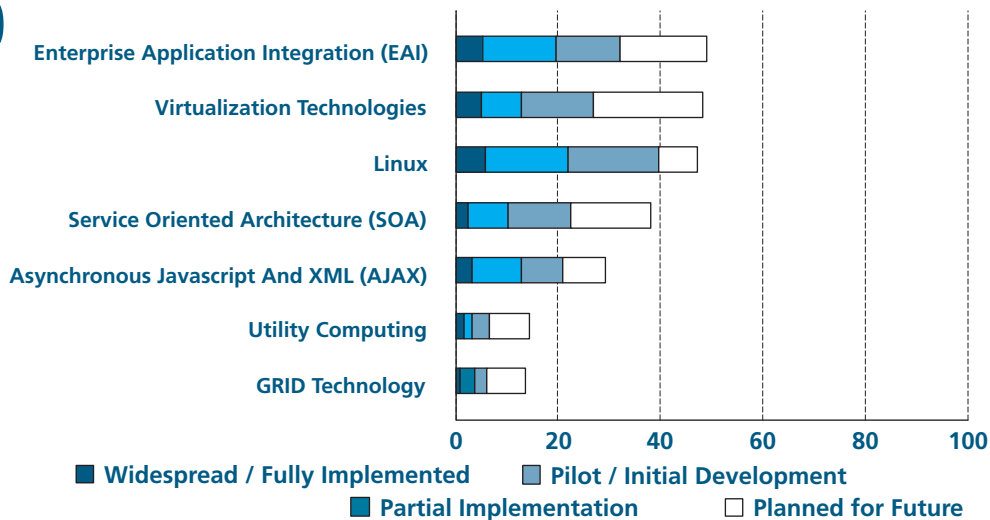


Mobile – remote access is regarded as being a key strategic technology or of major significance by two-thirds of the respondents. It is being used in many organisations to change the way that field-based staff or remote offices are brought into the virtual organisation with major consequences. The direct concomitant of that is that just over two-thirds also indicated that user authentication was a key technology or of major significance.

For many of the other communications technologies including mobile email and home-based working around half of the respondents who have any plans to use them indicated that they will only be of minor significance.

Figure 6.10 Current Status of Systems Technologies

6.10

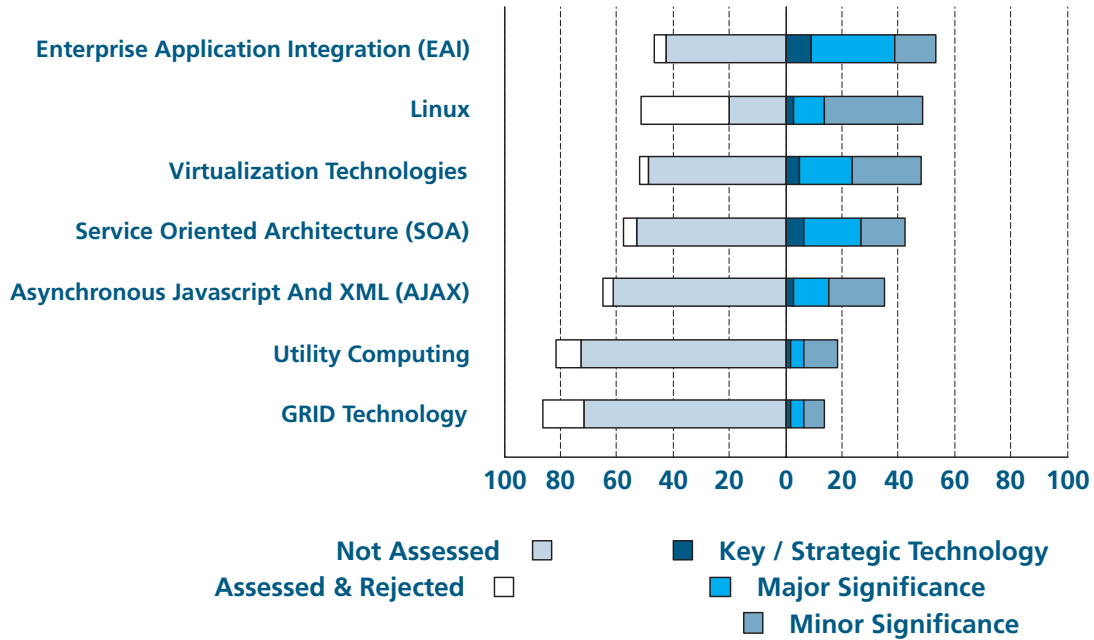


Some of the systems technologies that were cited in the questionnaire are quite clearly beyond the planning horizon for the majority of user organisations. There was a clear correlation with the size of organisation for any degree of current interest in most of these technologies. For example, nearly 20% of respondents have made significant EAI developments and a further 30% have either made a start or have plans to implement EAI. However, in organisations with over 5,000 end-users 41% of respondents have implemented some form of EAI and a further 17% have plans. The pattern is similar for virtualization technologies and SOA.

Linux is an exception in this list, as it is not a new technology. It is the most widely used of these technologies with 40% of respondents reporting some Linux systems, but it is also the slowest growing, with only 7% of respondents indicating plans to try Linux in the future.

Figure 6.11 Potential Significance of Systems Technologies

6.11



Nearly 80% of the organisations who have taken up EAI regard it as being a key strategic technology or one of major significance for their organisation. This does suggest that when the 42% of respondents who have not yet assessed it, do so, there are likely to be a considerable number of further converts. SOA has fewer current adherents, but once again a high proportion of them (63%) regard it as potentially a key strategic technology or one of major significance. Linux, by contrast, is only regarded as a key strategic technology or of major significance by 29% of those who are currently using it.



## CASE STUDY 1 - Document Management in Consulting Engineering

### Background

This company is a large engineering consultancy originally specialising in transport and property projects. Increasingly the civil engineering content of their work is being complimented by other areas of consultancy addressing wider issues such as environment and leisure.

This project began as a high level initiative, championed by a senior director, to review the potential for an over-arching enterprise-wide document management system. Initially it was envisaged that the system should provide document management for all activities and all types of documents.

An initial brainstorming exercise invited input from all parts of the organisation and from all levels of staff. This exercise explored the concept of document management for the organisation and adopted it as a key strategic technology for the future.

### Market Assessment

A core team was established to assess the document management requirements of the organisation and to carry out a review of the market and an analysis of the available solutions. The core team worked on the project part time and included experienced engineering managers and IT staff.

In the consulting engineering sector, large complex projects with very specialised documentation requirements, place very particular demands on the nature of document management. The ability to manage specialised documents effectively has a significant role to play in terms of quality standards, it may also be a key factor in winning contracts. Indeed, the ability to provide documents in a managed environment may be a key deliverable from those contracts. This aspect of the role of document management in their sector imposed very specific additional requirements on the potential solutions.

The core team invited responses from a wide variety of document management suppliers. As their submissions were reviewed they were whittled down to two products, one from a leading general IT supplier organisation, and the other from a much smaller IT organisation providing niche products for the engineering sector. They were already users of some of the niche supplier's other engineering products and this was a factor which operated in favour of their selection.

### Specialised Requirements vs. General Document Management

During the selection process it began to be apparent that none of the proposed solutions would provide an adequate solution for their specialised engineering documentation requirements, whilst at the same time providing the overall document management solution for all types of corporate document management (e.g. including Word documents and emails).

If the all-singing-all-dancing product that they were searching for was not immediately apparent, the product from the niche supplier provided a solution which at least seemed to meet their requirements for engineering document management for large engineering projects. It did also offer some general document management functionality, although it is felt that these general document management functions were oversold in the original product presentations. Notwithstanding any doubts, the specialised document management functions were regarded as key strategic business goals and the decision was taken at the highest level to adopt the highly specialised package.

### Strong Features

There were also other specific features of this package that were particularly attractive, one of which was the strong support for distributed teams located in different locations. A feature of many of the larger projects where this package could bring the greatest benefits is that they are typically staffed by consultants in several different offices. The package supports a number of different options for the storage of project files in various locations. There is a single central database containing metadata describing all of the documents that have been created, but the documents themselves (which can be very large) can be stored at different or multiple locations. This permits the central coordination function, which is an essential element of document management, while allowing for large files to be stored in the most appropriate locations, thus minimising network bandwidth requirements or time spent waiting for remote files to load.

Another highly attractive feature of this package was the fact that some existing clients wanted a full document managed copy of all documents for maintenance purposes at the end of the project. Some existing large clients would have been prepared to defray part of the cost of the package as part of their contract in order to receive a fully working and managed copy of the project documents for ongoing maintenance.

### Implementation

The decision was taken to pilot the package on a few very large projects, with the option to roll it out to other projects after they had gained experience with it.

This partial implementation had limited implications for the systems infrastructure. These included the purchase of a number of servers, so that the new system was not running on any existing servers with existing applications. It also involved upgrading some wide area network links, although this was very limited.

The end-user reaction was initially quite poor and users needed a good deal of hand-holding. A number of project champions, who were CAD specialists, were involved in this hand-holding

process. The package presents a steep initial learning curve, and at the beginning of a project the benefits are less obvious to the user. As the scale and the complexity of the project increases over time, the benefits of the document management increase dramatically and become more obvious to the end-users.

### Assessment of the Package

As their experience with the package has grown, their initial doubts about the ability/suitability of the package to provide a one-stop document management package for the all types of documents and all types of projects has been confirmed. Nor do they see any possibility for this package to be adapted to provide an overall document management solution for their business.

In the implementation of the package, they have had to adapt their initial expectations and demands on the package and instead implement a more limited, discrete form of document management. They feel that the very nature of their business, which involves being highly adaptive to technological change in order to remain competitive, has helped them to adapt their requirements 'on the fly' and make the most of the package.

At the same time the package has been successful and has made a significant contribution in the very large projects where it has been piloted, and they intend to continue to roll-out the package to other very large engineering projects in the near future. The project now has a momentum of its own that is being driven by demand from end-users who can see the benefits on existing projects and also by clients who want the solution as part of their deliverable.

### A Document Management Strategy for the Future

As far as the initial requirement for an overall document management strategy is concerned, the current status was

described as 'under review'.

They had envisaged a single integrated solution for managing all types of documents, including emails, (which are an increasingly important part of their project documentation) and Word documents, photographs etc. These types of documents constitute the most significant part of the documentation on many of their non-engineering projects, and a significant part on all types of projects. What they have instead is a document management package which is appropriate for handling large engineering documents on large projects. They have also established that they do have a demand for this function.

They have also started to implement other elements of document management in other parts of the organisation. An email management package, which helps staff working on projects to ensure that all emails are stored in appropriate project areas, is being used successfully in one division of the organisation and is likely to be adopted by other divisions soon. With hindsight, this has caused them to question the scope of the original requirement for a single integrated solution was too broad and whether they were trying to do too much too soon. Later this year, they intend to carry out a new review of enterprise-wide document management in the light of their experiences. They will still be looking for integrated document management, and they still feel that it is in the integration of document management that many of the potential benefits lie. However, this is tempered by an awareness that there is probably no existing product that will provide a single integrated solution that suits their diverse requirements. In this case a strategy that takes several different products, for different areas of document management, and integrates them on an ad-hoc basis, may be the best solution available.

## CASE STUDY 2 - Case Work System for Grant Awarding Body

### Introduction

Amongst other activities, this public sector organisation awards grants for a range of activities which may be undertaken by organisations or private individuals. The process of receiving a grant application and processing the application, then, if a grant is awarded, monitoring the progress of work and administering payments, is a complex activity. It involves different individuals within the organisation, including field staff and office-based workers. It also involves communication with other agencies as well as the applicant.

This activity has recently been the subject of a major workflow application which has generated significant benefits in terms of the productivity of staff, the efficiency of the entire operation and the waiting time for grant applicants. A key measure of the gains achieved is a drop in the average time between initial grant application to notification of grant from 28 days to 21 days.

The project is up and running, although further enhancements are planned. It makes a significant contribution to the work of the organisation and is used by 300 of the total workforce of 1,800, although it affects the work of some much more than others.

### Background

Several factors provide a background to the development of this application.

Historically a user in one of the regional offices had developed a case work application in MS Access. This application had also begun to spread to other areas of the organisation on an ad hoc basis. However, Y2K concerns had caused a rationalisation of systems and the management of all systems by an FM supplier.



Although there was some history of case work computerisation, the main momentum for the development of the new application came from a major organisational initiative which had established improvements in the overall level of performance in case work as a key corporate objective. This initiative came, at least in part, as a response to external pressure at the highest level to improve the speed of response to grant requests.

Because of the highly visible and strategic nature of the case work initiative, the project had very strong senior management support from the outset. It also had clear and measurable benefits that had to be delivered in terms of an increase in the speed of response and a fall in the turnaround time for handling grant requests.

### The Process

The process is triggered by a request for a grant application, which is received in a regional office. Prospective applicants are sent a grant application form to complete, which captures the basic details about the individual and the precise nature of their grant application. This information is then fed into the system and constitutes the first stage in the workflow.

The application is forwarded to the Case Work Manager, the key individual in this workflow application, who checks the information for completeness and correctness and carries out checks against a number of other information sources and then generates a number of standard letters.

The Case Work Manager will then pass the case on to an Inspector who will assess the application, gathering any information from internal databases, and by visiting the site to assess and report.

The Inspector's report is passed back to the Case Work Manager, who will look at cost estimates, allowable percentages and determine the amount of any grant and a schedule of payments or payment plan. Assuming all stages have progressed satisfactorily an offer of grant is made.

During the course of the project itself the workflow application will trigger checks to be carried out by inspectors at different stages, to ensure that the work is carried out in accordance with the standards and conditions of the grant.

### The Technology

The system that they have implemented is based on an Oracle database and was developed internally in C# and Visual Basic by a team of 4 systems developers.

At the outset they investigated the possibility of a packaged solution but found that there was nothing commercially available that would do the job adequately to their specification. The complexity of the application, its highly specific nature, the legal and regulatory complexities involved, and the requirement

to link the system to existing databases and other applications, all militated against a packaged solution.

Initial investigation of the possibility of adapting existing packages suggested that the cost would exceed the cost of a fully bespoke system. They also had an internal team of systems developers who already had an understanding of many of the processes involved and the technical skills required to implement the application.

The functional business case was supported by the main user department involved and the technical specification was developed internally and approved by the organisation's IS Programme Board.

### The Development Team

The development process involved two teams. The "user team" consisted of a director, a more junior manager, a case work manager and a case worker. The core user team of 4 users were dedicated virtually full time for between 12 and 20 months to the business analysis roles involved in the development. Additional user resources were applied from time to time. The application support team who carried out the technical development consisted of 4 systems developers.

In addition to these staff, the user team also assembled a team of "expert users" to help with the analysis and the implementation phases of the development. The expert users were end-users working in the regional offices with an interest in technology. Having been identified by the user team, they were approached and asked to be the project champion for their region.

The expert users were encouraged to make an input into the design and specification of the system and given early site of all developments and system changes. They also had a role to share their knowledge and brief their colleagues in the region. The expert user system has been found to be very effective within the organisation and has been used on other developments which involve a significant end-user interaction, such as their GIS implementation.

The complex nature of the system and its very significant implications for the organisation of work lead the team to take a highly consultative approach in the development process. In addition to the large user team and the expert users, the systems developers themselves spent several days out on site with the end-users. One of the factors that was regarded as an important factor in the success of the project was the fact that the technical development staff remained with the project throughout, so that the same individuals with their organisation-specific knowledge and experience were involved in the project throughout.

### The Impact

Despite the highly user-oriented approach that was taken with

this development, from the outset there was a good deal of user hostility towards the concept of a workflow application. As the software began to rollout however, the benefits of the system were quite readily apparent to the end-users as its advantages over any form of system that they had used before were very considerable. It is now considered to be well received by the end-users.

There was a considerable impact on the organisation of work, particularly that of the casework manager whose productivity increased very considerably and whose responsibilities also increased. The more efficient lines of communication between all of the staff involved in a case, means that they can see their case load changing much earlier, making it easier for them to schedule their work.

Staff have also been pleased at the extent to which the system still allows them to exercise a high degree of flexibility in their role.

The key measurable benefit of a drop in the time from initial contact to grant notification from 28 to 21 days is the headline benefit from the project. Other benefits, particularly the productivity gains that have resulted have not been formally assessed yet.

### Lessons Learnt

The project is regarded as a successful project. It has been

achieved largely on time and on budget. Initial end-user resistance has been overcome and measurable benefits are flowing from the project.

In hindsight it was felt that the fact the user team was based in London and the developers in Swindon caused some additional problems for the project. In an ideal world they would try to site them in the same location.

The aspect of development that had caused the most significant problems were fault management and change control. In future they would probably assign greater resources to the systems testing and change control aspects of development.

### The Future

The system is still being developed in several directions.

The system is being extended so that it can process some of the less common types of grant application and some of the more unusual types of tasks undertaken during the case work.

More generally, interfaces to the email system, to allow automatic generation of email communications, and automated links to the organisation's GIS system are also in the initial stages of development.

## CASE STUDY 3 - Purchase Order Release Workflow under SAP

### Introduction

This organisation supports a network of nearly 250 locations nationwide and in the Republic of Ireland. They have approximately 1000 end-users.

They installed the SAP ERP application in 2000 and have implemented one major workflow system (Purchase Order Release) utilising SAP's workflow development facilities. The application has been in place for some time and is a stable, significant and successful system.

During the initial development of the system significant problems were encountered, partly due to the lack of appropriate skills and the lack of support for workflow development within SAP. These problems tempered their view of further workflow developments at the time, so, despite the existence of a successful workflow application and a positive attitude towards workflow amongst end-users, they have not developed any other workflow applications as yet.

### Background

The background to the development of this particular workflow

application was the acquisition and implementation of SAP. In the context of the overall decision to acquire and implement SAP, the development of the Purchase Order Release workflow application was a relatively minor decision, that was brought about by the need to redevelop existing systems when SAP was implemented.

During the ERP selection process, SAP's support for workflow development was noted and was added to the list of requirements. It was not a key factor in the selection of SAP, but it was perceived as an added benefit.

The Purchase Order Release system provides a workflow environment that controls the releasing of purchase orders for non-stock items as opposed to regularly purchased stock items or spares. It is used by over 250 of the staff in all areas of the organisation and as such represents a significant application of the use of workflow.

### Development

The project was developed by an external SAP consultant because they had no in-house knowledge of workflow



development. Unfortunately, the external consultant did not have particularly strong workflow expertise either, so the initial development procedure was not a particularly smooth one. It is felt that with a more experienced workflow consultant from the outset, the work might have been more effective, and additional workflow projects might then have been considered.

Several technical problems were experienced during the initial development, the most significant of which was the reliance of the workflow system on HR records. Problems with the development and implementation of the HR system meant that a “work around” had to be implemented which allowed the workflow system to operate from an independent list of end-users.

Workflow is now a stable application, which is well received by end-users and an important part of the organisation’s purchasing procedures.

The application is now regarded as a good advertisement for workflow with the end-users, who warmed to the technology quite quickly and who also raised the possibility of workflow applications in the context of other areas of their work.

### Benefits

One of the key benefits that has been achieved, partly by the use of a workflow system for purchase order processing, has been a significant improvement in the efficiency and control of purchasing activities within the organisation. Prior to the implementation of the workflow system, purchasing procedures were not as strictly controlled or as standardised within the organisation as they are now. The development of the workflow

system has helped to formalise best practice purchasing procedures and these are now enshrined in the workflow procedure with clear benefits to the organisation.

### Current Strategy Towards Workflow

Despite the success of this particular application and the positive attitude towards workflow amongst end-users, there have not yet been any further workflow developments. Several factors have contributed to this, the most significant being the specialist skills that are required for workflow development.

It was felt that because they were not familiar with workflow technology at the outset, they did miss some early opportunities for implementing workflow applications. The initial experience with a relatively inexperienced consultant highlighted the need for specialist skills. It was also felt that the technical support for SAP workflow was not very effective in the early days, making it hard for inexperienced staff to acquire the necessary skills.

Both of these limitations are being addressed. Some IT staff are being sent on courses, thus increasing the level of in-house expertise in this area. Later releases of SAP have also improved the technical support for workflow development. However, at the same time they have improved direct support for email, thus negating consideration of further use of workflow for this function.

Despite these issues, workflow technology is regularly reviewed as a solution to specific problems and it seems likely that it will be used again in the future, although there are no concrete proposals involving workflow at the moment.

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## CASE STUDY 4 - Broadband for Remote Access

### Introduction

This public sector organisation employs a total of 2,000 staff in regional offices across the UK. The main regional centres are linked by an MPLS WAN. However, the organisation also has 70 home-based workers, and 85 additional small remote sites which require remote access to the corporate network. They are in the process of upgrading their remote access facilities for these from dial-up to broadband VPN access. There are in addition 200 “occasional” remote access users, many of whom may be updated in a second phase of the project.

### Background

The background to the implementation of broadband for remote access was a major strategic technology refresh exercise, which had been undertaken to upgrade much of the IT infrastructure. This included the implementation of the MPLS WAN, a Windows upgrade, and LAN upgrades.

Within the context of the overall technology refresh, the

relatively antiquated dial-up connectivity for home-based workers and the small remote sites, became much more noticeable. The old technology was a source of problems and end-user dissatisfaction, both with the shortages of available dial-up connections and the slow speed of the connection.

The main uses of the dial-up remote access facility were access to email and file exchange, intranet and Internet access. Office-based applications were typically too bandwidth hungry to run effectively across the dial-up links, but there is increasing demand from remote end-users to access a range of remote applications.

### Selecting Technology and Suppliers

An initial investigation started with BT’s price list and compared the cost of the existing dial-up connections with broadband costs. Even this initial investigation indicated that the project was going to be easy to justify on cost savings alone, without the considerable performance benefits that would also accrue.

The new WAN infrastructure also offered an alternative technology to a broadband VPN, by allowing home-based and small site users to plug in to the MPLS cloud. This would certainly provide increased bandwidth, far more than they would require, but the costs were clearly higher than with broadband ADSL solutions.

At this stage the organisation sat down with network specialists from their FM supplier for desktop systems and networking, and came up with a detailed requirements specification for the home-based and small site connections. A number of telecommunications providers were invited to come back with technical solutions and proposals. These included a proposal from the existing FM supplier.

Eventually NTL's broadband VPN solution was chosen.

### The Benefits

There are a large number of benefits expected from this project. The simplest benefit, although not the most significant, is a direct cost saving which will cut in during the second year of operation.

There are a number of ways in which the quality of service to end-users will be improved. These include the elimination of queuing for a dial-up connection (the new system will degrade gradually as load increases), much faster access to all remote applications and the Internet, an always on connection, the necessary bandwidth for more complex applications to be run across the remote link.

The organisation is planning a major relocation of part of its operations in the near future, and the ability to provide remote end-users with a high quality connection to the corporate network will permit a great deal more flexibility during the move and may allow some staff to elect not to move.

There are also a number of benefits derived from the contractual arrangement with the new supplier. Bills are fixed so that costs are easier to forecast and the new billing will mean easier management of costs. The contract also incorporates tight SLAs with better monitoring, reporting and fault-fixing conditions built in.

### Implementation

This project is on-going and has not yet been rolled out to end-users. The contract has been awarded and the core equipment is being installed. The remote equipment will be installed with one visit by the broadband supplier to each user site. Because the organisation already has an external management contract for the support of all PCs and networks, there is still some negotiation needed to ensure that the visit by the broadband supplier's engineers will carry out all of the work required to get

the end-user up and running, so that this can be done in a single visit.

The existing FM supplier service provides a helpdesk resource and they will continue to provide a comprehensive single point of contact for staff requiring support for their new broadband connections. They will receive calls, book them in, carry out a 1st level analysis and then pass any broadband-related calls onto NTL for further analysis and resolution.

The rollout is a substantial task with 150 home-based or small site users. There are another 200 occasional remote end-users, many of whom are requesting the improved access facilities, who will be dealt with in a second phase of the project. An internal project team, including end-users, is now managing the overall implementation process.

### Problems Arising

A high degree of commercial uncertainty was identified as one of the problems or concerns which had arisen during the early stages of this project. The telecommunications market was described as very volatile, with companies changing and merging very rapidly. Prices are also volatile and can fall rapidly.

Both of these factors contribute to the high level of uncertainty and a need to keep abreast of the marketplace developments. One of the responses to this uncertainty has been to negotiate the initial contract for broadband provision as a two year contract.

Another problem, although it could be seen as an early sign of the success of this project, is the growing number of end-users who want to have remote access. This has put some strain on the project management team in terms of managing user expectation.

### Lessons Learned

Since the project is still in its relatively early stages it is rather soon to be assessing the lessons learned from this project.

However, it was felt that the project would have benefited if it had been formalised as a project in its own right at an earlier stage. Before this occurred, it was possible for activities to progress without a clear delineation of responsibilities. Giving these activities the formal status of a project ensured that specific individuals received a proper brief about their responsibilities. One of the specific roles that had been lacking in the early stages was a project manager with specific project management skills. This was remedied, and was described as a minor irritation.



## CASE STUDY 5 - 3rd Generation Mobile Application

### Introduction

This organisation provides a warranty service for companies that operate within a specific industry sector. Companies within that sector can elect to register with the organisation, which then undertakes inspections of their activities on an ongoing basis and provides warranties for their products. It is a not for profit organisation and is regulated by the FSA.

330 staff are employed as field staff and these staff have been using mobile devices to record the details of their inspections since 1996. The application has recently been redeveloped taking advantage of new handheld technologies and to accommodate a major redevelopment of back-end systems.

### Background

Ten years ago field staff were equipped with one of the early handheld "brick" devices. DOS based with a 640K memory limit, it firmly established the use of mobile devices for data collection, within the organisation.

However, the original DOS-based system was expensive and very limited in terms of expansion potential. By 2003 they could not be enhanced any further and it was no longer possible to add any additional functionality to the application. At the same time, the emergence of PDA technology had placed a whole range of cheaper, smaller and more powerful systems, running under Windows CE, on the market.

### PDA Upgrade

The decision was taken then to migrate to a new more powerful and more expandable PDA platform to allow new functionality and new applications to be added to the core field activities. The device used was the Dell Axim X5. It had 64mb of memory and ran under the Pocket PC 2002 operating system and later Pocket PC 2003. This PDA was selected following a pilot scheme involving three devices. The selection criteria included screen visibility, robustness and responsiveness. In 2003 field staff were issued with PDAs running an exact mirror copy of their original DOS-based application written in C++, and was welcomed by the majority of staff.

At this point the evolution of the mobile system was taken over by a much larger legacy upgrade to all of the organisation's main back office systems. This redevelopment was brought about by the increasing IT support costs for the ageing legacy systems and the opportunity to reduce total IT costs by replacing them. However, the upgrade to the back office systems necessitated further redevelopment of the PDA-based field system so the subsequent redevelopment of the PDA-based system to accommodate the new back-office systems was a second-order decision.

The core functions that were provided by the original mobile system are still core functions on the third generation iteration of this mobile application. Furthermore, every attempt has been made to ensure that, where it is providing the same functionality, the latest system also reproduces these functions in exactly the same way.

This is so that staff, who are accustomed to the old system, undergo only the minimal re-training necessary to learn to use the new one.

However, the original objective of upgrading from the DOS brick, to allow them to extend the range of field-based applications supported by the hand-held device, has also been pursued to gain the greatest possible advantage from the redevelopment.

### The Application – How it Works

An inspector in the field visits the site and inspects it for any defects on a wide range of predefined issues. A report of the inspection and any defects are recorded on the handheld device. A printed copy of the report is presented to the manager at the site. The handheld device has also been used to collect a large range of other data. For example, any problems that have been picked up during the inspections before his next visit.

With the new system the scope and function of the data that can be collected has been greatly expanded. For example the handheld system can provide specialised surveys, such as individual performance reports for registered companies.

Under the original system, data was transferred from the handheld device to the back-end office system. This was carried out using a batch up and down transaction from a dial-up modem connection cradle at the inspector's home. The modem was then polled by the back-office system to upload new data collected since the last upload. It was then polled again later that night and then the merged and updated records from the back-end system were downloaded to the handheld device.

Under the new system there is a synchronisation process set up between the PDA and the mobile server system. The PDA initiates a dial-up connection from a cradle and negotiates a time slot one-off call during which the data on the PDA and the server are synchronised. There is also the facility to do this via a GPRS link via cellular phone. (Bluetooth and GPRS equipped cellular phone acting as the connection between the Bluetooth enabled PDA and the mobile server.) This has made it possible to transfer work between inspectors very quickly if necessary (for example, in the event of sickness).

### Benefits of the System

The main reason for the latest implementation of the new system is to integrate it with the organisation's new back office system. This has brought many benefits in terms of the additional functions that can be built into the application because of the additional power and memory of the new PDA. Furthermore, it's hoped additional functions will be developed in the future, particularly as the system is more flexible.

There are many benefits, for example it is now possible to enhance or modify the application, download it remotely to the PDAs and the only human intervention that is required is the inspector electing to upgrade the application. This additional flexibility means that the inspectors can be equipped to take on new tasks or to handle changes in their environment with minimum effort.

### Technology Issues

There have been a number of technological issues the organisation has considered in the evolution of this application. For example, issuing field staff with laptop systems. However, there are clear benefits of using a hand held device to record data on the move.

Another more detailed technological issue involved the Java Virtual Machine (JVM) that is used on the PDAs. The first PDA development of the original system was developed in C++, however the availability of JVM, under Windows CE, offered considerable benefits. So much so, that an early application handling Health and Safety issues was developed using the JEODE JVM.

However, the most recent development involved the use of Oracle database technology, which was not supported by the JEODE JVM. This required a change of JVM, and the new system is currently being developed using the CREME JVM, which is able to support Oracle databases.

The CRÈME JVM also had the additional advantage of allowing the inspector to view more of the PDA screen for the application, with only one line on the screen reserved for access to the operating system.

### Development and Implementation

Up until now the coding of the mobile applications has always been developed by third-party systems developers. Even the suppliers of the original DOS based brick system developed the first system on the PDA in C++.

Unfortunately, they did not have experience of handling Oracle-like database developments, or implementing a mobile communications element using GPRS. Following some research, the organisation found a small PDA developer offering bespoke handheld developments.

### Implementation and End-users

The new system is in the final stages of development but is yet to go live. User acceptance testing and load testing with live users has generated positive feedback. It is expected that the initial rollout will be gradual. However, all 330 users are expected to be using the system by the end of July 2006.

Rapid user acceptance, ease of implementation and minimising retraining effort have been significant objectives in this project. Where the system reproduces the functions of the original DOS based system, it is designed to look and feel like the original system, so that minimal retraining is required to use these original functions.

There are a number of areas where training will be given, including the new communications facilities and the new applications. Inspectors will be provided with the necessary training for the new system and this will also be an opportunity to resolve any outstanding hardware issues with their existing equipment.

### Problems and Lessons Learned

Overall the project was considered successful, with any development issues arising from changes and additions to the original requirements specification. Senior management, end-user management and end-users were very supportive of the project and the organisation was pleased with the performance of external suppliers. While it is still early days for the project, it is hoped that it will bring long-term business benefits for the organisation.

## CASE STUDY 6 - Mobile/Remote Access for Field Sales Team

### Introduction

The company is a manufacturing organisation producing products for the construction industry. They employ 2000 staff in the UK in over 20 manufacturing locations. The company has a sales force of 50 representatives and 10 sales managers operating out of 7 sales offices covering the entire UK. Up to September of 2005 the 50 reps had no formal computer facilities. The case

study describes the initial process of providing computing facilities for the sales force.

The current status of the project is that all reps have been equipped with laptop PCs with wireless connectivity. They all have BT Broadband access from their homes with wireless routers. They connect by logging on to a Citrix SSL and this



currently gives them secure access to their email and to the corporate intranet facilities. User acceptance of this first stage of sales-force computerisation is very high and at the time of the interview all of the reps had picked up their email over the previous two days.

### Project Initiation

Prior to this project, there was a general awareness that the sales force was operating in a relatively antiquated manner compared to competitors, clients and the rest of the company. The Sales Director was initially keen to bring the sales force right up to date, equipping them with “sexy silver laptops” with mobile communications that could provide direct connectivity to corporate systems from the client’s office at the point of sale. Although there was never a very detailed direction as to exactly what functions would be delivered at the point of sale, there was clear top level support for bringing the sales force into the 21st century and projecting a more technologically advanced image to the customer.

### Pilot and Proposal

An initial pilot project was undertaken by the IT function to see what IT could deliver for the sales force. The fact that this technology would be applied largely to inexperienced computer users also imposed the very clear initial requirement that the technology and any applications should be very reliable, robust and easy to use.

In this pilot stage a number of different approaches were tried including laptops and ruggedised tablet PCs with 3G communications, and XDA2 PDAs with GPRS communications.

A number of factors emerged from the pilot project.

Mobile communications from the point of sale (i.e. the customer’s office) were often not good enough and certainly not reliable enough for carrying out on-line transactions or enquiries back to corporate systems. Sales staff were also resistant to having a laptop “coming between them and the customer” particularly if the technology was not 100% reliable and was not delivering additional functions that would actually help them to close the sale.

Staff quite liked the PDA as a less intrusive means of accessing information, but the screen was too small to deliver very much information, and the GPRS connection was also too slow for any serious transactions or enquiries to be made at the point of sale.

Although there were considerable technical issues and constraints, it was also clear that many of the sales staff lacked confidence and familiarity with computer technology. Implementing applications for them to use at the point of sale would involve an unnecessarily steep learning curve and would add unnecessary pressure to the sales situation.

However, during the course of the pilot it emerged that one of the features of remote connectivity that the sales staff seemed to appreciate from the outset was the possibility of access to their email without coming in to the office. This ready acceptance of the value of email and of the advantages of accessing it remotely was taken up by the pilot project as an obvious and achievable first phase for sales force automation.

The recommendation from the pilot project was a proposal to provide all sales staff with mobile computing, in the form of a laptop computer and remote access to corporate email and intranet facilities from their homes. All staff would be given a new broadband connection (irrespective of whether they had their own existing broadband facilities) and provided with secure access to their corporate email and to corporate intranet facilities.

Although this was much less ambitious than the original vision of a fully automated on-line sales force, it was presented to the top level IS Steering Group (comprising three directors and three senior managers) for capital approval. There was a basic cost benefit analysis but many of the key benefits outlined in the proposal were hard to quantify.

They included:

- ▶ *faster and more efficient communications with the sales force within the organisation, with consequent improvements in internal efficiency;*
- ▶ *faster and more reliable email contact with the sales force and between the sales force and their clients;*
- ▶ *easy access to corporate intranet facilities for the sales force;*
- ▶ *a feel good factor for the sales force which has been brought into the 21st century and feels more a part of the organisation;*
- ▶ *the use of digital photo technology for reporting customer complaints to manufacturing areas in a timely and convincing way;*
- ▶ *a starting point for further developments for the sales-force as communications technology improves and as the computer-awareness of the sales force improves.*

### The Project

The facilities that have been implemented so far consist of 2 Citrix Access Gateways providing SSL VPN access for remote users. Authentication is provided by Signify’s two-stage RSA Authentication and key fob security system.

When they have logged in, users have access to their email in Outlook, to any applications and information on the company

intranet, and to Excel and Word (they also have full client versions of Office on their laptops).

The corporate end of the project is hosted on 5 Dell Blade Servers. The remote equipment consists of 60 laptop PCs including printer, wireless router, wireless network card, and digital camera. These were purchased at a very competitive price from PC World, who also imaged up the systems for them.

The broadband connections at the 50+ representatives addresses were provided by BT. It was felt that the level of service and support when dealing with BT at the corporate level was very good. They were given a single contact for dealing with the entire contract and, even when their single corporate contact was not available, the level of service was good. The process of installing the new broadband connection at the reps' homes also went quite smoothly with mainly good experiences of the BT engineering staff.

Once the broadband connection was installed at the reps' houses the rollout of the laptops and the commissioning of their systems was carried out by the internal IT staff. This involved a home visit by a member of IT staff to install the equipment and take them through the process of connecting up to corporate systems. Typically it would take about two hours to connect up the system and check it out and then another two hours spent showing the staff the key points of connecting up.

A one day external course in the use of Outlook was also made available to staff.

### Post-Project Appraisal

The initial phase of the project was only completed very recently and it is very early days to assess the results.

However, in those areas where an assessment can be made it is generally very positive. Monitoring of network activity shows that the initial assessment of the user take-up and acceptance is very positive, with most of the sales staff already using remote access to check their email on a regular basis.

Anecdotal evidence also suggests that the project has also been very good for the morale of sales staff and that the initial reluctance of sales staff to embrace the use of computer technology in the client's office has not prevented them from

seeing the benefits of remote access technology from their homes. The relatively gentle approach to sales-force automation that has been taken is regarded as one of the key reasons for the success of the project thus far.

Initial assessment of the products/technology in use are all positive although it is too soon to assess factors such as the robustness and reliability of the equipment in the field.

Similarly, it is too soon to make any real estimate of the business benefits achieved by the project.

As far as the conduct of the project itself is concerned, it was regarded as having progressed quite smoothly. Suppliers' performance was good and the performance of the staff responsible for rolling out the equipment internally was good. With hindsight it was felt that it would have been a benefit if one of the helpdesk staff had been drafted onto the implementation team as it is the helpdesk staff who have to pick up the support role as soon as the sales reps encounter any problems.

### The Future

The pilot investigations that were carried out suggested a rather limited initial development was the most sensible approach for this sales force. However, from the outset a more ambitious long term strategy was envisaged and this continues to be the case with the apparent success of the initial phases.

Sales managers already have access to the corporate J.D. Edwards ERP system via their remote access facilities. There is no intention to make this available to all sales staff, partly because of the cost involved in the additional user licenses and partly because the sales staff only ever need access to a very small part of the total ERP package.

However, they are already looking at a much more cost-effective but very powerful report/enquiry generator system which would allow them to generate a set of standard enquiries and reports on corporate Oracle databases, that would be accessed via a simple browser-based front end. These would provide sales staff with very rapid remote access to live data. As the mobile communications technology becomes more reliable, and as the computer awareness and confidence of sales staff increases, it is likely that this type of application will be run in the field.





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