

## Chapter one

It is hard to define what the definition of a project really is. A common definition is that a project is a task that has a beginning and an end. The problem with this is that some projects get redundant.

- a) A health manager who does inspections defines each inspection, which may last for a couple of hours, as a project. In this case the task is rather a combination of operation and general management than project management.
- b) A ship procurement for the UK Military takes 60 years, if you count the entire life-cycle from designing the ship, building it, trials, maintenance and disposal. This is rather a series of projects which need their own management.

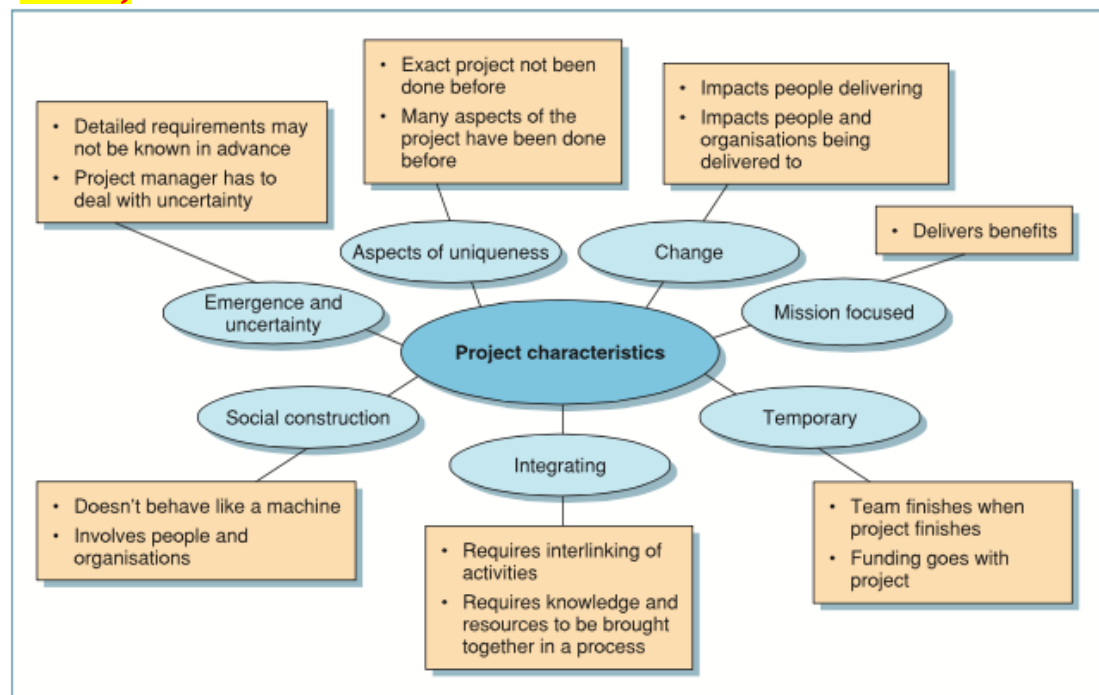
Hence there are three common themes that define a project:

- 1) **Unique** – This exact project has not been performed before.
- 2) **Temporary** – The project has a beginning and an end and requires a group of people to carry out the task (a temporary organization). The financial resources are usually finite.
- 3) **Focused** – A project has a specific mission, for instance to deliver a particular product, service or result. However this may not be clear in the beginning of the project but definitely by the end.

In PRINCE 2, which is a project management methodology, a project also needs a business case. People argue that this is sometime redundant, for instance during the tsunami in Asia where it is of bigger interest to start helping people right away than doing a business case. Instead it is more relevant to say that projects need to deliver benefits.

Further characteristics of projects are described briefly in the figure below.

\*LÄRDEJ\* MACSITE



**Emergence** – The high level benefits that the tsunami project was undertaking were known, to save lives. But the exact objectives and means to achieve them could be determined only once a certain amount of work had been done. It is a fact that many projects start with a limited or high-level view of what will constitute their performance measures and it is quite normal for such criteria to evolve as the project progresses.

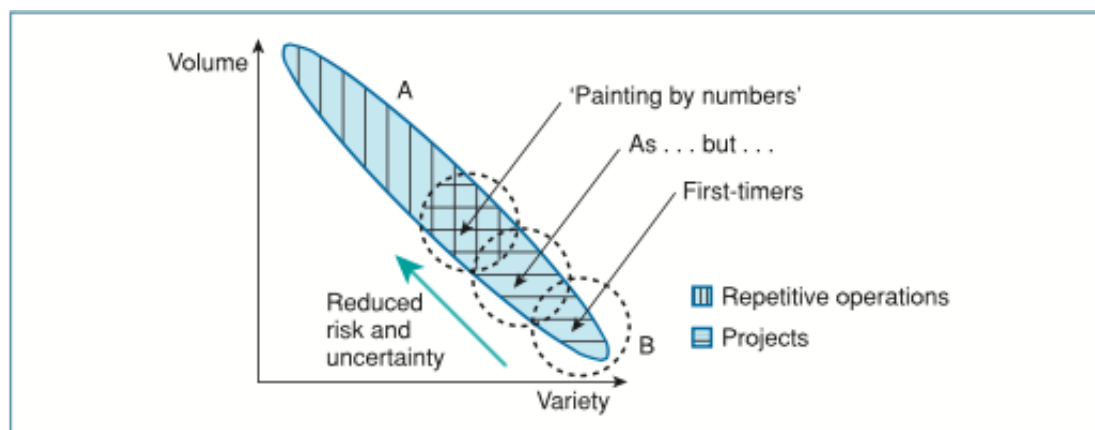
**Uncertainty** – The future can not be predicted nor the response to activities in a project. We may not know how much time tasks will take for instance. This leaves a challenge to the project manager: how they work with such uncertainties.

**Change** – All project need to somehow indicate or affect change to the organization.

**Social construction** – We say that unlike a machine that is real and tangible, a project is a social construction since it is run by people. Treating a procejt as a mechanical system that responds easily to changes is inapriopirate.

**Integrated** – When the Chip and Pin solutions was released the technological solution was only one part of the execution. It also needed training for shop staff, and marketing.

All of the above describes how to determine **what a project is**. But to classify the project processes considers volume and variety.

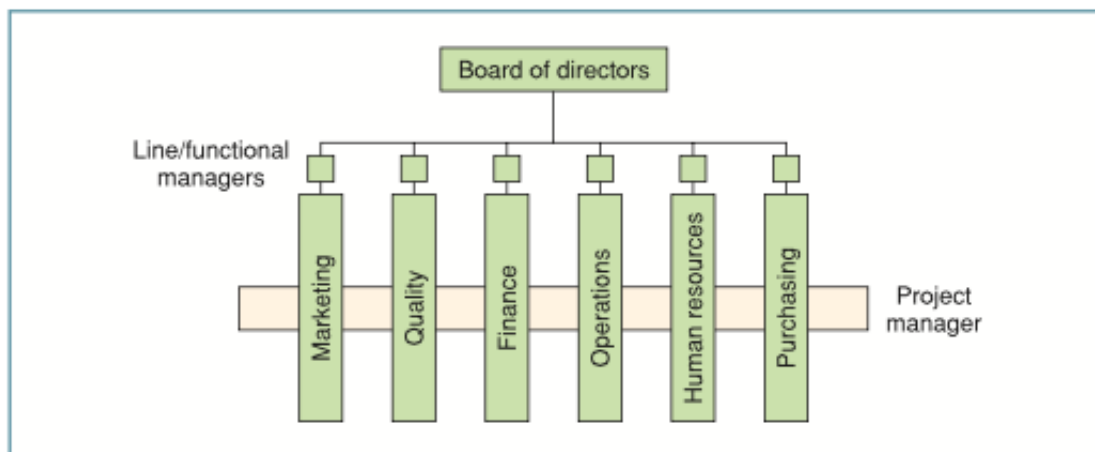


The most common and traditional project management area is the First-timers, which truly is unique. Examples of these projects are the moon landing or the first computer. The two following scenarios have some similarity to previous work. "As...but..." refers to *as* the job was done last time, *but* with the following differences. The last scenario is the Painting by numbers projects. The processes and the outcome are well known and the team has the task of following the path to the required outcome. Building a McDonald's restaurant is a typical example of a "painting by numbers" project. In UK there was a restaurant that from scratch took 48 hours to be a up and running McDonald's. This usually takes months to finish. How come McDonald's is so quick? Recognizing that this was likely a project that was repeated meant that that it was worth the companies investing in finding ways to improve the process. So, instead of trying to build a unique store on each site, modular manufacturing took place which increased building efficiency remarkably. The more like repetitive operations a project is the less risk and uncertainty.

For many years a project manager was seen as an accidental profession.

**Project based organization:** Where most revenues come from projects, e.g. contractors

When the iPod was launched the development was managed through a **programme** of projects, which means a coordinated set of projects with a common goal. These included develop the hardware, the software, establishing iTunes, production and the marketing. These are in their essence different projects and require widely different expertise.



These projects regard medium complexity. The project manager's role differs from that of the line manager in the nature of the task being carried out. Today many managers have both project management and line management responsibility and the time split between the two is usually 50/50.

General management	Project management
<ul style="list-style-type: none"> <li>• Responsible for managing the status quo</li> <li>• Authority defined by management structure</li> <li>• Consistent set of tasks</li> <li>• Responsibility limited to their own function</li> <li>• Works in 'permanent' organisational structures</li> <li>• Tasks described as 'maintenance'</li> <li>• Main task is optimisation</li> <li>• Success determined by achievement of interim targets</li> <li>• Limited set of variables</li> </ul>	<ul style="list-style-type: none"> <li>• Responsible for overseeing change</li> <li>• Lines of authority 'fuzzy'</li> <li>• Ever-changing set of tasks</li> <li>• Responsibility for cross-functional activities</li> <li>• Operates within structures which exist for the life of the project</li> <li>• Predominantly concerned with innovation</li> <li>• Main task is the resolution of conflict</li> <li>• Success determined by achievement of stated end-goals</li> <li>• Contains intrinsic uncertainties</li> </ul>

There are many areas where project management proves to be a huge challenge for individuals and organizations:

**'Ready, fire, aim'** – A project is started with no clear objectives. The motto is *'shoot first – whatever you hit, call that a target.'*

**'It's all in my head'** – The project manager only has the information in their head. If the project is very small this might not be an issue but as the project grows bigger this becomes an issue.

**'We work in a nanosecond environment, we don't have time'** –

**'Project management – we have a procedure for that'** –

**'It's all just common sense, isn't it?'**

**'I've got the badge, therefore I am the PM'** –

**'We've done this lots of times before. It never worked, why should it this time?'** –

**'It won't work here!'** -

## Chapter two

The globalization affects the project and project teams. For instance when launching the new Mazda MX5, Different parts in the launching took place in different parts of the world, for instance financing from New York, assembling was done in Mexico with parts that came from Japan. This has opened up new aspects of complexity in projects:

- a) Generally the simplest ideas have been exploited first hence it is getting more difficult to be innovative
- b) Business are becoming more complex and it is less likely for a company to provide a commodity, product or service but rather a 'package' that meets an entire need and not just part of a need.

These changes of the environment have changed how organizations manage projects. Some of the major changes are:

- Time has become a major source of advantage
- The speed at changes are occurring is increasing
- Since customer expectations are increasing organizations focus on exceeding customers rather than just meeting the expectations
- More partnerships between companies
- The service sector is growing

The environment in which projects operate are summarised by the 5 Cs:

- Context – external general influences on the organisation in which the project is taking place
- Complexity – level of difficulty or complication of a piece of work called 'a project'
- Completeness – how much of the end requirement a project will deliver
- Competitiveness – how many other organisations will be competing to deliver that work
- Customer focus – the expectation that customers will have their needs met by the project



The context can be described with PESTEL:

- **Political influence** – For instance change of party in power which may lead to what the party does or do not fund
- **Economic influence** – For example during an economic 'boom' it may be hard to recruit staff or obtain contractors.
- **Social influence** – the influence of social changes on the project environment for instance on methods of communication
- **Technical influence** – Changes in technology will challenge the viability of some projects and create the need for others, in addition to determining the way in which those projects are delivered
- **Environmental influence** – Many projects are now part of an emerging interest in corporate social responsibility
- **Legal influence** – For instance regulations affecting property

When it comes to describing the project the 7 S seems to be very useful and it is originally developed by McKinsey & Co. It stated that every successful project needs a successful strategy.

- *Strategy* is not a statement but a process. It involves high level consideration of objectives. It is supposed to be used as a guideline to the other tasks in the project.
- *Structure* is the arrangement of human resources on how to set up the team. For instance; will the PM work full-time or not? Will consultants be used if needed?
- *Systems* are 'the way we work'. Formal and informal systems need to be developed on how to perform key tasks as well as having a plan how to act under certain circumstances.
- *Staff* need to be selected and managed. How they respond will have a large impact. Their *skills* is also important
- *Style/culture* The style of leadership adopted
- *Stakeholders* Individuals or groups that have an interest in the project outcome

Element	Description
Strategy	The high-level requirements of the project and the means to achieve them
Structure	The organisational arrangement that will be used to carry out the project
Systems	The methods for work to be designed, monitored and controlled
Staff	The selection, recruitment, management and leadership of those working on the project
Skills	The managerial and technical tools available to the project manager and the staff, and how these are developed
Style/culture	The underlying way of working and inter-relating within the work team or organisation
Stakeholders	Individuals and groups with an interest in the project process or outcome

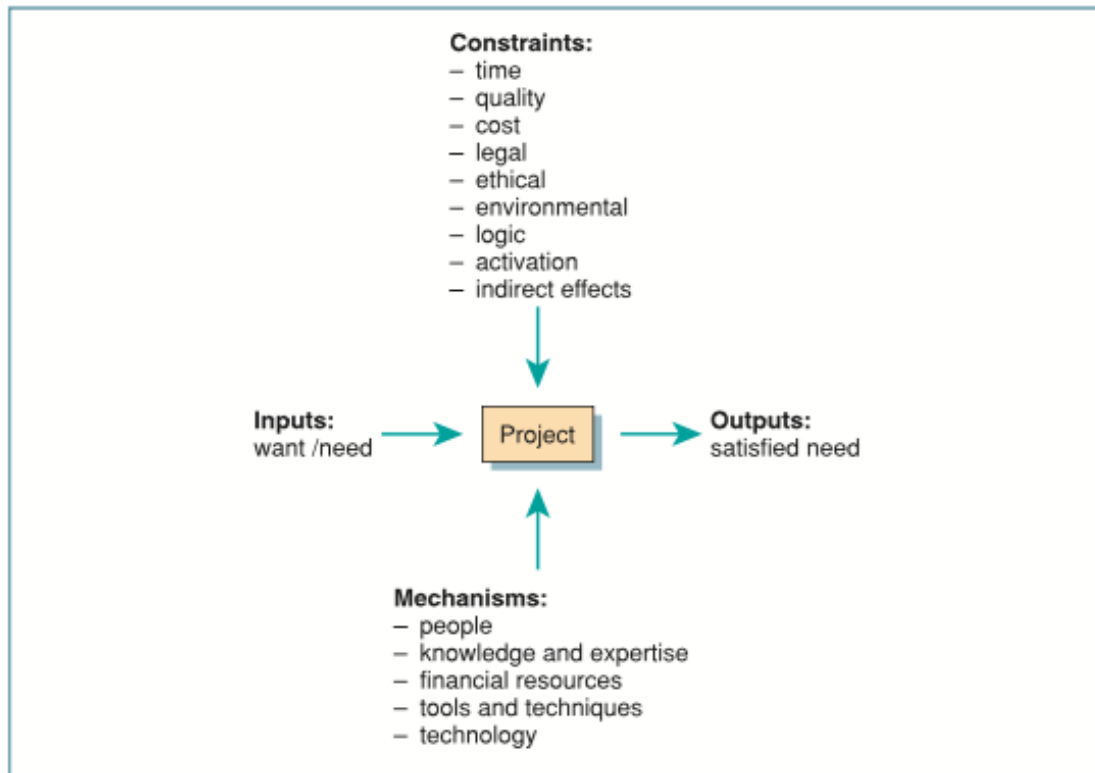
Another popular model for any operating system is the ICOM model, or input-output model.

*Inputs* define the need of the product, for instance what it is and what benefits it got.

*Constraints*, the three main ones are cost, time and quality. But there may also be other ones, such as legal (a building need a permission), ethical or environmental.

*Outputs* can vary but may be specifications for a new product, a tangible product e.g. a building, or changed people via a training program.

*Mechanics* are the means by which the output is achieved. This can be defined by the people involved in the project or what knowledge or expertise that will be needed. It can also be financial resources and other tools.



An application of the **hedgehog syndrome**: Two parties have a dispute over a new facility being built which leads to court. Seven years later a very similar facility are to be built and the same dispute takes place again. So why did the companies not learn from the previous expensive lessons? Two reasons for this.

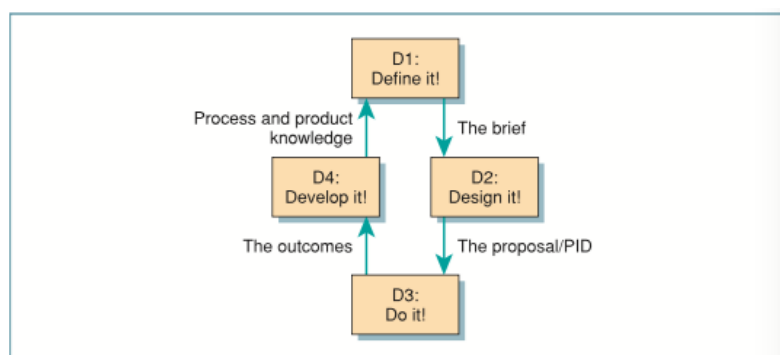
- 1) The party that got the largest interest in this are the lawyers
- 2) This is common in organizations with a large proportion of contract staff that leave once the project is completed.

### **DONT LEARN BY MISTAKES**

This comes from hedgehogs crossing the streets and being killed over and over again. The same goes for projects; unless there is an opportunity to develop the project processes and provide the feedback to the organization the knowledge will be lost.

There are companies, for instance Hewlett-Packard that use previous projects as a starting point for new projects so that they have good and bad lessons in mind. In order to do so the project process is seen in four phases.

### **Typical lifecycle of a project:**





The 4D structure is as follows:

- **Define the project** – this is the time when it is determined what the project is about, its reasons for existence and the intentions that it intends to progress. It is a time to explore the possibilities, find alternatives to the problems presented.
- **Design the project process** – construct models to show how the needs will be developed, evaluate these to determine the optimum process for the task and minimize risk.
- **Do It! or Deliver the project** – carry out the project in line with the models or plans generated above.
- **Develop the process** – improve the products and processes in the light of the experience gained from the project.

Phase	Key issues	Fundamental questions
Define the project	Project and organisational strategy, goal definition	What is to be done? Why is it to be done?
Design the project process	Modelling and planning, estimating, resource analysis, conflict resolution and justification	How will it be done? Who will be involved in each part? When can it start and finish?
Deliver the project (Do it!)	Organisation, control, leadership, decision-making and problem-solving	How should the project be managed on a day-to-day basis?
Develop the process	Assessment of process and outcomes of the project, evaluation, changes for the future	How can the process be continually improved?

This system is rather complex and puts a pressure on the PM to be knowledgeable in all phases of the project. There are a number of tasks and issues to be addressed in each phase and the goal is that all phases needs to have the same level of expertise rather than one stage has more in order to work at its best. The most time is usually spent in the doing-phase. The develop it the process part is very crucial and is when the team has time to conclude the good and bad lessons from the project. A problem with this system is that the PM usually is not in the project in the early stages, he/she is given a brief.

Stage in project lifecycle	Activity	Description
Define the project	Conceptualisation Analysis	Generate explicit statement of needs Identify what has to be provided to meet those needs – is it likely to be feasible?
Design the project process	Proposal Justification Agreement	Show how those needs will be met through the project activities Prepare and evaluate financial costs and benefits from the project Point at which go-ahead is agreed by project sponsor
Deliver the project (do it!)	Start-up Execution Completion Handover	Gather resources, assemble project teams Carry out defined activities Time/money constraint reached or activity series completed Output of project passed to client/user
Develop the process	Review Feedback	Identify the outcomes for all stakeholders Put in place improvements to procedures, fill gaps in knowledge, document lessons for the future



In project terms the project is over as the equipment goes into service. The development of the product or service is another project. With this said is that the lifecycle of a project differs from the lifecycle of a product.

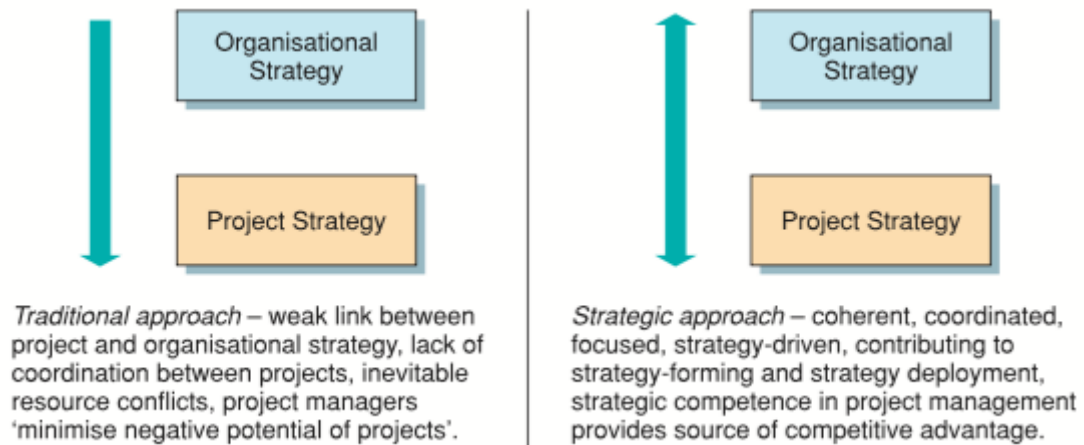
The MODeST framework describes what issues may occur.

<i>Element of complexity</i>	<i>Examples of issues that make management complex</i>
<b>Mission</b>	Lack of clarity of requirements Large scale, high value, high importance, high urgency Large number of constraints – legal, health and safety, security High level of interaction and interdependency with other projects High level of uncertainty – novelty, implications and side effects
<b>Organisation</b>	Multiple time zones project team members operating in Lack of collocation of project team Linguistic differences between team members Lack of appropriate organisational structure used in the project High level of change that the project produces in the organisation
<b>Delivery</b>	Lack of common or appropriate project management method Inappropriate human, financial or other resources Problematic communications in the project team Lack of clear or timely decision-making Lack of flexibility for the project manager to respond to changes
<b>Stakeholders</b>	Large number of stakeholders with differing requirements Lack of commitment to the project by key stakeholders Interference in the project by key stakeholders Lack of relationships with key stakeholders Problematic inter-relations between stakeholders
<b>Team</b>	Lack of leadership shown by project manager Cultural and other differences between team members Low level of motivation of team Lack of project, technical and business experience in the team Lack of appropriate training for team members

Mindre viktig eftersom det är ett exempel i boken

### Chapter three

The organization that attempts a narrow mission will outperform one that attempts a wider mission. The mission and vision statements are often clichéd, but none the less a good guide to the strategy process of the organization. Earlier strategy usually was created top-down but now days management tend to use the sub managers opinions on the matter.



When using the traditional approach project managers are often forced into a mode of 'just don't mess up' leaving little effect in creating competitive advantage through projects. The strategic approach has a strong link between strategy work and activity at project level. Strategy is still formulated at senior management level but with the input from all levels of the organization.

Setting the vision determines where the organization is heading. The next step in the strategy process is organizational strategy, which essentially is the route to get to the vision target. This is known as strategy deployment which concerns setting the ideas into reality. In addition to this environment is used, for instance SWOT. All the methods content a plan, pattern or behavior strategy helping how to reach the vision.

Deploying strategy results in two key things- the way products or services looks today and how it will look tomorrow.

How the vision helps to plan projects is that the strategic input says that the focus of the company is. For instance we want to be the fastest OR the cheapest OR the best which may help prioritizing in projects (usually goes hand in hand with time-cost-quality triangle). Master of this is Toyota Motor Company where projects must demonstrate contribution to QCD – Quality, Cost or Delivery performance. Features of its process makes the strategy visible for the entire organization (with highly visible measures) making all of it responsible. Also the objectives are based on customer needs so that the customer focused nature remains in the organization.

The definition of project strategy the book uses is: "Positions, means and guidelines of what to do and how to do it to achieve the highest competitive advantage and the best value from a project". This focused more on the benefits and value of the project than the mechanics behind it.

**Portfolio management** – Is the amount that an organization will choose the activities it undertakes such that it will gain maximum benefit from its investment in those activities.

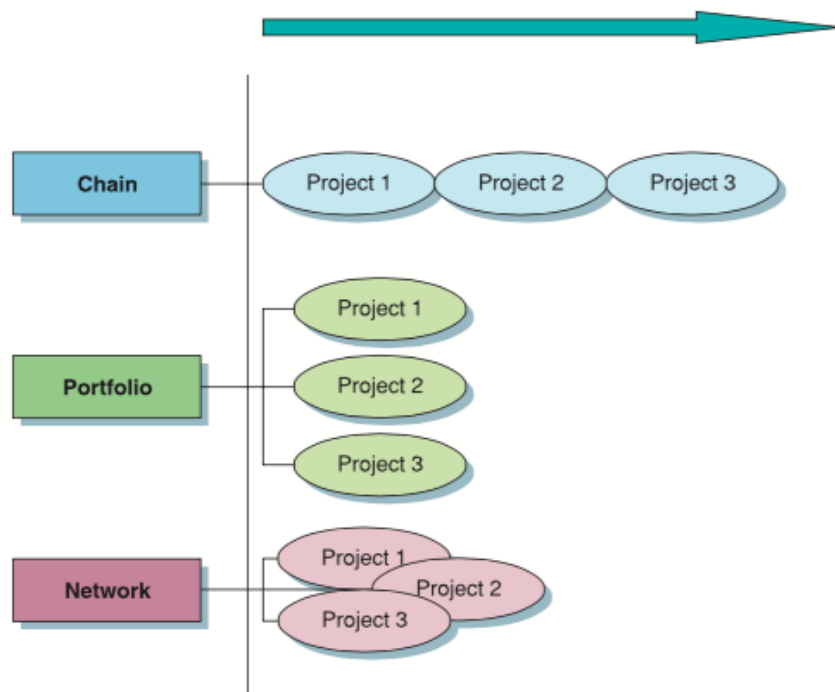
Companies often have a fairly good overview of the repetitive work load but not on project work load. **An aggregate resource** plan helps with mapping the undertaken projects and also in what order projects should be done. For instance if a consultancy firm want to increase the amount of projects they can take, do they need to employ

more people or should it be enough with the current capacity. When management then does is that it calculates what the total number of projects should be and pinpoint where the bottleneck is, where they put their effort in employing more people. **Ensure personnel don't overload, sanity check**

It is very important to keep track of work overload. When a project is planned there are uncertainties for instance with how much time the processes will take. What often happens is that the PM wants the employees to squeeze as much work in on short period of time. This often leads to the project taking longer than expected, leaving employees with a backlog. Try to keep track of amount of work put in projects.

**EPM (Enterprise programme/Project Management)** is defined as the capability to lead and manage resources, knowledge and skills in the effective deployment of multiple projects designed collectively to deliver enhanced value. Smaller firms can keep track of their projects in an Excel-sheet while bigger firms need company wide software (SAP, Microsoft Project) to keep track of the projects and plan accordingly.

The definition of a **programme** is an organisational framework for grouping existing or defining new projects and for focusing all the activities required to achieve a set of major benefits. These projects are managed in a coordinated way, either to achieve a common goal or to extract benefits which would otherwise not be realised if they were managed independently. In many organisations programmes are just referred to as large projects.

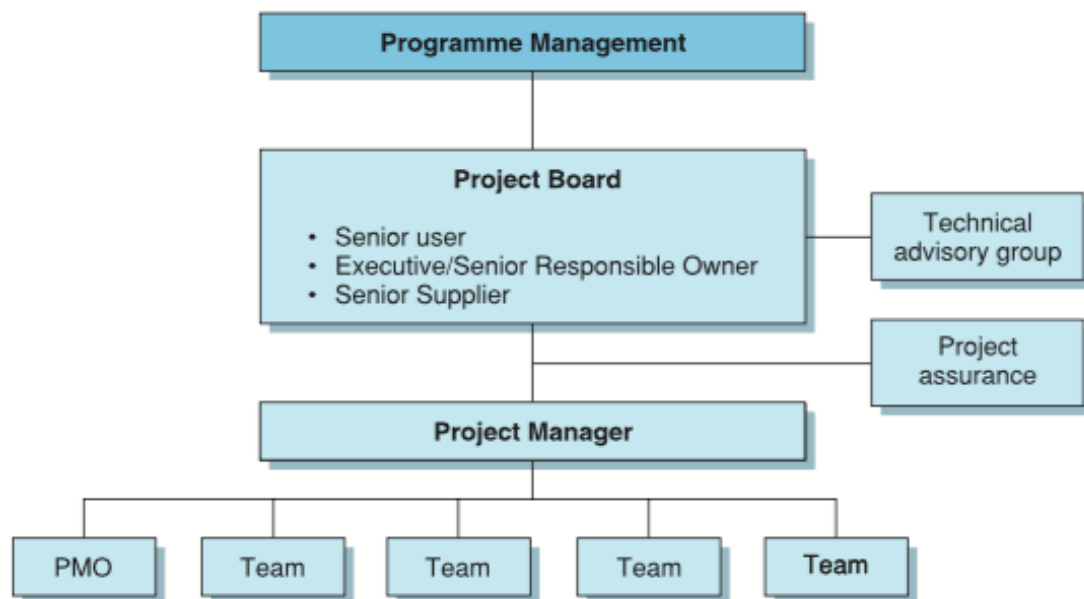


Most companies use a combination of the programmes described above. To decide which programme to go for a strategy matrix can be looked at, to see what projects objectives correlates so it can be seen if there are 'economies of scale' in the projects. Also potential negative effects can be removed.

Programme and portfolio management provide mechanisms by which organisations

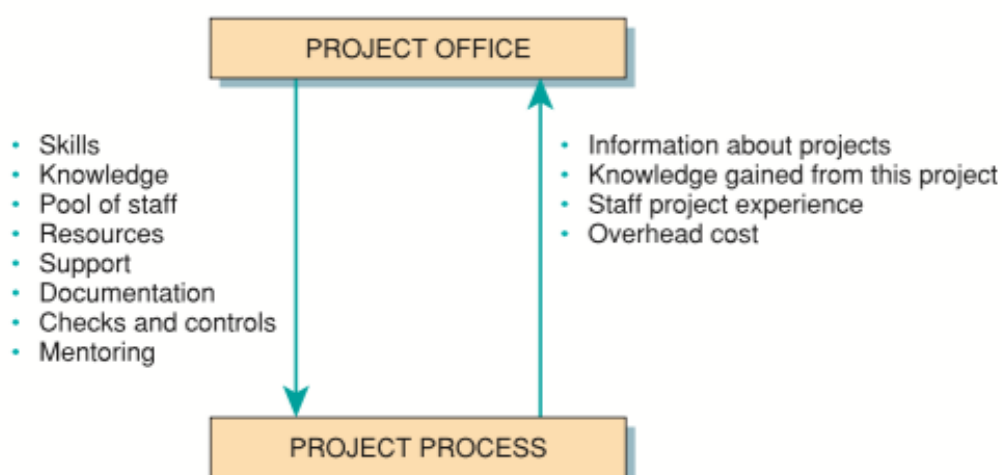
can reconcile the demands and the capacity to deliver these demands.

There are different roles in attempting to facilitate the management of projects, which is called project governance.



This is a typical project **governance structure**. The project board is the group that has interest in the outcome of the project and have high level input. A **Technical advisory** group may be added if there is a hard technical problem.

In many organizations a Project Management Office (PMO) is for use in projects. They are a sort of mentoring office for projects. This used to be something larger firms had but now days smaller firms do as well. The extra overhead cost is covered by the extra success rate.



<i>Category</i>	<i>Role</i>
1 Monitoring and control of project performance	Report status to upper management Monitor and control project performance Implement and operate a project information system Develop and maintain a project scoreboard
2 Development of project management capabilities and methodologies	Develop and implement a standard methodology Develop competency of personnel, including training Promote project management within organisation Provide mentoring for project managers Provide a set of tools without an effort to standardise
3 Multi-project management	Coordinate between projects Manage one or more portfolios Identify, select and prioritise new projects Manage one or more programmes Allocate resources between projects
4 Strategic management	Provide advice to senior management Participate in strategic planning Manage benefits Conduct networking and environmental scanning
5 Organisational learning	Monitor and control performance of PMO Manage archives of project documentation Conduct project audits Conduct post-project reviews Implement and manage database of lessons learned Implement and manage risk database

## Chapter four

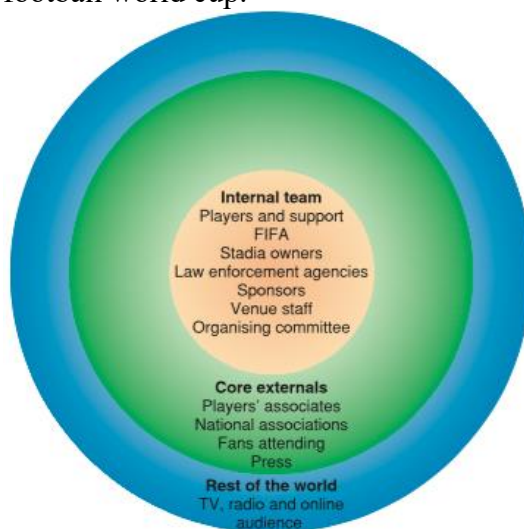
In every project there are various stakeholders and it is impossible to meet everyone's requirements. The PM's role is to minimize the level of unhappiness over all the stakeholders.

Another view is that projects are about delivering a value rather than a product. Hence the goal is to maximize the overall value of the project.

Item	Definition	Examples
Stakeholders	Any individual or group with an interest in the project process or outcome	The project customers, the delivery team, the end beneficiaries of the project, anyone affected by the outcome, proponents and opponents of any change
Requirements	What each individual or group wants from the process or outcome	Defined requirements in the form of a specification or contract, implicit requirements (I want this project to be a good place to work), or legal/ethical/moral/commercial/competitive requirements
Measures	The means by which it will be determined during and post project whether those requirements have been met	Level of compliance to specification, customer satisfaction, level of return on investment, staff retention levels

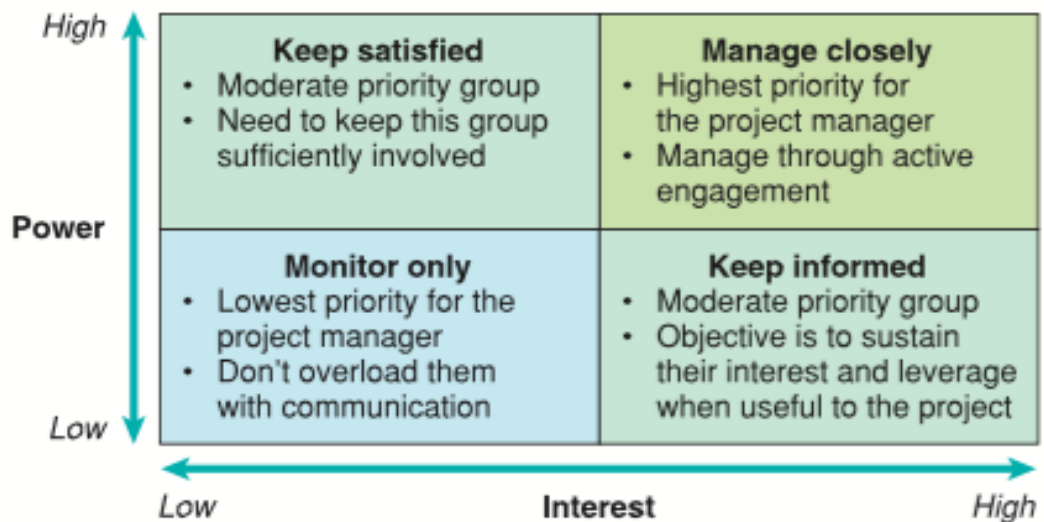
There are three major questions to be answered by the project manager to identify the value and importance of each stakeholder a.k.a. the requirements: cant satisfy all...

- a) **Who are they?** Important to identify what groups of stakeholders there are and to classify their importance. In the chart below is the stakeholders of the football world cup.



- b) **What do they want?** This can for instance be goals for the project, such as 'develop this as soon as possible' or 'this project needs to remain secret'. These can be split into measures (input, process or outcome) Input: 'This product must be done as soon as possible'. Process: 'We want this to stay out of news'. Outcome: 'I want this to be seen as success years to come'.
- c) **What influence is this going to have on the project outcome?** Consider the power or influence of a stakeholder and the interest or impact if the project on that stakeholder. Power can be direct authority or having an important relationship with the team (sponsor). The stakeholder map roughly guides how to manage particular groups.





The most basic requirements regard TCQ (Time-Cost-Quality) which are easy measures. These measures can be further split into process, short-term outcome and long-term outcome measures. Below is the New Product Development (NPD) metric.

Type of measure	Characteristic measured
Process measures	Product development cost, time and conformance to quality procedures
Short-term outcome measures	Product performance level, desirability to market, flexibility of design to be changed to meet emergent customer needs
Longer-term outcome measures	Payback period, customer satisfaction, percentage of business being generated by the new product, market share, customisability for high-margin markets

This is all the conventional approach. The participatory monitoring and evaluation (PM&E) is a shared ownership of the project planning process to a wider range of relevant and often qualitative indicators. LÄS DETTA I BOKEN

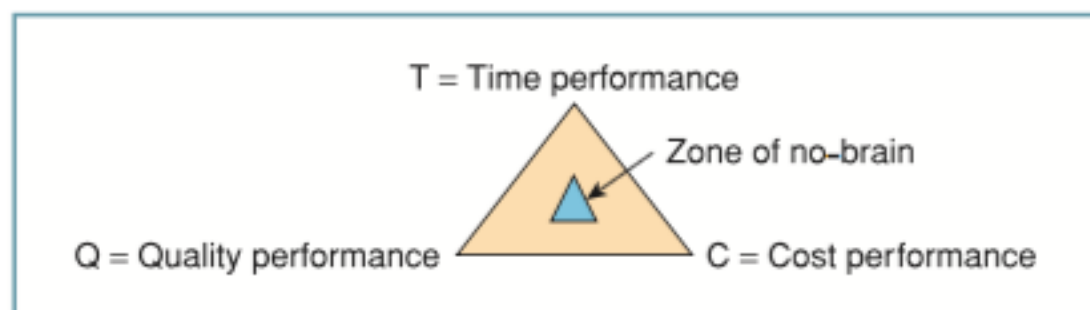
**Table 4.4** Conventional versus participatory project monitoring and evaluation

	Conventional M&E	Participatory M&E
Who plans and manages the process:	Project managers	Local people, project staff, managers and other stakeholders, often helped by a facilitator
Role of 'primary stakeholders' (the intended beneficiaries):	Provide information only	Design and adapt the methodology, collect and analyse data, share findings and link them to action
How success is measured:	Externally defined, mainly quantitative indicators	Internally defined indicators, including more qualitative judgements
Approach:	Predetermined	Adaptive



There is a timing issue for the project manager as he or she is judged on the measures during the project. Sometimes it just takes longer than expected to achieve the goals. For instance if a tunnel runs over budget but it generates way more profits since it is used more than expected or the Apollo which took longer time than expected but it went and explored space. These are examples of failures, but the long-term goals for the stakeholders are still successes. Hence it is hard how to measure a project's success.

To understand what the most important measures are of the TCQ, first understand the tradeoffs between them. An example is if your team is about to do a market survey in a short period of time. The quality is dependent on the time spent and if you put in more resources the cost will go up. This illustrates the trade-offs between the three. Titanic prioritized the time on the cost of quality. However the requirements usually change over time. This comes with a 'project flexibility cost' if the measures ought to be changed.



There can also be dual requirements but if there are all three the project stays in the middle, in the zone of no-brain. The PM uses different mechanics to assure conformance of the objectives and the ones that ensure performance. For instance if low-cost suppliers are used the PM ensures the project runs at minimum cost (performance). Whether it is in fact deliverable is determined by actions of that manager to secure guarantees that the price (cost) will be achieved in practice (conformance).

	<i>Time</i>	<i>Cost</i>	<i>Quality</i>
<b>Performance</b>	Shortest possible	Cheapest possible	Highest level
<b>Conformance</b>	As planned	As budgeted	As specified

If the organizational objective is to be the fastest then this is a performance objective while cost and quality criteria are conformance objectives. As a minimum we must hit our conformance objectives.

To determine what projects that should be proceeded with payback time or return on investment can be used but they are rarely enough. That is why in combination with this most companies use a balanced scorecard to determine the nature of the ROI, which is the value proposition of the project. The balanced scorecard covers four perspectives:

- 1) **Shareholders** – what are the intended financial benefits in the short, medium or long term of the projects?

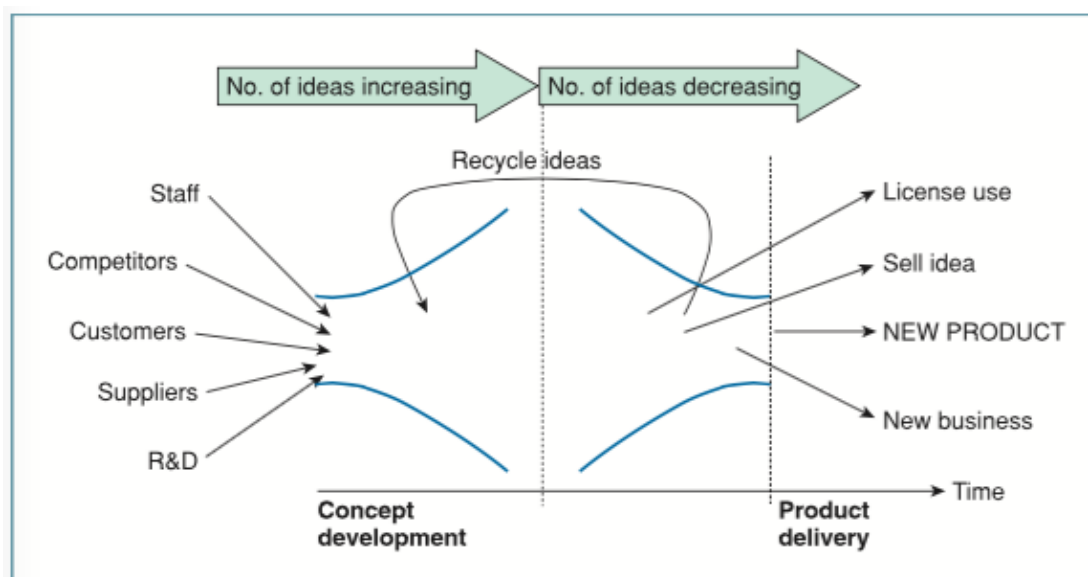
- 2) **Customers and suppliers** – what are the benefits that they will receive from the project, direct benefit or simply goodwill?
- 3) **Internally** – how will the project improve our **business process**?
- 4) **Innovation and learning** – how much will we learn from the project? (*this one is important and often missed*)

Project managers struggle with determining intangible benefits. To deal with these Maylor suggest three things:

- **Carrying out a pilot study** to determine on a small scale the costs and benefits
- **Benchmarking and reference sites** – other organizations may have done similar projects
- **Modeling** – build a simulation and use its data

### Chapter five (This is the first D in the 4D method: Define it)

Typically every project are characterized by order and chaos. Ideally the chaos comes first followed by the order or system a well-developed process can bring. When for instance a New Product development project takes place it often starts out with many ideas which later are narrowed down.

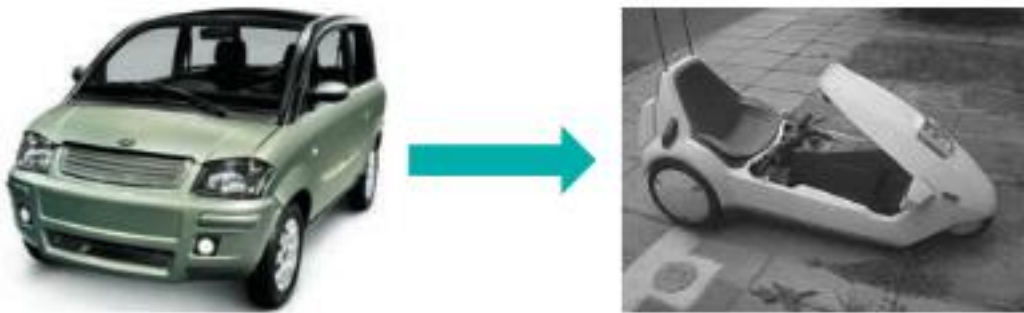


This process is developed through the stage-gate-process.

Organizations often kill the innovation of products through a hard process to share the ideas. The characteristics of highly creative processes for concept development;

- a) Allow time and space for individuals to carry out the exploration. 3M for instance allow 15% of the employees time just coming up with ideas which has lead to a stream of new products.
- b) Protect ownership of ideas. If people feel that their ideas are taken their incentive to share diminishes.
- c) Have senior level people who acts like project **champions** to help to sell in the ideas.

Scope creep is the concept of purpose of a project changes in many subsequent occasions until it no longer resembled the original concept. This could be avoided if all parties agree before the project starts what the end product should be.

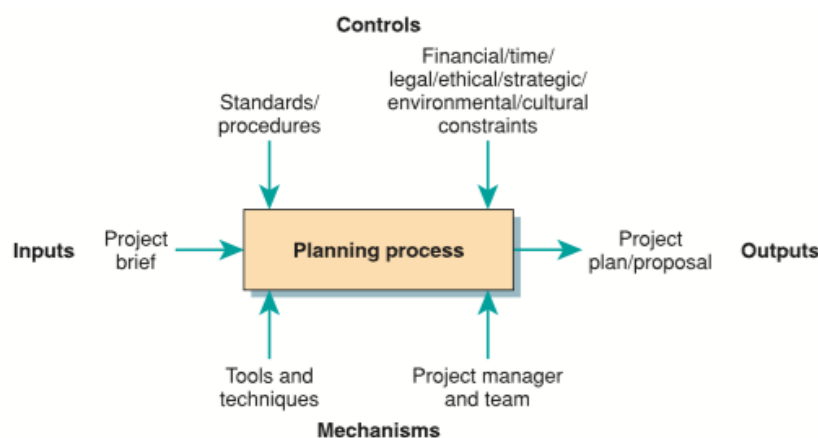


This scope management usually consists of initiation, which covers how the product fits in the company's strategy. The next step is to generate a scope plan, which includes a work break down structure. This helps to pinpoint what is included and excluded from the project. The last crucial part is to get acceptance of the scope.

The planning for the project can be costly, in the means of labor time, travel, tools or basic reports. This work will hopefully avoiding the costs of chaos later on for instance if problems come up during the process that changes the scope. A plan is a prediction of a future state, which is uncertain. Hence the plan will change.

Projects plan can deal with uncertainties in three ways:

- 1) **Claim we know everything** – This works well at the painting by numbers projects and means that the plan goes into detail throughout the project. A problem with this is that there could be an optimist bias
- 2) **Acknowledge we know nothing** – this approach often results in wishful thinking. **just set up some basic milestones and hope for the best**
- 3) **Rolling-wave planning** – The level of detail increases as the milestones are approaching. Many say that it leads to imprecision in planning and poor delivery again key objectives.

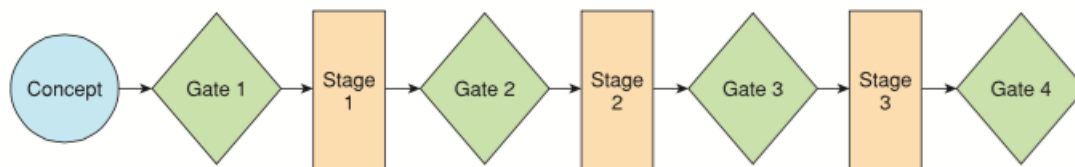


Benefits of using a systematic planning approach:

- Breaking down complex activities to manageable chunks
- Determining logical sequences of activities
- Providing a logical basis for making the decisions

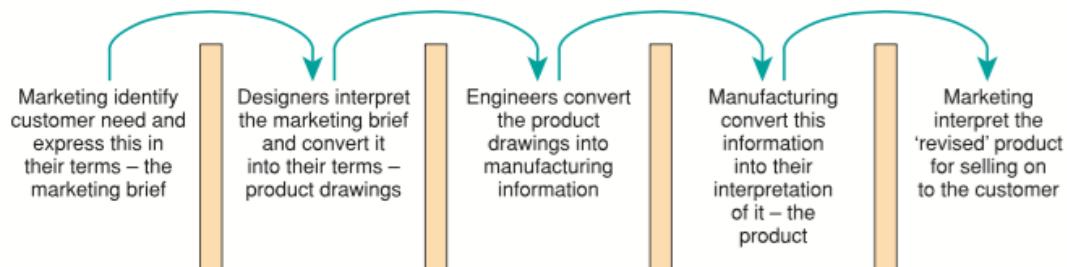
Projects for external clients often involve that the customer provides a brief and the project manager replies with a proposal or project initiation document (PID). in process terms, the PID is the output in the overview planning process. In this is often stated the project team structure, project approach, project plan, risk log and a communication plan. The PID captures the requirements of a project. The level of formalization differs between organizations, since some claim that it is just bureaucracy which is costly and time consuming.

To use checkpoints or gates between the phases provides a good opportunity to review progress and you do not have to wait until the budget or time allowance expired to find out that there is a problem. The criteria for passing a gate must be determined on the forehand. **STAGE GATE MODEL**



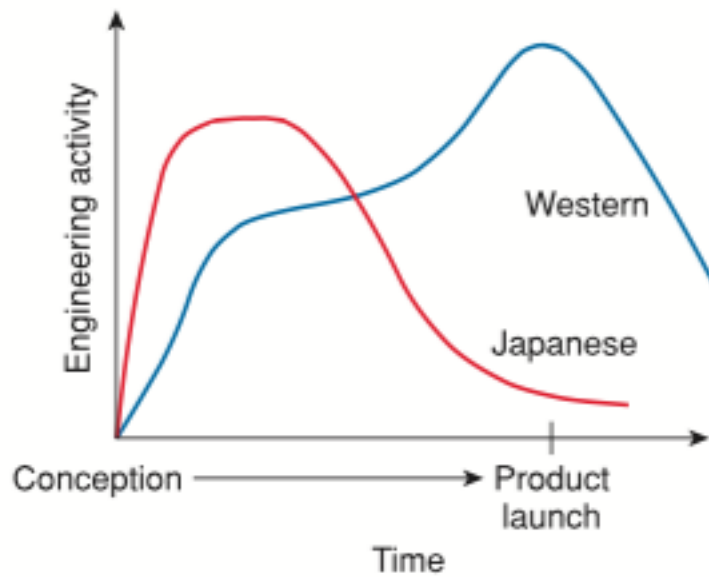
The idea of the gates is so that there is a way to see if it is a better idea to stop the project than proceeding. However some companies do not approve the gate approach since they feel that it encourage stopping projects.

#### New product development, conventional approach



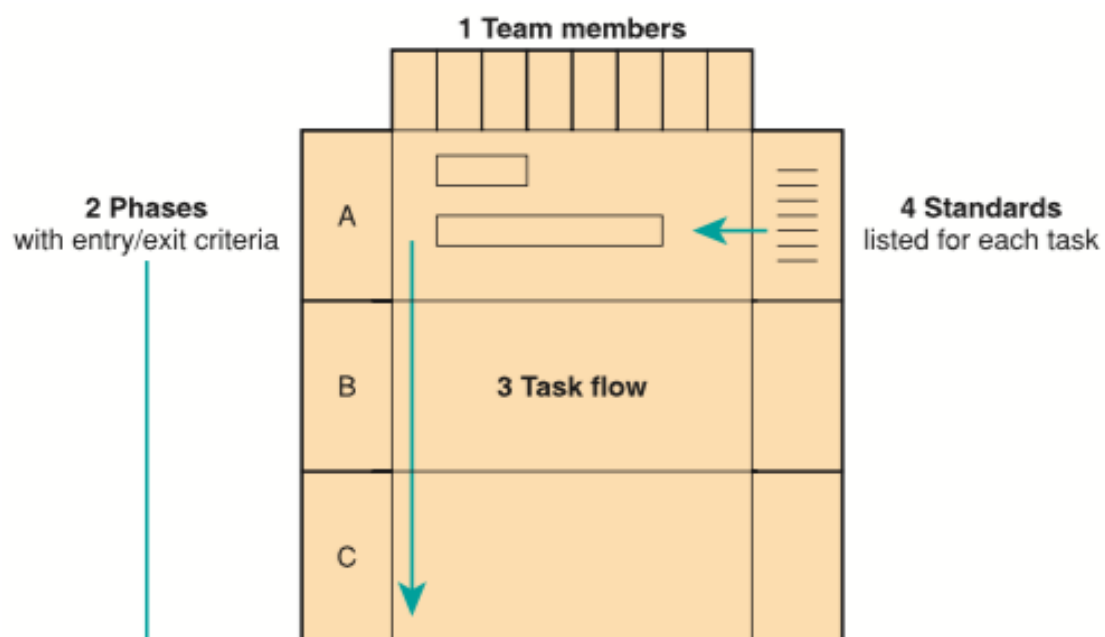
This conventional approach has two major drawbacks. The customer specification is interpreted by different people at each stage ('Chinese-whispers' syndrome). The other one is engineering changes often are made late in the process which cause enormous disruption.

The automotive in Japan was very different from the western world. In Japan they had the goal of 'making the product right the first time' which lead to engineers being very integrated early on which lead to short time to market. In the western world the engineers were integrated later leading to longer Time to market. This is termed **concurrent engineering**. (when processes here are concurrent, JAPAN, not sequent. )

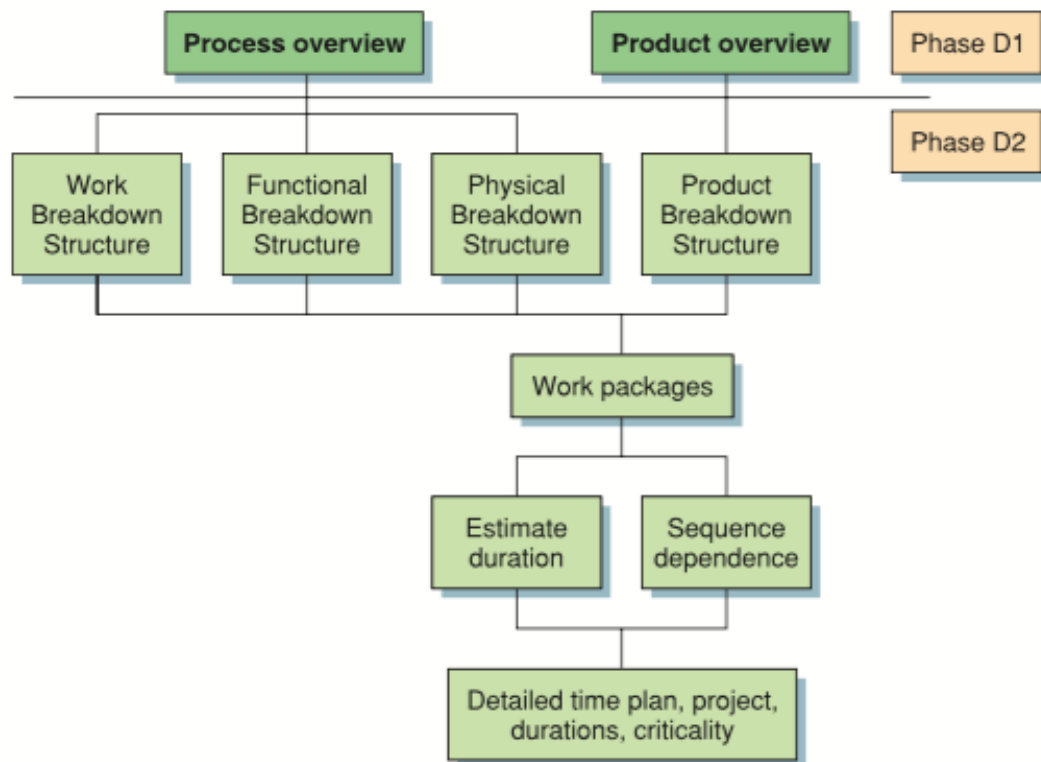


When it comes to preceding the project sequentially or concurrently there are issues to keep in mind. If taking the concurrent way it has many perks. The project will be done quicker and it will cost less money since the reduction of rework since the units talk to each other whilst doing their sequence. The disadvantages is that it increase overhead costs since it is harder to administrate a project like that and also there is a cost of co-location (people being relocated away from their functions to be with the team). **CULTURAL issues** If the objectives and requirements are not specified first and things are added during the way this can cause lots of problems as with the millennium park which got delayed four years.

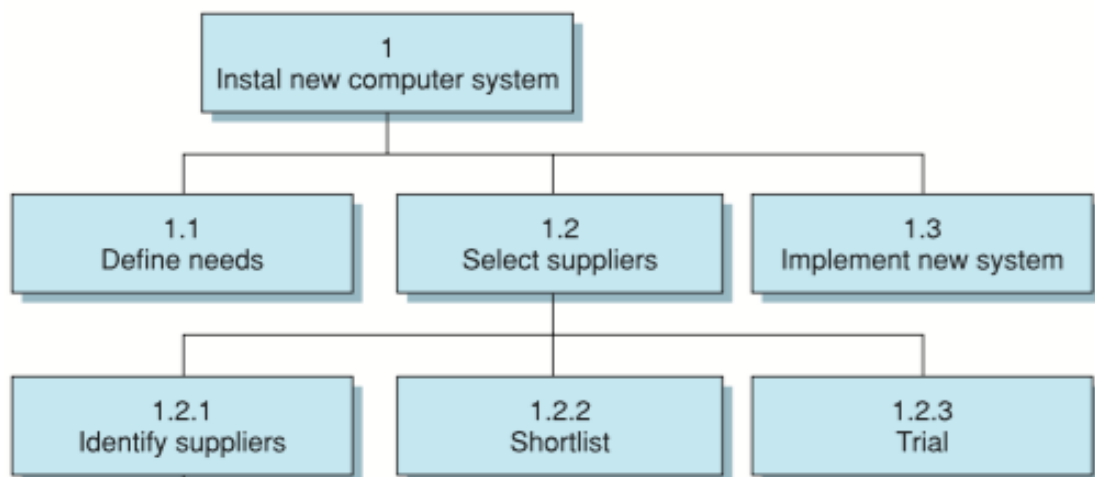
Flow charts help to map the tasks, with entering and exit criteria for each task.



## Chapter six (This is the second D in the 4D method: Design it)



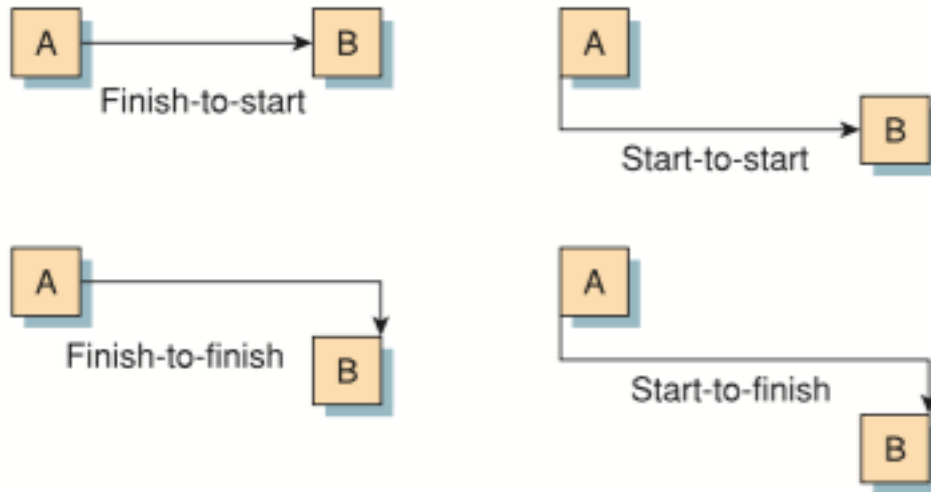
Work breakdown structure (WBS) is the breaking down of large activities (the elephant) into manageable units (the slices) which is a fundamental part of project management.



The idea with WBS is to create a linked, hierarchical series of activities, which are independent units, but at the same time still part of the whole. A problem with this is that often a product breakdown structure is needed so that all parts are getting in there. The bottom level will be a list of activities that are passed on to the next stage.

Estimations are essentially guesses and should not be to relied on. The estimations are updated along the project making them more precise. A common planning method is activity-to-node where the activities from the WBS are represented as tasks on a

simple diagram, to indicate the way the project is expected to work. The estimates are used and a logical sequence is picked. The sequence is determined biased on the dependencies (Activity B can't be done before Activity A). There are different ways that activities can depend on each other:

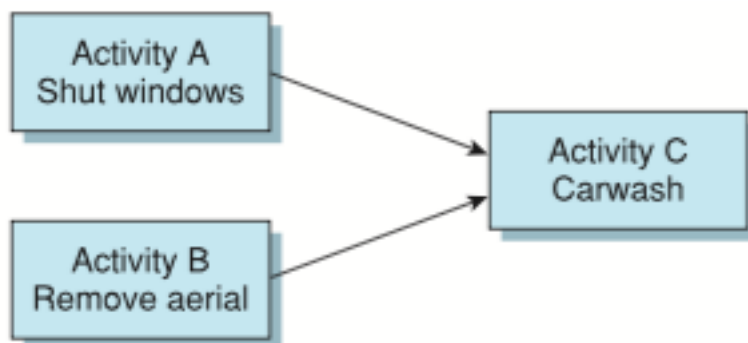


**Finish-to-start** – the second activity can't start until the first has finished (**below**)

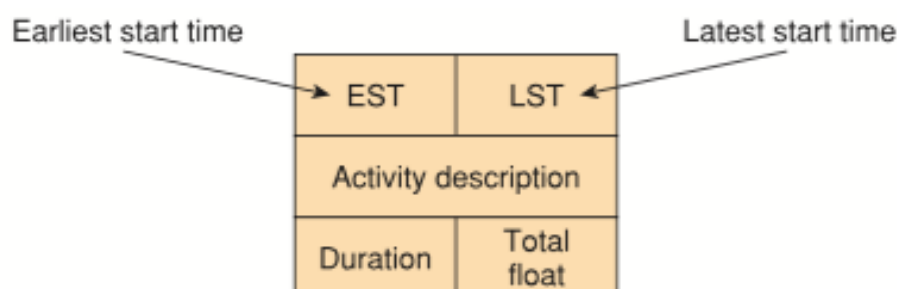
**Start-to-start** – The second activity can't start until the first has started

**Finish-to-finish** – the second activity can't finish until the first has finished

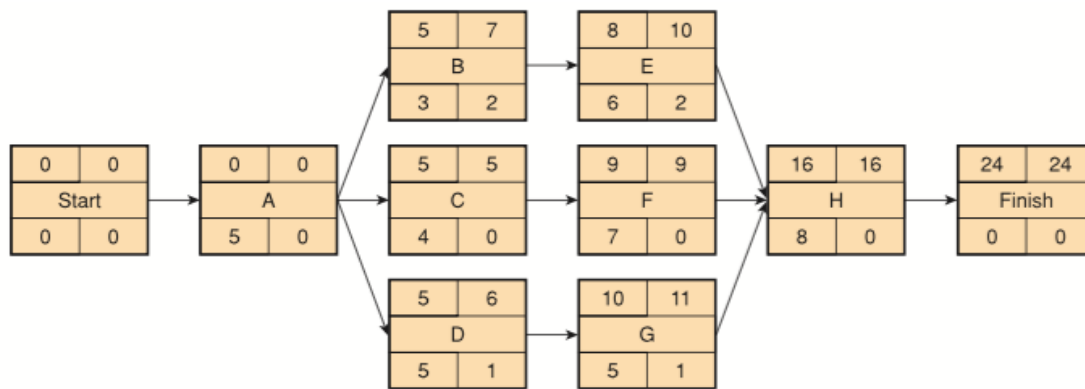
**Start-to-finish** – the second activity can't finish until the first has started



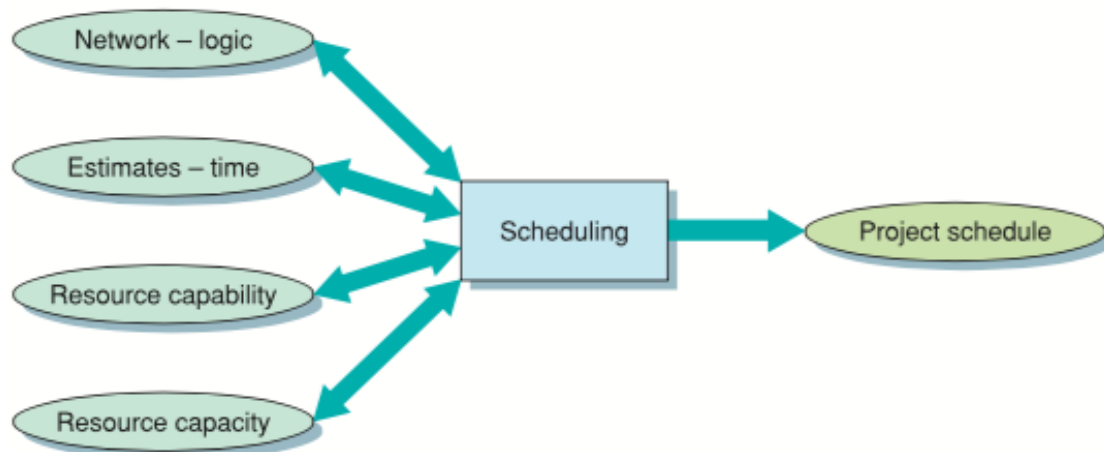
When the sequence and dependencies are in place we can analyze the network. To do so we first need the expected duration of the task. The float is the difference between EST and LST.







Where there is no float it means that the activity is critical and any delay in this activity chain will delay the project as a whole. Knowing the critical path (A-C-F-H) we know what activities can tolerate delay and which ones cannot with the end date in mind, leading to the focus is on the critical ones to go smoothly. It is important to take the holidays into account. This system is called Critical path analysis (CPA). This type of planning is often used in medium and large-scale projects. Some big companies use post-it notes instead of CPA for visualization.



**Resource capability** – The set of tasks that the resource available to the PM can undertake. If external pool can be taken use of it should be noted.

**Resource capacity** – Know when the weekends and holidays are.

**Gantt-charts:**

- Simple to draw and read
- Good for static environments
- Useful for providing overview of project activities
- Very widely used
- The basis of the graphical interface for most project planning software
- Difficult to update manually – charts can quickly become obsolete
- Does not equate time with cost
- Does not help in optimizing resource allocation
- Can lead to false sense of certainty about the project

## Chapter 7

During a project there are uncertainties. People are unwilling to change in the project and do not know how to deal with uncertainty. This is why CPM and PERT do not work. **Problems with the CPM:**

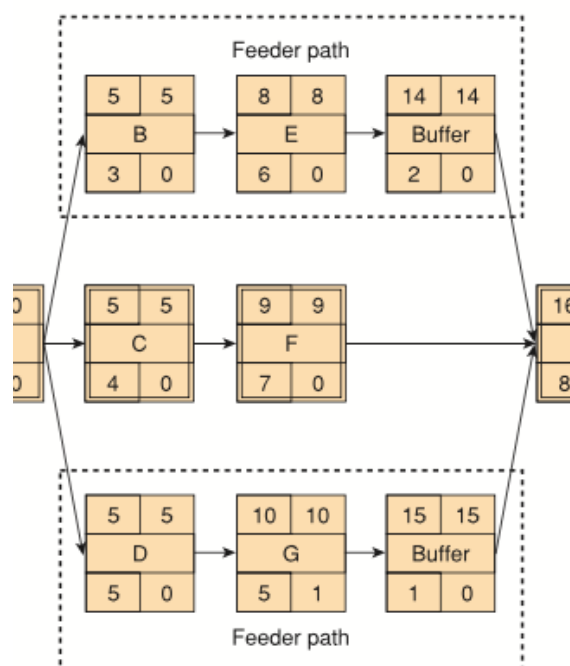
- Goals are based on estimates
- People plan with a large safety margin but Parkinson's Law states that the project will not be done in time anyway
- Other paths than the critical may become critical
- Often leads to multi-tasking which leads to longer lead times than in done in sequence since adaption needs to be done between projects

**Problems with estimates:**

- Estimates often become committed
- People take unrepresentative data, for instance from earlier projects
- The estimates are used out of context, maybe change some criteria

**Theory of constraints (TOC) – Theory of bottlenecks:**

- Identify the bottleneck, both park and resources
- Exploiting the constraining – Everything that prevents the bottleneck from performing at full capacity needs to be optimized
- Elevate the bottleneck – increase flow thorough this point
- Go back and find new constraints



The critical chain approach creates buffers and removes due-date constraints in activities whenever possible. In those paths that are not critical it is possible to create

buffers that sum up to the critical path's length. due dates student syndrome

Critical chain chain represents the formation of compound series of activities. The TOC is on a activity level.

When due dates are being used there is no incentive of being finished early. The task for the project manager is to make sure that the lack in incentive in non-critical processes do not postpone their chain of activities making them to new critical paths.

The Critical chain have proven to be more effective than the CPM.

## Chapter 8

A business case is essential but it is very hard to estimate costs. The business case contains definable benefits, costs, risks and the problem with the 'solution'.

Three different methods of estimate cost.

- Price = cost + profit; target costing, the price is fixed
- Cost = price – profit; cost is fixed
- Profit = price – cost; reimbursable pricing, the amount of profit is fixed

To prepare for costing information there is two ways of doing so:

- Ground-up costing – the estimates of cost on each level of the project are added together making a total cost
- Top-down costing – the project leader is allocated a amount of money and allocate this amount to the subparts. **creates competition between sub managers to get the most money. bråk**



Elements of costs:

- **Time** – Direct labor
- **Materials** – Consumables and other items used
- **Capital equipment** – Maintenance of the project
- **Indirect expenses** – Transportation, training
- **Overheads** – Provision of an office
- **Contingency** – Margin/allowance

Estimating techniques:

- **Parametric estimating** – Estimating cost of previous projects, for instance

how long it will take to lay railways

- **As...but...** – If the company has done a similar project before it can be used as a guideline
- **Forecasts** –
- **Synthetic estimation** – When you look at a larger group and take the mean, repetitive work
- **Using learning curve effects** – On the repetitive elements to the project assume there will be learning effects
- **Wishful thinking** – Optimism bias, politics (need money to buy a tunnel)

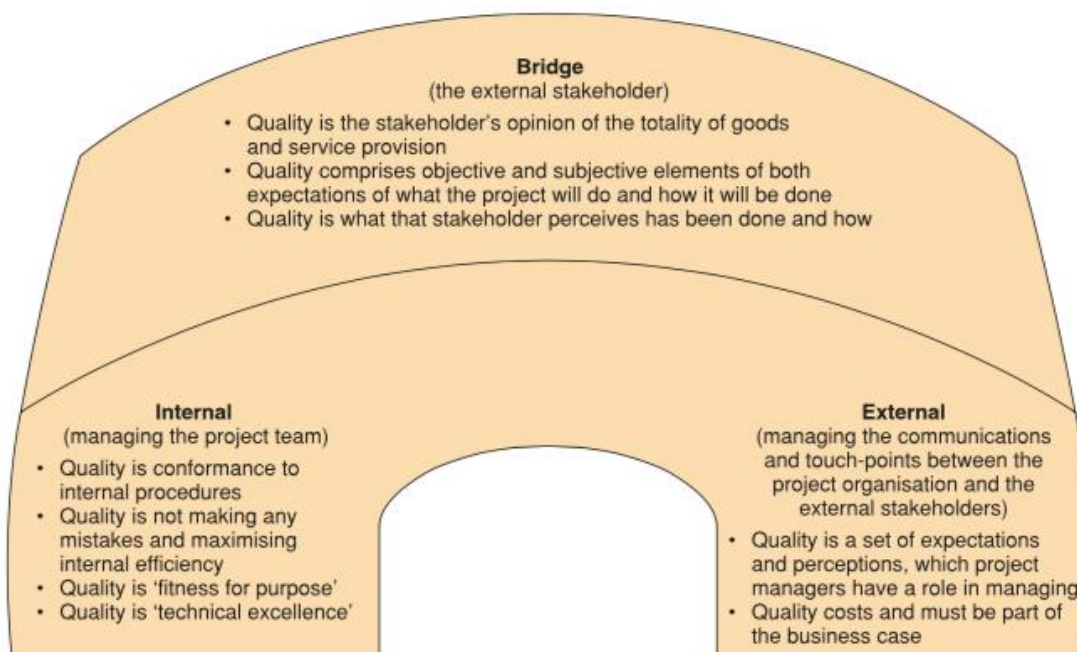
Financial appraisals:

- Payback period
- Discounted cash flow
- ROI

In some cases the benefits of a project can be more discrete, for instance no guaranteed return, the project can be strategic or the organisation can be a non-profit organisation. An example of a strategic investment is an organisational change which lead to increased flexibility and capability which can be hard to put a value on. When the project does not have a profit motive it is much harder to motivate people.

## Chapter 9

The term 'quality' can mean very different things. It could be conformance to specification, customer requirements to lowest cost or quality as a strategic advantage. The **product based view** of quality can be measured, for instance fitness, specification or technical features. There are two views in the chart below. Internal means the project team and the external the communications.



**The system structural approach** defines quality by a specific standard while

**control-organisational approach** define it by putting employees and customers as key determinants of quality. A good way of defining the project quality definition is using the Quality planning process below:



**Maister's first law of service** says that satisfaction=perception-expectation. Hence one large reason for dissatisfaction is unreasonably high expectations.

**Quality function deployment (QFD)** – To ensure that the team has understood the customer needs correctly, the customer requirements will be expressed in the terms of the customer instead of the project team (for instance IT-projects). The customer then ranks the functions importance. These kind of frameworks minimize the gaps between customer expectations and perception.

It is a good idea to have someone responsible for each activity to ensure the quality of it. This to have the documentation if the questions comes up afterwards, if nothing else to know who to blame and also legal aspects.

The purpose of documentation:

- To provide evidence that the project has been completed in proper manner
- Give guidance to the customer on the operation and maintenance of the item provided
- To give future projects of similar nature a good starting point

In order to ensure that the quality is enough, show them your quality work along the way. Also show **cues** – favourable project points where the stakeholder's attention is drawn. On certain parts also over deliver to create a 'quality buffer'. The quality documentation of the team can also be shared with the customer to ensure that it is correct.

To ensure the above a **communications plan** is often planned into project plan. Set up what should be reported and when, and by who.

The **quality cost** is about measuring the hidden financial costs of delivering a certain quality as shown in the table below.

Category	Characteristic being measured	Examples
Prevention	The costs of ensuring that the required level of quality of service is met	Planning Risk management Stakeholder management
Appraisal	Measuring what level of quality of service is provided	Stakeholder surveys Random inspection/checks Performance data gathering and analysis
Failure	The costs of getting it wrong and putting it right – can be categorised as either internal or external failure	<i>Internal failure:</i> mishaps or errors that are resolved without the customer ever seeing them  <i>External failure:</i> occurs in the interaction with the customer, may result in loss/withdrawal of business or rectification/rescue being required

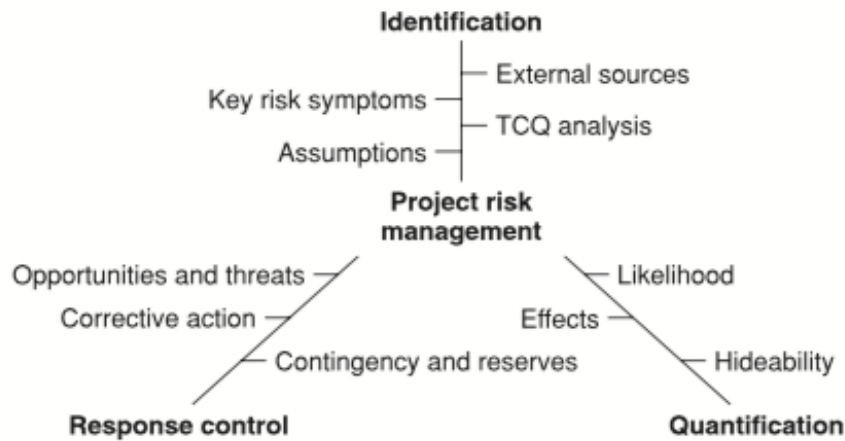
What to do if the project fails to reach the customers expectations? That is where **management of failure** comes into play. There are four steps:

- 1) **Identify that something has gone wrong** – Ensure the satisfaction from the customer
- 2) **Contain the situation** – Accept that there is problem and prevent further damage
- 3) **Regain customers confidence** – Maybe redo the batch or ensure quality in the future
- 4) **Learn from the failure** – Ensure that the practices are changed so this does not happen again

## Chapter 10

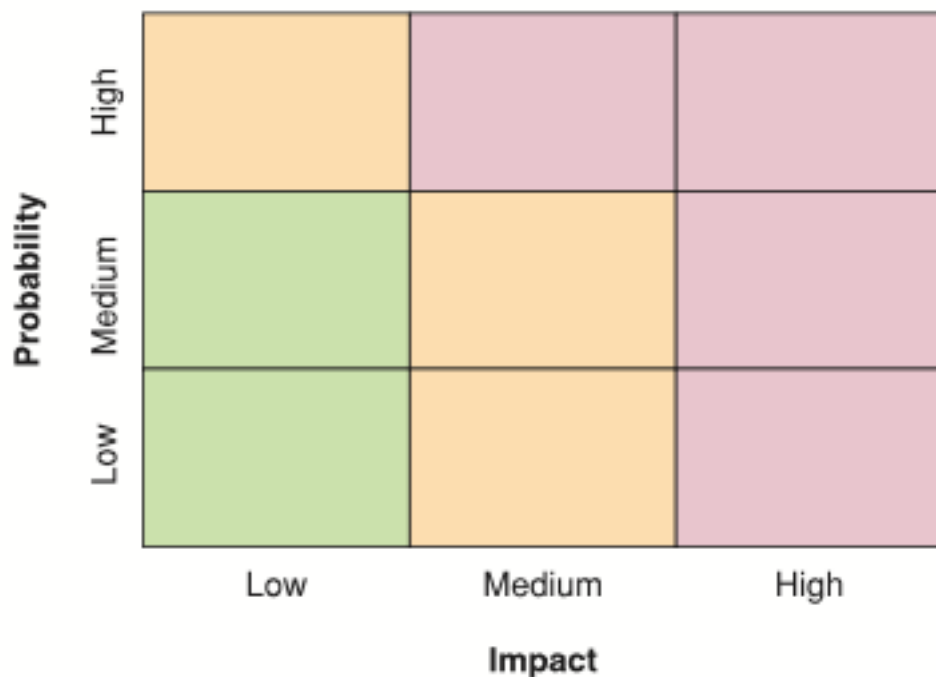
The **risk management framework** used in the book there are three components:

- **Identification** – For instance via brainstorming activity just to identify as many ‘unknown knows’ as possible
- **Quantification** –
- **Mitigation (Response control)** – When the risks are identified they need to be managed in some way, either to lower their likelihood of happening or lower the impact if they do occur. One way to avoid risk is to outsource the risk, for instance like contractors do.



The benefits of using this type of analysis include highlighting the areas of attention, trying to lower the impact and likelihood, allowing the quantification for future purposes (learning).

**Qualitative risk approach** is the majority of risk management and typically these risks map the likelihood and the impact of that risk.



The **failure mode effect analysis (FMEA)** considers three elements. Hideability is how visible the activity error might be. This is used to create some sort of ranking the risks.

Activity	Severity	Hideability	Likelihood	RPN
Development carried out by contractors	8	9	2	144
Development carried out in-house	8	2	7	112

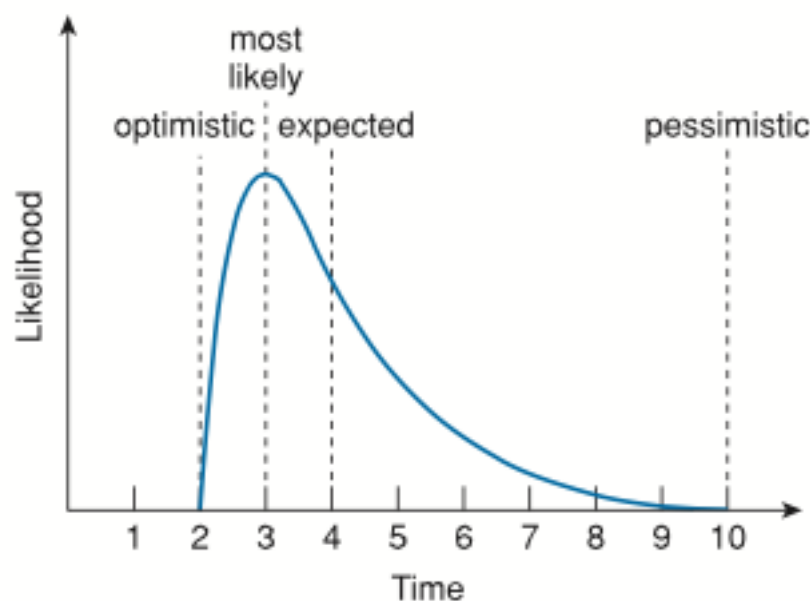


**Quantitative approaches** are mathematical models based on real data.

- **Expected value** – For instance if the revenues expect to be A with the probability a and the revenues B with probability b, EV is  $Aa+Bb$ . This can be used when comparing two different risks that yield revenues
- **Sensitivity analysis** – Uses an pessimistic, expected and optimistic value for the main inputs (e.g. costs) For instance used when price for something is going to fluctate.
- **Monte Carlo simulation** – Uses a range of values rather than single values.
- **PERT (Programme Evaluation and Review Technique)** – A method of calculating the probability of how long a process of activities may take. Instead of just using a expected time, an optimistic, most likely and pessimistic time is used. However it does not tell you the likelihood of each.

Activity	Optimistic time o	Most likely time m	Pessimistic time p	Expected time
A	3	5	7	5
B	2	3	10	4
C	3	4	5	4
D	4	5	12	6
E	5	6	7	6
F	5	7	9	7
G	4	5	12	6
H	6	8	10	8

Using a computer the graph can be created.



**Expected value (PERT) =  $(\text{optimistic} + 4 \times (\text{likely}) + \text{pesimistic}) / 6$**

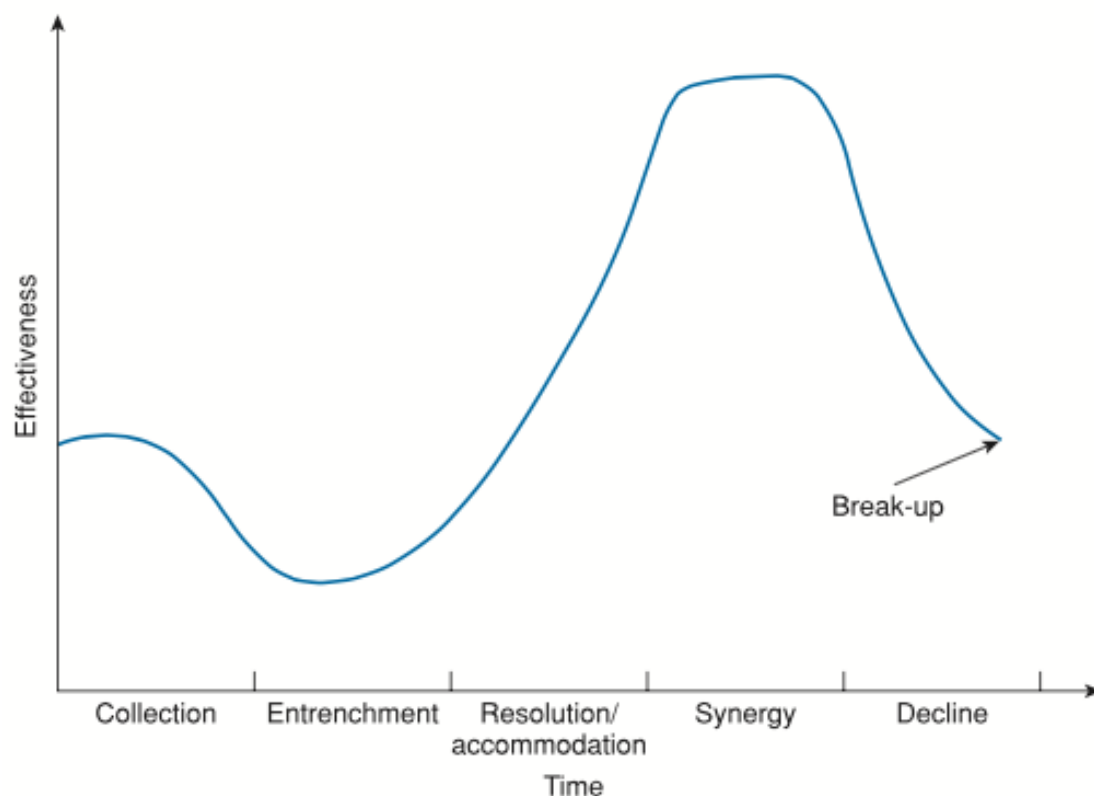
**Its a tool for putting a number to the risk. Good for upper management to evaluate the risks.**

## Chapter 11

The bigger a project group becomes the more specialized it becomes. Large organizations are organized by **functional specialism** into **silos**. This is good due to you have all needed knowledge and also if you have a question you know who to go to. One of these functions will not increase customer need, so **cross-functional activity** is needed to link them together. Else the functions will build their own functions whether this is value-adding or not.

**Dotted-line responsibility** – Used to enforce communication between departments to prevent them from working on their own. An individual may report to the function manager and a dotted line responsibility to another to indicate the linked goals.

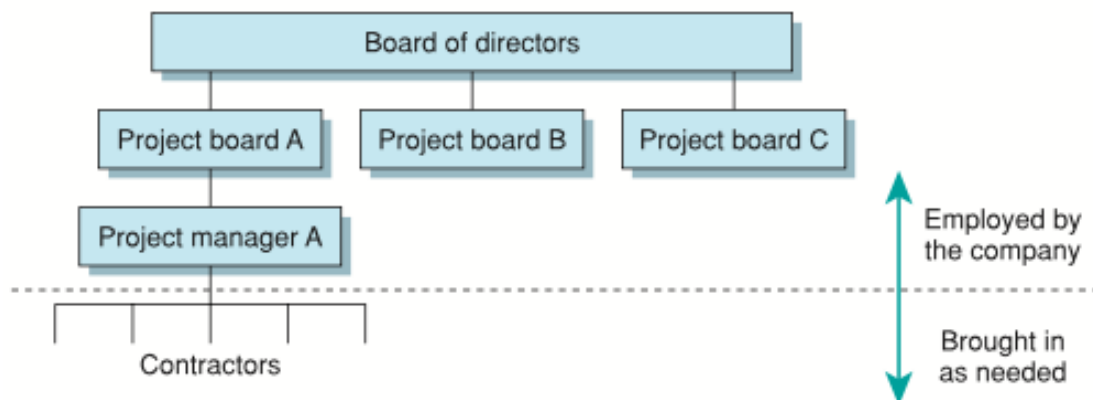
The teams usually follow a certain curve. The PM's role is to make the entrenchment and resolution times as short as possible and the synergy as long as possible.



- **Collection** – Bringing together the group, every one is eager in the beginning
- **Entrenchment** – Finding out where everyone stand, people want to pursue with different ideas.
- **Resolution** – The disagreements start to get resolved
- **Synergy** – They output as a whole is greater,  $2+2=5$
- **Decline** – Towards the end people's focus starts to shift to the next project

Quality circles?

**Pure project organization** – This is well represented in construction. Under the board of directors there is a project board, which contain of senior managers, directors etc. Then there is a PM under them. Types of resources change during the project lifecycle, for instance in the planning process there are architects, technical specialists etc. These will be replaced by contractors who are bought in to carry out specific tasks. When a task is completed the team in each case is disbanded. Perks is that the labor force is flexible and the company only has to administer its own staff. Downsides is the contractors have no commitment to the projects success and when there is a boom it is hard to get contractors.



**Three types is Matrix management:** (to avoid downsides in pure P. org.)

- **Lightweight matrix** – PM acts like coordinator between the departments involved
- **Balanced model** – Attempt to share responsibility between line manager and PM. Drawback is that all line managers favour their own part hence the resources put there will be most. Also this takes time from the line manager since he/she will have more work to do.
- **Heaveweight matrix** – The responsibility is on the line managers and other resources take over their original work temporarily. Can lead to the 'two bosses problem'

These methods are good when:

- More than one orientation of the activities
- Need to process simultaneously
- Need to share resources

	<i>Functional organisation</i>	<i>Lightweight project organisation</i>	<i>Heavyweight project organisation</i>	<i>Project organisation</i>
Example of usage	Minor change to existing product	Implementing change to work organisation, e.g. IT system	Major innovation project	Large construction projects
Advantages	Quality through depth of specialisation possible within functions, possible to 'hide' project costs	Quality maintained	Speed and quality (improvement) through use of relatively 'stable' organisation as a base	Speed highest through dedicated resources; organisation design dependent only on project strategy
Disadvantages	Relatively slow as a process	Some cost disadvantage due to additional coordination expense of the matrix	Adverse reaction from line managers; additional coordination and administration costs	Can incur significant additional cost due to the relative expense of contractors; quality may not improve over time; instability for staff
Issues for the project manager	Integration of functions within the organisation	Two bosses problem	Two bosses problem	Management of knowledge

The future of this is **cross-function management** encouraging teaming and communication.

In every team there are different roles to be adopted.

- **Plant** – Creative, solves difficult problems
- **Resource investigator** – Extrovert and communicative, develops contacts
- **Coordinator** – Confident, clarifies goals
- **Shaper** – Challenge-driven, overcomes obstacles
- **Monitor evaluation** – Strategic, Judges accurately among options
- **Teamworker** – Cooperative, calm the waters
- **Implementer** – Disciplined, turns ideas into action
- **Completer** – Anxious, serches out errors
- **Specialist** – Dedicated, provide knowledge

Problems with managing geographical seperated teams are:

- Language and culture
- Lack of communication
- Time zone
- Different standards
- Formal start-up meeting
- Regular face-to-face meetings to keep team engaged
- E-mail chain to circulate progress and questions
- Groundrules of dealing with certain situations
- Create highly visible program measures

## Chapter 12

There is a difference between management and leadership. Management is a discipline of administering authority over others, and leadership is the quality of obtaining results from others through personal influence.

Stress is one of the biggest reasons for poor performance in management. This could be handled with the 4 PS:

- Plan your way out of the situation causing stress
- Pace yourself – don't do everything at once
- Pamper yourself – reward yourself for goals accomplished
- Piss yourself laughing – healing power of laughter is enormous.

One way of setting good targets for short- medium and long term objectives must be SMART:

S – specific and written down

M – measurable

A – Achievable

R – Realistic

T – Time-framed

**Table 12.2** Techniques to keep to a plan

- Use a diary or other form of time-planner ('the shortest pencil is better than the longest memory') – record activities rather than trying to remember them – this only takes up valuable space in your mind.
- Say 'no' to non-goal-achieving tasks – do not add to your current task list.
- Handle each piece of paper once only – this rule avoids the little time-bombs (memos that required action by a date which is approaching rapidly) that sit in an office because you have not got round to tackling them.
- Use checklists and to-do lists to save you having to remember events and to enable you to sequence them rationally. Do not avoid difficult or unpleasant tasks. Get them done and out of the way so that your time may then be more positively employed.
- Make telephone calls with a fixed duration – e.g. by calling five minutes before a meeting you limit the time of the conversation to five minutes.
- When you talk to someone have your agenda written down and record the results of the discussion. Don't handle information twice.
- Allow people to make and implement decisions for themselves – they do not need to bring all basic issues to you – the rules for making the decisions should be established.
- Do not allow interruptions to disturb meetings or periods when you need to be engaged in proactive work.
- Do not be constrained by the normal work practices of time and place (if allowable).

**Scientific management** is the work of Taylor. What it does is that it puts the focus on the individual rather than the process. This works best in the repetitive parts of the WBS.

- Work should be studied in scientific term and should be expressed quantitatively of how it should be divided into segments to maximize efficiency
- Worker should be matched physically to the job

- The person doing the task should be trained to do so
- The person doing the task should be rewarded for good work

**The Hawthorne Studies** looks into the work conditions (temperature, light, noise) impact on motivation and productivity. Those factors did matter but what mattered more was that the workers got attention which motivated them personally.

**Maslovs Need Theory** states that a man has four needs:

- Physiological – Food, shelter
- Safety – Employment
- Need to belong – Socially accepted
- Need for self-esteem and respect – From upper level

**The Peter principle** is to pick a person for a role what he is good at and not if he has the qualifications for the current role.

Different cultures in organisations:

<i>Name</i>	<i>Description of culture</i>	<i>Characteristics</i>	<i>Advantages</i>	<i>Disadvantages</i>
<b>Apollo</b>	Role	Formalised, rule-based, focused on individual specialisms	Stable, predictable, visible	Stable, predictable
<b>Zeus</b>	Club	Entrepreneurial, focused on single leader, autocratic style	Little structure to prevent dynamism	Little logic to what is done, total dependence on one person
<b>Athena</b>	Task	Group gathered with common purpose	Creative, dynamic	Expensive to maintain, needs constant stream of new tasks and highly qualified people
<b>Dionysus</b>	Existential	Organisation that shares resources but where people are not dependent on each other	Allows each to be self-determining, little structure	Relies on individual responsibilities and risks, needs high level of personal development

**The Cooperation-coercion scale** is a scale of how to motivate people. Cooperation is based on educating individuals, ensuring that needs of the individual are met through group support. Coersion is based on forcing people into performing tasks (the basis of Taylorism). This works well in the sort term.

The more modern way of motivating people is in the humanistic way:

	<i>Tayloristic agenda</i>	<i>Humanistic agenda</i>
Level of needs met	Most basic level – physiological and possibly safety	Higher level – need to belong up to self-actualisation
Role of individual	Automaton carrying out specialised task under stated rules	Individual with freedom and autonomy
Advantages for system	Predictability of outcomes	Intrinsically motivated individuals, providing caring creativity
Advantages for individual	Unchallenging, safe, ordered existence	Challenging role with chance for self-determination
Role of management	Designer and controller of work tasks	Provider of scenarios and facilitator
Responsibility for outcomes	Lay with project manager	Shared between all members of the team

## Chapter 13

The most basic control system is the **feedback control system**, where the output is examined and feed back are fed the PM to change the process to improve it.



- **Inputs** – Design, defect-free materials, qualified labor
- **In-process** – Use of appropriate work methods
- **Output** – number of defects in the final result

**Feedforward** is when you use your knowledge to foresee what obstacles there might be ahead of you in the project and you adjust your actions to that.

**Configuration control** is to ensure that everyone in the team is up to date with the latest version of the changes of the project (air plane example)

The project manager has two main roles when it comes to control of quality, the concern of **conformance** of the product and process as well as the **performance** of the delivery.

For complex projects where and ability to predict final costs and times is required,



the concept of **earned value** is most useful. Lets say that we have 10 weeks and 100000€ to spend on a project. After week five we have completed 4 tasks and spent 36000€.

<i>Activity</i>	<i>Time</i>	<i>Budget</i>
1	1 week	€5000
2	1 week	€8000
3	1 week	€7000
4	1 week	€12 000
5	1 week	€14 000
6	1 week	€10 000
7	1 week	€13 000
8	1 week	€11 000
9	1 week	€16 000
10	1 week	€4000
TOTAL	10 weeks	€100 000

Actual spend: €36 000

Planned spend: €46 000

Earned value: €32 000

**Cost performance indicator** = earned value/actual spend=0.889

**Schedule performance indicator** = earned value/planned spend=0.696

You earn value when a task is complete. Hence the **estimated cost at completion** (ECAC) can be calculated: Original budget/cost performance indicator=112500€

Estimated time of completion: Original time estimate/schedule per. ind=14.4weeks

**Control using critical chain:** look at the buffer daily to know how it is going. If you finish early days are added to it, if activities take longer take days from it.

**Last planner** looks at activities per week and looks at the **planned percent complete** which is the activities completed/intended completed activities.

These methods are to increase visibility of control in projects. A downside of control is it may lead to decreased productivity.

## Chapter 14

There are two extremes of purchasing organization – **centralized** or **localized**.

<i>Centralised purchasing</i>	<i>Localised purchasing</i>
<ul style="list-style-type: none"> <li>• Purchasing power due to aggregation of orders</li> <li>• Better materials utilisation and stock management</li> <li>• Economies of staffing</li> <li>• Standardisation of purchasing procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Local knowledge of suppliers</li> <li>• Low organisational inertia</li> <li>• Local management control</li> <li>• Enhanced supplier relationships</li> </ul>

The **five rights** of purchasing strategy:

- The right **quantity** –
- The right **quality** –
- The right **price** –
- The right **time and place** –
- The right **supplier** –

Läs igenom sista på 14.2 om du orkar, verkar intressant.

Two types of relationships:

- **Adversarial** – Reliance of contract, competitive bidding, short-term relation
- **Partnership** – Long term, supplier agrees to be sole supplier

<i>Feature</i>	<i>Adversarial</i>	<i>Partnership</i>
Temporal basis	One-off purchase	Ongoing
Commodity	Product	Product, service, knowledge support
Contractual basis	Each purchase negotiated – competitive basis	Long-term deals agreed in advance, trust-based rather than contractually reliant
Communications and involvement	Limited to 'information as necessary' as determined by contract terms; use standard communications – telephone, fax, e-mail	Involved at all relevant stages of the project, as determined by impacts on all parties; may involve staff loan; suppliers involved in scheduling and planning; communicate through linked networks and regular information-sharing sessions
Focus	Our bit of the project is most important – maximise the return from that bit	The performance of the project as a whole is most important

More modern techniques of SCM are:

- **Open-book accounting** – The numbers are shown both to the supplier and customer. If the profit from one side is too high, prices will be cut. If too low, partnership might end.
- **Vendor-managed inventory** – Instead of ordering a bulk of bricks in the start of a project (which is costly for both parts) the planning of when the bricks should arrive at what phase is made with the supplier and customer, creating a more stable demand. No need to guard them, no need to work overtime to produce them, no risk of ordering too much.

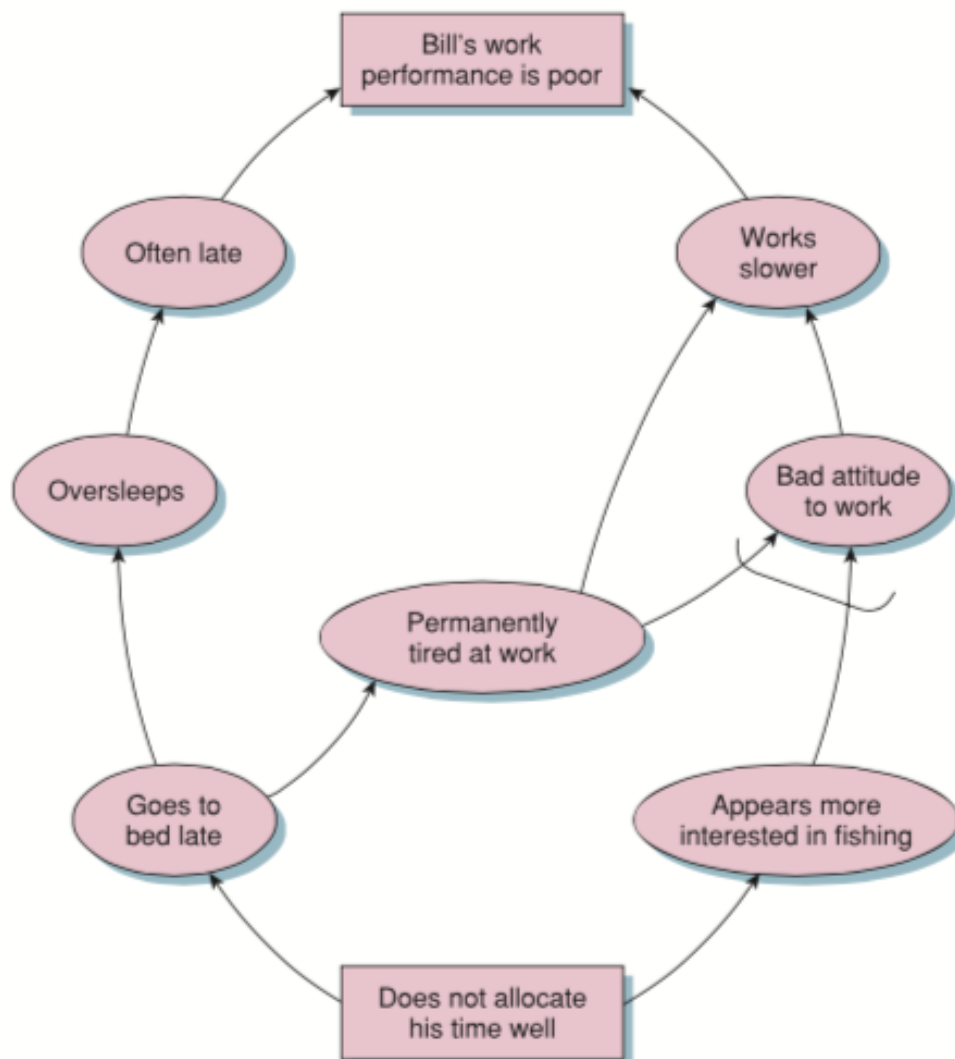
## Chapter 15

If the problem does not measure the gap between actual/perceived situation nor the desired/expected situation the problem is said to be **unbounded** and can not be solved with 'problem solving', hence the problem need to be defined.

There are two ways of dealing with **uncertainty** – dealing with the cause and dealing with the effects. The cause: minimize the risk of not knowing. The dealing: what to do if it happens.

**Pareto analysis** – 20% of the people hold 80% of the wealth. In PM: what 20% of causes are causing 80% of the problem? This can be researched on the forehand.

The **cause-effect-cause analysis** is applicable if there is a trained facilitator available and if the group is open to new problem solving methods. Better for strategic problems than tactical ones. For instance **five'why**. It bases with an effect. Then the group try to come up with reasons and link them to different effects, trying to solve what the real issue is.

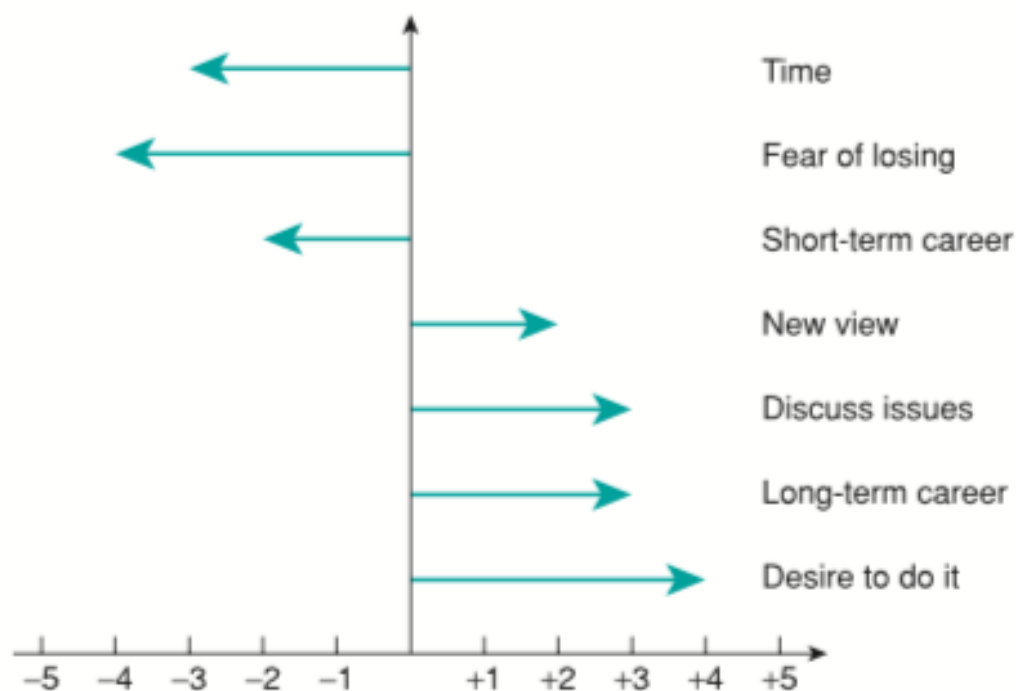


Another way is to use decision trees.

**Attribute analysis** is that for instance a firm want to pick a supplier (A-E) and then come up with a bunch of attributes to score them at. If needed they can be weighted by impprtance. At the total you see what one to pick.

Attribute	A	B	C	D	E
Knowledge and experience	6	7	7	9	8
Reputation	6	6	7	9	10
Prone to strikes/bankruptcy	4	6	9	9	9
Significance of their support	4	8	7	9	9
Design appreciation and conformance	7	7	8	8	9
QA system	5	6	8	9	9
Defects and warranty claims to date	7	6	8	9	10
Reliability of delivery times	6	6	6	9	10
Cost control	7	6	7	6	6
Service level	8	7	8	8	10
Total	60	65	75	85	90

**Force-field analysis** is when you have a choise to be made and you come up with different factors that affect it and rate their importance.

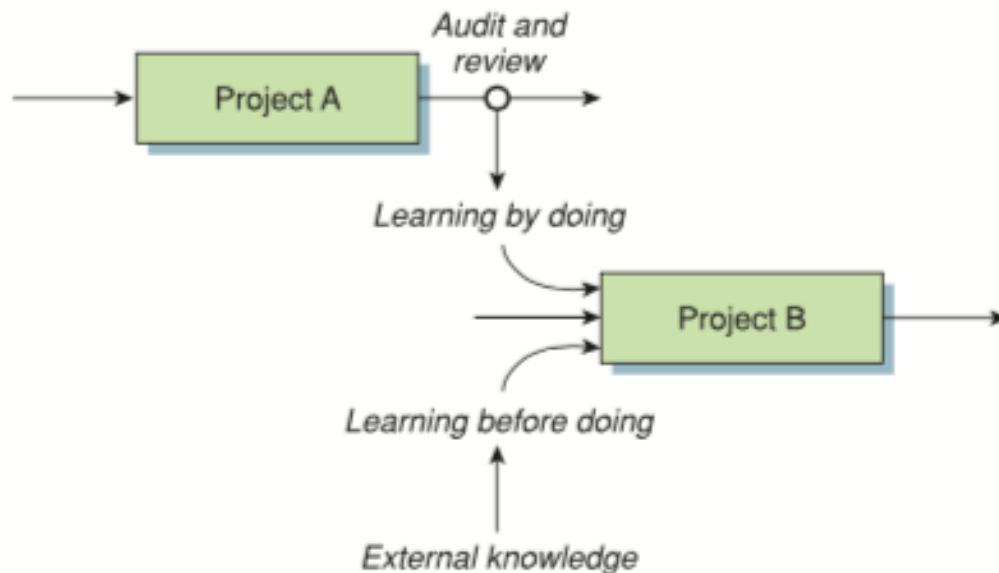


Computer systems can be use in the process if the problems are complex: **decision-support systems, expert systems or artificial intelligence**. They imcorporate expert knowledge and provides as its output advice or decisions in the area of expertise. They work on the base of a set of rules. They do not eliminate the need for gut-feel and experience.

## Chapter 16

**Management paralysis** is often linked to poor strategy and policy deployment on the part of senior management.

There are two ways of learning, learning by doing and learning before doing.



The main sources of external knowledge is training and education, and the use of consultants. utveckla..

It is good to review projects after some time since some of the outcomes can not be seen until a while later. This to look at the products **whole-life cost**.

To avoid that reviews become finger-points excercises that often point out the manager, use these guidelines:

- Focus on precesses, not individuals
- Use data when possible
- Try to solve the problems

**Quality cost** can be subdivided into prevention, Appraisal and failure, which all in different stages affect the cost to ensure quality:

- **Prevention** – Quality planning, training
- **Appraisal** – Any checking activities, storing records of quality results
- **Failure** – Internal: Any wasted activites. External: replacement of faulty goods

## Chapter 17: Improving project performance

There are four types of organizations when it comes when it comes to meeting objectives as time, cost and quality and then to improve these over time:

- **(1)Flatliners** – Despite good intentions to improve they make little progress in project performance
- **(2)Improvers** – Some improvement actions are put in place and performance increase slightly
- **(3)Wannabees** – Generally follows every initiative from the book in an attempt to keep up with the best
- **(4)Worldclass** – Ever-increasing standard for performance

Type	Characteristics
Group 1	Little by way of processes or disciplines. Every project is novel and little learning takes place as a result of project activities. External ideas rejected as being 'not invented here'. Goal of projects poorly established, if at all.
Group 2	Some processes and systems in place, resulting in pockets of acceptable performance. Little learning from one project to another. Goal of projects sometimes established, and focused on conformance to objectives.
Group 3	Processes well documented and systems imposed as to how to run projects. Improvement based on trying to keep up with the best by imitating their processes, but limited by the constraints of system documentation. Goals of projects routinely established and focused on conformance to objectives.
Group 4	Processes mapped (see Project Management in Practice at the end of this chapter) and based around a core, which is forever being improved. Learning evident within and between projects. Goal of project is to exceed the objectives and deliver the best project possible (performance).

These are different levels of project management maturity. There are generally three models companies can use to assess themselves against.

- **CMMI** – Capability Maturity Model, popular in IT.
- **OPM3** – Organizational Project Management Maturity Model,
- **P3M3** – Portfolio, Programme and Project Management Maturity Model,

**Best-in-class** implies that in one or other aspects of performance measure the organisation is rated as being the best within a limited class of organisations, such as a competitive group.

In lean thinking there are seven wastes:

- do not carry out activities above and beyond what is required by the customer in terms of quality or quantity
- eliminate waiting time
- the movement of information, people or materials is generally non-value-adding process
- eliminate the need for processes that generate the need for further processing
- eliminate the wastes associated with the building up of inventory

- avoid the waste of motion
- reduce waste caused by defects or mistakes

### Being Agile is, most in IT:

- Work broken into time boxes or sprints, keeps work packages short and visible
- Output of each sprint is to be a working software release
- Intensity maintained by daily stand-up meetings or scrums
- Programming carried out in pairs
- Programmers urged to write the testing protocols before the software

### Agile manifest

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- **individuals and interactions** over processes and tools;
- **working software** over comprehensive documentation;
- **customer collaboration** over contract negotiation;
- **responding to change** over following a plan.

That is, while there is value in the items on the right, we value the items on the left more.<sup>17</sup>

Used a lot in IT. The key challenge for software development was the balance of disciplines and the need to be able to respond to change, both in terms of new and existing software products.

There are three pillars of change:

<i>Strategy deployment</i>	<i>Managed knowledge</i>	<i>Implementation</i>
Strategy/policy deployment Prioritisation of changes Drivers for change (internal/external) Coherence	Organisational learning Explicit structure for sources of change ideas Systematic evaluation of new ideas pre-implementation	Measurement of impact of changes Implementation methodology

Övigt från test!

The basic requirements for a control system include:

- defining system characteristics of importance;
- defining *limits* to their variation;
- *measurement* of those characteristics;
- making progress *visible*;



- *feedback* to the team of performance;

- instituting *corrective action* where required.

Stakeholder management:

Stakeholders are people interested in project process and its outcome, stakeholder management is identifying and securing their interest.

What is earned value management?

A tracking of actually completed activities/tasks in an on-going project.