

Hybrid Information Systems  
The Key to Success in  
Office Automation

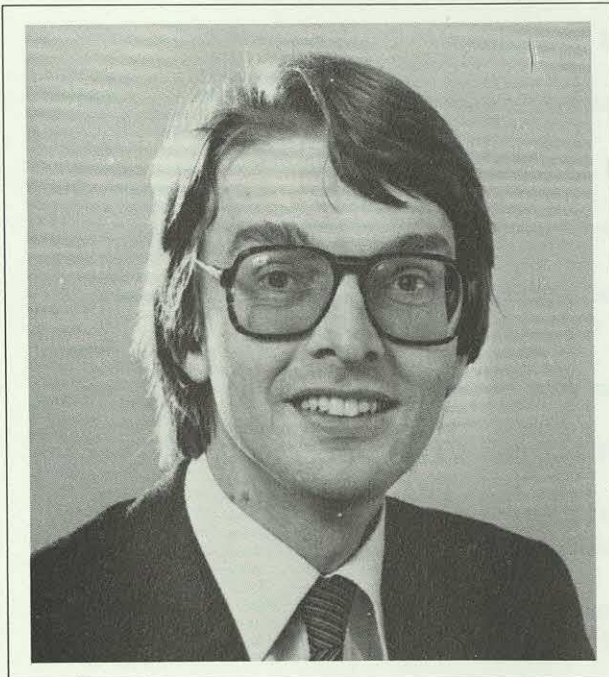
BUTLER COX  
FOUNDATION

A Paper by Neil Farmer



## Hybrid Information Systems The Key to Success in Office Automation

A Paper by Neil Farmer



Neil Farmer is a principal consultant with Butler Cox specialising in office automation. During the past few years, he has reviewed and analysed the office automation activities of more than 400 organisations in Europe and the United States. The majority of these (about 80 per cent) have been neither clear successes nor clear failures — they have simply been non-events. From his analysis, Neil has identified the reasons for the lack of success in office automation projects, and in this paper he sets out seven rules for success.

The key to success is hybrid systems that combine elements of standard office automation facilities, data processing systems, and telecommunications systems. These systems are aimed at specific applications and specific user groups, and therefore provide high payoffs very quickly.

The mistake that many organisations have made is to focus their early office automation activities on providing general-purpose facilities for all office staff. This does not work because the costs far outweigh the benefits, and first-time users of general-purpose facilities will only accept them once an electronic-office environment has been established. The best way of establishing this environment is to concentrate initially on hybrid information systems that focus on specific applications.

Other organisations have tried to emulate the success of the few organisations that have installed office systems using a top-down approach. This approach only works if a senior executive (ideally the chief executive) personally 'drives' the office automation programme. Office systems trials that start by installing general-purpose systems for use by senior managers are doomed to failure.



Published by Butterworths  
12 Bloomsbury Square  
London WC1A 2PL

Published by Butler Cox & Partners Limited  
Butler Cox House  
12 Bloomsbury Square  
London WC1A 2LL  
England

Copyright © Butler Cox & Partners Limited 1987

All rights reserved. No part of this publication may be reproduced by any method without the prior consent of Butler Cox.

Photoset and printed in Great Britain by Flexiprint Ltd., Lancing, Sussex.

# Hybrid Information Systems The Key to Success in Office Automation

A Paper by Neil Farmer

## Contents

<b>Examples of hybrid information systems</b>	1
<b>Most office automation systems have not been successful</b>	1
<b>Plan for and install hybrid systems</b>	2
<b>Plan to achieve clearly defined and quantified objectives</b>	3
<b>Recognise the three different types of office automation application</b>	4
<b>Do not rely on qualitative benefits</b>	6
<b>Ensure that the first application is relevant</b>	6
<b>Once an electronic culture has been established new users will demand generic facilities</b>	7
<b>Choose office automation suppliers on their ability to provide hybrid solutions</b>	8
<b>Conclusion</b>	8



# Hybrid Information Systems

## The Key to Success in Office Automation

Hybrid information systems combine elements of conventional office systems, data processing systems, and telecommunications systems to create a single user-oriented system that meets a real business need. They are the key to successful office automation.

### EXAMPLES OF HYBRID INFORMATION SYSTEMS

Consider, for example, a salesman who connects his portable computer to a modem at home and dials into his electronic mailbox at the office to gather all the relevant information on the customers he will visit tomorrow. The information comes both from data processing and from text-processing systems, and is accessed by a scheduling system and an electronic mail system. The access mechanism is of no interest to the salesman, who is concerned only that customer sales patterns, his previous visit reports, and a summary of recent press comments on the customer are available when he needs them for the next day's work.

Consider also an accountant in the head office of a large multinational corporation who is consolidating the monthly sales and trading profit figures from subsidiary companies around the world. The numerical consolidation is routine and causes him little difficulty because the computer system adds up and analyses the figures. He focuses his attention on assessing the comments made by the few companies that have deviated significantly from their budget targets. A few years ago this activity would have been a manual exercise. Now he can select the variance level that he considers significant, and the computer system will automatically identify the relevant company returns and display them together with their text comments on the screen of his terminal. If he is concerned about the activities of a particular competitor, he can use the system both to search for references to the competitor and to analyse the results of those subsidiary companies on which the competitor's influence was particularly strong. The system allows him to access relevant information held on a competitor-intelligence database by pressing two keys on his keyboard.

Meanwhile in another city on the other side of the world, a leading scientist in the research and development laboratory of the same multinational corporation is compiling the final report on a new-product development. He uses his terminal to assemble the report by accessing research data, technical drawings, and text from previous reports and computer files. Although this integrated system is valuable in saving the time of the scientist, its real benefit to the corporation is measured in terms of getting new products (or product improvements) onto the market more quickly. Launching a product a few weeks or months before the competition launches a similar innovation can often translate into millions of dollars in extra sales.

### MOST OFFICE AUTOMATION SYSTEMS HAVE NOT BEEN SUCCESSFUL

Regrettably, integrated hybrid information systems of the type represented by the above examples are the exception. The reality is that most office automation systems installed in the early and mid-1980s have not delivered real benefits. With hindsight, we can see that few office automation installations have been either notable successes or dire failures — most installations have quite simply made little impact on the way in which the users perform their work. Nevertheless, they have achieved a reasonable level of user acceptance, and users often claim significant qualitative benefits resulting from the systems. Where benefits have been quantified, they are usually modest, and even the claimed qualitative benefits are often not convincing to an objective observer.

As we enter 1987, the office automation picture can be summarised as follows:

About one in ten installations is a clear success; one in ten is a clear failure; and the remaining eight out of ten installations are non-events.

The reason for this sorry state of affairs is not that those responsible for installing office automation systems are not intelligent or motivated. In most



cases they are. Nor is the situation primarily due to a lack of competence or professionalism. In most cases, well-established procedures for equipment selection, project control, user involvement, and management support have been used. The real problem lies in widespread and fundamental misunderstandings about the nature of office automation and the rules for success in this field.

All too often, suppliers and consultants in the office automation field have preached a gospel based on wishful thinking, naive ideas, half-truths, and pure 'hype'. The rare office automation success stories have been over-publicised, leading to the belief that the particular approach used represented a formula for success. However, a little research would have shown that unsuccessful installations often followed very similar approaches, but those responsible for these fiascos never wrote articles or appeared on conference platforms to explain where they went wrong.

In the early 1980s, an office automation 'bandwagon' developed. Every organisation believed that it had to be seen to be using the latest technology. As a consequence, pilot trials came into vogue as a means of testing the effects of office automation. Today, in 1987, this approach is widely discredited. One theory that is currently much in favour is that office automation cannot be justified in hard financial terms, but that real benefits will arise from office automation because of much faster and more efficient communications within an organisation. I believe that in time this theory too will largely be discredited and that it will be replaced by a much clearer understanding of the real opportunities for exploiting office automation.

In this paper, I put forward a radically different view of the way in which office automation can be used to achieve real benefits for your organisation. This view is based on a personal analysis of more than 400 organisations in Europe and the United States over the last three years. In carrying out this analysis, I did not investigate all the office automation experiences in detail (although most investigation was carried out by face-to-face interviews) but concentrated instead on those experiences that were impressive to an impartial outside observer. In this way, the wishful thinking of those closely associated with office automation installations was ignored, and I was able to isolate seven 'rules' that were in the majority of cases associated with success. For the purposes of this analysis, I established a definition of success:

If the organisation has realised significant quantitative or qualitative benefits from an office automation installation then that installation can be called a success. The benefits

could relate either to internal efficiency or to external relations with customers (or with the general public in the case of government organisations).

In the remainder of this paper, I describe the seven 'rules for success' for office automation. Running throughout these rules is a strong belief that application-specific hybrid systems (such as those described in the opening paragraphs) are the key to the successful application of office automation.

### PLAN FOR AND INSTALL HYBRID SYSTEMS

In general terms, office automation applications are of three main types: traditional (mainstream) data processing systems, generic office automation systems (word processing, electronic mail, etc.), and hybrid systems. Although traditional data processing systems and generic office automation systems are quite well understood, the 'middle ground' between them is less clear. For example, office automation systems may be designed to meet particular requirements by combining elements from traditional data processing systems, standard packages, or generic systems to form application-specific hybrid systems.

Consider the sales information system used by the salesman in the earlier example. It comprises visit reports (text) prepared by sales staff, order information for each customer (data), and trade-press information (text), with access to each type of information being provided by a diary-scheduling system, an information-retrieval system, and an electronic mail system. Hybrid systems such as this are increasingly being used to meet specific business requirements. Indeed, these hybrid systems usually provide much greater benefits than generic facilities such as word processing, spreadsheets, or electronic mail. Hybrid systems have been used to:

- Prepare quotations and the associated correspondence for customers.
- Provide assistance in answering customer telephone queries by accessing both data processing files and image files of customer correspondence.
- Combine data processing information with spreadsheets and word processing.
- Route electronic documents in a particular sequence either for authorisation or for comments associated with capital projects.
- Allow customers to place orders electronically using a combination of external electronic mail services, internal data processing systems, and internal electronic mail.



The range of potential hybrid systems is very wide indeed, ranging from straightforward retrieval of data from files held on a mainframe computer for incorporation into a text report, to integrated multiple hybrid systems. (An integrated multiple hybrid system might be used, for example, by a large organisation with several salesforces selling different products to common customers. Each salesforce may have a hybrid system, similar to that used by the salesman in our example, and the systems may be linked together to provide both a comprehensive customer database and a competitive-impact database that is controlled by another hybrid data/text system.) The simpler hybrid systems tend to require a high degree of human intervention, whereas the more complex hybrids tend to be much more automated. The range of possible hybrid systems is illustrated in Figure 1.

To install hybrid systems effectively requires a single user-support group. Such a group is usually formed by combining end-user computing support staff (who usually provide support for standard packages and system building tools) and office automation support staff (who usually support users with word processing, electronic mail, etc.). Without a single user-support group, there is a considerable danger that the different support groups will adopt a narrow 'blinkered' view, each focusing on its own speciality. As a consequence, the high-benefit hybrid applications will either be overlooked or be deferred to some distant future date.

In making presentations to end-user and office automation support staff, Butler Cox consultants have often been surprised by the mental block that exists in the minds of the support staff. Many of them have never thought in terms of hybrid systems. This is particularly true where support teams are

established to oversee the implementation only of generic office automation systems. I believe that in the late 1980s, information centres will have a major role to play in the development of hybrid systems.

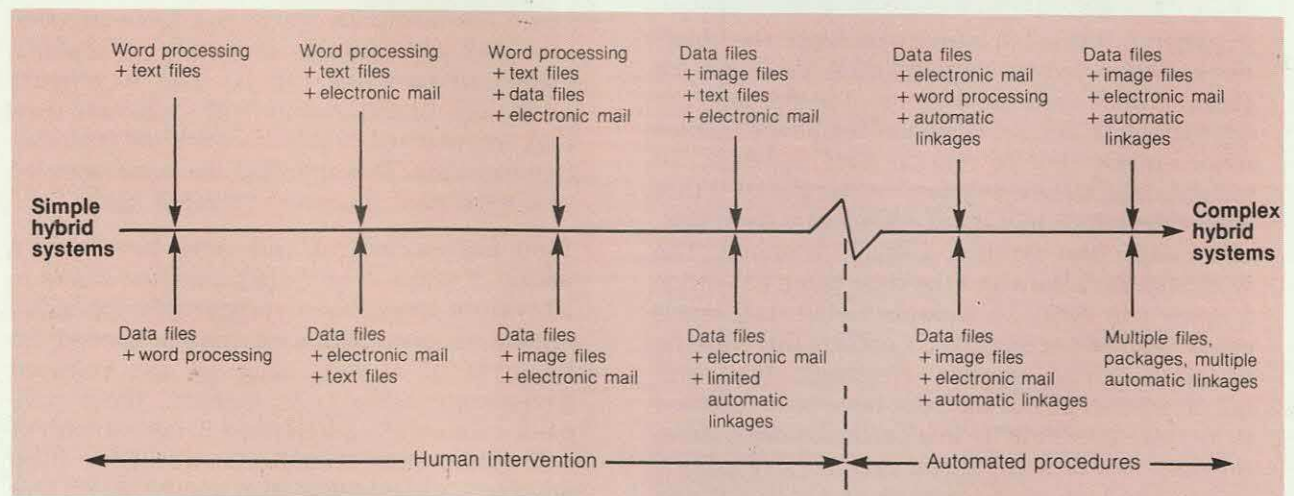
The concept of hybrid information systems is fundamental to an understanding of how office automation will be used in the future. I believe that it is essential to break away from the naive ideas that were propounded in the early 1980s. Office automation is not just a number of generic facilities that can be scattered around the office, and that will provide, as if by magic, increased efficiency and much less paperwork. A move away from providing only generic facilities and towards providing hybrid systems to meet real business-related needs is essential for sustained success in office automation.

### PLAN TO ACHIEVE CLEARLY DEFINED AND QUANTIFIED OBJECTIVES

Most organisations that install office automation systems prepare an extensive list of muddled, unquantified, and unrealistic objectives. Such a list of objectives might include:

- Increase efficiency in the office over the next five-year planning period.
- Reduce the volume of paperwork handled.
- Improve the quality and timeliness of information and so improve the quality of decision making at managerial levels.
- Educate staff in the use of office automation facilities.
- Evaluate the performance and potential for different types of office automation facility.
- Improve internal communications.

Figure 1 The range of hybrid systems





## Hybrid Information Systems: The Key to Success in Office Automation

- Stay ahead of competitors in the use of office automation.
- Retain staff who might otherwise leave the organisation.

All these objectives might sound worthy. But objectives such as these almost always lead to 'non-event' office automation installations.

By contrast, organisations that clearly establish and quantify objectives for each main application area have a much better track record. Examples of reasonably clear and quantified objectives might be:

- To achieve a 15 per cent improvement in the productivity of departments A, B, and E by the end of the next financial year.
- To reduce the volume of paper files, so that by the end of 1988 internal stationery requirements are reduced by 50 per cent, and 1,500 square feet of office space is released.
- To reduce by 40 per cent the number of staff required to answer customer telephone queries, at the same time halving the current elapsed time of six minutes to service a query, thereby improving customer service.
- To speed up the quotation process so that a customer receives a high-quality quotation (including diagrams) within one week of a request being received, rather than three weeks, as at present.

The reason clear and quantified objectives are one of the keys to success in office automation is that they often force those responsible to face up to the actions that will be necessary to achieve the objectives. If a 15 per cent productivity increase is to be achieved, who is to go? And what will the new organisation look like? Or, in what logical stages will paper files be reduced? When will the filing cabinets be removed? And what problems will need to be overcome? Who will be responsible? And so on.

In general, it is much easier to achieve the objectives set for hybrid systems than those set for generic office systems. Suppose, for example, the objective is to answer customer telephone queries more quickly and to reduce staff numbers. To achieve this, a hybrid system can be installed that allows the telephonist to access relevant data, text, and image files through a single terminal. The workload variations and the time taken to service a query can easily be measured, and staff levels can be adjusted accordingly. Compare this with the situation where generic electronic mail and information-retrieval facilities have been installed to increase productivity in a particular area. Here, the only way to achieve real productivity gains is often to reduce staff numbers and to see if any problems arise. Usually, there is no direct relation-

ship between the staff reductions and the effects of the new facilities. Quite often, the reductions could have been made without introducing the new facilities.

Similarly, when qualitative benefits are sought, hybrid systems are often more effective in delivering the benefits. For instance, Paul Strassman told a group of Foundation members about one company where 200 transactions were required before an existing product could be modified. Although electronic mail could help to speed up the transactions, it requires little imagination to see that a hybrid system consisting of CAD, information-retrieval, and electronic mail elements would have a much greater impact.

### RECOGNISE THE THREE DIFFERENT TYPES OF OFFICE AUTOMATION APPLICATION

It is important to recognise that there are three main types of office automation application — strategically important applications, specific operational applications, and general-purpose applications.

*Strategically important applications* are those that have a direct impact on the main function of the organisation — that is, they affect in a significant way the 'customer' or the service provided. There are many examples of this type of application:

- Some companies have provided their customers (or agents) with personal computers so that they can receive promotional and other information and place orders electronically. Sometimes, microcomputers on customers' premises have even been used to maintain stock records and to transmit reorder information to the supplier's computer automatically. In this way, the supplier may be able to increase market share considerably, particularly if its competitors are slow in offering comparable facilities.
- Some life insurance companies have supplied sales staff with portable computers and sophisticated software that can be used to prepare quotations (incorporating both data and text) that are matched closely to individual customer requirements. This approach has sometimes led to a significant increase in market share.
- Some pharmaceuticals companies have, over a period of years, used word processors linked to laboratory computers to prepare the extensive regulatory documentation that is needed for approval of a new drug by the relevant government agency. As a result, these companies are able to launch new drugs a month or two earlier than would otherwise have been possible — an advantage that may be worth tens of millions of dollars over a five-year period.



For any given market or service, there are typically only a few strategically important applications, and they are usually associated with very large financial benefits or, if things go wrong, considerable losses (see Figure 2). Strategically important applications often succeed or fail very quickly, usually within the first year after installation. Nearly all strategically important applications are based either on traditional data processing systems or (increasingly) on hybrid systems. In the main, generic office systems have not been used for strategic applications, except by office automation suppliers (who have a strategic interest in showing that office automation works) and by publishers, who use word processing as an integral part of their production process.

*Specific operational applications* are installed to improve the operational procedures associated with a particular business function. These applications are usually hybrid systems and produce significant (though not huge) financial benefits. But the benefits can be cumulative, becoming very important over a period of time. There are already many examples of successful specific operational applications, and the installation of hybrid systems of this type is expanding rapidly in leading-edge user organisations. Examples include:

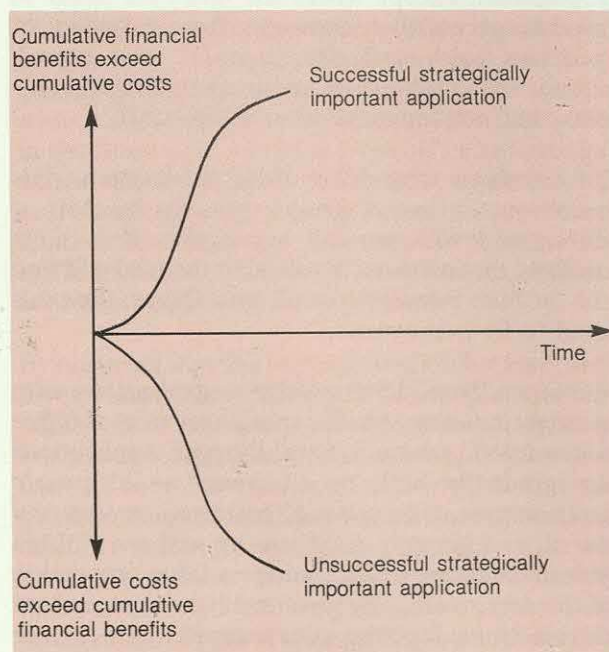
- A microcomputer-based system that was installed to prepare engineering quotations and correspondence.
- An integrated purchasing system that produces orders and correspondence.
- A desktop publishing system that accesses mainframe data to include in a price list.

- A microcomputer-to-mainframe spreadsheet-based budgeting system used by accountants.

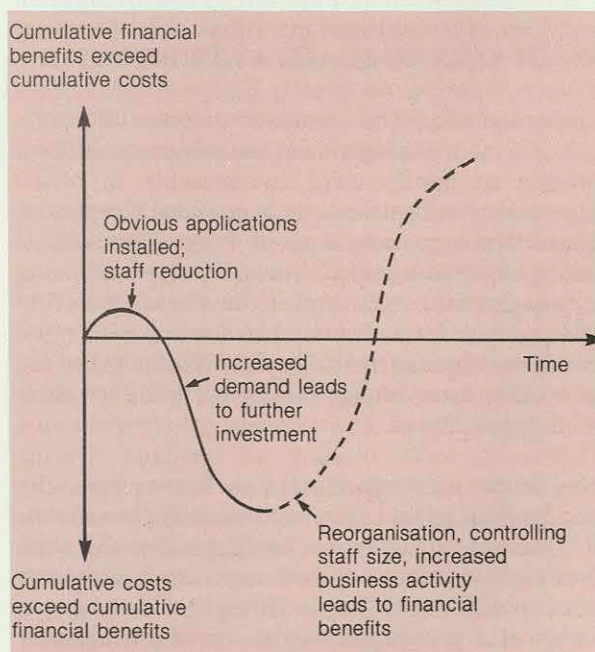
*General-purpose applications* aim to improve office efficiency by providing an electronic, rather than a paper-based, environment using generic office systems. Studies have predicted that generic systems such as word processing, electronic mail, electronic information retrieval, and electronic diaries can improve office productivity by between 15 per cent and 30 per cent, depending on the mix of office staff and current productivity levels. These benefits have been realised only in certain circumstances, however, usually in conjunction with reduced staff levels and reorganisations of managerial/professional staff or support staff. Experience has shown that productivity benefits from the installation of general-purpose applications cannot be achieved without a determination (usually driven by the chief executive) to reorganise and reduce staff numbers or to maintain staff numbers while increasing business activity. Even when these actions are taken, however, the relationship between increased productivity and generic office systems is often far from clear.

In the early 1980s, I predicted the cumulative costs and financial benefits from general-purpose office automation applications would follow the pattern shown in Figure 3. Initially, there would be modest financial benefits as the obvious applications, such as word processing in typing pools or intersite electronic mail (to replace postal, telex, and courier costs) were implemented. Some staff would also be

**Figure 2 Cumulative benefits and costs of strategically important applications**



**Figure 3 Cumulative benefits and costs of general-purpose office automation applications**





shed to justify the initial purchase of equipment. But as demand for office systems increased, and as educational and 'critical mass' barriers had to be overcome, significant further investments would be required and the cumulative costs would far exceed the cumulative financial benefits. Many, if not most, large organisations are currently in this situation — some even managed to avoid the early obvious financial benefits! A few organisations, however, have now begun to climb out of the trough shown in Figure 3 by a process of reorganisation driven by top management or by controlling staff numbers as business activity increases. My prediction (shown by the dotted line in the figure) is that the cumulative net financial benefits of general-purpose applications will then increase sharply. At present, there is only limited evidence to suggest that the sharply upward trend shown in Figure 3 will be the general case. In reality, even most organisations with a large installed base of terminals have yet to achieve the productivity benefits of a generic electronic-office environment.

Carefully phasing the implementation of different types of application can produce a favourable pattern of overall costs and benefits for office automation. A major early success with a strategically important application can provide substantial benefits for several years, and allow the costs associated with achieving a critical mass for general-purpose systems to be 'absorbed'. Similarly, a continuing programme of reorganisation and staff cutbacks implemented in conjunction with the introduction of generic or hybrid systems will speed up the rate at which total benefits exceed total costs, and provide the headroom for further investment in office automation systems.

### DO NOT RELY ON QUALITATIVE BENEFITS

In recent years, many organisations have taken the 'soft option' of relying almost entirely on qualitative benefits to justify large investments in office automation, and particularly in personal computers. Unless this approach is used very selectively, I believe it to be misguided. Certainly, there are some key people in the organisation for whom timely and high-quality information can provide major benefits, even if the benefits are difficult to quantify. But for many other areas, the qualitative benefits are minimal or nonexistent.

Consider the accountant in the earlier example who was using his hybrid system to identify the reasons for variances in budgets. At first sight, the time saved by the system's immediate analysis may seem quite unimportant. But to the senior manager in charge of a geographic region or of a particular product range sold worldwide, this analysis is one of

the main control mechanisms for running the business. If danger signals are not noted soon enough and remedial action taken, the damage to the business may be considerable. By contrast, the benefits of providing everyone in the head office of this organisation with electronic mail facilities to speed up all internal communications are far less convincing, even though the facilities will be important in some cases.

This example highlights the dangers of accepting half-truths at face value. The universal electronic mail system would help the senior manager by speeding up the delivery of the analysis by (say) half a day. But installing an appropriate hybrid system aimed specifically at the production of various reports and analyses would produce a further time saving of (say) two weeks.

### ENSURE THAT THE FIRST APPLICATION IS RELEVANT

The first application used by each new terminal user should be very relevant to that person's job. This suggests that general-purpose applications should not necessarily be the first office automation facilities provided. Many organisations have failed to appreciate the importance of this rule. As a result, many, if not most, office automation programmes are fundamentally misguided. Thus, although word processing is an appropriate first application for typists, secretaries, and text-oriented professionals, it is not appropriate for most professionals (such as accountants, engineers, or actuaries) or for senior managers. Similarly, electronic mail is very rarely suitable as a first application, except where the users are likely to need to access their messages from a variety of locations (sales staff, for example). And spreadsheets are suitable first applications for accountants, but not for most other office staff.

This explains why many office automation trials based on the use of generic systems by staff at different levels are not successful. It is most unlikely that all those involved in the trial will find the facilities relevant to their jobs. Hence, the trials tend to be non-events.

Evidence from leading-edge organisations also strongly indicates that the traditional view of office automation, where general-purpose applications are gradually built up to create an electronic environment, is misguided. Organisations that rely on this approach tend to experience 'office automation stagnation', where a large proportion of the user community never really comes to regard the electronic facilities as an everyday part of their working lives.



Most leading-edge organisations that have reached a high level of terminal penetration (at least one terminal for every two office staff) have provided generic systems as 'add-ons' to specific operational applications (such as word processing for typists and secretaries, spreadsheets for accountants, and data processing applications for clerks and professional staff). Generally speaking, the first users of office automation systems in these organisations were typists, secretaries, numerate professionals (such as accountants), and clerks. Later, other middle managers and less numerate professionals began to use the systems, but senior managers were the last group to use a terminal on their desks.

However, in a few leading-edge organisations, the dominant reason for the very high use of office automation systems was that a senior executive (usually the chief executive) personally 'drove' the office automation programme. In this situation, user resistance or apathy had often been overcome by the chief executive's enthusiasm and commitment, even though the first applications for new terminal users may have delivered only marginal benefits. The few (but well documented) experiences of this kind have led many organisations to assume that this top-down approach is the most effective way to introduce office automation. Often their approach has been first to install a trial office automation system for use by senior managers. However, experience shows that trials designed to provide general-purpose systems for use by senior managers usually fail. Trials based on hybrid systems tailored to meet senior management needs have a better record of success, but typically they require high levels of support from systems staff. If the level of support is reduced, the trial often fails.

The problem with top-down office automation programmes is that, although they can lead very quickly to high numbers of generic office system users, they often fail to provide significant benefits in the short term. Benefits from office automation can usually be obtained more quickly by identifying and installing the strategically important applications and the high-payoff operational applications at an early stage. And these applications are more likely to be hybrid systems.

By ensuring that the first application for each user is relevant to his or her job, it is possible to obtain high levels of user acceptance for office automation. For example, specific operational applications are usually very relevant to the user's job and are quickly accepted. Furthermore, these applications usually result in worthwhile cost reductions. In this way, the number of terminals installed can be increased with an ongoing, plausible cost justification. By carefully phasing the introduction of different types of application it is possible to

achieve continuing benefits while maintaining a high level of user acceptance. Thus, it is possible to avoid the cumulative benefits trough shown in Figure 3 and to maintain the momentum of the office automation programme.

A potential difficulty with this approach is that, although some applications (such as word processing for secretaries and spreadsheets for accountants) can be installed very quickly, others have to be specially designed, and this can require considerable investigative or development effort.

### **ONCE AN ELECTRONIC CULTURE HAS BEEN ESTABLISHED NEW USERS WILL DEMAND GENERIC FACILITIES**

Once an electronic culture is established in an organisation (typically when 30 per cent or more of the staff use terminals regularly for hybrid and/or general-purpose applications), generic facilities (particularly electronic mail and word processing) become much more readily accepted as the first application by new terminal users at middle or senior levels. One leading-edge organisation summed up the experiences of many organisations by describing this effect as "an unstoppable wave of user demand".

Thus, there are two alternative strategies for gaining widespread user acceptance. If senior management is committed to office automation, a top-down approach will lead very quickly to high levels of use of generic office systems (particularly electronic mail). Hundreds of new users a month is not unusual when a major top-down programme is being implemented. However, this approach is not sufficient to guarantee that significant benefits will be obtained. The real benefits from office automation will not be realised unless hybrid systems are introduced and/or action is taken to reduce staffing levels among middle managers and professional staff.

But even if senior management commitment is less than wholehearted, an application-led approach can produce early and real benefits and a growing base of both hybrid and generic office systems. Essentially, this approach is based on installing office automation facilities that will be accepted and work well — word processing for typists and secretaries, spreadsheets for accountants, hybrid systems for specific applications, generic office systems for existing terminal users, and so forth. In this way, the number of office system users can be built up until the expected 'unstoppable wave' of user demand for generic systems overcomes the remaining user resistance to adopting office automation. There is one possible drawback to this approach, however — what happens if a sufficiently high user population



is not achieved for the expected wave of user demand to materialise? An organisation could experience a gap between the application-led base of users and the numbers required for an electronic-office environment to take off. In this situation, a push from senior management would be necessary to close the gap and to create an electronic-office environment.

I believe that the second alternative — the application-led approach — should be adopted even where senior management commitment is very strong. In this way, high levels of terminal penetration and significant benefits can be achieved in parallel.

**CHOOSE OFFICE AUTOMATION SUPPLIERS ON THEIR ABILITY TO PROVIDE HYBRID SOLUTIONS**

From the preceding rules, it is clear that office automation products should be able to provide integrated hybrid solutions. However, many of the leading suppliers are not very advanced in this respect. Indeed, most of them are struggling to integrate the different elements of their general-purpose office automation products. At the time of writing, for example, most suppliers are unable even to demonstrate products that enable word-processed documents to be prepared, sent by electronic mail, stored and retrieved by a content (but not a keyword) system, and then re-edited by the word-processing software with no difficulties. Nevertheless, two or three leading suppliers do make plausible claims to being ahead of the field in this respect.

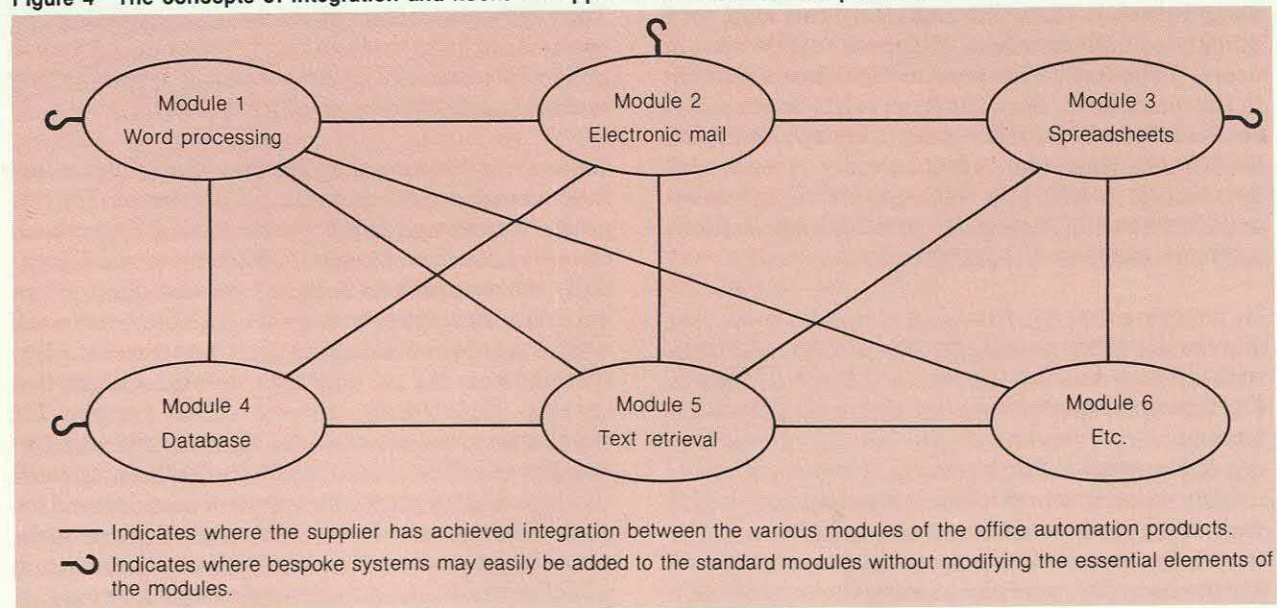
But integrating standard office automation elements does not produce a truly flexible hybrid-systems environment. Hybrid-systems implementers will also require assurances from the suppliers that future releases of standard office automation software will not make their hybrid solutions unusable. In other words, the office automation suppliers will need to provide sufficient software 'hooks' in their products so they can be used as elements of hybrid systems without affecting the standard software for word processing, for electronic mail, and so forth. (The concepts of 'module integration' and software 'hooks' are illustrated in Figure 4.) Several leading suppliers claim that their software architecture provides these facilities and therefore meets the needs of hybrid systems. However, at least one pioneering hybrid-system developer has experienced considerable problems in this respect, and it would be surprising if these problems were not to be experienced in the future.

Nevertheless, some of the leading suppliers are now in a far better position to support hybrid systems than they were in the early 1980s. Indeed, several suppliers now offer hybrid solutions as standard packages (the sales information system mentioned earlier is available in several different packages). The more widespread types of hybrid systems will increasingly be available as packages over the next few years.

**CONCLUSION**

This paper has set out seven rules for success in office automation. The rationale behind the rules is

Figure 4 The concepts of integration and hooks in suppliers' office automation products





that hybrid information systems are the key to successful office automation projects. Hybrid systems, focused on specific applications and needs, allow real and measurable benefits to be obtained quickly. They also pave the way to creating the electronic environment in which general-purpose office automation facilities will be accepted and used. Thus, the key to achieving real benefits and high levels of user acceptance is to shift the emphasis of office automation away from generic office systems and traditional data processing towards hybrid systems. A successful approach to office automation will therefore include the following key strategic elements:

- Establish clear and quantified objectives. The plan for achieving the objectives should include timescales for tough actions such as reorganisation, removing manual filing systems, and closing down office buildings.
- Form an integrated support team that will identify and install hybrid systems to meet both strategically important and specific operational applications.
- Choose an office systems supplier that can provide a high level of integration with existing computer systems and can facilitate the development of hybrid systems. Often this supplier will not be your mainframe computer supplier.
- Provide first-time terminal users with at least one application that is very relevant to his or her job. The application may be based on traditional data processing, or a hybrid system, or a general-purpose facility, depending on the work being done.

- Build up the user base of general-purpose office systems by providing these facilities as 'add-ons' to existing terminal users.
- Investigate the possibilities for organisational changes at middle management and professional levels in parallel with the introduction of new technology in the office. If the political climate is right, build these changes into the office automation plan, together with appropriate timescales.
- Anticipate the greatly increased demand for general-purpose office systems once an electronic environment becomes established.

The key message of this paper is that it is possible to achieve substantial benefits from office automation. The largest benefits will come from hybrid systems used for strategically important applications and for specific operational applications. However, these types of applications will only be used by a minority of office staff, probably less than 25 per cent overall. Many organisations have failed in their early office automation activities because they have concentrated on providing general-purpose facilities to the majority of office staff. Moreover, the temptation to be distracted in this way will increase as the price of personal computers continues to fall. An increasing number of office workers will perceive the personal computer as a convenience tool, rather like the telephone or pocket calculator, and they will expect to have a personal computer on their desk whether they actually need one or not. The successful organisations will be those that concentrate on the important applications, while providing a consistent environment in which general-purpose office automation facilities can be adopted as the majority of office staff become ready to accept them.



# BUTLER COX FOUNDATION

## *Butler Cox*

Butler Cox is an independent management consultancy and research organisation, specialising in the application of information technology within commerce, government and industry. The company offers a wide range of services both to suppliers and users of this technology. The Butler Cox Foundation is a service operated by Butler Cox on behalf of subscribing members.

## *Objectives of the Foundation*

The Butler Cox Foundation sets out to study on behalf of subscribing members the opportunities and possible threats arising from developments in the field of information systems.

New developments in technology offer exciting opportunities — and also pose certain threats — for all organisations, whether in industry, commerce or government. New types of systems, combining computers, telecommunications and automated office equipment, are becoming not only possible, but also economically feasible.

As a result, any manager who is responsible for introducing new systems is confronted with the crucial question of how best to fit these elements together in ways that are effective, practical and economic.

While the equipment is becoming cheaper, the reverse is true of people — and this applies both to the people who design systems and those who make use of them. At the same time, human considerations become even more important as people's attitudes towards their working environment change.

These developments raise new questions for the manager of the information systems function as he seeks to determine and achieve the best economic mix from this technology.

## *Membership of the Foundation*

The majority of organisations participating in the Butler Cox Foundation are large organisations seeking to exploit to the full the most recent developments in information systems technology. An important minority of the membership is formed by suppliers of the technology. The membership is international with participants from Australia, Belgium, France, Italy, the Netherlands, Sweden, Switzerland, the United Kingdom and elsewhere.

## *The Foundation Research Programme*

The research programme is planned jointly by Butler Cox and by the member organisations. Each year Butler Cox draws up a short-list of topics that reflects the Foundation's view of the important issues in information systems technology and its application. Member organisations rank the topics according to their own requirements and as a result of this process members' preferences are determined.

Before each research project starts there is a further opportunity for members to influence the direction of the research. A detailed description of the project defining its scope and the issues to be addressed is sent to all members for comment.

## *The Report Series*

The Foundation publishes six research reports each year. The reports are intended to be read primarily by senior and middle managers who are concerned with the planning of information systems. They are, however, written in a style that makes them suitable to be read both by line managers and functional managers. The reports concentrate on defining key management issues and on offering advice and guidance on how and when to address those issues.



Butler Cox & Partners Limited  
Butler Cox House, 12 Bloomsbury Square,  
London WC1A 2LL, England  
☎ (01) 831 0101, Telex 8813717 BUTCOX G  
Fax (01) 831 6250

*Benelux*

Butler Cox BV  
Burg Hogguerstraat 791  
1064 EB Amsterdam  
☎ (020) 139955, Telex 12289 BUCOX NL  
Fax (020) 131157

*France*

Butler Cox SARL  
Tour Akzo, 164 Rue Ambroise Croizat,  
93204 St Denis-Cedex 1, France  
☎ (161) 48.20.61.64, Fax (161) 48.20.72.58

*Germany (FR)*

Butler Cox Deutschland Ltd.  
Richard-Wagner-Str. 13  
8000 München 2  
☎ (089) 5 23 40 01

*United States of America*

Butler Cox Inc.  
150 East 58th Street, New York, NY 10155, USA  
☎ (212) 486 1760 Fax (212) 319 6368

*Australia*

Mr John Cooper  
Consultants (Computer and Financial) PLC  
Level 7, 20 Bond Street, Sydney, NSW 2000  
☎ (02) 237 3232, Telex 1 22246 MACBNK  
Fax (02) 237 3350

*Italy*

SISDO  
20123 Milano - Via Caradosso 7 - Italy  
☎ (02) 498 4651, Telex 350309 SISBDA I

*The Nordic Region*

Statskonsult AB  
Stortorget 9, S-21122 Malmö, Sweden  
☎ (040) 1030 40, Telex 12754 SINTABS