Planning and managing systems development

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Position Paper 3, September 1987
by Lilian Lodge

Lilian Lodge is a Principal Consultant with Butler Cox specialising in all aspects of information systems policy, strategy, and planning. She also has considerable experience of large-scale project management and of directing the information systems function in user organisations.

Immediately before joining Butler Cox she was Assistant Director of Information Technology for the British Post Office, where she was responsible for strategy development and operation of postal systems (letters, parcels, and Datapost).

Her career began in 1973 with IBM (UK) Ltd, where she progressed through the various systems engineering roles, providing sales support and customer consultancy to many major users. In 1978 she became Systems Development Manager for Lyons Computer Services Ltd, where she was responsible for the strategic development of information systems in the Lyons Group worldwide and for the implementation and maintenance of such systems in the United Kingdom. She then joined the Insurance and Unit Trust wing of TSB in 1981. As Planning and Technical Manager she was responsible for information systems strategy, research, and the systems software function.

A frequent conference speaker, her papers include:

'The Impact of SNA on Systems Development, Implementation and Operation' (1980).

'Telecommunications: The User's Dilemma' (1982).

'DB2: The Myth and the Reality' (1986).

'Managing User Involvement in Systems Development' (1987).

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The computer industry has been developing systems for over 30 years. Throughout this period, the whole issue of how best to manage the development of a particular system (the project) has come under the close scrutiny of various authorities, resulting in vast investment in project management courses, reference manuals, methodologies, techniques, tools, and so on. It is therefore reasonable to assume that most information departments are only too aware of the theory of how to manage systems development projects. (The term 'information department' is used throughout the paper for the department charged with the responsibility of 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.) Many departments also have substantial experience, having experimented with different project management approaches, styles, and organisations.

Against this background, the obvious questions are:

— Are we, in 1987, managing systems development projects successfully?

— If not, why not?

As this paper will illustrate, PEP subscribers generally share the view that they are increasingly successful in managing projects, and there is a clear consensus on areas where improvements in project management are necessary. Whilst I would support the common view that project management is improving, I disagree with the consensus in that I believe that the improvements sought amount to treating symptoms rather than causes.

Using the criteria of timescale and cost targets, PEP subscribers generally believe that their organisations are increasingly successful in the management of systems development projects. (This belief is intuitive and has yet to be tested through analysis of each organisation's PEP assessment results.) However, PEP subscribers report that dramatic failures still occur — with perhaps one in ten systems development projects exceeding their time and cost targets by over 100

per cent. When asked, through a questionnaire, where improvements in project management are needed to achieve more effective and less costly systems development, and to reduce the incidence of these disaster projects, PEP subscribers highlight some 19 different areas for improvement. Of these, 11 (58 per cent) could be said to be tangible — that is to say amenable to a specific approach, a set of rules, and measurement techniques. The remaining eight (42 per cent) could be said to be intangible — that is to say areas where rules and measurements cannot easily be applied. The areas most often identified for improvement were *estimating* (69 per cent) and *progress monitoring/chasing* (50 per cent) — both of which are in the tangible category and, indeed, have been the subject of computer-based tools for a number of years.

This result surprised me, since I believe that the intangible aspects of project management (like risk assessment, people management, user expectation management, quality control) are the hardest to handle. Since the evidence from the questionnaires and follow-up discussions suggests that PEP subscribers are benefiting from the latest techniques and tools, I was bemused by the concentration on tangible issues. I sought to probe further by asking PEP subscribers, in telephone discussions, to share with me the *stories* behind some of their recent development projects. The resulting case histories and comments suggest that the real problems *are*, in fact, intangible — but so tied up with the organisation's culture and its general attitude to information systems that it is difficult to see how best to effect improvements. The problems that emerged include:

— Ineffectual user sponsors, user coordinators, and steering committees — perhaps through the lack of understanding of what these roles are really all about, perhaps through lack of motivation or availability or experience. These are especially difficult problems. Having persuaded an organisation of the merits of establishing these roles and making the necessary appointments, it is not always easy to review the original arguments if and when the roles are not properly understood, resourced, and enacted.

Chapter 1 Introduction

— Insufficient support from the information department as a whole and from the information department's director in particular. There is a belief that is often held that project managers should be measured by their ability to do the impossible in the face of all obstacles and risks. This belief is an abdication of responsibility by the rest of the organisation — but especially by the information department.

— Lack of tenacity (or perhaps honesty) in the supplier/customer relationship. There is little point in a supplier knowingly committing to a product that he cannot deliver — he will always be found out. How often, however, do we commit to blanket cuts in project budgets or timescales because we feel we have no other choice? How often are timescales imposed without consideration of the task in hand or of the indisputable evidence (well documented in the PEP assessment reference material) that less time means disproportionately more cost.

— Lack of a fully documented statement of the project's objectives, the programme of works, and responsibilities of all parties involved. Without this, the project manager has no meaningful understanding of what he expected to achieve, and the users have no means of judging the success or failure of his or her achievements.

Unless an organisation realises that these intangible difficulties — rather than the ability to estimate correctly or to use PERT-network tools effectively — are the fundamental causes of systems development project management failure, it will not significantly improve its management of systems development projects. That is not to say that estimating and project planning/monitoring are unimportant — but rather to say that improvements in these areas constitute fine-tuning and not radical progress.

This paper seeks to explore these, and other problems, which I believe are the real causes of project management failure, and to suggest how to begin to resolve them. I will:

— Discuss the symptoms of project management breakdown and my diagnosis using a 'case study' that I have constructed as a result of discussions with various PEP subscribers.

— Describe the respective roles of the users and the information department in successful project management.

— Suggest some steps that I believe can be taken quickly and effectively in order to help to generate an environment in an organisation more conducive to project management success.

This paper is based on my own experience, reading, and research, on a questionnaire completed by 16 PEP subscribers, and on telephone discussions with some 20 others.

The concern about project management

A project is a single, non-repetitive enterprise which is undertaken to achieve agreed objectives within a given time and a given cost. Each project is unique and, as a consequence, there is always an element of risk. Project management is the business of securing the end objectives in the face of all the risks and problems encountered on the way.

These simple definitions encapsulate the criteria for measuring how successful the management of a project has been:

— Were the objectives of the project achieved?

— Did the project finish on time?

— Did it come in on budget?

In any project, whether in medical research, marine engineering or systems development, the first question — were the objectives of the project achieved? — is the most difficult to answer. The difficulty arises because there are many different types of objective (some are related to functionality and fitness for purpose, others are of a technical nature, and others are related to the benefits — both tangible and intangible — that are expected to be realised as a result of the project), and because many of the objectives are qualitative and, hence, the success judgement is no more than opinion. However, even the time and budget questions may be problematic. Different players in the project game often have different interpretations of what the commitment to timescale and costs really was.

In seeking to determine whether PEP subscribers believe that their organisations are managing systems development projects successfully, I held telephone discussions with a number of PEP subscribers about their last 10 systems development projects. I tried to remove some of the potential ambiguity by posing a small number of very specific questions:

— Were the benefits the users were expecting realised?

— Was the service level agreement (whereby the information department committed to technical deliverables such as system availability,

response time, report production and distribution, and so on) realised?

— Did the users believe the project was completed on time?

— Did the users believe the project was completed within budget?

Remembering the unique nature of each project, I attempted to impose some dimensions on the measure of success. Of the last 10 projects completed by the organisations:

— Four of the projects were within 25 per cent of both the time and cost target, a further three were within 50 per cent, a further two within 100 per cent, and the remaining one over 100 per cent (see Figure 1).

— There was no knowledge of whether the benefits the users were expecting were realised.

— There was little formal information on adherence to service level agreements since official statistics are seldom compiled.

How does the project performance suggested by these discussions compare with performance in the

Figure 1 How PEP subscribers are performing

PEP subscribers were asked to assess the extent to which their last 10 projects had met time and cost targets. This figure represents the average response.
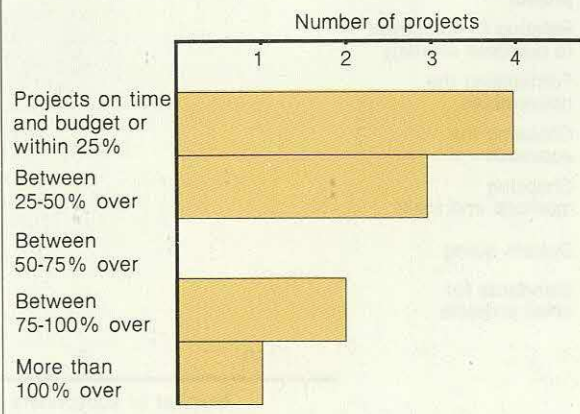
Chapter 2 The concern about project management

industry in general? The results of a survey conducted for the Department of Trade and Industry in the United Kingdom in 1986 suggested that:

— Sixty-five per cent of all UK systems projects seriously exceed their budgets.

— Cost and time overruns of 100 per cent plus are not uncommon.

— Many projects fail to deliver the promised benefits.

Clearly there is no room for complacency. A substantial number of projects continue to cause significant concern because of dramatic overruns in cost and time. Even those meeting the established targets could, we believe, often be accomplished in a more effective and less costly manner.

Where then do we need to effect project management improvements to achieve more effective and less costly systems development, and to reduce the incidence of disaster projects? The questionnaires distributed to some PEP subscribers sought to answer this question. In analysing the answers, I tried to differentiate between those aspects of a project which a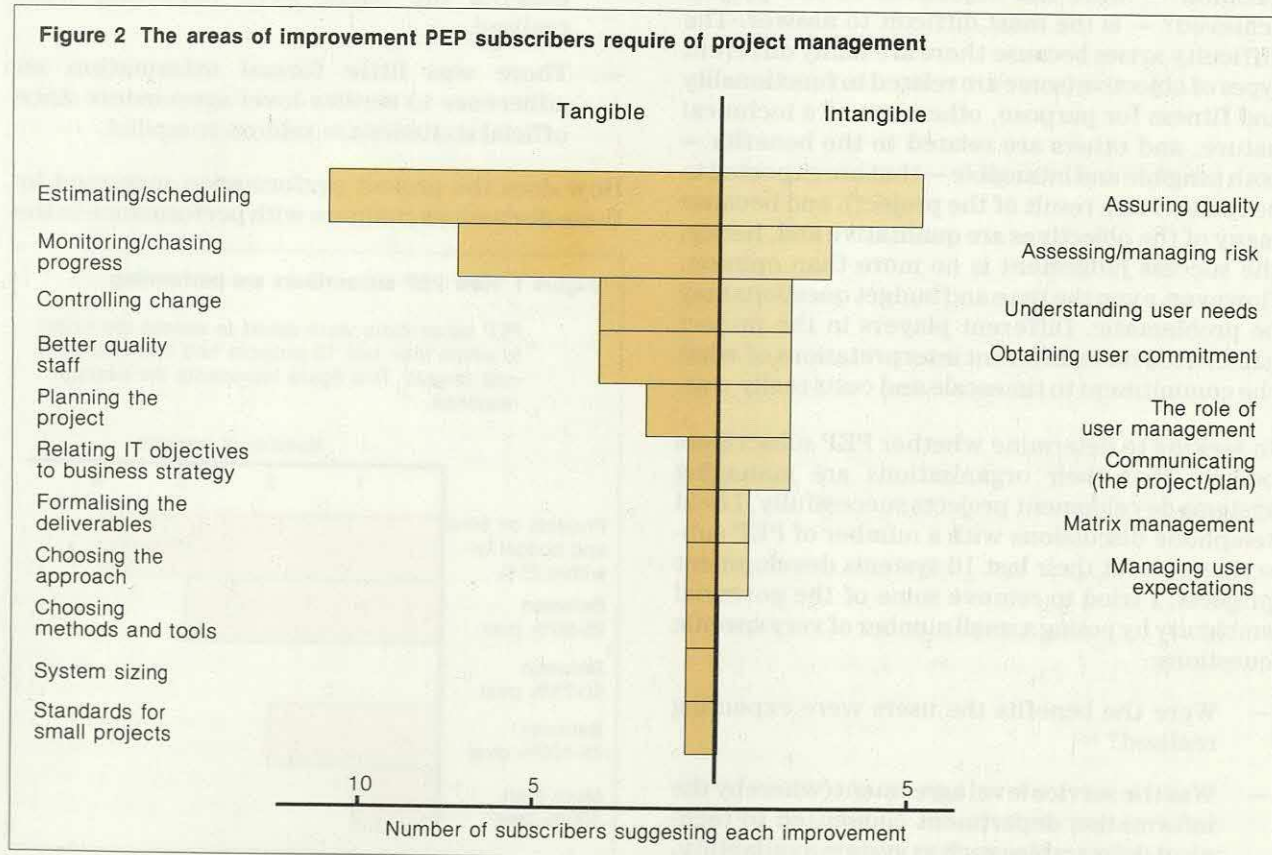re tangible (that is to say, amenable to a specific approach and set of rules) and those that are intangible, where the only measure may be intuitive.

As shown in Figure 2, most of the perceived needs for improvement (65 per cent) were in the tangible category. I find this result very surprising:

— Projects have been mounted since the earliest civilisations (the construction of the Pyramids was a classic engineering project). Hundreds of years of experience have endorsed the view that the most difficult aspects of a project are the intangibles (like risk assessment, people management, and quality control). The more tangible aspects (like estimating, planning, and progress monitoring) have been the subject of commonsense rules over many centuries and most recently have benefited from the emergence of new management techniques backed by computer-based tools (for example, estimating tools and project planning and control tools). Of the 19 areas for improvement that the PEP subscribers have highlighted, 11 are in the tangible category.

— Although the new techniques and tools clearly have a big part to play in successful project management, I still believe that well-defined objectives and clear lines of responsibility are key. The small demand for improvements in understanding user needs, in managing user expectations, in user commitment/involvement, and in matrix management (one of the most difficult aspects of a project) suggests that the PEP community is succeeding in areas

Figure 2 The areas of improvement PEP subscribers require of project management

Tangible | Intangible

Estimating/scheduling — Assuring quality
Monitoring/chasing progress — Assessing/managing risk
Controlling change — Understanding user needs
Better quality staff — Obtaining user commitment
Planning the project — The role of user management
Relating IT objectives to business strategy — Communicating (the project/plan)
Formalising the deliverables — Matrix management
Choosing the approach — Managing user expectations
Choosing methods and tools
System sizing
Standards for small projects

10   5   5

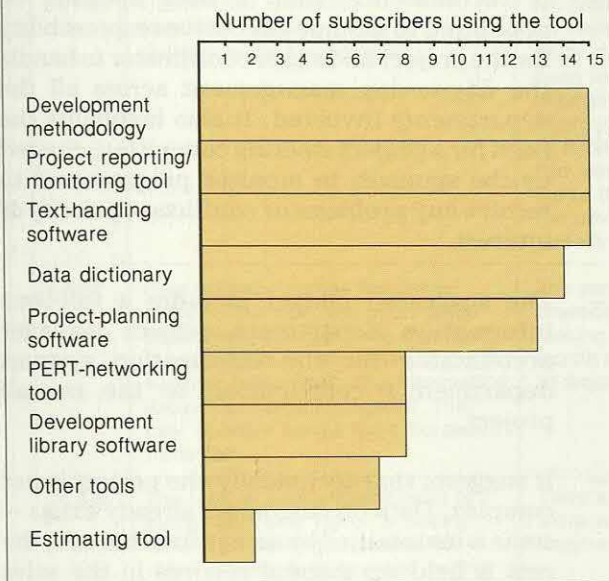Number of subscribers suggesting each improvement

where the rest of the industry is failing. I doubt that this is the case.

What then is behind these results? There are several possibilities:

— PEP subscribers may not be using the new techniques and tools. As Figure 3 indicates, generally speaking, this is not the case. Most PEP subscribers have a large portfolio of techniques and tools to help their project managers. However, in estimating/schedul-

ing where the demand for improvement was the highest (69 per cent of all PEP subscribers submitting questionnaires), only two organisations claim to use an estimating tool.

— PEP subscribers may be using the tools without making sure that the underlying project management techniques are properly understood. For example, if you load a project scheduling tool with summary-level tasks, you trivialise the program's calculations and run the risk of producing a grossly inaccurate schedule. The techniques of full task decomposition, dependency identification, and resource, rather than task, scheduling must be applied to the tool to obtain meaningful results.

— PEP subscribers are identifying the symptoms and not the causes. For example, when a task takes longer to complete than was originally scheduled, poor estimating may be the cause — but it is more likely that the user needs were not properly understood in the first instance or that the user failed to provide appropriate resources to fulfill the user aspects of the task. Either way, the information department is likely to be held responsible and, in turn, will point the finger of blame at the estimator.

In reality, the situation is likely to be a mixture of these possibilities, and many others. I do, however, believe that the identification (and treatment) of symptoms rather than causes is the most significant contributor to project management failure.

Figure 3 PEP organisations' use of project management tools

Results of a survey showing the use of project management tools by 16 PEP subscribers.

Number of subscribers using the tool

	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Development methodology	
Project reporting/ monitoring tool	
Text-handling software	
Data dictionary	
Project-planning software	
PERT-networking tool	
Development library software	
Other tools	
Estimating tool	

Chapter 3

A composite case study

To illustrate many of the points made in the previous chapter I have constructed a composite case study based on case histories described to me by PEP subscribers.

The story begins at the end of June 1987. The cast of characters is given in Figure 4. The company, Blasé and Partners Limited, has just completed a study into the feasibility of developing a computer-based customer information system. The report has been well received, especially since it demonstrates that not only is the development of such a system technically feasible, it is also commercially very attractive, showing payback in the second year of operation.

The feasibility study is very thorough:

— It recommends that the necessary development project be mounted immediately, and it provides a tentative timescale with an overall target of 3 June 1988 for the customer information system to be up and running in the four sales regions. This includes one month's contingency.

— It suggests a development budget of £150,000, including 25 per cent contingency. This represents 40 man-months of effort from the information department, and some new terminal devices.

Figure 4 The cast of characters

Name	Position	Role in project
Mr Elusive	The marketing director.	User sponsor.
Mr Sloth	An assistant accountant (seconded to the marketing department especially for the project).	User project coordinator.
Mr Barrymore	The information department's director.	The information department's director.
Mr Terror	The information department's project manager.	The information department's project manager.
The governing body	The board.	The governing body.

— It specifically states that the suggested timetable target and budget are guestimates which will need to be reworked once a detailed system specification has been produced.

— It recommends that a user sponsor be appointed to assume executive responsibility for the project and a user coordinator to handle the day-to-day management across all the departments involved. It also highlights the need for a project steering committee, chaired by the sponsor, to monitor progress and to resolve any problems or conflicts of priority or interest.

— The suggested budget includes a full-time information department project manager accountable for the information systems department's contribution to the overall project.

— It suggests that technically the project is not complex. Data on customers already exists — some is maintained by an external bureau, the rest is held on manual records in the sales regional offices. The objective of the new system is to establish a centralised base of customer information — extracts of which can be downloaded to microcomputers in the regional offices for the sales executives to perform whatever analyses they choose.

Our story ends on 7 October 1988, when the information department declares the project complete, and the user sponsor complains to the board that:

— The information department has delivered a half-finished system that is missing many of the vital functions agreed in the specification.

— The information department has overspent the budget by more than 60 per cent and is already six months late.

— In the circumstances, the marketing department should not be held responsible for realising the benefits.

How should the board react:

— Is the information department responsible?

— Did their project manager grossly under-estimate what was involved and how long it would take?

— What part did the users and, in particular, the user sponsor play?

In order to answer these questions, we need to know what happened in more detail. The project story is told in the diary of key events shown in Figure 5 below:

Figure 5 The diary of project events

Diary of project events			
Date	Event	Effect on timescale	Effect on budget
6.7.87	Ernest Elusive, the marketing director, is appointed project sponsor. Terry Terror is appointed information department project manager.	None at this stage.	None at this stage.
24.7.87	Users finish reviewing feasibility study and request some amendments.	No time had been allowed for reviewing the feasibility study so two weeks have been lost, and have been debited to this project since the feasibility study is closed. In addition, it takes a further two weeks to make and to agree the amendments — so the development project is already a month behind.	Since the feasibility budget has been closed, the development budget picks up the costs for the amendments (£2,900).
7.8.87	User sponsor agrees feasibility study — but asks the information department director if he can have the system a month earlier to hit the summer sales peak. The information department director agrees. The user sponsor leaves for a European trade fair.	The project immediately loses its timescale contingency and is looking to clawback another month by as-yet unspecified cuts in requirements.	None apparent.
24.8.87	The lack of a user coordinator is being felt. Terry Terror is having difficulty involving the users in requirements definition and begins to give the users' secretaries a hard time.	Terry's tactics fail. It takes two extra weeks to define the requirements.	The additional time is elapsed rather than actual — except of course for Terry's time spent trying to whip the users into shape (£1,200).
7.9.87	Terry Terror instructs data communi-cations to order the data lines.	None apparent.	None apparent.
25.9.87	The requirements definition is published and the user sponsor, newly returned from Europe, complains that his requirements have not been taken into account.	It takes two weeks to make and to agree the amendments.	That is two weeks' additional development costs (£2,900).
9.10.87	The cost/benefit statement is published showing that the user is less confident about the benefits. The return on investment is not looking so good — the sponsor asks all departments to cut costs by 10 per cent to help.	By now, the project has already slipped by seven weeks and has lost all its time contingency.	The project has already used £7,000 more than was planned. This combined with a 10 per cent cut means that £22,000 (74 per cent) of budget contingency is no longer available. The remaining contingency stands at £8,000.
26.10.87	After being nagged unmercifully by Terry Terror, the sponsor appoints a project coordinator — Samuel Sloth (seconded especially for the project from the finance department). The first project steering committee meeting is called and proves very acrimonious.	Terry Terror spends two weeks trying to explain the slippage (he does not highlight the looming budget problem). As a result, he fails to measure the progress on *specifying the system* — but assures the steering committee that at least that task is on schedule.	None apparent.

Figure 5 The diary of project events

	Diary of project events		
Date	Event	Effect on timescale	Effect on budget
4.12.87	The system specification is published.	It is two weeks late — making a total slippage time of nine weeks by now.	A further £3,800 contingency is used — leaving £4.200.
9.12.87	The second steering committee meeting is held. Terry Terror, who knows all about securing objectives in the face of all risks and problems, insists that despite mishaps to date the system will go live on 2.5.88.	Terry is now being dishonest — he has some well-rehearsed tricks up his sleeve. if he cuts a few corners on design and defers a few non-critical requirements until after the bulk of the system has gone live, he believes he can save four weeks. If he can persuade the users to cut back on *testing and proving*, he can retrieve another four weeks and, effectively, be back on schedule.	As a result, Terry will claw back £7,600. This will result in a further saving of £6,800, so that he now has a contingency of £18,600.
8.1.88	The technical specification is published. It proposes: — The use of a new terminal device. — The use of a 4GL to speed up the build process.	This is two weeks later than Terry promised because of the Christmas period.	Because the systems manager let him down on recruitment, Terry had to employ a database designer contractor. This cost him £6,200 more than he budgeted. He has £800 contingency left.
22.1.88	The program specifications are published.	Terry cannot believe it. He took advice from a consultant on the estimates and had access to directly comparable data from his friend in another organisation. Detailed analysis revealed two relatively junior programmers working at half-speed, and the whole team displaying the Friday afternoon syndrome.	Given the extra man time and the consultants' fees, Terry only achieved £800 clawback. His contingency stands at £1,600.
16.3.88	The third steering committee meeting and Terry has a very hard time. He begs for a month's grace and is given a fortnight. He cuts *testing and proving* by another two weeks.	Terry is left with nine weeks — five for *testing and proving* and four for *implementation*.	There is no cost saving since Terry decides to use more staff to get the maximum out of the nine remaining weeks.
6.4.88	An emergency steering committee meeting is held — Mr Elusive having been recalled from his South African trade fair. The system has not been signed off technically. The communications facility is not working properly.	Unknown at this stage — but potentially disastrous, Terry is asked to attend a weekly steering committee meeting.	Unknown at this stage — but Terry has had to bring in a communications consultant at £600 per day.
16.4.88	The communications facility is working.	Three weeks have already been lost and the system has not been to quality assurance yet.	The cost penalty is £20,400, including £9,000 for the communications consultant. Terry is looking at an overspend of £18,800 (14 per cent).
23.4.88	Quality assurance refuses to sign off the system since it has not been developed according to standards (the installation does not have standards for 4GLs) and since it does not meet the specification (remember the functions Terry decided to defer!).	Unknown at this stage — but potentially disastrous. Pressure is put on quality assurance by both the user sponsor and by Terry Terror.	Unknown at this stage — but the systems manager wants to know who is going to pay for the project team members who are idle pending the outcome of the QA dispute.

Continued from previous page

Figure 5 The diary of project events

Diary of project events			
Date	Event	Effect on timescale	Effect on budget
6.5.88	Quality assurance succumb but not without formally registering their reservations.	A further three weeks have been lost. Terry is asked to attend a weekly information department meeting.	The systems manager was 'persuaded' to absorb the project team's costs — but not those of Terry Terror. The projected overspend is £20,500 (15 per cent).
9.5.88	The users start user testing. Terry Terror is very worried — he has spent so much time attending review meetings and chasing communications and QA problems that he has not had time to contribute to the user test plan or data.	None apparent at this stage.	None apparent at this stage.
3.6.88	The users refuse to sign off the system. It does not meet the original specification or the change requests (Terry has religiously ignored these, intending to bundle them into release 2).	Only a week is lost since Terry persuades the users that they have no choice but to go live as is and to let the information department 'rush the enhancements' through as quickly as possible after the event.	The projected overspend is now £24,400 (18 per cent).
6.6.88	Terry decides to push ahead and install the terminals in the regional offices. For once Lady Luck is smiling on him. The terminals were actually delivered two months late (supply and purchasing negotiated an extra 0.5 per cent discount in return for a later delivery) — but with everything else being late, it did not matter.	None apparent at this stage.	The half per cent discount has saved him £2,000. This cheers Terry up; his projected overspend is now only £22,400 (17 per cent).
6.6.88	The data conversion work begins. It goes very badly — the system and user tests have not been exhaustive enough and the bureau is unhelpful (hardly surprising since they are losing the business).	Data conversion takes six weeks instead of two and is only then completed as a result of some very fragile program amendments.	The extra development costs are £10,100 and the project picks up a bill from the bureau for the extra processing between 18.4.88 and 15.7.88 at £2,500 per week — that is £26,000 in all. The projected overspend is now £58,400 (43 per cent).
18.7.88	The implementation teams finally move into the regional sales offices. They find the users only partially trained, the source data dirty, and the user manuals incomplete. They withdraw from all but one office.	It takes eight weeks to get the first regional sales office working well. The other three offices are implemented in parallel in four weeks.	The extra implementation costs are £24,500. The final overspend is £82,900 (62 per cent).
7.10.88	The information department declares the project completed. The marketing director takes the matter to the board.		

The impact of the various events on the project schedule is summarised in Figure 6 overleaf.

Let us now consider the roles of the main players and highlight where the project management failures occurred.

THE USER SPONSOR

Mr Elusive, the marketing director, should never have been appointed as the user sponsor. He had neither the motivation nor the availability to provide the level of personal interest and commitment necessary. As a result, he was directly responsible for many of the problems:

— The user sponsor did not call the first steering committee meeting until the project was into its fourth month and was already nearly two months behind schedule.

The first steering committee meeting should always be held before any project tasks have

Figure 6 The planning revisions

	July '87	Aug	Sept	Oct	Nov	Dec	Jan '88	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct

Prepare environment (Feb–Mar)

Original schedule: Define (July) | Specify (Sept) | Design (Oct–Nov) | Build (Dec–Jan) | Test and prove (Jan–Mar) | Impl. (Apr) | Contingency (May)

↑ Starting position

Prepare (Mar)

First major rethink: Define (Sept) | Specify (Oct) | Design (Nov) | Build (Dec) | Test and prove (Jan–Mar) | Impl. (Apr) | Contingency (May)

↑ Starting position

Prepare (Mar)

Second major rethink: Define (Sept) | Specify (Oct–Nov) | Design (Nov–Dec) | Build (Dec–Feb) | Test and prove (Feb–Mar) | Impl. (Apr) | Contingency

↑ Starting position

Prepare environment (Apr–May)

The final outcome: Define (Sept) | Specify (Oct–Nov) | Design (Nov–Dec) | Build (Dec–Feb) | Test and prove (Feb–Apr) | Implement (Apr–Sept)

Steering committee meetings: ↑ ↑ ↑ ↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑

been started. Its primary purpose is to ensure that all the contributors to the project are given the opportunity to discuss both the objectives of the project and the proposed plan. Until the sponsor is convinced that the objectives are understood and agreed, and that clear lines of responsibility have been established and the necessary commitment given, he should not release the project funds.

Other purposes include establishing the ownership of the system and encouraging good working relationships. Neither of these purposes can be achieved retrospectively — once problems arise (as they inevitably will), no one wants to be the owner and accusation has already stepped in.

— The user sponsor failed to call the other steering committee meetings at appropriate times.

Since the role of the steering committee is to create an environment conducive to the successful achievement of the project's objectives, it must meet often enough to assist with problems and conflicts of priority as and when they arise. Since we believe that the definitional work (*defining requirements* and *specifying the system*) is vital to the success of

the end-product system, we recommend that the steering committee should meet fortnightly until the final systems specification has been agreed by all parties. Thereafter, monthly meetings may suffice — although more frequent meetings may be necessary once *testing and proving* has commenced.

As can be seen in Figure 6, Mr Elusive called steering committee meeting only after milestones had been achieved (if that is the right word). As a consequence, such meetings were bound to act in a censorious rather than a helpful manner. Panic ultimately provoked him to call weekly meetings, with three disastrous consequences: the problems in information systems became the focus, distracting attention from the users' lack of progress in *preparing the environment* and creating good user test data; the pressure on the information systems staff resulted in very low morale and poor productivity; and the information systems project manager spent more of his time preparing for the battle at the steering committee than he spent managing the information department's contribution.

— The user sponsor did not appoint a project coordinator until the project was into its fourth

month. As a result, the sponsor had no agent and no one was accountable for the users' contribution to the definitional work. Perhaps, even more serious was the fact that the overall project plan was perceived as an information systems plan. Once the project coordinator was appointed, he naturally resented the lack of involvement in the planning process and was bound to shoot holes in the plan on every occasion that presented itself.

The first steering committee meeting should not be held before a project coordinator has been appointed. The project coordinator should be seen to be the architect of the plan, with the individual specialisms contributing their elements (in this context, information systems is just another specialism). It is thus the responsibility of the sponsor to define the objectives of the project to the steering committee members, and it is the responsibility of the project coordinator to take them through the plan.

— The user sponsor misrepresented the return on investment. The fact that he reviewed his position on the benefits is not a problem — that is his prerogative, and in most sales and marketing situations the benefits are usually very speculative and likely to change.

However, the fact that he sought to cut the costs in line with the change in benefits in some random blanket fashion without being prepared to accept compensatory reductions in systems function was unacceptable.

— The user sponsor failed to monitor progress carefully and did not exercise common sense when presented with blatantly nonsensical revisions.

Project slippage was conscientiously reported. It was painfully obvious that on average the project was slipping by two weeks per month. How then could the user sponsor expect it to be delivered on target without fundamental compromises in the quality of the end-product system?

Why did the sponsor not spot the budget problem? The cash-flow-based report masked the difficulties — the slower spend reflecting the slower progress (Figure 7 overleaf): but why did he not call for value-related cost monitoring? Figure 8 on page 13 highlights the fact that budgetary problems began very early in the project. Perhaps the sponsor did not regard the budget as his problem — but surely he should have done since he commissioned the project in the first place. He authorised the funds and, therefore, had an interest in ensuring that the funds were used sensibly and that the work that was funded constituted good value for money.

Do not forget that the user sponsor should be a senior, influential member of the company. As such, his general management skills should equip him to perform the monitoring and commonsense role without difficulty. As we said earlier, Mr Elusive was the wrong choice.

THE USER PROJECT COORDINATOR

Mr Sloth, an assistant accountant in the finance department, should never have been appointed as the project coordinator. His usual role is very much of a line function — so he knows nothing about coordinating projects, he knows nothing about sales and marketing (and the personality of the users likely to be involved), and he is prejudiced against the information department, believing it to be a drain on company resources. Combine these facts with the fact that he was brought in late and under duress (no volunteers for this job!) and the prognosis is hardly favourable.

The project coordinator was directly responsible for much of the major slippage and the budget problems. Frankly, he failed to coordinate:

— He did not control the development of the test plan and data. Blinded by charismatic sales personalities of the users, he allowed himself to be persuaded that progress was being made and did not set up specific schedules and monitor progress against them.

— Similarly, he did not control the *preparing the environment* task:

  He could not be expected to know how disorganised the regional sales offices were but he made no attempt to assess the risk by an early reconnaissance. As a result, the project coordinator (not the information department, whose original suggestions in the feasibility study were admittedly guestimates) grossly underestimated what was involved, and the work commenced too late and was under-resourced.

  The problems were exacerbated by union action. The project coordinator failed to involve the unions and the personnel department. The unions claimed that the first they knew about some 'new-fangled system' was when the British Telecom engineer arrived, unannounced, to install the data communications line. The project manager failed to control British Telecom!

— Finally, he failed to control the information department's project manager:

He should never have accepted the recommended cuts in *testing and proving*.

Having been persuaded of the virtue of change control procedures, he should have insisted on formal replies to his change control requests rather than just assuming that they were being dealt with.

THE INFORMATION DEPARTMENT'S DIRECTOR

The role of the information director is to support and direct the project manager. This he singularly failed to do:

— The information director was the only person in the information department who could have prevented some of the more disastrous decisions.

In the first place, he should have made sure that both the governing body and the marketing director understood the role and responsibilities of the user sponsor sufficiently well to make a suitable appointment.

Similarly, he should have spelled out the vital importance of a good choice of project coordinator — emphasising the personal attributes and experience needed to succeed.

He should have acted as an advisor to the user sponsor — thus ensuring that the need for and purpose of steering committee meetings and meaningful reporting were recognised and acted upon.

In short, the information director should not have committed his department to the project until a suitable sponsor and a project coordinator able to fulfill the executive responsibility of his role had been appointed, and until overall objectives and clear lines of responsibility had been agreed, underpinned by formal terms of reference defining the role and power of the steering committee and how often it would meet.

— There were, of course, other decisions that the information director should have challenged. He undermined the credibility of his project manager by agreeing to the early cut in timescale. At the same time, he generated the impression that the information department was an amateur 'soft touch' whose judgements would change in line with the latest intimidator. In accepting the blanket 10 per cent cut in budget, he probably provoked the panic in the information department that resulted in ill-conceived action.

— The information director did not fulfill his role as internal reviewer to the project
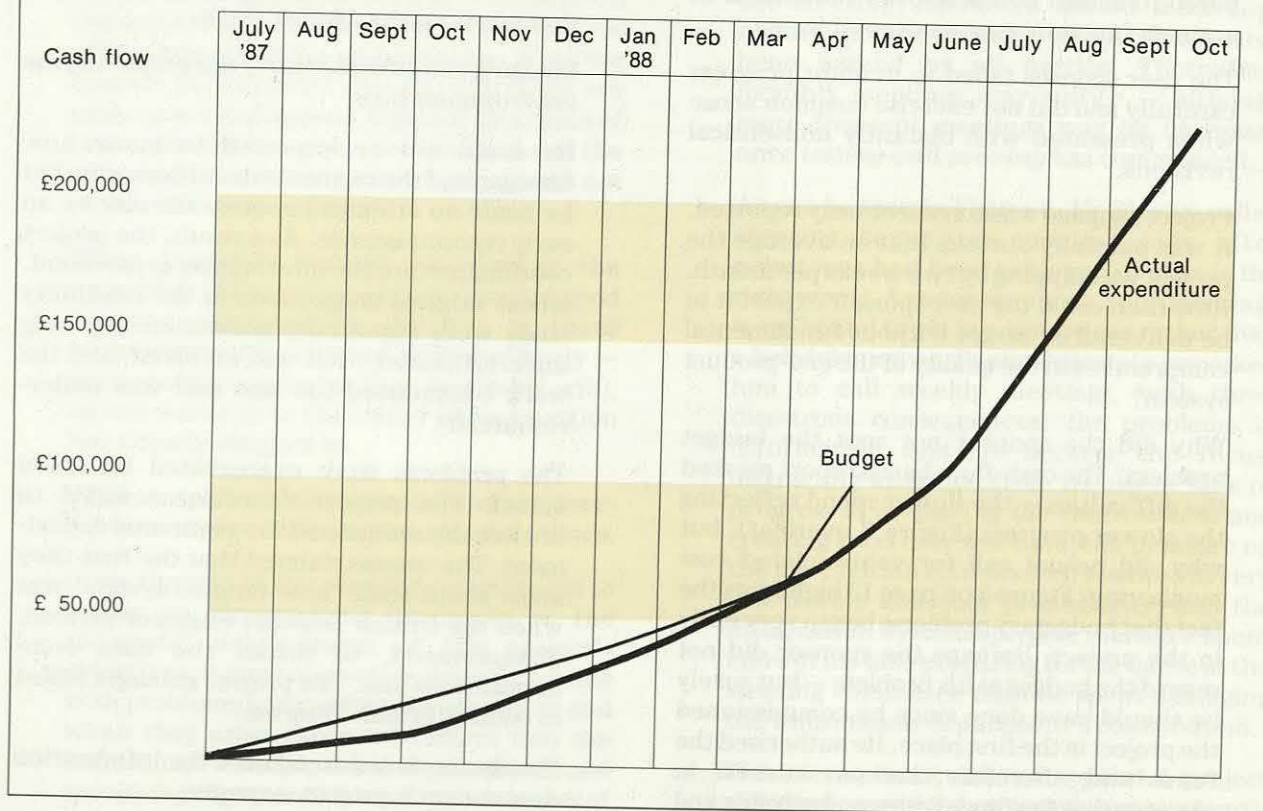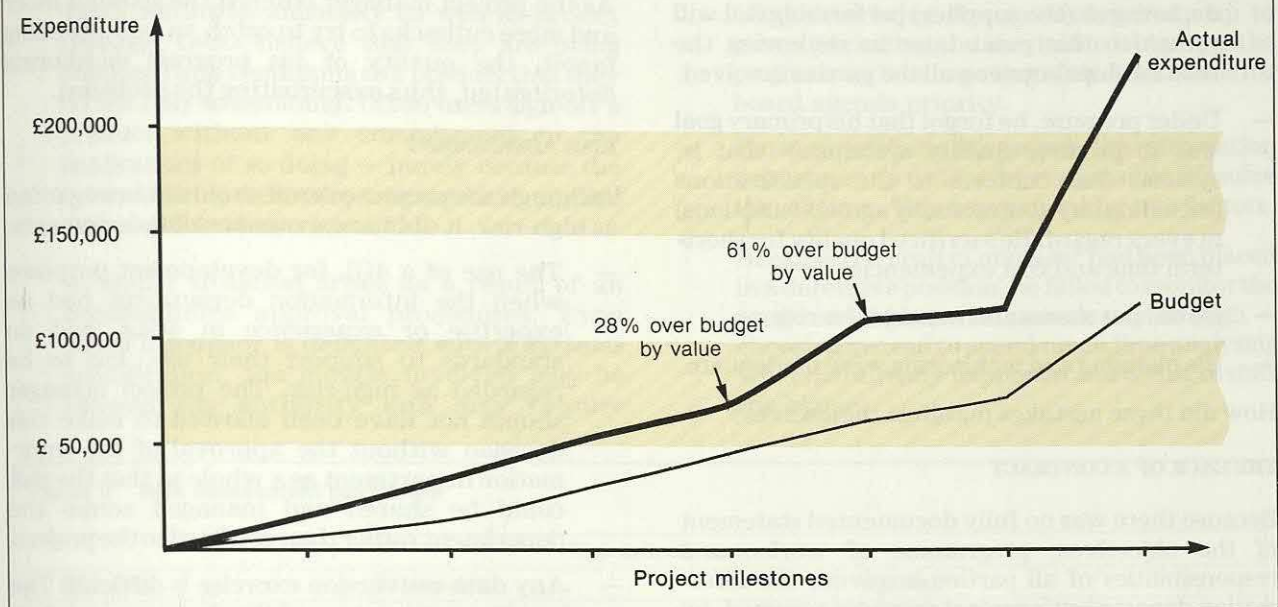

Figure 7   The project's cash flow

Figure 8 Value-earned budget versus actual expenditure

Expenditure

£200,000

£150,000

£100,000

£ 50,000

Actual expenditure

61% over budget by value

28% over budget by value

Budget

Project milestones

manager. Had he held regular informal discussions with his project manager, he would have been much closer to his problems and his thinking, and could have steered him away from his damaging actions. We suspect that he motivated the project manager initially by appeals to his ability to "do the impossible" singlehanded — thus creating a "don't bring me any problems" ego barrier. No internal reviews were held until nearly a year after the project began, by which stage it was already too late to avoid the budget and timescale problems.

THE INFORMATION DEPARTMENT'S QUALITY ASSURANCE UNIT

The quality assurance unit should be an aid rather than a threat to the project manager. In this case, the unit's actions were very predatory:

— Quality assurance was not involved with the project until asked to give the formal technical sign-off. Normal practice was to produce a quality assurance plan early in the project and to hold review meetings at the main project decision points.

In waiting to be 'asked' to be involved and in ignoring the standards problem that would inevitably emerge as a result of using a fourth generation language (4GL) tool, quality assurance acted irresponsibly, to say the least. They have a right to be involved in each and every commitment undertaken by the infor-mation department, and they are accountable

for exercising that right. Had they done so, a position on standards would have been agreed; the risk with the communications facility would have been identified and some precautionary action taken; suggested cuts in tasks would have been debated (and probably rejected); and change control would have been enacted.

— Quality assurance's biggest mistake of all was succumbing to pressure and ultimately signing off the system before any action had been taken to rectify the numerous and significant shortcomings which they properly highlighted (once they had deigned to allow themselves to be involved).

THE INFORMATION DEPARTMENT'S PROJECT MANAGER

Despite all the symptoms, the information department's project manager was probably the least to blame for the failure of the project. Remember that the project manager is responsible to the information department for its contribution to the project. The project is owned by the user and the project coordinator has executive responsibility for its overall success.

Did the project manager fulfill his responsibilities to the information department? The answer is obviously no — but apart from some general interpersonal skills difficulties (hassling users' secretaries never will achieve anything), the project manager made only four mistakes:

— He did not insist on a formal contract between the marketing department (the customer) commissioning the work and the information department (the supplier) performing it. I will return to this point later in reviewing the relationships between all the parties involved.

— Under pressure, he forgot that his primary goal was to produce quality systems — that is, systems that conform to the specifications (including any contractually agreed variations) in every regard. He sacrificed quality for short-term time and cost expediencies.

— He did not assess and manage the risk.

— His planning and monitoring were inadequate.

How did these mistakes manifest themselves?

THE LACK OF A CONTRACT

Because there was no fully documented statement of the objectives, programme of works, and responsibilities of all parties involved, the information department's project manager assumed, by default, prime responsibility for all tasks without the mandate and authority to exercise this responsibility successfully.

In the one area where he should have had prime responsibility (that is, building a system to conform to the specification), he was frustrated from the very beginning. The specification was never formally agreed, so that there was no common understanding of what it was that he had to achieve. As variations occurred (tentatively as a result of the budget cut, and definitely as a result of trying to shorten the timescale), they were not discussed and agreed between the supplier and the customer. Requests for change were casually posted to some ill-defined second release without the customer's knowledge or approval. It is hardly surprising therefore that the user and the information department failed to agree on whether the delivered software met the requirements of the specification.

THE QUALITY RESPONSIBILITY

As the project began to drift into difficulties during *defining requirements* and *specifying the system*, the project manager should have taken a long, hard look at the situation, reviewed the position, taken any remedial action necessary, and replanned the project with his responsibility for quality in mind. Instead, and primarily as a result of lack of support within his own department, he was intimidated into panic action, cutting man effort and time without due concern for quality. The staff cutbacks in *designing the system* and *building the system* demonstrate this point. The results are equally apparent — there is a direct correlation between the cutbacks in these last two tasks and the dramatic slippage and overexpenditure in the next two

(*testing and proving the system*, and *implementing the system*).

As the project manager entered the spiral of more and more cutbacks to try to catch an ever-receding target, the quality of his progress monitoring deteriorated, thus exacerbating the problems.

RISK ASSESSMENT

Although the project overall could not be regarded as high-risk, it did have a number of risk elements.

— The use of a 4GL for development purposes when the information department had no expertise or experience in 4GLs, and no standards to support their use, has to be regarded as high-risk. The project manager should not have been allowed to make this decision without the approval of the information department as a whole so that the risk could be shared and managed across the department rather than confined to the project.

— Any data conversion exercise is difficult. The incidence of incompatibility between one data structure and another is always high and requires significant man effort (especially user effort) to rectify. Earlier attention and much more emphasis on user involvement was called for here.

— The use of a new communications facility involving a technique (downloading) new to the installation was also high-risk. The telecommunications department should most certainly have been involved from the very beginning and the contract with the supplier of the terminal should have imposed contractual obligations on the supplier to prove fitness for purpose.

The fact that the project manager failed to recognise and to manage the conversion and communications risks, in particular, had a direct bearing on the major difficulties encountered during *testing and proving* and *implementing the system*. Figure 9 overleaf suggests some common risks that all information systems departments should watch out for and guard against.

The PEP assessment reference material also gives some guidance on how to determine the probability of a particular project succeeding, given the objectives, resources, timescales, and budget. This is another, and a very important, form of risk assessment and management.

POOR PLANNING AND MONITORING

There were several occasions where poor planning and monitoring were particularly damaging:

— The project manager allowed insufficient time for the users to review intermediate products

(like the *requirements definition*) and for the project team to make the necessary amendments as a result of the review. This is a common failing which results in animosity as well as project slippage. Users believe that they are being bulldozed into commiting to a product that they do not fully understand. Often users sign-off a product without any commitment to the implications of so doing — purely because the information systems department have applied unreasonable time contraints.

A similar situation arises as a result of an organisation's approval procedures. Even when a sponsor is delighted with a systems specification, the monies involved may be beyond his authority and may require governing-body approval. The time this can take can often be measured in months rather than weeks — because, apart from the time needed to bring the governing body up to steam (including the inevitable lobbying), the project may be competing with other issues for board agenda priority.

— During *specifying the system*, the information department's staff were responsible for some loss of time. This was caused by two factors.

Because the project manager had been placed in a defensive position, he failed to monitor the progress of his own team closely enough — choosing instead to spend much time analysing what had already happened and trying to shift the blame.

Figure 9   Risk assessment guidelines

Risk assessment		
Risk area	Low risk	High risk
1. Project management		
User sponsor involvement	Actively involved	No participation
User management participation	Actively involved	No participation
Project coordinator	Experienced, competent, full-time	Inexperienced or part-time
Project manager	Experienced. competent, full-time	Inexperienced or part-time
Project management approach	Proven techniques in use	Proven techniques not available or used
Quality assurance	QA program followed	No QA program followed
2. Project characteristics		
Complexity	No unique/new considerations	Pioneering, new hardware/software, and so on
Mainstream impact	Mainstream operations affected minimally or not affected	Significant impact on mainstream operation
User impact	Minor impact on user's day-to-day work	Significant impact on users
Approach	Typical systems development cycle, for example: requirements definition, systems specification, systems design, and so on	A typical approach, for example: no formal requirements definition, systems design and build merged, and so on
Organisation scope	Less than three user departments	More than three user departments
Project size	Project will be one year or less or small number of workdays in relation to other completed projects	Project will be over one year or large number of workdays
Existing application software	Little or no modification expected	Extensive modification expected
Cost/benefit analysis	Estimates prepared and completely documented using proven standards (prerequisites, criteria, guidelines, and so on)	Approximation used or estimates not completely documented or based on unproven standards
Hardware/software	Requirements determined and documents based on proven standards (performance requirements, prerequisites, and so on)	Limited safety margins for contingencies (scope expansion, volume increases, and so on) and/or requirements not documented or not based on proven standards
3. Project staffing		
User participation	Actively involved and knowledgeable in system area	Little involvement and little knowledge in system area
Project supervision	Level of supervision and span of control equals or exceeds guidelines	Level of supervision or span of control is below guidelines
Project team	Experienced personnel with appropriate functional and technical skills	Inexperienced personnel and/or personnel lacking appropriate skills

Secondly, when the project manager discovered his team's deviation from plan, he failed to act decisively. The team should have been brought in over the weekends or been asked to work late to claw back some of the lost time. This way the team would have realised that the project manager regarded hitting dates as important and was prepared to take action when there was slippage.

— In seeking to replan and short-circuit the *designing the system* task, the project manager forgot the time-honoured short-term planning rules and omitted to take account of the prevailing circumstances. Planning for staff to work over Christmas is never a clever idea — especially when you have failed to inspire the commitment ethic.

— In short-term scheduling for the *building the system* task, the project manager scheduled by task rather than by available resource. As a result, he failed to adjust his base estimates to take account of the experience and skill of the staff assigned to the task. Studies have shown that different programmers have taken between 3 and 25 hours to solve the same problem in Cobol. Project managers should incorporate this sort of insight into their short-term schedules.

— Finally, the project manager failed to use value-earned progress measurement techniques to help to identify problems early enough to allow appropriate corrective action.

What does our case study tell us about project management and about the responsibilities of the various parties involved?

Overall, I believe that our case study says that the often-held belief that project management is the sole responsibility of some 'human dynamo' is quite wrong. The management of a project has to be regarded as a corporate activity if it is to be achieved successfully. This means that several levels of management both through the company and across the company need to be involved — each with a somewhat different prime responsibility but all with the same common objective.

How should this corporate responsibility manifest itself?

THE GOVERNING BODY

There are at least three areas where the governing body's responsibility is prime:

— The first involves generating and maintaining in the organisation a culture that is orientated to 'results-through-cooperation' and that sees no virtue in playing the blame game.

— The second involves demonstrating commitment to a particular project by being actively involved through its lifetime (even if this only takes the form of a brief report at each board meeting) rather than only when things have gone wrong.

— The third involves appointing an appropriate user sponsor with the personal interest, the availability, and the personality to exercise successfully the overall executive responsibility for the success of the project.

THE USER SPONSOR

There are least six areas where the user sponsor's responsibility is prime:

— The first is to reinforce for any particular project the understanding that all parties have a responsibility for the successful management of the project and for the success of the ultimate end product. This responsibility includes the generation and maintenance of good working relationships and instilling the 'results-through-cooperation' concept.

— The second involves ensuring, at the very beginning, that the objectives and lines of responsibility are well-defined, understood, and agreed to. This responsibility includes the generation and maintenance of the contract concept, whereby all parties involved formally commit to the delivery of their particular contribution.

— The third involves establishing a steering committee to generate an environment conducive to the success of the project and to resolve any problems or conflicts of priority or interest in as constructive a manner as possible.

— The fourth involves motivating user management to properly resource the user aspects of the project.

— The fifth and most important responsibility is executive accountability for the success of the end-product system, and (as a consequence) the responsibility for leading all work on requirements definition, testing and proving, training, preparing the environment, and implementing.

— The final responsibility involves appointing an appropriate user project coordinator with the experience, skills, and personality to succeed as the user sponsor's agent for the day-to-day running of the project.

THE USER PROJECT COORDINATOR

Given the definition above (executive responsibility for the day-to-day running of the project), there are at least six areas where the user project coordinator has prime responsibility:

— The first is the development, communication, and maintenance of an overall project plan. This involves liaising with the project managers from the various departments involved

(estates; supply and purchasing; internal audit; marketing; sales; information department) in order to understand and bring together the various pieces of their jigsaw contribution. The user project coordinator is the only person who can produce a critical path analysis of the whole project (information department tasks are by no means the only critical path drivers).

— The second is chasing progress against that plan. This again involves liasing with the individual project managers to understand, probe, and challenge their progress statements and to determine their impact on the overall situation.

— The third involves assessing and managing risk. Again, this is at the overall project level and depends upon close liaison with the project managers from contributing departments.

— The fourth involves accountability for all costs and benefits.

— The fifth involves managing project-wide change control procedures.

— The final responsibility involves reporting progress fairly and accurately to the steering committee and, in particular, alerting the members to any problems or conflicts of priority or interest, in order to enable them to exercise their power.

THE INFORMATION DEPARTMENT'S DIRECTOR

No matter how experienced, intelligent, and enthusiastic the information department's project manager is, he or she cannot be expected to succeed without adequate support and cooperation from his or her own department. The information director's role (in relation to a project) is to ensure that this support and cooperation is forthcoming.

Support and cooperation takes various forms:

— As and when difficulties arise with relationships with the users (and, in particular, the user sponsor), the project managers need to know that their own management can be called upon to assist — taking conflicts all the way to the governing body if absolutely necessary. There is no such thing as 'performing the impossible'; the information department has to be able to say no and its director must be prepared to support its judgement.

— The project manager needs a second opinion — a project reviewer to discuss concepts, ideas, technical directions, progress, and problems in

an informal and constructive (rather than intimidating) environment.

— The provision of standards and good working practices is another form of support. The project manager should not be saddled with the responsibility of introducing new standards, techniques, and tools through the project. Such a responsibility increases the risk significantly and results in project-driven decisions with long-term corporate significance. The PEP subscribers' questionnaires suggest that some organisations do expect the project manager to determine standards (32 per cent), techniques (43 per cent), and tools (63 per cent); 43 per cent permit the selection of new equipment without any apparent reference to a planning, operations, or quality assurance unit.

— The further form of support is ensuring that a separate quality assurance unit is established, is given clear responsibilities, and is involved at appropriate periods during the project's life. Of the PEP subscribers submitting questionnaires, only 56 per cent have established quality assurance units.

— The availability of suitable supporting clerical and other staff is also important. Of the PEP subscribers submitting questionnaires, none provide their project managers with a secretary, and 50 per cent provide a shared secretary.

— The recognition that project management training is a continuous process, and not simply a question of sending someone on a three-day project management course, is another important form of support.

All of these forms of support and cooperation are the prime responsibility of the information director. Agents may be used (for example, the systems manager) to execute the responsibility — but the director should have a personal sense of ultimate accountability and commitment.

THE INFORMATION DEPARTMENT'S PROJECT MANAGER

The information department's project manager has one overwhelming responsibility, and that is to ensure that the delivered system conforms to the specification and to the service level agreement. In fulfilling this responsibility, there are a number of factors that he or she must look to:

— Orchestrating the information department's component of the overall plan, liaising with both the user project coordinator and the various units within the information department.

— Ensuring that the overall objectives and overall project plan are communicated within the information department, and that, at a detailed level, the information department's contribution is communicated, fully understood, and agreed.

— Taking responsibility for planning and coordinating the information department's contribution, and for communicating any need for changed plans to the user project coordinator.

— Progress-chasing the information department's contribution — liasing with colleagues to understand, probe, and challenge their progress statements.

— Reporting the information department's progress to the project coordinator in a fair, meaningful, honest, and open manner — exposing both successes and failures.

— Assessing and managing risk within the information department — reviewing any impact on the overall project with the user project coordinator.

— Ensuring that all requests for change are promptly dealt with, and that formal statements of resulting impact on functionality, cost, and timescale are forwarded to the user project coordinator for approval.

— Ensuring that the technical contribution conforms to any established standards and working practices.

All in all, the project manager is a facilitator — bringing the various skills across the department to bear in such a way as to achieve the specification required within the budget and time set. It is a prime example of matrix management and this is why it is so difficult.

THE IDEAL PERSONALITY FOR A PROJECT MANAGER

The project manager's objectives can be achieved in a wide variety of ways — but there are some characteristics that can be specified:

— An easy, but authoritative, manner with all levels of staff. Interpersonal skills must be exemplary.

— The display of leadership, having the desire and ability to get things done, and the knack of motivating other people.

— A good brain, with the ability both to extract salient points from a set of data and to take an objective stance, one step removed from the immediate problem.

— Sufficient technical ability to judge the quality of colleagues' work and to determine the relevance and accuracy of advice offered by experts.

We believe that successful project managers are likely to have a business background, having come to information systems as part of their general career development. They are probably graduates in their late twenties who have been identified by the organisation as high-flyers destined for general management in the not too distant future.

Since the project manager's role is largely one of coordinating, combining, and steering the activities of the various information systems department's units, he or she must hold a post at least equivalent in grade, remuneration, and status to that occupied by the unit heads. We believe that the project manager should, in fact, report directly to the information department's director.

The views expressed here are markedly different from those suggested in the PEP questionnaires. The responses described the average information department's project manager in PEP subscribers' organisations:

— He is a non-graduate in his late thirties with an information systems background.

— He reports to the information department manager and earns some 20 per cent less than the manager; he probably does not have a company car, and he certainly does not have a secretary.

— He is responsible for the timescale of the total project (but only the IT component of the costs!), for a project budget of £500,000, and for 13 staff reporting directly to him. He is allowed to select the development method to be used and the software tools — but probably not the equipment. He has to pass all requisitions and invoices to his manager for approval.

We would suggest that many organisations are selecting the wrong project managers and are paying too little and demanding too much for them to be successful:

— Matrix management requires business and organisational skills and experience, management prowess, and interpersonal capability. The data processing long-term professional is not known for these attributes.

— We believe that organisations need to pay project managers at least as much as the information department manager and to provide equivalent benefits such as a company car to attract the high-flyers needed in this important role.

Chapter 4 Guidelines for success

— The responsibility of the project manager should be limited to delivering the information department's contribution to the overall project. It should not include making decisions about broader aspects of the project.

Finally, let me re-emphasise that the project manager must be given adequate support — from clerical/secretarial services, from colleagues in the information department, and from the information director. Do not leave him to sink or swim.

Chapter 5

When I began my research for this paper, I assumed that most information departments were only too aware of the theory of how to manage systems development projects. My research and discussions have confirmed that this was a reasonable assumption and that, generally speaking, most PEP subscribers contacted feel that their organisations are increasingly successful in the management of systems development projects. Nevertheless, the incidence of disaster projects with cost and time overruns of 100 per cent or more is still high — with perhaps one in ten projects falling into this category.

Despite the improvements over the last thirty years, I believe that this situation will prevail until we are prepared to identify and tackle the real obstacles to successful project management. My research suggests that PEP subscribers do recognise these obstacles and their damaging implications but feel that the problems are so tied up with the organisation's culture and its general attitude to information systems that it is difficult to see how best to effect improvements. As a consequence, improvements are sought in areas under the more immediate control of the information department (such as project estimating, progress monitoring/ chasing, and so on) — often with the help of the computer-based tools that have emerged over the last few years. Whilst such improvements are desirable, they will have only a marginal effect on our ability to manage systems development projects successfully, since such improvements are treating symptoms rather than causes.

I believe that the most significant causes of project management failure are:

— The lack of commitment to the project by the governing body, resulting in a casual attitude to the appointment of the user sponsor and little senior management involvement in the project until things go dramatically wrong.

— The appointment of inappropriate user sponsors with neither the motivation nor the availability to provide the necessary level of personal interest and commitment.

— As a consequence, inadequate resourcing of the user aspects of the project and ineffectual steering committee meetings (if they are held at all) with a blame rather than a support mentality.

— The lack of the contract concept, whereby all parties involved formally commit to the delivery of their particular contribution.

— The appointment of inappropriate user project coordinators with neither the experience nor the personal authority to take executive responsibility for the day-to-day running of the project.

— As a consequence, the lack of an overall project plan and critical path analysis, and the lack of progress monitoring/chasing and quality controlling of the user tasks.

— The lack of support for and cooperation with the information department's project manager from within his own department.

— The inability, as a consequence, of the information department to say no when it really is being asked to do the impossible.

In recognising that some of these causes are particularly difficult to tackle, I nevertheless believe that improvements can be effected. A two-pronged attack is required:

— First, be sure that the information department's house is in order.

— Secondly, mount an ongoing programme within the organisation, focused particularly at user senior management, to promote the concept of corporate responsibility for systems development project management with a clear understanding of what that means in terms of the roles and specific responsibilities involved.

GETTING THE INFORMATION DEPARTMENT'S HOUSE IN ORDER

Before tackling the user issues, the information department must be able to demonstrate that it is handling its contribution effectively:

— Be sure that your development approach has been properly implemented and is actively being followed throughout the department.

— If you have not got a unit responsible for methods, techniques, tools, and standards (from the point of view of selection, implementation, training, maintenance, and advice and guidance), establish one as a matter of urgency. If you have, make sure that is is doing an effective job — do not let your project managers make decisions on these high-risk issues. Project managers must work within the development framework established for the organisation as a whole.

— If you have not got a quality assurance unit, establish one — again, as a matter of urgency. Make sure that the unit understands that it has the right to be involved in each and every project throughout its development cycle, and make sure it exercises that right. If you have got a quality assurance unit, reinforce its role and responsibilities.

— Introduce guidelines for assessing and managing risk. This is not as difficult as it sounds. There are very few new risks, and some careful thinking through of previous experience can help to develop some much-needed guidance.

— Persuade the information director to review his role and to consider whether he or she is really providing the necessary support and promoting the necessary cooperation.

— Critically analyse your project manager's job description, your recruitment policy and methods, and your reimbursement package to decide whether they are conducive to successful project management. If not, consider the approaches suggested in this report. In particular, consider where in the organisation the project manager reports.

— Make use of latest tools available — making sure that the underlying project management techniques are properly understood. In particular, invest in *estimating* and *project planning* tools.

— Ensure that your change-control procedures have been properly implemented and are being rigorously followed.

— Conduct thorough post-implementation reviews, and use the data collected to create a database for continuing estimation and evaluation purposes and to supplement your PEP assessment programme.

TACKLING THE USER ISSUES

Once the information department is sure that it is performing its part in successful systems development project management as effectively as possible, it can begin to tackle the user issues:

— Develop, with the corporate planners, a model demonstrating the commercial impact of information systems on the business, and present the results to the governing body. If you cannot persuade the organisation of the importance of information systems to its bottom line, you cannot expect the governing body to regard successful project management as a corporate issue.

— Introduce formal contracts between the users (the customers) commissioning the system and the information department (the suppliers). Do not allow your inhouse development staff to be treated any differently from an external software house. There should always be a fully documented statement of the objectives, programme of work, and responsibilities of all parties involved.

— Mount a senior and user management education programme on the management of systems development. Use this report as a case history to provoke discussion and to help the users to draw out some of the main messages themselves. Use the PEP assessment reference material as an educational aid in describing the balance between cost, time, and quality, and some of the critical parameters and relationships involved.

— Motivate the information director to act as an advisor to both the governing body and the sponsor — thus continually reinforcing the role and responsibilities of all parties involved, and ensuring that effective steering committees and meaningful reporting procedures are established and acted upon.

PROJECT MANAGEMENT IS A REAL JOB

Our final, and overall recommendation, is to recognise that project management is a real job and requires appropriate time, effort, and support. When asked how much time a project manager should spend managing, one respondent reluctantly conceded that the main role of a project manager was indeed management and that it might take up to four days a week. However, he then added this would leave one day for his *real* work. This attitude of failing to recognise management as real work is probably the root cause of most project failures. We hope this paper has helped to convince PEP subscribers that the management element of managing projects is *real* work.

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.

The services provided include:

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.