# Managing User Involvement in Systems Development

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Position Paper 1, April 1987

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# Chapter 1
# Introduction

There is a strong conviction throughout the information industry that the 'wrong' systems are still being built. Equally strong is the belief that the solution is to involve the user in the development cycle. But which user should be involved in which task and to what end? As this report will illustrate, there are as many different views on this topic as there are *PEP* subscribers, and, as yet, no organisation has discovered a user involvement recipe which guarantees success.

Such lack of success is not surprising. We believe that the whole concept of user involvement is fundamentally wrong. It implies that the ownership and the initiative is not with the user. It assumes a user role which is still basically passive in that executive accountability is elsewhere, with the user merely making a contribution – however worthy or energetic. It denies the supplier/customer relationship.

Why have users allowed themselves to be placed in this position? Generally speaking, performance is measured by results, and, for many years, managers have insisted that if they are to be accountable for results they should be given the authority and power to manage those resources which influence the results. Thus, managers expect to negotiate and control their own budgets and headcounts. Information systems are just another such resource, and, as such, user managers should own and control them.

The real question now becomes whether and how to involve the information department - since the role of the user is perfectly clear! (The term 'information department' is used throughout the paper for the department charged with the responsibility for developing, running and maintaining systems. It is intended to include the development, operations and support functions, and thus covers both information systems and information technology.) At the heart of the issue is executive accountability for the success of the end-product system. We believe therefore that the user must:

- Lobby for systems investments to be included in the normal business plan.
- Ensure that individual initiatives are subject to proper investment appraisals, and, if necessary, fight for the appropriate allocation of priority and funds.
- Lead the resulting projects: mounting and controlling them, including agreeing to, securing, and managing all resources (capital, revenue, staff, and so on).
- Take responsibility for ensuring that the end-product fits the real business requirements by leading all work on requirements definition, testing and proving, training, preparing the environment, and implementing, and by influencing other activities such as systems design and build.
- Demonstrate the success of the investment by formally tracking the return and by taking responsibility for realising the benefits.

The implications of this user-led approach are profound. It may well affect the overall culture and political infrastructure of the company. It will most certainly cause a change in the organisation and role of the information department. The decision to adopt this approach must, therefore, be regarded as strategic and cannot be undertaken without corporate commitment. (Three subscribers to the Butler Cox Productivity Enhancement Programme, or *PEP*, have already achieved strategic agreement in their companies.) Such agreement is gained only by convincing the board of the impact of information systems on the profit/loss account and on the long-term commercial success of the business, and by demonstrating the dependence of these systems on user leadership.

This paper seeks to assist in this process by:

- Exploring the management issues involved, including ways of achieving corporate commitment.
- Examining the benefits to be achieved by users leading the systems development process.
- Presenting our model of the respective roles of the user and the computer staff in the various development tasks.

**RESEARCH METHOD**

The research for this paper was carried out early in 1987 as a direct result of the concern about this topic expressed at initial meetings by the subscribers to the Butler Cox Productivity Enhancement Programme. The research had four components:

- A literature search which was interesting, if only in that it revealed that there is little empirical evidence available on this topic.
- Telephone discussions with a representative sample of 20 *PEP* subscribers to elicit their views and share their current experience.
- The personal experience of the author, who has spent the last fifteen years in a number of companies as a senior manager in the systems development function.
- The experience gained by other Butler Cox staff from working with many clients and from conducting research for the Butler Cox Foundation.

# Chapter 2

# Why do systems developers believe that they should involve users?

An analysis of the benefits that *PEP* subscribers expect from involving users in the development process offers interesting insight into the systems department's perceptions of the reasons for any previous failures. It also reveals how the systems department views the relationship with its users. Concern that the 'wrong' systems are being built is still very dominant and results in persistent sensitivity about 'image' within, and criticism from, the user community.

As Figure 2.1 shows, the benefit that all *PEP* subscribers expected is a much closer fit between the real business requirements and the end-product system. This is expected at several levels:

- Being confident that the investment in the system, in the first place, is consistent with the business objectives of the company. Misunderstanding or ignoring the business priorities results in the worst possible failure – a system that contributes nothing to those things that really matter to the company. If income growth is the prime goal, systems concentrating on cost reduction may constitute a major loss of systems development opportunity. We know of one information department that set and achieved the goal of reducing its annual budget by £1,000,000. The next year, the business went bankrupt, having lost significant market share to competitors who had chosen to use IT as a competitive weapon and had increased their IT budgets accordingly.

- Being confident that, at the most detailed level, the processes performed and the information made available by the system conform with the most intimate tactical and operational requirements of the various business functions and different management levels involved. Misrepresenting the business requirements can cause another major kind of failure – a system that performs the wrong tasks.

- Being confident that the design of the system reflects the cultural and social characteristics of the company as well as dealing with the technical and ergonomic issues. Ignoring such factors results in another form of failure – a system that nobody wants to use.

**Figure 2.1 Benefits expected from user involvement**

| Benefit | Level of expectation |
|---|---|
| Better fit with business requirements | 100% |
| More cost-effective development | 25% |
| Faster development | 0% |
| More cost-effective use | 20% |
| Improved attitude to systems department | 15% |
| Safeguarding of user interests | 0% |

Level of expectation is the percentage of PEP subscribers contacted who expected to achieve the benifit described by involving users in the development cycle

Figure 2.1 also shows that this 'fitness for purpose' benefit is seldom accompanied by high expectations of reductions in development costs and systems lead times. This may be reasonable because:

- The little empirical evidence that is available on these issues is very contradictory. Examples of conflicting evidence appear in an article by R A Hirschheim "Assessing Participative Systems Design: Some Conclusions from an Exploratory Study" *Information and Management* 6, 317-327, (1983). Sadly, few companies have conducted formal post-implementation reviews sufficiently consistently and for long enough to enable realistic comparisons of the tangible effects of different levels of user involvement to be made.

- In any case, the material benefit, which is less demand for change and generally lower maintenance, occurs after the system

has been delivered. If it is measured at all, it is likely to be outside the review process, and not at the individual project level. To all intents and purposes, it is, therefore, invisible.

- On the other hand, the costs in both resources and time of involving users are not only potentially significant, they are also very visible since they can be directly linked to a specific project during the development process.

The net result is a misleading, but nevertheless embarrassing, apparent arithmetic diseconomy, and it is not surprising, therefore, that most information departments are not prepared to claim cost or time improvements as a result of involving users.

Similar caution is displayed about the concept of improved use of the system as a result of user involvement. Intuitively, there is a belief that participation will help users to identify with the system and, hence, be more disposed to use it. However, in many circumstances (like data capture), there is little choice but to use the system, and no real benefit is achieved from the participation.

The idea that user involvement will result in an improved user attitude to systems staff in particular, and to the information department in general, has some support. The belief is that being exposed to the problems and constraints that system builders have to contend with will result in users who are more sympathetic when things go wrong; more willing to accept compromise in function and design; more accepting of the charges that systems departments are increasingly levying. This need 'to be understood' is misplaced. Any sustained improvement in image will occur only as a result of consistent delivery of the right system to time and budget.

Of course, a more altruistic attitude on the part of systems staff might help. No *PEP* subscriber suggested that there may be inherent benefit in letting users have a say in their destiny or in improving job satisfaction by being part of the decision-making process!

To summarise, information departments believe that the most important benefit likely to arise from users' involvement during the development cycle is a better fit between the business requirements and the system delivered. The users' views on this matter have not, as yet, been researched by the *PEP* programme – but the difficulties encountered in securing appropriate user staff (we shall discuss this in Chapter 3) suggest that the users may not support this hypothesis wholeheartedly.

This lack of support is not surprising; the reason is obvious from the benefit analysis. How can we expect user management to volunteer to contribute their key staff to a systems development project when they do not own or lead that project, when they are promised no return from so doing, and when no attempt is made to measure any possible return?

We believe that a much more aggressive approach is called for. If user involvement is expected to result in a better fit, let us define and quantify that 'fit' in terms of, for example, targets for:

Contribution to bottom-line profit and other business objectives.

- Error rates during acceptance testing and the initial implementation period.
- Improvements in the costs and speed of implementation.
- Requests for change and enhancements, and the costs of these adjustments.
- Lower maintenance costs.

Let us also establish rigorous mechanisms to enable the targets to be monitored throughout the lifetime of both the project and the resulting system.

In the Appendix, we describe a model showing the respective roles of users and developers. We discuss when and what the user should contribute to the systems development process. We compare the model with the various practices of the *PEP* subscribers and suggest that many subscribers may need to make some fundamental changes. The findings from that comparison are summarised in the next chapter.

# Chapter 3

# The user-led development model

Before discussing the conclusions from the user-led development model described in the Appendix, it is important to agree definitions and context. The model assumes the development of a new system which is large and complex and is more concerned with amorphous concepts – like competitive edge – than with the routine processing of an administrative function. As such, it is likely to cross company boundaries – both functional and hierarchical.

In the discussion of benefits from user involvement, the term 'user' was used very loosely. In practice, there are several different kinds of people involved in the development and operation of a system who could be called a user. To distinguish between them in the model, we use six distinct names – the governing body, the sponsor, the user specifier, the end user, the input generator, and the output receiver. These are defined in Figure 3.1.

In any one systems project, an individual user may play more than one role. For example, in a senior management decision support application, the members of the governing body may prioritise, sponsor, specify, and use the new system. Whatever the circumstances, it is important to maintain an understanding of the distinction between these different user roles in order to ensure that each is appropriately involved in the development cycle.

Finally, the role of the unions should be considered. The definitions offered so far should cover any individual union member, but they do not necessarily embrace the negotiation, representation or consultation practices followed in the company. For completeness, the union has been added to the model – and so, therefore, has the personnel department.

It is just as important to consider the different levels of involvement:

- *Consultative* involvement implies that the user is consulted on various matters related to the system but does not make any of the actual decisions.
- *Participative* involvement implies a close working relationship with the project team (possibly on a secondment basis), but the influence and accountability implicit in leadership is lacking.

**Figure 3.1 Defining "the user"**

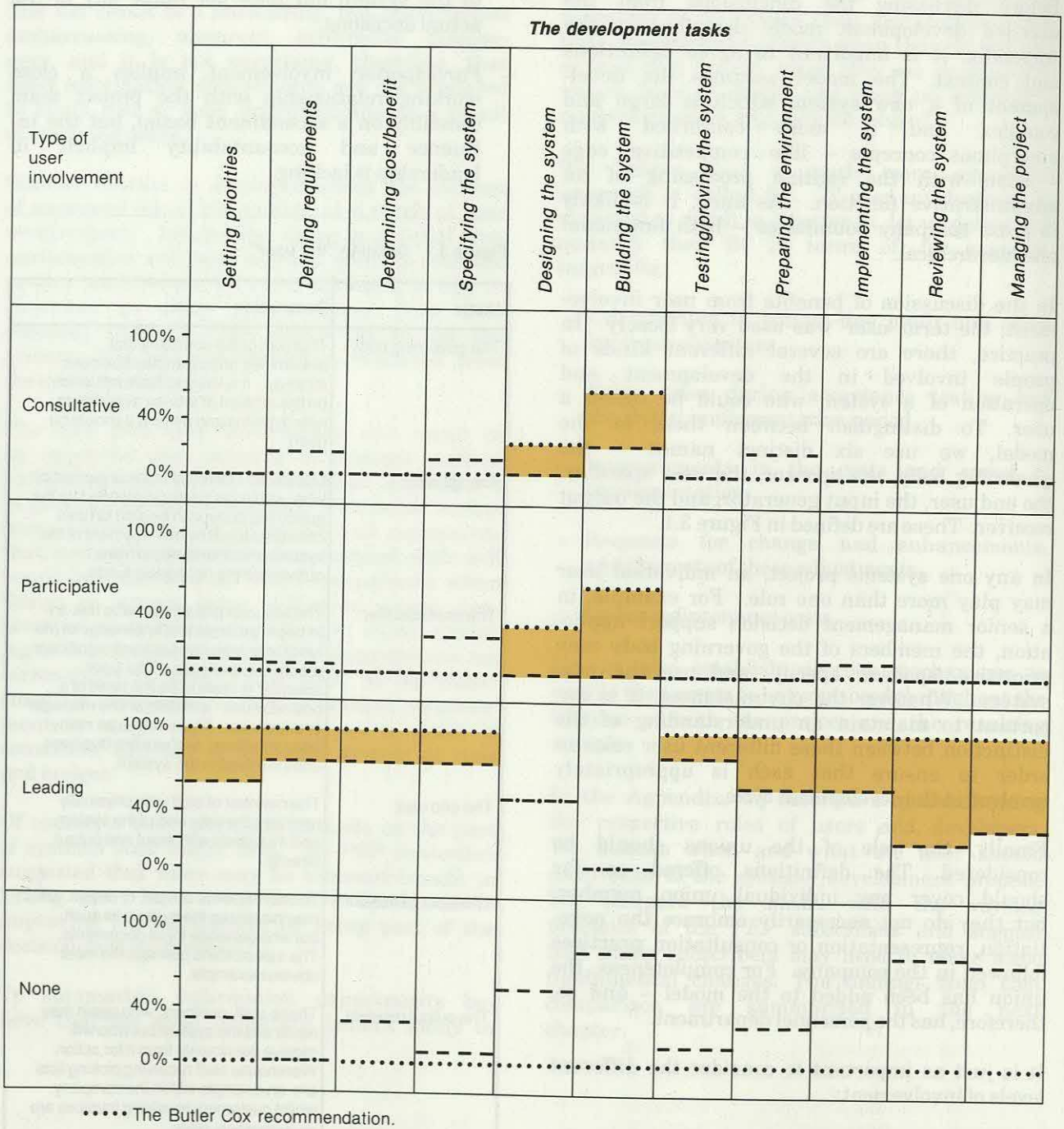
| Name | Description |
|---|---|
| The governing body | That part of the company that determines and promotes business strategy. It is likely to have influence on the amount of money available to new systems and on how it should be used. |
| The sponsor | Usually an individual in the organisation who, within the strategy imposed by the governing body, can be said to have commissioned the development of the system and, therefore, to have authorised the necessary funds. |
| The user specifier | The key user practitioner who has an in-depth professional knowledge of the functional area involved and significant practical experience. The 'user specifier' is likely to be the head of a business unit - a middle or line manager or supervisor. There will be as many 'user specifiers' as there are business units involved in the system. |
| The end user | The member of staff who physically operates the user end of the system and thus deals with input and output directly. |
| The input generator | Those members of staff, or others, who may never see the system as such, but who generate input documents. The salesforce is perhaps the most obvious example. |
| The output receiver | Those staff, or others, who again may never see the system but who will receive documents from it for action. Warehouse staff receiving picking lists are an example within the company, whilst customers receiving invoices are an example outside. |

– *Leading* involvement implies that the user has great influence – not only making decisions but being responsible for their implementation.

Using these definitions, we shall compare the Butler Cox approach to user-led development with the actual situation amongst our sample of 20 *PEP* subscribers.

Our starting position is that users should be accountable for the success of the system end-product. We believe that this will occur only if the users have the appropriate power and influence. Thus, we would expect the user to adopt the leading role in nine out of the eleven development tasks shown in Figure 3.2. The exceptions arise purely because of the very technical nature of two of the tasks – but even in these, we would recommend some user participation.

**Figure 3.2 The Butler Cox user-led development model, compared with actual practice**



The comparison between the Butler Cox recommendations and the current practice (Figure 3.2) shows a fair degree of commonality – especially amongst the definitional type tasks. However, in no single activity is the user leadership role stressed as strongly as we would like to see it. There appear to be three main reasons for this. Some *PEP* members are in a period of transition and are working towards the recommended approach – having taken the corporate decision to switch to user leadership; as a result, their practice still reflects the previous approach. Other *PEP* subscribers have yet to convince their boards and user managers; we hope that the arguments put forward in Chapter 4 Implications of adopting the user-led model, and in the Appendix will help. Other *PEP* subscribers see practical difficulties with the approach; we believe that this stems from a lack of understanding of the full implications. If these are thoroughly thought through and appropriate action taken, many of the practical problems disappear. Chapter 4 should help here too.

Some specific differences are of concern:

- Perhaps the most serious situation is that some systems staff are still taking responsibility for the overall management of the project. We are convinced that users will not be committed to the success of the project unless they are held accountable for it. This cannot be achieved unless the users accept management responsibility. Systems staff must be discouraged from trying to shoulder this burden.

- The lack of user leadership (or any involvement at all) in the implementation tasks is another concern. Systems staff cannot take responsibility for reviewing and changing working practices and staff roles, and should not be expected to do so. Systems *do* fail because they are poorly implemented and, especially, because the working environment has not been prepared for them. User commitment must not be allowed to dwindle at this stage.

- Some *PEP* subscribers are also still taking responsibility for the commercial aspects of the system, in that their systems staff are setting priorities and are intimately involved in the investment appraisal process (both in defining cost/benefit and in tracking the ultimate return). This is a fundamental mistake. It frustrates user ownership and places demands on systems staff that they are not equipped to meet and for which they cannot realistically be held accountable.

- The lack of user involvement in the design-and-build tasks is of less concern. However, we believe that, throughout these activities, decision points will be reached, as a result of cost considerations or technical constraints, where compromise will be sought. The user must be given the opportunity to provide the business perspective on such decisions. Similarly, some of the design parameters (service requirements, ergonomic concerns, and so on) can be properly established only as a result of user participation.

The Appendix provides a more detailed discussion of these tasks and the respective roles of the users and developers. Chapter 4 discusses the implications of adopting the Butler Cox approach.

# Chapter 4
# Implications of adopting the user-led model

It would be gratifying to be able to suggest that following the user-led development model described in the Appendix, will guarantee the overwhelming success of all future systems investments. Unfortunately, this is not the case.

The level of involvement described has such fundamental implications for change of company culture, interdepartmental attitudes, and costs that many companies may decide to reject it. Where a company is convinced of the value of user involvement, it may need to fight for it – both among its information department staff and among its senior and middle management. If the implications are too unpalatable, then it is best to stop paying lip-service to user involvement and let the information department devise procedures and controls to match systems to needs as best it can.

Let us describe the implications.

## ORGANISATIONAL IMPLICATIONS

Many organisations practise a management style which is very hierarchical and bureaucratic and which actively discourages participation. User involvement implies a fairly open company style, with staff at all levels encouraged to enter into the decision processes. The consequences are manifold:

- Staff may become aware of hitherto confidential information about company policy, performance, problems, and attitudes. (Ignorant users cannot participate.)

- Staff will have early warning of changes in working practises, relationships, and roles. (Well-informed users may rebel.)

- The company may feel vulnerable to union action, breaches of security, and fraud.

Attitudes are difficult to change. It is often only when a company realises how very dependent it has become on information systems that it will begin to create an environment more conducive to their success. Senior management education can help, but a more powerful tool is the demonstration of the commercial significance of information systems through the strategic planning process and through their relationship to the balance sheet. The careful construction of sensitivity analyses can often demonstrate how vulnerable to ill-conceived systems a company's market position and profitability are. Butler Cox's public report, "Information Technology: Value for Money", published in December 1986, gives some useful advice on how to go about this.

Once the governing body is convinced, there are some specific steps that can be taken to communicate that conviction throughout the organisation:

- As discussed earlier, the systems objectives must be included as an essential component of the overall business plan, and this level of visibility is fundamentally important.

- The sponsor must be a senior and influential member of the company. In one organisation, the sponsor is always a board member and always chairs the project steering committees. A personal interest is necessary – as is a genuine willingness to consider any business recommendations that may emerge from user participation. The sponsor must also be instrumental in the provision of both funds and user manpower. Regrettably, in many organisations, the sponsor is no more than a figurehead.

To summarise, commitment from the top is vital and may necessitate a change in management style.

## USER IMPLICATIONS

On the whole, users are keen to be involved – but are often inhibited from participating fully. There may be a sense of lack of real influence or, in the extreme, a feeling that they are actually being manipulated. Users are intimi-

dated by the jargon and techniques, and by the dismissive attitude of the systems staff. None of these problems are insurmountable, but they do require some fundamental changes:

- The whole concept of 'user involvement' is ironic since it does beg the ownership question. What we should be worrying about is how best to involve the information department!

  We believe that the user should make the investment, manage the project, and own the ultimate system. This 'total ownership' should be very visible. As stated earlier, the user must take responsibility for project coordination and must be accountable for the success of the investment.

  Total ownership needs the right circumstances. Changes within the information department may be necessary and are discussed below. The very position of the information department in the company may be an important factor. Several *PEP* subscribers have suggested that the introduction of real charges (with a genuine effect on the users' bottom line) has stimulated a sense of ownership in the users and a more aggressive interest in the development process. In the extreme, the information department may be established as a separate and entirely unsubsidised trading company. Ultimately, the users may seek assistance from other, external sources. This is particularly likely if a poor charging policy and mechanism is introduced. No such change should be undertaken without very careful consideration of the likely response of the users.

- User management must be prepared to make high-calibre staff available to participate. Unfortunately, many *PEP* subscribers believe that not only is insufficient user manpower made available, but that, if an individual can be spared, the chances are that he or she is inadequate for the purpose. Obviously, this is a generalisation, but it does reinforce earlier comments about establishing the status of the systems investment and motivating user management. This is one of the main responsibilities of the sponsor.

  *PEP* subscribers are tackling the problem of lack of suitable user staff in different ways. In ,some companies, there is a regular transfer of staff from the information department to user areas, and such staff are obvious candidates for involvement in the systems development process. In other companies, user departments have their own business analysts who handle all involvement with systems. One organisation has a unit of professional project coordinators who are independent of both the users and the information department and act as go-betweens. Some organisations have 'development' units within the user departments that tackle all project-orientated work -systems or otherwise. All of these methods are proving successful – the only reported failures are associated with the traditional idea of seconding a user to a systems project and expecting him to perform his usual line function.

Finally, users must meet information department staff halfway. Users really must be persuaded to stop belly-aching and to take up their responsibilities. The education and internal public relations activities described in the section on implementation implications below will help, but the most important factor is user ownership and influence.

## INFORMATION DEPARTMENT IMPLICATIONS

Information department staff still tend to regard users as a necessary evil. The press literature continues to be full of comments about users refusing to take the time to become computer-literate or to define needs in information technology terms. A classic example occurred in a recent government-sponsored report that suggested that users should be made to receive education in the principles of mathematical logic. Combine these attitudes with the fact that information staff are often more highly paid than their user counterparts and tend to move from company to company, thus never seeming to form any loyalty to or empathy with a particular business and it is not surprising that a cultural gap exists. We believe that if users are to be effectively involved this gap must be bridged but there are significant implications:

- Most methods, techniques, and tools used by information staff are designed for the *IT* professional. Although some *PEP* subscribers have demonstrated that users do respond well to thorough training in techniques such as data analysis, in general we believe that users should not be expected to adopt them. It should be borne in mind that users are generally asked to verify the output from these techniques – a corporate data model or a set of activity diagrams, for example.

This is much more demanding than developing the output in the first place, and no amount of training will provide the in-depth experience needed to perform these tasks.

The message here is that language, techniques, and documentation with which users have a natural affinity should be used when involving users. This is potentially very costly since it is an addition to, rather than a substitute for, existing *IT* practices.

- The professional standards of information staff should be reorientated to user satisfaction. The active involvement of users *will* lead to suboptimal design, to inefficient machine usage and departures from the perfect data model. This is the price to be paid for systems that fit the business requirements better. Information department managers must accept this and must be prepared to set their staff objectives that reflect it.

- Equally, information department managers need to be much more selective about the staff who will work with the users during a development project. The selection criteria must emphasise business skills and experience, management prowess, and interpersonal capability. Most staff are still selected for their technical talents and are sent on courses to acquire financial, managerial, and personnel know-how. It is hardly surprising, therefore, that information staff struggle to understand the amorphous business environment and to cope with the politics and conflict that aggressive user involvement is bound to attract.

  *PEP* subscribers are tackling this staffing problem in different ways. In some companies, there is a regular transfer of staff from the user areas to the information department specifically to assist with the user interface. In other organisations, the role of the business analyst is being emphasised and the business analysis unit is established as a separate entity (sometimes within the information department's structure; sometimes not). Business analysts are selected for their maturity and personality and have probably come into *IT* as a second career with a successful track record in business.

  There are two further difficulties to contend with. First, the structure of the information department is not always conducive to successful user involvement. Generally speaking, *IT* itself has become more and more specialised, and this has resulted in strong demarcations between the various information department functions. This may lead to users having to cope with a confusion of *IT* staff interfaces. The second difficulty is that, over the last several years, there has been a tendency to assume that technology in general and telecommunications in particular allow information staff to be located remotely from the rest of the business. The attraction of lower accommodation costs is the obvious motivator. While this may be a sensible idea for some *IT* functions (like operations), it is a disaster in terms of user involvement. Many *PEP* subscribers emphasised the need for physical proximity between users and the systems staff working with them.

  The combination of these two difficulties suggests that some restructuring is necessary. We believe that a single interface should be established between the users and the information department, that it should be manned by business analysts selected on the basis described above, and that it should be located in the same place as the user community.

Finally, we believe that a fundamental change of attitude is required among information staff. One *PEP* subscriber told us how his company's external customer care programme had been adopted by the information department, with all staff given objectives demonstrating their care for the users. We strongly recommend such initiatives!

## IMPLEMENTATION IMPLICATIONS

Over and above the cultural, structural, and attitudinal changes that may be required to enable user involvement to be more effective, there are some more tangible factors:

- We believe that the relationship between the information department and the rest of the company should always be formal. This means formal corporate management reviews of priorities and formal steering committees to set policy and monitor progress on individual projects. It means a formal contract between the customers commissioning the work and the suppliers. In this context, the information department should be treated no differently from external software houses: there should be a fully documented statement of the objectives, programme of works, and responsibilities of

all parties involved. It also means establishing and maintaining strict change control procedures so that when the contract is altered both the customer and the supplier understand and accept both the alteration and its implications.

- We believe that user training is essential and needs to be multipurpose. Many *PEP* subscribers run appreciation courses to introduce users to the *IT* world and its practices. Only one reported providing courses specific to the user involvement task. In this particular company, courses on specification, testing and implementation, and project coordination are bought in and tailored both to the specific project and the specific users. Clearly this is costly, but the company concerned is convinced that the increased effectiveness of its users and the resulting improved end-product well justify the expenditure.

  In many cases, *PEP* subscribers use internal training departments to give users *IT*-related courses. This has one disadvantage. The opportunity to establish a good relationship between the course attendees and the systems staff is lost. We recommend that systems staff should at least be guest speakers and that they take enough time to get to know the users attending the course.

- Information departments should take some deliberate steps to assist with their public relations and communication. Two *PEP* subscribers have set up demonstration centres in the user areas and have found them a tremendous help in promoting understanding and good relationships. Conducted tours of and presentations about the information department for users may seem unsophisticated, but they do help with goodwill and serve to remove some of the mystique.

- The personality issue is also vital. A vibrant sponsor and an exuberant project coordinator can carry a project to successful completion even in the face of many obstacles.

All of these aids depend upon the goodwill of senior management. This will only be sustained where there is empirical evidence that the involvement of users results in the benefits suggested. We cannot, therefore, overstress the need to maintain comprehensive statistics detailing the extent and nature of user involvement and linked to the adequacy of the end-product system.

# Chapter 5
# Conclusions

The relationship between in-house computer staff and their clients, the 'users', has always been the subject of debate – and usually, fairly passionate debate. Intuition suggests that if only we could get this relationship right, we could build the 'right' systems. This belief is not unreasonable – the underlying principle is fundamental to any customer/supplier situation.

Twenty years ago, an arm's-length approach prevailed. The computer staff and user typically met twice – once when the request to build was made and once when the user complained that the delivered product was not what was required. About ten years ago, computer staff rebelled – refusing even to consider building a system until the user had provided a detailed specification. At this stage, the relationship was at an all-time low – with heated arguments about what constituted a specification.

More recently, as the discussions with *PEP* subscribers indicate, the information department is taking positive steps to involve users throughout the systems development process. The general lack of post-implementation reviews means that there is no reliable measure of the success of these steps. There is, however, evidence that users continue to be reluctant to commit the required time and effort.

We believe that this situation will prevail until we stop talking about user involvement and begin to achieve user ownership and leadership. We are convinced that users will strive to ensure the success of the end-product system only when given the necessary accountability and associated authority and influence.

One *PEP* subscriber described how his company's information department was established as an internal software house/bureau with tremendous emphasis on service to the client. Although this arrangement may not be appropriate, at this time, for all companies, it does reflect our view of the customer/supplier focus that is needed. We believe that the respective roles can be summarised as follows:

- The customer is the champion of the system investment and competes with his business colleagues for investment priority and funds. To do this, he must take responsibility for the appraisal process and, in particular, for ensuring that the end-product system meets the objectives of that process. Thus, it is imperative that the customer leads the resulting project and takes the key role in all activities that have a direct bearing on the end-product fit.

- The supplier is the provider of various system services. He monitors the technology marketplace and exposes the customer to new products and opportunities. He provides a consultancy service to help the customer specify the requirement and a software house to custom-build it. The supplier may also provide the ultimate production line.

To establish such a relationship will take time and will require corporate commitment. We believe that the information department can take a number of steps to help:

- Take a more aggressive approach to quantifying and targeting the benefits attributable to user involvement and set up mechanisms to monitor them throughout the life of the system.

- Develop, with the corporate planners, a model demonstrating the commercial impact of information systems on the business and present the results to the board.

- Provide senior and user management with suitable education on systems and system projects.

- Mount an on-going public relations campaign to remove the mystique and emphasise customer care.

- Critically analyse the structure of the information department, its recruitment policy and methods, and decide whether they are conducive to user involvement. If not, consider the approaches suggested in this report. In particular, introduce carefully selected business analysts located in the same place as the users.

- Adopt a more formal approach, and, in particular, introduce contracts for both development and production work.

- Consider introducing charges which affect the individual user manager's bottom line.

Many *PEP* subscribers are already taking some of these steps, and we hope, through the *PEP* programme, to be able to monitor the progress and results and to provide some of the empirical information so badly needed.

# Appendix

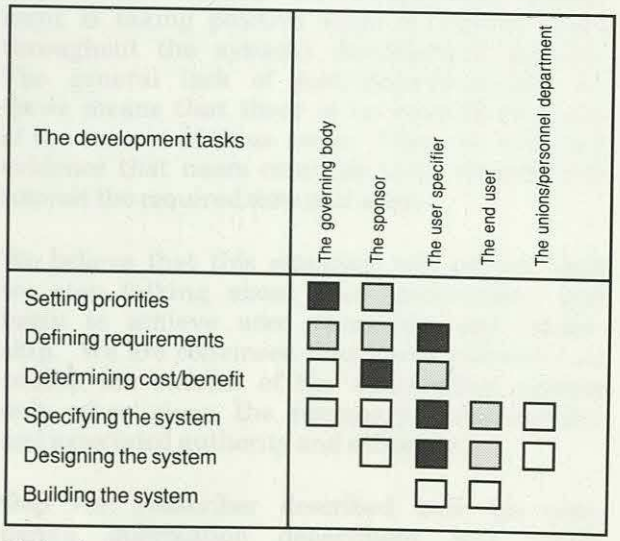
# The user-led development model in detail

Using the definitions presented in Chapter 3, we review in detail the respective roles of the users and the developers in the main phases of the systems development cycle. We contrast the Butler Cox model with the current practice of our sample of *PEP* subscribers.

## SETTING PRIORITIES

Setting priorities is the very first step in the development cycle, as shown in Figure A1. No project should be commissioned until its relationship to the business strategy is clear and its relative priority is, therefore, established. Essentially, this means that the company's business plan will include systems objectives – not as an adjunct but as an integral component of the plan.

**Figure A1 A user involvement model – analysis and design**



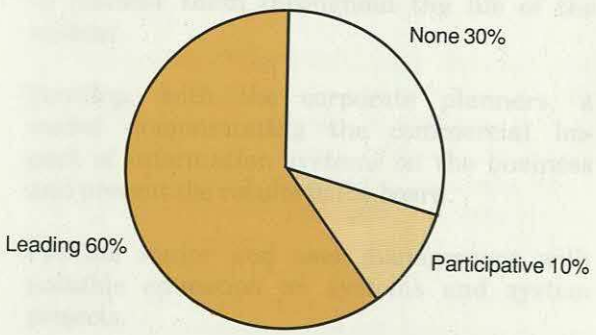

The level of the involvement is shown by the density of the shading in the diagram:

- Leading
- Participative
- Consultative

Making systems objectives an explicit component of the business plan results in certainty about where to invest systems development effort, and it also motivates user management to understand the importance attributed by senior management to the development initiatives. Without this, user management may not be prepared to provide the appropriate user resources to make user involvement in the later stages a success.

As Figure A2 suggests, most *PEP* subscribers approached agreed that involving users in setting priorities is a key factor. In one organisation, it is considered so vital that the directors of each business area (marketing, finance, purchasing, and so on) have a fixed weekly appointment when priorities are reviewed in the light of the latest business position and progress on systems work-in-progress is discussed. Another organisation has a similar approach and includes non-executive board members in order to avoid stalemates! More typically, other organisations have a management review board (normally consisting of company directors and chaired by the chief executive) which meets

**Figure A2 User involvement in setting priorities – the practice among *PEP* subscribers**




The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by the type of involvement

quarterly or as dictated by the company's overall strategic planning cycle.

In some organisations, the setting of systems priorities is decoupled from the business plan and is often delegated to relatively junior staff, who are unlikely to have the breadth or experience to take anything other than a parochial view. Even worse, there are still some companies who expect systems staff to determine development priorities. It is reassuring to note that, in all such cases, the systems staff recognise that they are not equipped to fulfill this responsibility and are very conscious that the result may be wasted investment.

## DEFINING REQUIREMENTS

Once a project has been given priority and the appropriate management and control mechanisms have been established (we discussed these in Chapter 4 Implications of adopting the user-led model), the first project-orientated task involves producing a business definition of what the eventual system is required to do. This definition is so important that it is worth stressing that:

- It really is mandatory. The use of techniques such as prototyping is no substitute. Even decision support systems, which cannot easily be prespecified, should, nevertheless, have a statement of business objectives.

- It must be done well. Most of the more expensive system failures can be traced to woefully inadequate or missing requirements definition.

- It takes time. The systems staff's eagerness to possess a 'signed-off' document must not be allowed to limit the time and level of detail involved here – nor should the users' desire to have the end product as quickly as possible.

- It must be considered as an opportunity to rethink the business. It is a well-known fact that computerising a poor manual system produces a poor automated system – unless the opportunity to review and re-create is taken during requirements definition.

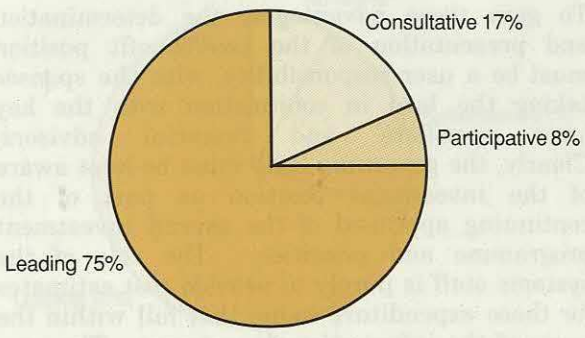
For this task to be successful, the users must be intimately involved – taking the lead and exerting influence. The systems staff should act as catalysts and scribes. For each business area involved, a high-calibre 'user specifier' must take personal responsibility for defining the requirement. He or she must take into account any impending changes in the business. Equally, the governing body and the sponsor must be given the opportunity to define their objectives for the system and to define what they expect to get out of it.

Defining business requirements is by no means an easy process. It takes considerable time and effort to do it properly. At times, it will appear that the whole project is threatened by the difficulties of working with multiple users – possibly geographically dispersed – with different local requirements; by increased complexity of seemingly simple problems; and by political in-fighting. These are actually good signs. They stem from commitment and genuine user desire to get it right. The real problem is that most systems development models suggest that requirements definition should constitute about 10 per cent of the total development effort. To achieve the benefit (described above) of better fit between the business requirements and the delivered system, this task warrants a higher proportion of the total effort.

Defining requirements correctly is vital to the ultimate success of the system, and all *PEP* subscribers approached agreed that user involvement is the key to getting it right. In practice (Figure A3), only 75 per cent of members contacted translate that user involvement into leadership. Only 35 per cent consider the needs of the governing body and sponsor.

In some organisations, a user *representative* is appointed to help with this task. Here, we believe the risks are twofold. No one individual, however competent, can hope to have sufficient professional knowledge and practical experience of all the business areas

**Figure A3 User involvement in defining requirements – the practice among *PEP* subscribers**




The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by type of involvement

concerned. Equally, the representative may feel overshadowed by the systems staff and may therefore be rendered ineffectual. The net result is likely to be a lack of empathy with the emerging system. This will lead not only to ill-defined requirements but also to lack of user commitment to the later development tasks.

The most surprising finding was that over 17 per cent of *PEP* subscribers contacted only consult their users during requirements definition. Explanations here ranged from the lack of the right calibre of user resource, to the inability of the users to 'conceptualise', and finally to the superior business understanding of the systems analysts!

## DETERMINING COST/BENEFIT

On the basis of a clear understanding of the requirements in business terms, the systems staff should be in a position to sketch out and cost some alternative approaches. This then enables the sponsor to determine the initial cost/benefit position of the various technical scenarios and thus to secure the necessary funds for the remainder of the project.

If handled correctly, this task:

- Reinforces the company's commitment to the development initiative by demonstrating that it is a investment opportunity supported by the management of the company.
- Heightens user management's perception of the commercial significance of the project and the need, therefore, to ensure that it is successful.
- Identifies the user as the owner of the system – as would be the case with any other investment.

To gain these advantages, the determination and presentation of the cost/benefit position must be a user responsibility, with the sponsor taking the lead in conjunction with the key 'user specifiers' and financial advisors. Clearly, the governing body must be kept aware of the investment position as part of the continuing appraisal of the overall investment programme and priorities. The role of the systems staff is purely to provide cost estimates for those expenditure items that fall within the scope of the information department. The user must identify and quantify the benefits and, in so doing, must accept responsibility for their realisation. The user must also identify and cost all expenditure items that fall to the user areas. Systems staff may need to help with this – but such help should not change responsibility.

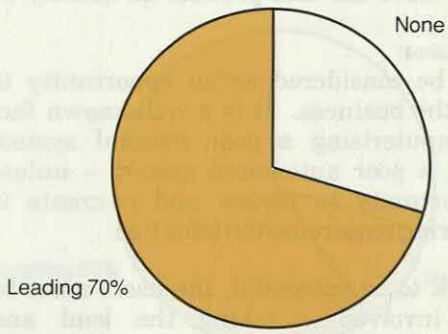
Systems staff, however, have the responsibility for ensuring that the company is kept aware of the latest opportunities afforded by technology and should promote discussion of their likely commercial impact.

Of the *PEP* subscribers approached, over two-thirds expect the users to take responsibility for the cost/benefit analysis and, in particular, to quantify the benefits (Figure A4). In practice, the work tends to be performed jointly, and the information department is often a co-signatory to any formal presentation. As suggested above, the utility of this arrangement is questionable, since there is no realistic way of holding systems staff accountable for benefits or their realisation.

One company has started to reject projects that do not show a positive return or whose sponsor has not formally accepted responsibility for the benefits. This has reduced the level of demand on the information department and has resulted in a much more commercial attitude on the part of the users.

Just under one-third of *PEP* subscribers contacted do not involve users in determining costs or benefits – either because the systems staff assume (mistakenly, we believe) this responsibility or because there is no requirement in the company as a whole to conduct formal financial appraisals of system investments!

**Figure A4 User involvement in determining cost/benefit – the practice among *PEP* subscribers**




The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by type of involvement

## SPECIFYING THE SYSTEM

Specifying the system should build on the good work performed during the requirements definition. Analysis is required in order to understand and describe the activities, data, input, outputs, and interfaces needed to achieve the business objectives already defined.

On the face of it, this is a more technically orientated task. In fact, it is really a more refined level of requirements definition that involves getting beneath the surface of the business functions. It should not be concerned with how the functions will ultimately be achieved, and, therefore, it takes no account of equipment or systems and development software. Where tools are used to assist the analysis process – fourth-generation languages for prototyping, for example – it must be remembered that their purpose is to aid logical definition rather than to second-guess physical solutions (unless, of course, the house rules permit the use of prototype systems for production work). Users, who will always be only too willing to run production work on prototype software, will not readily accept this limitation.

Once again, for this task to be successful, the users must be intimately involved. For the user specifiers, the involvement should take the form of a joint user and systems staff team with the user taking the lead. It is at this stage that the other users (the end user, the input generator, and the output receiver) should begin to be involved – in a representative fashion at least. Without such involvement, those user staff who are likely to be most affected by the new system will feel that they have been denied the opportunity to influence the real decisions. They are likely to make some very practical suggestions about tactical and operational aspects of the business functions which could ultimately prove invaluable. We also believe that any union consultation should begin no later than this stage. Otherwise, the unions might claim that the company's commitment to union involvement is mere lip-service since all important issues will already have been decided.

As Figure A5 suggests, of the *PEP* subscribers approached, over two-thirds expect the users to play a leading role in the system specification task – although the actual level of involvement is very variable.

The remaining 30 per cent believe that the users have difficulty in assisting with this task because the concepts are foreign and the techniques and documentation too technical. As a result, 9 per cent do not involve the users at all and 21 per cent encourage some limited participation at the user specifier level.

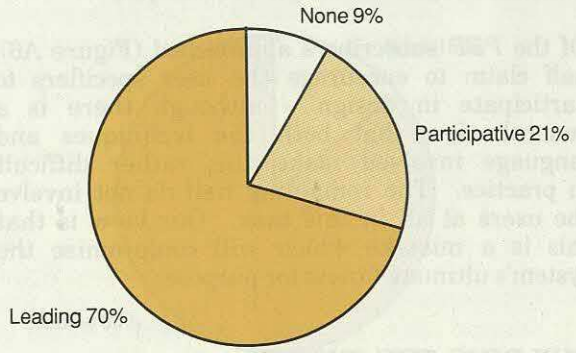
No company involves the unions or personnel department! As discussed above, our view is that union consultation should begin here and no later.

## DESIGNING THE SYSTEM

The next task, designing the system, involves determining how to build the system to ensure that it performs the functions defined, given the physical opportunities and constraints imposed by any overall technical strategy and by the peculiarities of any available equipment and software. This design task has many objectives – including deciding how to meet:

- The functional and information requirements.
- The ergonomic requirements.
- The performance requirements, which should be defined as a formal agreement (the service level agreement) between the sponsor and the information department and which should cover such issues as system availability, response time, report production and distribution, and security.
- The backup/recovery and disaster requirements. The sponsor and his key user specifiers should define the impact on the business of different levels of system failure; the design team can then use these definitions as design criteria.

**Figure A5 User involvement in specifying the system – the practice among *PEP* subscribers**




The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by type of involvement

We believe that this task is often mishandled. 'Systems designer' is seldom encountered as a job title in the application software context. Much design occurs by default during a rather loose liaison between the senior analysts and programmers. Designing the system is another major stage at which the emerging system can depart radically from the requirements of the business. The wrong design will frustrate both the function and performance requirements.

Lack of involvement of users will mean that, at those inevitable and frequent decision points where expense or technical constraints suggest the need for compromise, the business implications of such compromise are not well understood. Not only is the user denied the opportunity to make the final decision, but he will not even be aware that such decisions have been made until the system is operational.

To overcome these problems, there must always be a formal system design task, and the user specifiers must be intimately involved. We believe that:

- The sponsor's views on the service levels required must be elicited.
- The end users' attitudes to the ergonomic implications must be considered.
- The input generators' and output receivers' attitudes to what the system will ultimately require of them and offer to them are also important
- The dialogue with the unions and the personnel department should be continued in order to maintain their involvement.

The importance of involving the users in specifying the system is reinforced at the design stage, since many of the design criteria (response time, for example) stem from the business needs.

Of the *PEP* subscribers approached (Figure A6), half claim to encourage the user specifiers to participate in design – although there is a general view that both the techniques and language involved make this rather difficult in practice. The remaining half do not involve the users at all in this task. Our view is that this is a mistake which will compromise the system's ultimate fitness for purpose.

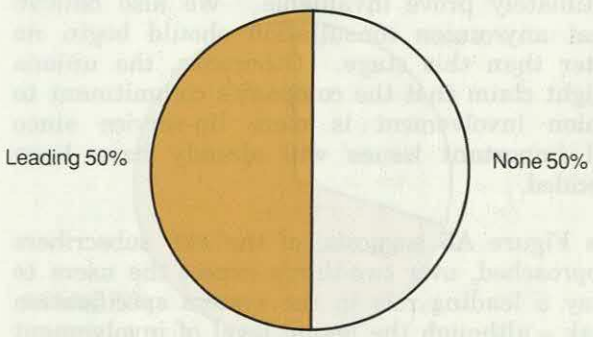
## BUILDING THE SYSTEM

There is no doubt that building the system, which is essentially code carving in one form or another, is highly technical. We do, however, believe that the users should continue to be involved, if only in a consultative manner. We believe this for two very good reasons:

- If the tasks leading to system building have worked well, a very good relationship between the users and the information department will have developed. The users will be enthusiastic and committed and their aspirations will be high. The often lengthy period between their last intensive involvement and the next (testing and proving) can be psychologically damaging to the good relationship. The risk of upsetting the relationship can be minimised by scheduling some user activities (such as test data generation) in parallel with system building – but this must be combined with genuine attempts to keep the users (the specifiers, the end users, the input generators, and the output receivers) informed of progress. Remember that in a customer/supplier relationship, the customer will expect to be kept informed of progress. Imaginative demonstrations and discussions of computer-produced output, albeit draft, are appropriate and will always be appreciated.
- Throughout the building process, very detailed decisions will be made which could affect function and peformance and, hence, threaten the fit. Continuing user involvement will ensure that such decisions are taken in a business context.

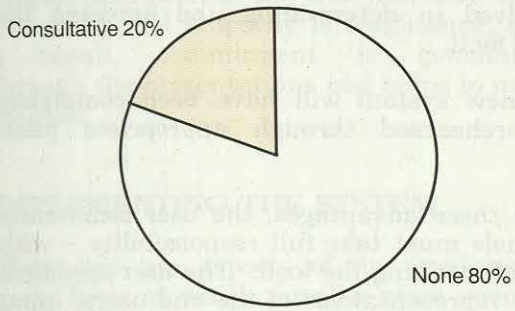
Of the *PEP* subscribers approached , over three-quarters felt unable to involve users in any way in building the system because of the technical orientation of the task (Figure A7 opposite). The remainder recognise this problem – and feel that attempts to overcome it

**Figure A6 User involvement in designing the system – the practice among *PEP* subscribers**




The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by type of involvement

**Figure A7 User involvement in building the system – the practice among *PEP* subscribers**




The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by type of involvement

have contributed to safeguarding the 'fit' in the long run. We support this view for the reasons described above.

## TESTING AND PROVING THE SYSTEM

There are, of course, several levels of tests that need to be performed before a system is truly proven. Tests of individual programs and, indeed, of the interplay between different programs and suites of programs (systems testing) are concerned with the mechanics and logic of the system and are most appropriately conducted by the information department.

The most important test is 'fitness for purpose'. Here, as Figure A8 suggests, the users, led by the sponsor, must demonstrate the fit between the delivered system and the business requirements that they themselves described during the requirements definition, system specification, and system design phases. This is no mean task. It involves all user types (apart, perhaps, from the governing body – where the art of delegation will always prevail), participating in:

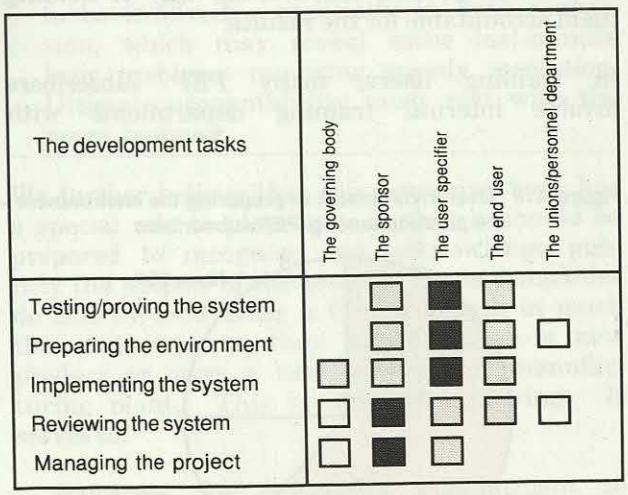
- Deciding the testing strategy.
- Developing test scenarios and expected results.
- Preparing test data.
- Conducting the tests.

This part of the task should not be performed jointly with the information department, but the users will need assistance in understanding those aspects of the system that influence how the tests are physically performed.

The work on the 'testing strategy' and the 'test scenarios' is likely to cause the user specifiers, in particular, to review their needs with respect to some of the details of the business requirements. This review, and possible change, is to be encouraged. Provided it is handled through proper change control procedures (we discussed this in Chapter 4 Implications of adopting the user-led model), it will increase the likelihood of a good fit. Systems staff, who can feel very threatened by the slightest suggestion of change, may find such second thoughts difficult to accept.

As Figure A9 shows, of the *PEP* subscribers approached, 85 per cent expect users to be closely

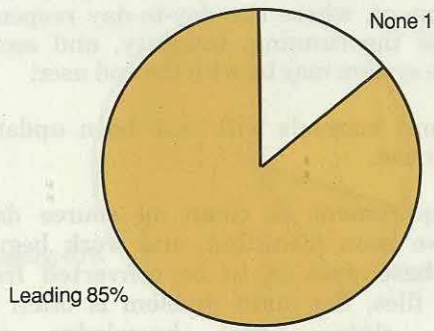
**Figure A8 A user involvement model – implementation and management**




The level of the involvement is shown by the density of the shading in the diagram:

- Leading
- Participative
- Consultative

**Figure A9 User involvement in testing and proving the system – the practice among *PEP* subscribers**




The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by type of involvement

involved in testing and proving – although in some cases, this involvement appears to take the form of the users checking the test results of the systems staff. This is a mistake – the users will have no confidence in the final results. The user tests must be independent, with the systems staff providing only such assistance as is requested.

We were surprised to find that the remaining 15 per cent do not involve users in testing and proving at all, even though they do involve them in defining the requirements in the first place!

## PREPARING THE ENVIRONMENT

Before the new system can be implemented, the working environment into which it is to be introduced must be prepared. Here, we are concerned not with physical preparation in the sense of laying cables and installing equipment (this is discussed in the next section) – but, with the changes in working practices and existing staff duties and responsibilities that may need to be made as a result of the new system. We also include the training that is needed to make the most of the systems investment.

If handled correctly, this task will promote the cost-effective use of the system:

- Working practices will complement the functions performed by the system and will be geared to exploit any newly available information.
- Staff and unions will understand, accept, and be trained in their new roles, and will be ready to enact them.
- Additional responsibilities will have been identified and rehearsed. This is particularly important in the distributed processing environment, where the day-to-day responsibility for the running, integrity, and security of the system may be with the end user.
- Procedural manuals will have been updated ready for use.
- Any requirement to clean up source data will have been identified, and work begun. Where base data is to be converted from manual files, the main problem is often its existing state. Local knowledge can compensate for poor manual data – but this is no help once that data is computerised. This reinforces the need for the earlier involvement (that is, in specification and design) of the end user. It is difficult to motivate staff to perform what is essentially a very tedious exercise, if they have not been involved in determining and agreeing the need for it.
- The new system will have been completely dress-rehearsed through appropriate piloting.

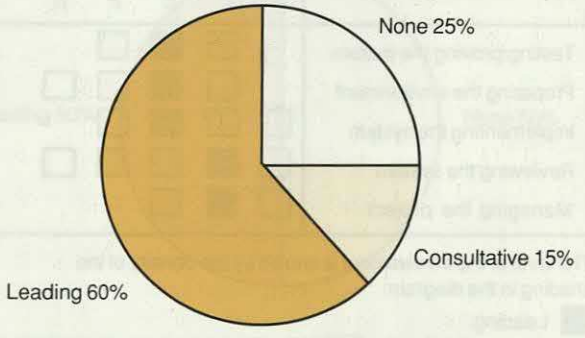
To gain these advantages, the user community as a whole must take full responsibility – with the sponsor taking the lead. The user specifiers and the representatives of the end users, input generators, and output receivers need to be actively involved both in deciding what needs to be done and how to do it, and in implementing these decisions.

Unfortunately, users do not always handle this task well. Sometimes users fail to recognise that it really is their responsibility; sometimes the extent of the work involved is not understood. *PEP* members also complain of insufficient user time. Systems staff clearly have a role to play in prompting the sponsor based on experience with other systems – but they should not assume responsibility.

Nearly 80 per cent of the *PEP* subscribers approached expect users to be heavily involved in staff training, but only 60 per cent expect users to be responsible for the other activities. Fifteen per cent consult the users only, and 25 per cent do not involve the users at all (Figure A10). This is a mistake. Systems staff cannot be expected to have the local knowledge, experience, or personnel skills to assume this responsibility, and there is no way of holding them accountable for the results.

In training users, many *PEP* subscribers involve internal training departments with

**Figure A10 User involvement in preparing the environment – the practice among *PEP* subscribers**




The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by type of involvement

good effect. There can, however, be disadvantages. In our view, where the users themselves prepare and present the training, their sense of ownership and empathy is heightened, and, as a result, commitment is communicated through the presentations and helps to motivate the staff.

## IMPLEMENTING THE SYSTEM

There are two aspects of the implementation task, both of which involve close cooperation between users and information staff. In one, equipment installation, the information staff should take prime responsibility, in the other, system and data conversion, the users should be responsible:

- The information staff should take the lead in the physical aspects of implementation assuming full responsibility for placing orders, organising suppliers, physical installation, and commissioning. Clearly, users need to be involved, since much of the equipment may be on their premises, and, in any case, there is a growing *DIY* trend promoted by suppliers (especially for terminals). Ultimate accountability must rest with the information department, however.

- The user staff (and, in particular, the user specifiers and end users) should take the lead in the operational aspects, assuming full responsibility for data conversion and for defining and enacting all transition procedures. Clearly, information staff need to be involved – especially in data conversion, which may reveal some last-minute logic problems requiring speedy resolution. Ultimate accountability must rest with the users, however.

We further believe that the governing body has a special role to play here, in that it should be prepared to recognise and acknowledge publicly the success of the project. Some companies do this by conducting a formal launch in much the same way as they would launch a new product or open a new building or manufacturing plant. This is not game playing. It serves to:

- Reinforce the company's commitment to information system investments.

- Demonstrate their significance relative to other major investments.

- Congratulate all staff concerned and motivate them for their next major undertaking.

Of the *PEP* subscribers approached , 70 per cent expect users to be involved significantly in the implementation task (Figure A11). The remaining 30 per cent do not involve users at all. We believe that this results in poorly implemented systems that, as a result, will probably never be used as effectively as intended.

## REVIEWING THE SYSTEM

Since the company, through the governing body, has been prepared to invest in the systems initiative in the first place, it should assure the success of the investment through a post-implementation review process.

This review should:

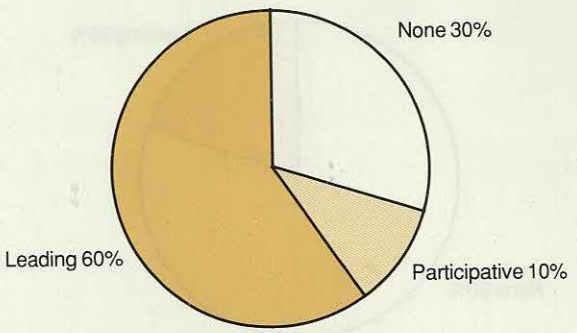
- Provide a formal statement of the actual expenditure on the project (in terms of both capital and once-off revenue) compared with the budget. Any major variances should be properly analysed to enable any important lessons for future projects to be learnt.

- Monitor the level of running costs (only part of which will be allocated to the budget of the information department).

- Demonstrate the return on investment achieved in practice by comparing the costs from the two analyses above with the benefits actually being realised.

- Analyse and formally document the quality of the system in terms of its fitness for purpose; its performance against the service level agreement and other key criteria; and its level of change and maintenance costs.

**Figure A11 User involvement in implementing the system – the practice among *PEP* subscribers**



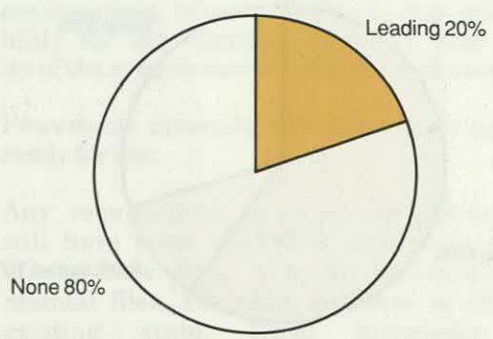

The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by type of involvement

- Carefully compile and register statistics concerning the effort involved of both user and system staff – analysed by size, complexity, techniques, and so on – creating a database for continuing estimation and evaluation purposes. This opportunity to quantify the level and effectiveness of user involvement should not be missed!

The conduct and presentation of the post-implementation review must be a user responsibility – with the sponsor taking the lead in conjunction with the key user specifiers and financial advisors. The role of the information department staff is purely to provide expenditure details for those items that fall within the scope of the department, and to provide and maintain all appropriate technical statistics (as described in the last point above). The user must identify and quantify the benefits actually achieved and be prepared to have them subjected to audit scrutiny. This is the only way that real benefit accountability can be secured. Similarly, the user must detail all expenditure that fell to the user areas and must take responsibility for measuring the quality of the system (as highlighted above).

Of the *PEP* subscribers approached, only 20 per cent perform post-implementation reviews with any meaningful user content (figure A12). In practice, most reviews are perceived to be an internal information department matter and concentrate on technical issues. We believe that this is why there is little empirical evidence to persuade the governing body of the commercial significance of information systems in the first place, and why there is little tangible evidence to support the need for user involvement.

**Figure A12 User involvement in reviewing the system – the practice among *PEP* subscribers**




The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by type of involvement

## MANAGING THE PROJECT

It is clear from our description of the model and from the high level of user involvement that it entails, that we believe that all system projects are multidisciplined. Indeed, in some cases, like the development of a system in support of a new product, the information system component may be a relatively small proportion (in terms of resources and investment) of the overall project. Whatever the circumstances, we believe that a single member of staff must be given responsibility for the success of the entire project.

We call this individual the 'project cordinator' in order to draw a clear distinction between his role and that of the information department's own project manager. The project coordinator is the sponsor's agent and will be given accountability and authority for all project tasks, staff, costs, and benefits. The information department's project manager is accountable, within his Department, for its contribution to the project. The project coordinator must be a senior member of the user community to whom all project staff are effectively seconded for the purpose of the project. The information department's project manager and, indeed, all other project managers are subordinate to the project coordinator.

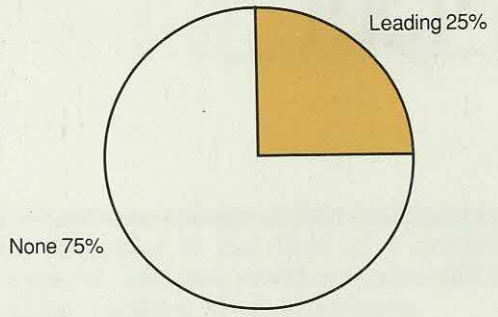
To support the project coordinator, there should be a steering committee chaired by the sponsor, with representatives from each of the main user areas. Normally, such representatives will be the user specifiers – but it is good psychology to include an end-user spokesman. Unless the project is especially large or complex, the information department's representation should be limited to its project manager – who must, therefore, have the authority to make decisions on behalf of the entire department.

Formal terms of reference defining the role and power of the steering committee must always exist, and meetings must be held regularly to set policy and discuss progress. It is the responsibility of the project coordinator to present to each meeting a formal statement of achievements to date, work in progress, performance against schedule, and expenditure against budget. The project coordinator is also responsible for alerting the steering committee to any problems or conflicts of priority or interest, in order to enable it to exercise its power.

Of the *PEP* subscribers interviewed (Figure A13), only 25% adopt the project coordinator approach. The normal practice is for the information department's project manager to assume responsibility for all aspects of the project. We believe that this places impossible demands on this individual and also denies where the true ownership of the system lies. The reason normally given for the current practice is that users do not understand how to manage change. This suggests that change occurs only as a result of information systems, which is patently not true. The real reasons have already been discussed — if user management doesn't recognise the commercial significance of the project, the experienced change managers will be otherwise engaged!

In fact, more than half the *PEP* subscribers interviewed *do* use the steering committee concept to control the project. We would encourage the remainder to persuade their companies to do so too.

**Figure A13 User involvement in managing the project – the practice among *PEP* subscribers**




The diagram shows the percentage of *PEP* subscribers contacted who involve users in the task described – analysed by type of involvement

BUTLER COX

P,E,P

## Butler Cox

Butler Cox is an independent international consulting group specialising in the application of information technology within commerce, industry and government.

The company offers a unique blend of high-level commercial perspective and in-depth technical expertise: a capability which in recent years has been put to the service of many of the world's largest and most successful organisations.

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*Consulting for Users*
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## P E P

The Butler Cox Productivity Enhancement Programme (PEP) is a participative service whose goal is to improve productivity in application system development.

It provides practical help to system development managers and identifies the specific problems that prevent them from using their development resources effectively. At the same time, the programme keeps these managers abreast of the latest thinking and experience of experts and practitioners in the field.

The programme consists of individual guidance for each subscriber in the form of a productivity assessment, and also position papers and forum meetings common to all subscribers.

*Productivity Assessment*
Each subscribing organisation receives a confidential management assessment of its system development productivity. The assessment is based on a comparison of key development data from selected subscriber projects against a large comprehensive database. It is presented in a detailed report and subscribers are briefed at a meeting with Butler Cox specialists.

*Position Papers*
Four PEP position papers are produced each year. They focus on specific aspects of system development productivity and offer practical advice based on recent research and experience.

*Forum Meetings*
Each quarterly PEP forum meeting focuses on the issues highlighted in the previous PEP paper, and permits deep consideration of the topic. They enable participants to exchange experience and views with managers from other subscriber organisations.

## Topics for 1987

Each year PEP will focus on four topics directly relating to improving systems development and productivity. The topics will be selected to reflect the concerns of the subscribers while maintaining a balance between management and technical issues.

The topics selected for 1987 are:

- Managing user involvement in systems development.
- Using tools to improve productivity.
- Planning and managing projects effectively.
- Using methods to improve productivity.

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