



keynote

Project Planning

A short guide to principles and practice

INTRODUCTION

Plans are needed in any situation where resources are consumed to undertake tasks and create outputs. This keynote provides a short guide to the principles and practice of planning for business or technical programmes, projects and similar packages of work.

WHY PLAN

The main reasons to develop a plan for a project are:

- to inform a decision – whether to approve a project, choose an option, or commit to a contract
- to implement a course of action – to tell those involved who should do what, when, to achieve the desired outcome
- to set and communicate goals – to provide a basis for leadership within the organisation.

Planning is the art of predicting the future. It needs skill, experience and a disciplined approach and yet almost inevitably, the final outcome will deviate from the plan. Mature organisations recognise the need to plan, expect deviations from the plan and learn from the results. Although it is tempting to 'just get started', it is simply more cost effective to plan first rather than find out by doing.

TYPES OF PLAN

Many people assume that a 'plan' means a timetable (Gantt chart) although this is just one type of plan. There are many types of plan each with specific objectives and contents. The table lists the main types of plan and what they contain.

Type	Contents
Activity Plan	What detailed tasks/deliverables are required and the quantities of resource are needed. Usually based on a work breakdown structure
Dependency Plan	The external dependencies for the project and any internal dependencies between work/deliverables. Typically a PERT chart
Timescale Plan	When things will happen in time, usually key milestones supported by high level or detailed Gantt charts
Staffing Plan	What staff are needed to for the whole project , usually numbers (names) of staff, by role/grade, by time period, by source (staff/external).
Facilities Plan	What facilities are needed to carry out the work including accommodation, equipment, plant, tools, materials, training facilities, spares, logistics, supply chain
Project Organisation	How staff will be organised including management structures and duties, roles/job descriptions.
Financial Plan	How much the work will cost, broken down by time period (year/quarter/month) often split into capital and running costs and by cost type. May also show cash flow.
Specialist Plans	Including training plan, communications plan, support plan recruitment plan etc.

The term plan is best used to refer to the 'what, when, and who' of a piece of work so all information of this type can be kept together. Unfortunately 'how' documents are often also called plans (e.g. Quality Plan, Test Plan) which can lead to overlap or duplication of information.

PLANNING THE PLAN

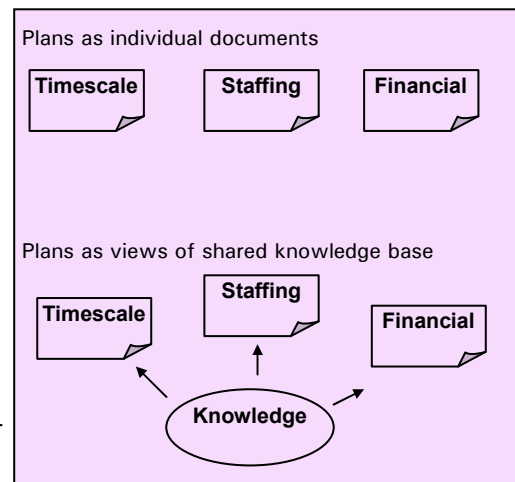
Given the many types of plan and the fact that each can be detailed, high level (i.e. low detail) or somewhere in between, it is essential to be clear what plans are needed before starting to plan.

Define Structure

The simple idea of a plan is a document that presents a particular type of information. Different documents contain different plans (see diagram).

A progression of this is to create detailed information of a particular type, which can be summarised up to present different levels of plan.

A more sophisticated idea of a plan is a core of information, from which different perspectives or types of information are derived. The core links different types of information together so that if, say, the work to be done changes the timescale, resource and cost plans will also change. This core of information may be regarded as the knowledge base for the project and may be shared data sources, or a common database.



At this stage identify the types of plan you need and the relationships between, specifically:

- where you need to keep information consistent between plans
- where you need to summarise up/drill down.

Identify Planning Horizons and Constraints

Before starting to plan, examine the planning objectives/constraints and set a suitable planning horizon. Common scenarios are:

- The total cost of a project is needed to decide if it is worth proceeding - the plan must cover the whole project but can focus on cost related items such as staff and material requirements
- Duration and earliest delivery date is needed - the plan must run at least to the first/main delivery, but focusing on duration drivers such as the length of major tasks, the critical path and external dependencies.
- There is a fixed end date to hit (e.g. to comply with legislation) - the plan must cover the whole project, focusing on duration drivers but including timescale risks and contingencies.
- The project covers several years but funding is approved each year - a medium level plan is needed for this year, with a high level plan for future years
- The project objective is clear; how to achieve it isn't, but you want to get started - create a short term plan which includes production/agreement of longer term plans. Define the structure of the longer term plans through product descriptions.

The Audience

Consider the needs of your audience. Senior managers are often satisfied with a high-level plan (with supporting detail available) but like to examine different options and consider what-ifs. Customers may be interested in what they will get and when, but not the work needed to produce it. Junior staff need a simple plan showing what is expected of them in the next few days or weeks.

DEVELOPING THE PLAN

The Key Steps

The key steps to creating a set of plans for a project or task are set out below. It is assumed that the project objectives, scope and key deliverables have already been defined.

1. Define what work needs to be done and what intermediate deliverables need to be produced.
2. Identify the interdependencies between work/deliverables and any external dependencies; establish the sequence of work.
3. Identify/estimate the labour and materials needed for each item of work/deliverable.
4. Establish the total project resource profile needed and available
5. Allocate resources to work and hence derive task durations and an overall project schedule
6. Allocate costs to resources (labour and materials) to derive a complete project cost.

Expect to keep revisiting step 1 throughout the process as additional work or outputs are identified. Note that step 2 will identify the sequence of work but not the timing (which is usually influenced by resources). Step 3 should also identify key facilities (e.g. a production line) if there are any. The order of 4 and 5 suits most projects but if timescale is the overriding factor then consider swapping them. Step 6 may require quotations/cost negotiations with suppliers.

Iteration and Development

In developing a detailed plan it is best to take a layered approach, making several passes through the key steps. Producing a complete (draft) plan for review at each iteration builds management commitment and flushes out important issues before too much detailed work has been done.

For a sizeable project the first iteration might take tasks down to say 3 months duration, the second iteration to say 1 month and the third to say 1 week duration.

Secondary Elements

As you iterate round the planning layers, work in the secondary tasks and products that are needed to make the core work happen. These include management, administration, training, testing, recruitment, procurement, press relations, communications, planning approvals etc. Some of these will lead into specialist plans but try to keep all data on work, resources and costs all together.

TECHNIQUES & TIPS

Work/Product Breakdown Structure

A work breakdown structure (WBS), or if using Prince, Product Breakdown Structure identifies the work to be done/products to be produced, normally as a hierarchy or tree diagram. Essential elements are

- the name of the task/product
- a description of the task/product
- an identifying reference code.

The WBS can be organised in a number of ways (by output, by discipline, by geographical location) and it is worth choosing this carefully as it will determine much of the future plan structure.

The work breakdown structure is one of the most important elements of planning, and is the main technique for step 1 and step 3.

Dependency Analysis

Begin by identifying dependences external to the project since there is usually less control over these. Then identify internal dependencies beginning with the most rigid (such as laying the foundations before constructing a building). The simplest representation is a diagram which shows tasks/products as boxes and inter-dependencies as lines. Uses include explaining key timescale drivers to senior management and for clarifying interactions with subcontractors.

This is the main technique for step 2, it helps identify missed (and sometime unnecessary) tasks often causing step 1 to be revisited.

Labour and Material Estimates

Estimating for step 3 is the subject of a separate Keynote which describes this in more detail. In order to associate labour with tasks a consistent definition of staff grades/role titles is needed. Some organisations have these as standard, if not then it is worth compiling one. Avoid overcomplicating this - if cost forecasting is the aim 3 or 4 cost bands is often sufficient.

Step 3 also involves material estimates to create what some call a Bill of Materials (BoM). There are advantages to matching the structure of the bill of materials to the WBS; otherwise engineering staff will usually create a BoM structure which does not map the WBS.

Costing & Budgeting

Ensure you involve your organisation's finance team in this at an early stage, if only to agree costing conventions. Areas to consider include the treatment of VAT and other taxes/duties, capital versus running costs, overheads, contingencies, inflation, currency conversion, interest rates, insurance and guarantees.

ESSENTIAL CHECKS

A comprehensive planning checklist runs to many pages but there are some key questions to be asked regularly throughout the planning process:

- Is all the work that needs doing in the WBS and translated into a task?
- Are there tasks to produce all the agreed customer deliverables?
- Are there tasks to produce all the internal deliverables and are these defined?
- Are all internal deliverables needed (i.e. do they feed into a subsequent task)?
- Are all the external inputs (particularly from customers and suppliers) defined and do they feed into tasks?
- Is every task resourced?
- Is the resource profile practical (i.e. smooth without sudden peaks/troughs)?
- Are internal hard dependencies captured and honoured?
- Is labour, material and timescale contingency included?
- Are all risk prevention actions in the plan?
- Have risk fallback actions and hence costs been factored into the budget?
- Is the plan developed to most detail in the areas which are innovative or unfamiliar?

PLANNING TOOLS

In choosing tools, the choice is between generic tools which people are familiar with, so they can easily contribute to planning and understand the outputs, and specialist tools which are more powerful but require more specialist knowledge. A good principle is to use the simplest tools until they run out of capability, then move up.

Be aware that planning tools capture your knowledge, they do not do the thinking and analysis for you!

Generic Tools

Word processing/presentation tools (Word/PowerPoint) remain the mainstay of management level communications - you must be able to present key planning information in this format.

Spreadsheets skills are widely available; spreadsheets are the quickest, most productive way of creating numeric plans such as resource and cost estimates. As the project becomes larger they become hard to manage with problems of proliferation, integration, systematic errors and lack of documentation.

Drawing tools (e.g. Visio) are less commonly used though generally available. They are good for drawing organisation charts, WBS and dependency charts.

Microsoft Project is so widely encountered it can almost be classed as generic. It is good for timescale planning and has many more sophisticated facilities but these have a significant learning curve. Inexperienced staff often find it difficult and frustrating to use. Unlike a spreadsheet it is not formula based so development and revision is labour intensive.

Specialist Tools

There are many specialist tools available in the marketplace, but their use should be approached with care. Advantages include: automating routine and error prone tasks, integrating data and managing it as one set, facilitating distributed working, creating a wide range of standard outputs together with flexible ad hoc reporting.

They have significant disadvantages, depending on complexity: they need specialist expertise (and hence specialist staff) to operate, they can be complex and inflexible, they inhibit communication and sharing and their purchase and operating costs need to be considered.

COMMUNICATING AND AGREEING THE PLANS

Plans are of no value if they are not understood so communicating plans effectively is vital. Plans have a very high density of information - asking someone to read a plan is like asking them to read a road atlas. In communicating a plan therefore you need to explain:

- the purpose of this specific plan
- the methodology used to produce it
- the structure and contents
- any presentation conventions and symbols
- any important assumptions
- any known planning problems/issues
- the conclusions and the implications of approval.

MORE INFORMATION

For more information on the techniques described in this note please contact:

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