

# PLANNING A PROJECT

by Gerard M Blair

*The success of a project will depend critically upon the effort, care and skill you apply in its initial planning. This article looks at the creative aspects of this planning.*

## THE SPECIFICATION

Before describing the role and creation of a specification, we need to introduce and explain a fairly technical term: a *numbty* is a person whose brain is totally numb. In this context, numb means "deprived of feeling or the power of unassisted activity"; in general, a numbty needs the stimulation of an electric cattle prod to even get to the right office in the morning. Communication with numbties is severely hampered by the fact that although they think they know what they mean (which they do not), they seldom actually say it, and they never write it down. And the main employment of numbties world-wide is in creating project specifications. You must know this - and protect your team accordingly.

A specification is the definition of your project: a statement of the problem, not the solution. Normally, the specification contains errors, ambiguities, misunderstandings and enough rope to hang you and your entire team. Thus before you embark upon the the next six months of activity working on the wrong project, you must assume that a numbty was the chief author of the specification you received and you must read, worry, revise and ensure that everyone concerned with the project (from originator, through the workers, to the end-customer) is working with the same understanding. The outcome of this deliberation should be a *written* definition of what is required, by when; and this must be *agreed* by all involved. There are no short-cuts to this; if you fail to spend the time initially, it will cost you far more later on.

The *agreement* upon a *written* specification has several benefits:

- ⚡ the clarity will reveal misunderstandings
- ⚡ the completeness will remove contradictory assumptions
- ⚡ the rigour of the analysis will expose technical and practical details which numbties normally gloss over through ignorance or fear
- ⚡ the agreement forces all concerned to actually read and think about the details

The work on the specification can be seen as the first stage of Quality Assurance since you are looking for and countering problems in the very foundation of the project - from this perspective the creation of the specification clearly merits a large investment of time.

From a purely defensive point of view, the agreed specification also affords you protection against the numbties who have second thoughts, or new ideas, half way through the project. Once the project is underway, changes cost time (and money). The existence of a

demonstrably-agreed specification enables you to resist or to charge for (possibly in terms of extra time) such changes. Further, people tend to forget what they originally thought; you may need proof that you have been working as instructed.

The places to look for errors in a specification are:

- ⚡ the global context: numbties often focus too narrowly on the work of one team and fail to consider how it fits into the larger picture. Some of the work given to you may actually be undone or duplicated by others. Some of the proposed work may be incompatible with that of others; it might be just plain barmy in the larger context.
- ⚡ the interfaces: between your team and both its customers and suppliers, there are interfaces. At these points something gets transferred. Exactly what, how and when should be discussed and agreed from the very beginning. Never assume a common understanding, because you will be wrong. All it takes for your habitual understandings to evaporate is the arrival of one new member, in either of the teams. Define and agree your interfaces and maintain a friendly contact throughout the project.
- ⚡ time-scales: numbties always underestimate the time involved for work. If there are no time-scales in the specification, you can assume that one will be imposed upon you (which will be impossible). You must add realistic dates. The detail should include a precise understanding of the extent of any intermediate stages of the task, particularly those which have to be delivered.
- ⚡ external dependencies: your work may depend upon that of others. Make this very clear so that these people too will receive warning of your needs. Highlight the effect that problems with these would have upon your project so that everyone is quite clear about their importance. To be sure, contact these people yourself and ask if they are able to fulfil the assumptions in your specification.
- ⚡ resources: the numbty tends to ignore resources. The specification should identify the materials, equipment and manpower which are needed for the project. The agreement should include a commitment by your managers to allocate or to fund them. You should check that the actual numbers are practical and/or correct. If they are omitted, add them - there is bound to be differences in their assumed values.

This seems to make the specification sound like a long document. It should not be. Each of the above could be a simple sub-heading followed by either bullet points or a table - you are not writing a brochure, you are stating the definition of the project in clear, concise and unambiguous glory.

Of course, the specification may change. If circumstances, or simply your knowledge, change then the specification will be out of date. You should not regard it as cast in stone but rather as a display board where everyone involved can see the current, common understanding of the project. If you change the content everyone must know, but do not

hesitate to change it as necessary.

## PROVIDING STRUCTURE

Having decided what the specification intends, your next problem is to decide what you and your team actually need to do, and how to do it. As a manager, you have to provide some form of framework both to plan and to communicate what needs doing. Without a structure, the work is a series of unrelated tasks which provides little sense of achievement and no feeling of advancement. If the team has no grasp of how individual tasks fit together towards an understood goal, then the work will seem pointless and they will feel only frustration.

To take the planning forward, therefore, you need to turn the specification into a complete set of tasks with a linking structure. Fortunately, these two requirements are met at the same time since the derivation of such a structure is the simplest method of arriving at a list of tasks.

### Work Breakdown Structure

Once you have a clear understanding of the project, and have eliminated the vagaries of the numbties, you then describe it as a set of simpler separate *activities*. If any of these are still too complex for you to easily organise, you break them down also into another level of simpler descriptions, and so on until you can manage everything. Thus your one complex project is organised as a set of simple tasks which together achieve the desired result.

The reasoning behind this is that the human brain (even yours) can only take in and process so much information at one time. To get a real grasp of the project, you have to think about it in pieces rather than trying to process the complexity of its entire details all at once. Thus each level of the project can be understood as the amalgamation of a few simply described smaller units.

In planning any project, you follow the same simple steps: if an item is too complicated to manage, it becomes a list of simpler items. People call this producing a *work breakdown structure* to make it sound more formal and impressive. Without following this formal approach you are unlikely to remember all the niggling little details; with this procedure, the details are simply displayed on the final lists.

One common fault is to produce too much detail at the initial planning stage. You should stop when you have a sufficient description of the activity to provide a clear instruction for the person who will actually do the work, and to have a reasonable estimate for the total time/effort involved. You need the former to allocate (or delegate) the task; you need the latter to finish the planning.

### Task Allocation

The next stage is a little complicated. You now have to allocate the tasks to different people in the team and, at the same time, order these tasks so that they are performed in a sensible sequence.

Task allocation is not simply a case of handing out the various tasks on your final lists to the people you have available; it is far more subtle (and powerful) than that. As a manager you have to look far beyond the single project; indeed any individual project can be seen as merely a single step in your team's development. The allocation of tasks should thus be seen as a means of increasing the skills and experience of your team - when the project is done, the team should have gained.

In simple terms, consider what each member of your team is capable of and allocate sufficient complexity of tasks to match that (and to slightly stretch). The tasks you allocate are *not* the ones on your final lists, they are adapted to better suit the needs of your team's development; *tasks are moulded to fit people*, which is far more effective than the other way around. For example, if Arthur is to learn something new, the task may be simplified with responsibility given to another to guide and check the work; if Brenda is to develop, sufficient tasks are combined so that her responsibility increases beyond what she has held before; if Colin lacks confidence, the tasks are broken into smaller units which can be completed (and commended) frequently.

Sometimes tasks can be grouped and allocated together. For instance, some tasks which are seemingly independent may benefit from being done together since they use common ideas, information, talents. One person doing them both removes the start-up time for one of them; two people (one on each) will be able to help each other.

The ordering of the tasks is really quite simple, although you may find that sketching a sequence diagram helps you to think it through (and to communicate the result). *Pert charts* are the accepted outcome, but sketches will suffice. Getting the details exactly right, however, can be a long and painful process, and often it can be futile. The degree to which you can predict the future is limited, so too should be the detail of your planning. You must have the broad outlines by which to monitor progress, and sufficient detail to assign each task when it needs to be started, but beyond that - stop and do something useful instead.

## Guesstimation

At the initial planning stage the main objective is to get a *realistic* estimate of the time involved in the project. You must establish this not only to assist higher management with their planning, but also to protect your team from being expected to do the impossible. The most important technique for achieving this is known as: *guesstimation*.

Guesstimating schedules is notoriously difficult but it is helped by two approaches:

- ✧ make your guesstimates of the simple tasks at the bottom of the work break down structure and look for the longest path through the sequence diagram
- ✧ use the experience from previous projects to improve your guesstimating skills

The corollary to this is that you should keep records in an easily accessible form of all projects as you do them. Part of your final project review should be to update your personal data base of how long various activities take. Managing this planning phase is vital to your success as a manager.

Some people find guesstimating a difficult concept in that if you have no experience of an activity, how can you make a worthwhile estimate? Let us consider such a problem: how long would it take you to walk all the way to the top of the Eiffel Tower or the Statue of Liberty? Presuming you have never actually tried this (most people take the elevator part of the way), you really have very little to go on. Indeed if you have actually seen one (and only one) of these buildings, think about the other. Your job depends upon this, so think carefully. One idea is to start with the number of steps - guess that if you can. Notice, you do not have to be right, merely reasonable. Next, consider the sort of pace you could maintain while climbing a flight of steps for a long time. Now imagine yourself at the base of a flight of steps you do know, and estimate a) how many steps there are, and b) how long it takes you to climb them (at that steady pace). To complete, apply a little mathematics.

Now examine how confident you are with this estimate. If you won a free flight to Paris or New York and tried it, you would probably (need your head examined) be mildly surprised if you climbed to the top in less than half the estimated time and if it took you more than double you would be mildly annoyed. If it took you less than a tenth the time, or ten times as long, you would extremely surprised/annoyed. In fact, you do not currently believe that that would happen (no really, do you?). The point is that from very little experience of the given problem, you can actually come up with a working estimate - and one which is far better than no estimate at all when it comes to deriving a schedule. Guesstimating does take a little practice, but it is a very useful skill to develop.

There are two practical problems in guesstimation. First, you are simply too optimistic. It is human nature at the beginning of a new project to ignore the difficulties and assume best case scenarii - in producing your estimates (and using those of others) you must inject a little realism. In practice, you should also build-in a little slack to allow yourself some tolerance against mistakes. This is known as *defensive scheduling*. Also, if you eventually deliver ahead of the agreed schedule, you will be loved.

Second, you will be under pressure from senior management to deliver quickly, especially if the project is being sold competitively. Resist the temptation to rely upon speed as the only selling point. You might, for instance, suggest the criteria of: fewer errors, history of adherence to initial schedules, previous customer satisfaction, "this is how long it takes, so how can you trust the other quotes".

## **ESTABLISHING CONTROLS**

When the planning phase is over (and agreed), the "doing" phase begins. Once it is in motion, a project acquires a direction and momentum which is totally independent of

anything you predicted. If you come to terms with that from the start, you can then enjoy the roller-coaster which follows. To gain some hope, however, you need to establish at the start (within the plan) the means to monitor and to influence the project's progress.

There are two key elements to the control of a project

- ✦ milestones (clear, unambiguous targets of what, by when)
- ✦ established means of communication

For you, the milestones are a mechanism to monitor progress; for your team, they are short-term goals which are far more tangible than the foggy, distant completion of the entire project. The milestones maintain the momentum and encourage effort; they allow the team to judge their own progress and to celebrate achievement throughout the project rather than just at its end.

The simplest way to construct milestones is to take the timing information from the work breakdown structure and sequence diagram. When you have guesstimated how long each sub-task will take and have strung them together, you can identify by when each of these tasks will actually be completed. This is simple and effective; however, it lacks creativity.

A second method is to construct more significant milestones. These can be found by identify stages in the development of a project which are recognisable as steps towards the final product. Sometimes these are simply the higher levels of your structure; for instance, the completion of a market-evaluation phase. Sometimes, they cut across many parallel activities; for instance, a prototype of the eventual product or a mock-up of the new brochure format.

If you are running parallel activities, this type of milestone is particularly useful since it provides a means of pulling together the people on disparate activities, and so:

- ✦ they all have a shared goal (the common milestone)
- ✦ their responsibility to (and dependence upon) each other is emphasised
- ✦ each can provide a new (but informed) viewpoint on the others' work
- ✦ the problems to do with combining the different activities are highlighted and discussed early in the implementation phase
- ✦ you have something tangible which senior management (and numbties) can recognise as progress
- ✦ you have something tangible which your team can celebrate and which constitutes a short-term goal in a possibly long-term project
- ✦ it provides an excellent opportunity for quality checking and for review

Of course, there are milestones and there are mill-stones. You will have to be sensitive to any belief that working for some specific milestone is hindering rather than helping the work forward. If this arises then either you have chosen the wrong milestone, or you have failed to communicate how it fits into the broader structure.

Communication is your everything. To monitor progress, to receive early warning of danger, to promote cooperation, to motivate through team involvement, all of these rely upon communication. Regular reports are invaluable - if you clearly define what information is needed and if teach your team how to provided it in a rapidly accessible form. Often these reports merely say "progressing according to schedule". These you send back, for while the message is desired the evidence is missing: you need to insist that your team monitor their own progress with concrete, tangible, measurements and if this is done, the figures should be included in the report. However, the real value of this practice comes when progress is not according to schedule - then your communication system is worth all the effort you invested in its planning.

## **THE ARTISTRY IN PLANNING**

At the planning stage, you can deal with far more than the mere project at hand. You can also shape the overall pattern of your team's working using the division and type of activities you assign.

### **Who know best?**

Ask your team. They too must be involved in the planning of projects, especially in the lower levels of the work breakdown structure. Not only will they provide information and ideas, but also they will feel ownership in the final plan.

This does not mean that your projects should be planned by committee - rather that you, as manager, plan the project based upon all the available experience and creative ideas. As an initial approach, you could attempt the first level(s) of the work breakdown structure to help you communicate the project to the team and then ask for comments. Then, using these, the final levels could be refined by the people to whom the tasks will be allocated. However, since the specification is so vital, *all* the team should vet the penultimate draft.

### **Dangers in review**

There are two pitfalls to avoid in project reviews:

- ⚡ they can be too frequent
- ⚡ they can be too drastic

The constant trickle of new information can lead to a vicious cycle of planning and revising which shakes the team's confidence in any particular version of the plan and which destroys the very stability which the structure was designed to provide. You must decide the balance. Pick a point on the horizon and walk confidently towards it. Decide objectively, and explain beforehand, when the review phases will occur and make this a scheduled milestone in itself.

Even though the situation may have changed since the last review, it is important to recognise the work which has been accomplished during the interim. Firstly, you do not

want to abandon it since the team will be demotivated feeling that they have achieved nothing. Secondly, this work itself is part of the new situation: it has been done, it should provide a foundation for the next step or at least the basis of a lesson well learnt. Always try to build upon the existing achievements of your team.

### **Testing and Quality**

No plan is complete without explicit provision for testing and quality. As a wise manager, you will know that this should be part of each individual phase of the project. This means that no activity is completed until it has passed the (objectively) defined criteria which establishes its quality, and these are best defined (objectively) at the beginning as part of the planning.

When devising the schedule therefore you must include allocated time for this part of each activity. Thus your question is not only: "how long will it take", but also: "how long will the testing take". By asking both questions together you raise the issue of "how do we know we have done it right" at the very beginning and so the testing is more likely to be done in parallel with the implementation. You establish this philosophy for your team by include testing as a justified (required) cost.

### **Fitness for purpose**

Another reason for stating the testing criteria at the beginning is that you can avoid futile quests for perfection. If you have motivated your team well, they will each take pride in their work and want to do the best job possible. Often this means polishing their work until it shines; often this wastes time. If it clear at the onset exactly what is needed, then they are more likely to stop when that has been achieved. You need to avoid generalities and to stipulate boundaries; not easy, but essential.

The same is also true when choosing the tools or building-blocks of your project. While it might be nice to have use of the most modern versions, or to develop an exact match to your needs; often there is an old/existing version which will serve almost as well (sufficient for the purpose), and the difference is not worth the time you would need to invest in obtaining or developing the new one. Use what is available whenever possible unless the *difference* in the new version is worth the time, money and the initial, teething pains.

A related idea is that you should discourage too much effort on aspects of the project which are idiosyncratic to that one job. In the specification phase, you might try to eliminate these through negotiation with the customer; in the implementation phase you might leave these parts until last. The reason for this advice is that a *general* piece of work can be tailored to many specific instances; thus, if the work is in a general form, you will be able to rapidly re-use it for other projects. On the other hand, if you produce something which is cut to fit exactly one specific case, you may have to repeat the work entirely even though the next project is fairly similar. At the planning phase, a manager should bare in mind the future and the long-term development of the team as well as the requirements of



the current project.

### **Fighting for time**

As a manager, you have to regulate the pressure and work load which is imposed upon your team; you must protect them from the unreasonable demands of the rest of the company. Once you have arrived at what you consider to be a realistic schedule, fight for it. Never let the outside world deflect you from what you know to be practical. If they impose a deadline upon you which is impossible, *clearly* state this and give your reasons. You will need to give some room for compromise, however, since a flat **NO** will be seen as obstructive. Since you want to help the company, you should look for alternative positions.

You could offer a prototype service or product at an earlier date. This might, in some cases, be sufficient for the customer to start the next stage of his/her own project on the understanding that your project would be completed at a later date and the final version would then replace the prototype.

The complexity of the product, or the total number of units, might be reduced. This might, in some cases, be sufficient for the customer's immediate needs. Future enhancements or more units would then be the subject of a subsequent negotiation which, you feel, would be likely to succeed since you will have already demonstrated your ability to deliver on time.

You can show on an alternative schedule that the project could be delivered by the deadline if certain (specified) resources are given to you or if other projects are rescheduled. Thus, you provide a clear picture of the situation and a possible solution; it is up to your manager then how he/she proceeds.

### **Planning for error**

The most common error in planning is to assume that there will be no errors in the implementation: in effect, the schedule is derived on the basis of "if nothing goes wrong, this will take ...". Of course, recognising that errors will occur is the reason for implementing a monitoring strategy on the project. Thus when the inevitable does happen, you can react and adapt the plan to compensate. However, by carefully considering errors in advance you can make changes to the original plan to enhance its tolerance. Quite simply, your planning should include time where you stand back from the design and ask: "*what can go wrong?*"; indeed, this is an excellent way of asking your team for their analysis of your plan.

You can try to predict where the errors will occur. By examining the activities' list you can usually pinpoint some activities which are risky (for instance, those involving new equipment) and those which are quite secure (for instance, those your team has done often before). The risky areas might then be given a less stringent time-scale - actually planning-in time for the mistakes. Another possibility is to apply a different strategy, or more resources, to such activities to minimise the disruption. For instance, you could include training or consultancy for new equipment, or you might parallel the work with the

foundation of a fall-back position.

### **Post-mortem**

At the end of any project, you should allocate time to reviewing the lessons and information on both the work itself and the management of that work: an open meeting, with open discussion, with the whole team and all customers and suppliers. If you think that this might be thought a waste of time by your own manager, think of the effect it will have on future communications with your customers and suppliers.

### **PLANNING FOR THE FUTURE**

With all these considerations in merely the "planning" stage of a project, it is perhaps surprising that projects get done at all. In fact projects do get done, but seldom in the predicted manner and often as much by brute force as by careful planning. The point, however, is that this method is non-optimal. Customers feel let down by late delivery, staff are demotivated by constant pressure for impossible goals, corners get cut which harm your reputation, and each project has to overcome the same problems as the last.

With planning, projects can run on time and interact effectively with both customers and suppliers. Everyone involved understands what is wanted and emerging problems are seen (and dealt with) long before they cause damage. If you want your projects to run this way - then you must invest time in planning.

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