



# NSCET E-LEARNING PRESENTATION

**LISTEN ... LEARN... LEAD...**





# **COMPUTER SCIENCE AND ENGINEERING**

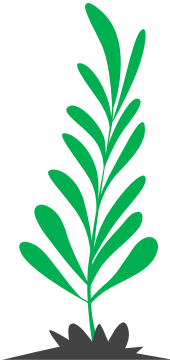
**IV YEAR / VIII SEMESTER**

**MG6088 – SOFTWARE PROJECT MANAGEMENT**

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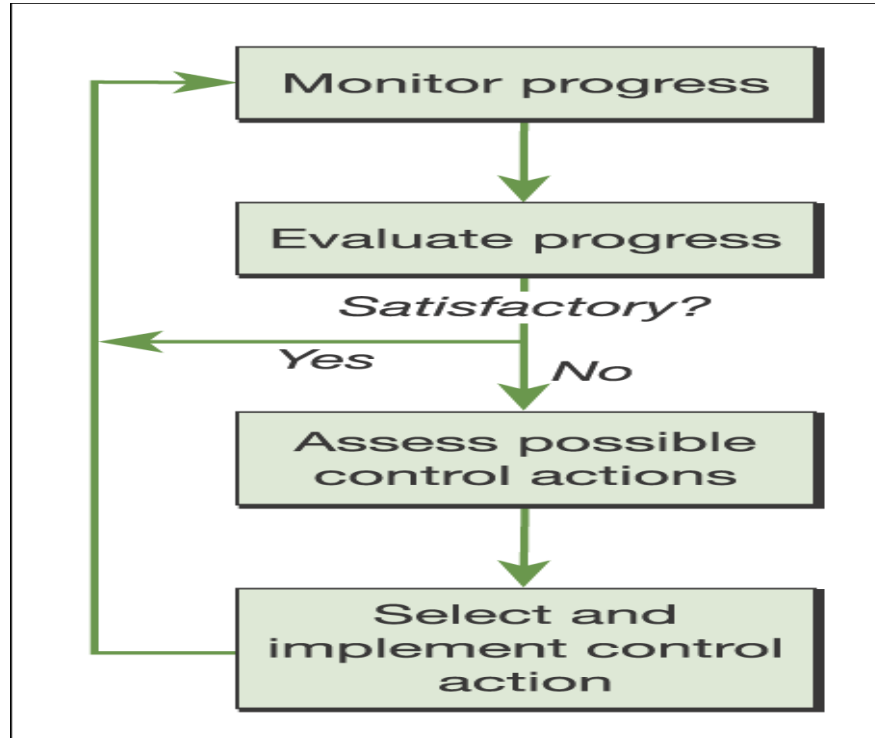
The background features a white space with three orange, stylized clouds at the top. At the bottom, there is a large orange shape representing a hill or ground, with two dark green, stylized leafy plants on either side. The text is centered in the middle of the page.

**UNIT IV**  
**Monitoring And Control**  
**Contract Management**

The image features a stylized landscape with orange hills and black foliage. The hills are represented by smooth, rounded shapes in a warm orange color. The foliage consists of several black, leafy branches with small, pointed leaves, positioned in the foreground. The background is plain white, and the overall aesthetic is clean and modern.

# MONITORING AND CONTROL

# Monitoring And Control Cycle



# Responsibilities



The main lesson here is that the details relating to project progress have to originate with the people actually doing the work and have then to be fed up through the management structure. At each management level there is going to be some summarising and commentary before information is passed up to the next level. This means that there is always a danger of 'information overload' as information passes from the many to the few.

# Assessing Progress

Checkpoints – predetermined times when progress is checked

- Event driven: check takes place when a particular event has been achieved.
- Time driven: date of the check is pre-determined.

Frequency of reporting

- The higher the management level, generally, the longer the gaps between check points.

# Collecting Progress Details

Need to collect data about:

- Achievements/ Milestones.
- Costs.

How to deal with partial completions?

- 99% completion syndrome.

Possible solutions:

- Control of products, not activities.
- Subdivide into lots of sub-activities.



# Red/Amber/Green (RAG) Reporting

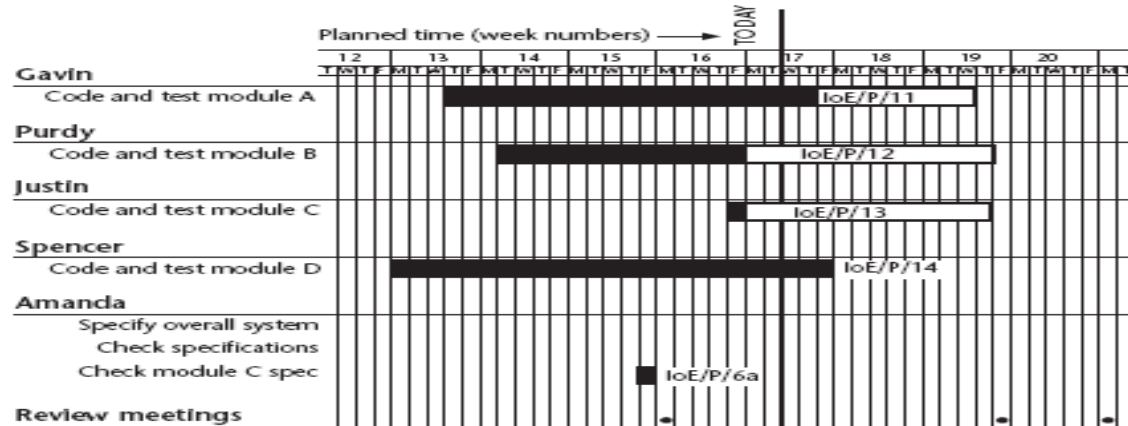
- Identify key tasks.
- Break down into sub-tasks.
- Assess subtasks as:
  - Green – ‘on target’.
  - Amber – ‘not on target but recoverable’.
  - Red – ‘not on target and recoverable only with difficulty’.
- Status of ‘critical’ tasks is particularly important.

The image features a stylized landscape with orange hills and black foliage. The hills are represented by smooth, rounded shapes in a warm orange color. The foliage consists of several black, leafy branches with small, pointed leaves, positioned on the slopes of the hills. The background is plain white, and the overall aesthetic is clean and modern.

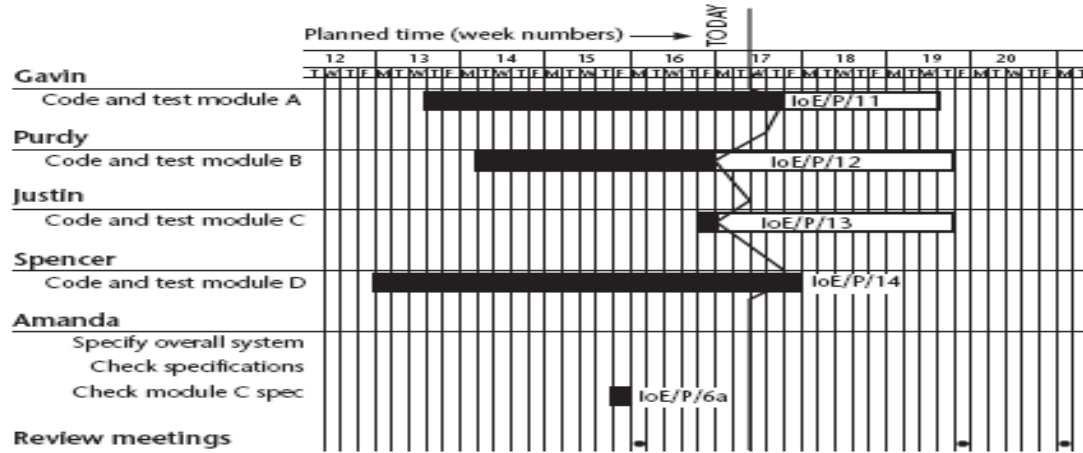
# Reporting and Analysis

# Gantt Charts

- The Gantt chart is named after Henry Gantt (1861-1919) and so should not be written in capitals!
- The format of the Gantt chart here differs from the format used in Microsoft project as the activities for each team member are grouped together. You could input the details so that they came out in this format, but it would not occur automatically.

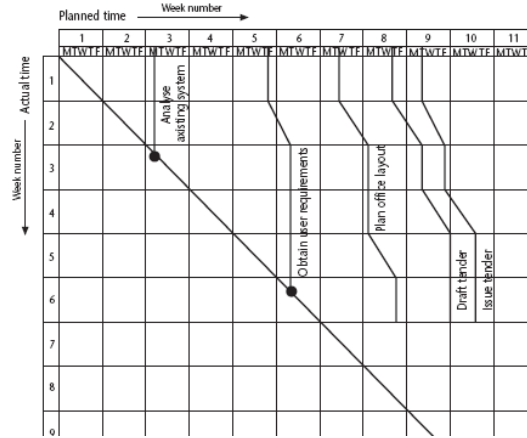


# Slip Charts



- A slip chart is a version of the Gantt chart where a line is drawn from top to bottom. To the left of the line are all the completed activities and to the right those activities ( or parts of activities) that have not been completed.
- A very jagged line means that there is scope for re-planning to move resources from those activities that are ahead to those that are behind.

# The Timeline



➤ Planned time is plotted on the horizontal axis, and actual time on the vertical axis. The bendy lines going from top to bottom represent the scheduled completion date for each activity e.g. then 'obtain user requirements' was originally planned to finish on the Thursday of week 5, but at the end of the first week it was rescheduled to finish on the Tuesday of week 6.



# Cost Monitoring



# Cost Monitoring

- A project could be late because the staff originally committed, have not been deployed.
- In this case the project will be behind time but under budget.
- A project could be on time but only because additional resources have been added and so by over budget.
- Need to monitor both achievements and costs.

# Earned Value Analysis

- Planned value (PV) or Budgeted cost of work scheduled (BCWS) – original estimate of the effort/cost to complete a task (compare with idea of a ‘price’).
- Earned value (EV) or Budgeted cost of work performed (BCWP) – total of PVs for the work completed at this time.



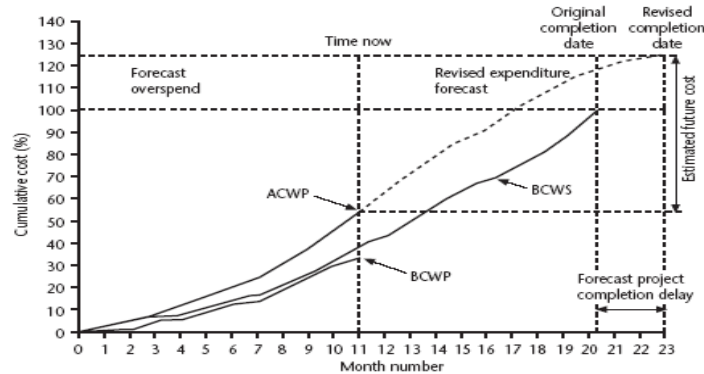
# Earned Value – An Example

## Tasks

- Specify module            5 days
- Code module                8 days
- Test module                 6 days

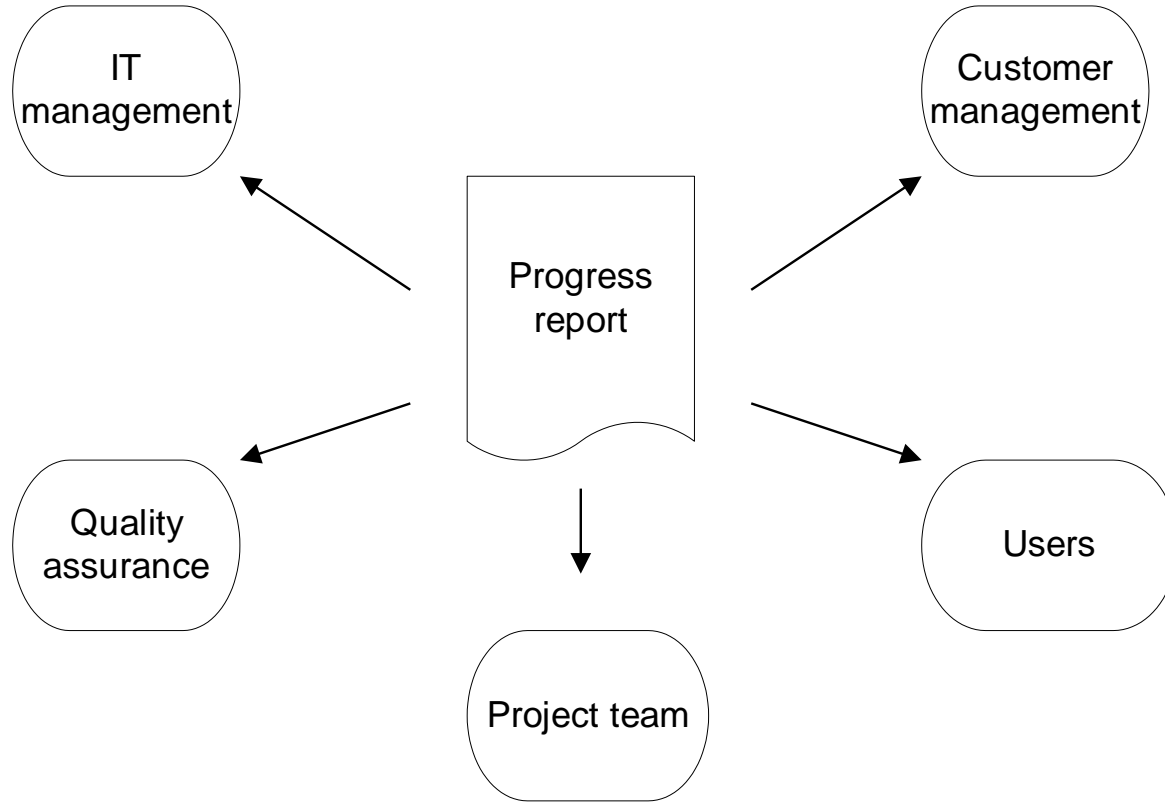
- At the beginning of day 20, PV = 19 days
- If everything but testing completed, EV = 13 days
- Schedule variance = EV-PV i.e. 13-19 = -6
- Schedule performance indicator (SPI) = EV/PV i.e 13/19 = 0.68

# Earned Value Chart With Revised Forecasts



- This shows how the planned value (PV), earned value (EV) and actual cost (AC) can be tracked over the lifetime of a project.
- A revised assessment of the budget at completion (EAC estimate at completion) can be produced by dividing the original estimated budget at completion (BAC) by the current CPI.

# Recipients Of Progress Reports





# Report Contents



# Report Contents (Typical)

- Period covered.
- Narrative summary of progress.
- Milestones achieved/deliverables completed.
- Problems encountered (and solutions).
- Projected completion date.
- Costs to date and predicted.
- Changes identified and implemented.

# Reporting In PID

- Project Initiation Document (PID).
- End-stage assessment.
- Mid-stage assessment.
- Highlight report.
- Checkpoint report.
- Project closure report.

# Prioritizing Monitoring

We might focus more on monitoring certain types of activity E.g.

- Critical path activities .
- Activities with no free float – if delayed later dependent activities are delayed.
- Activities with less than a specified float.
- High risk activities.
- Activities using critical resources.

# Getting Back On Track

- Renegotiate the deadline – if not possible then
- Try to shorten activities on critical path e.g.
  - Work overtime.
  - Re-allocate staff from less pressing work.
  - Buy in more staff .
- Reconsider activity dependencies
  - Over-lap the activities so that the start of one activity does not have to wait for completion of another.
  - Split activities.





# Change Control



# Change Control

The role of configuration librarian:

- Identifying items that need to be subject to change control.
- Management of a central repository of the master copies of software and documentation.
- Administering change procedures.
- Maintenance of access records.

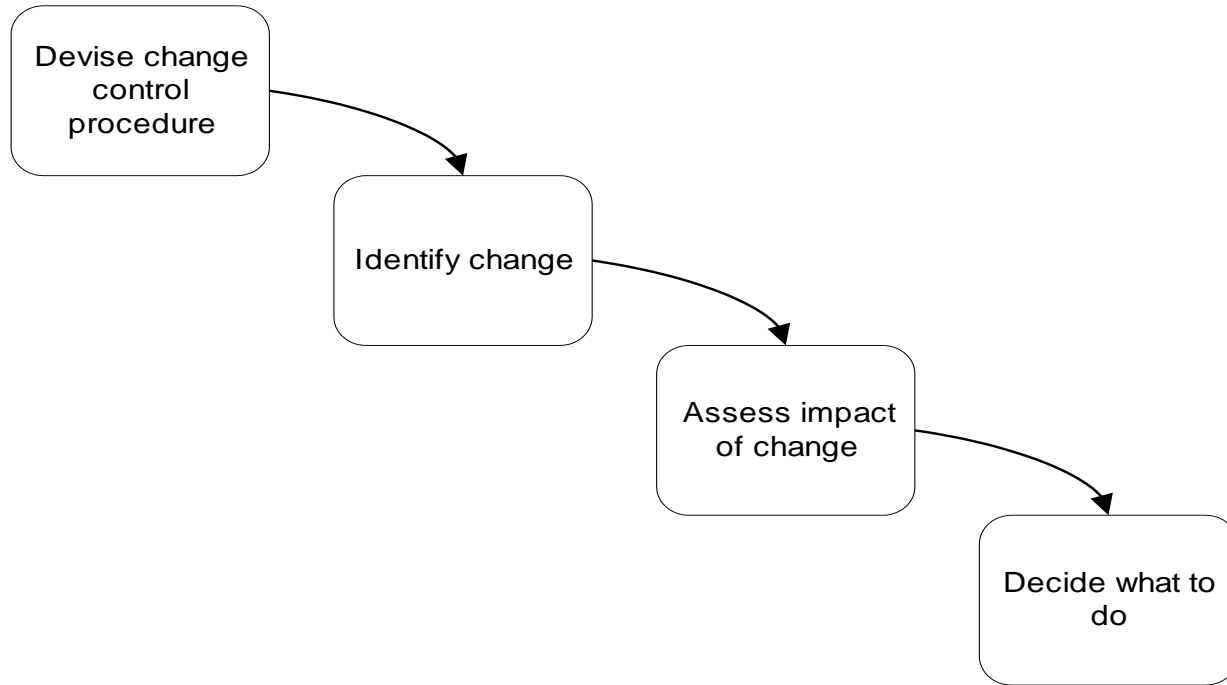
# Typical Change Control Process

- One or more users might perceive the need for a change.
- User management decide that the change is valid and worthwhile and pass it to development management.
- A developer is assigned to assess the practicality and cost of making the change.
- Development management report back to user management on the cost of the change; user management decide whether to go ahead.

## Change Control Process Contd.

- One or more developers are authorized to make copies of components to be modified.
- After initial testing, a test version might be released to users for acceptance testing.
- When users are satisfied then operational release authorized – master configuration items updated.

# Change Control



# Change Control And Configuration Management

## Change control

- Set of procedures to ensure that changes made only after a consideration of the full impacts.

## Configuration management

- Version control to ensure that all changes are properly recorded and managed – and so that knock-on effects on other projects can be identified.

# Contract Management



# Acquiring Software From External Supplier

This could be done via:

- A bespoke system - created specially for the customer off-the-shelf - bought 'as is' customized off-the-shelf (COTS) - a core system is customized to meet needs of a particular customer.



# Types Of Contract

- Fixed price contracts.
- Time and materials contracts.
- Fixed price per delivered unit.

# Fixed Price Contracts

## Advantages to customer:

- Known expenditure.
- Supplier motivated to be cost-effective.

## Disadvantages:

- Supplier will increase price to meet contingencies.
- Difficult to modify requirements.
- Upward pressure on the cost of changes.
- Threat to system quality.

# Time And Materials

Advantages to customer:

- Easy to change requirements.
- Lack of price pressure can assist product quality.

Disadvantages:

- Customer liability - the customer absorbs all the risk associated with poorly defined or changing requirements.
- Lack of incentive for supplier to be cost-effective.

# Fixed Price/Unit

## Advantages for customer

- Customer understanding of how price is calculated.
- Comparability between different pricing schedules.
- Emerging functionality can be accounted for Supplier incentive to be cost-effective

## Disadvantages

- Difficulties with software size measurement - may need independent FP counter
- Changing (as opposed to new) requirements: how do you charge?

# The Tendering Process

## Open tendering

- Any supplier can bid in response to the invitation to tender.
- All tenders must be evaluated in the same way.
- Government bodies may have to do this by local/international law.

# The Tendering Process

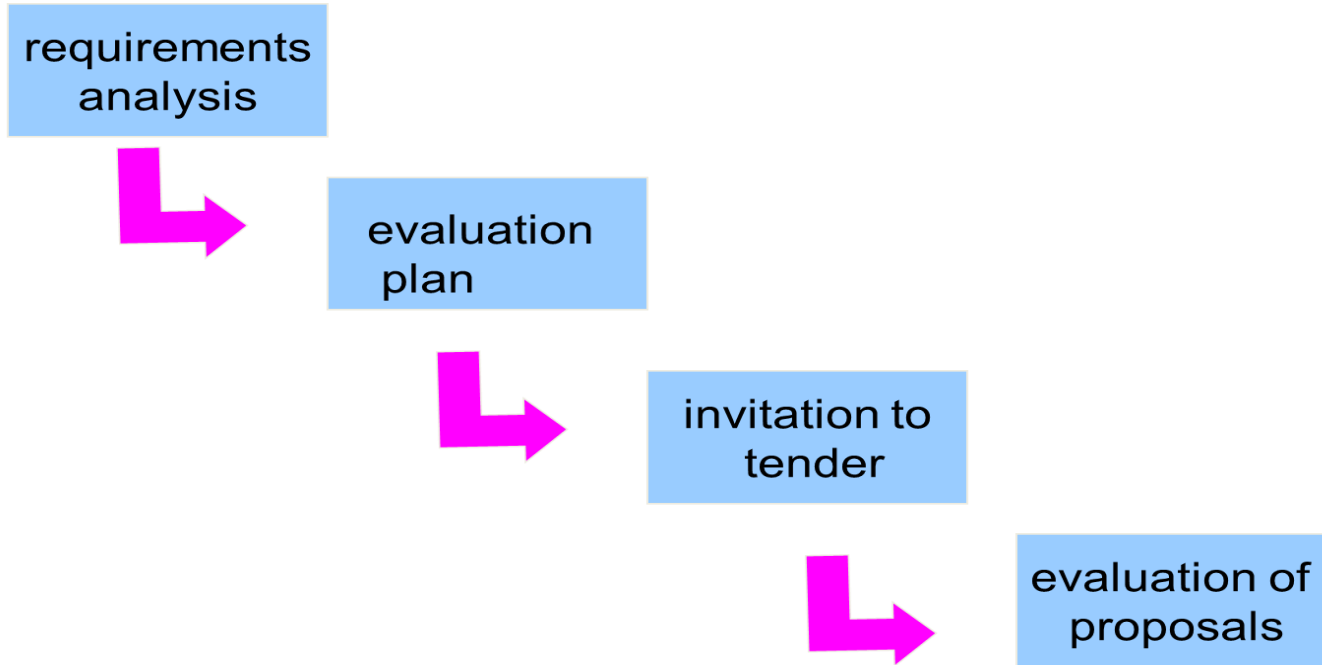
## Restricted tendering process

- Bids only from those specifically invited.
- can reduce suppliers being considered at any stage.

## Negotiated procedure

- Negotiate with one supplier e.g. for extensions to software already supplied.

# Stages In Contract Placement



# Requirements Document

- Introduction
- description of existing system and current environment
- future strategy or plans
- system requirements - mandatory/desirable features
- Deadlines
  - functions in software, with necessary inputs and outputs standards to be adhered to other applications with which software is to be compatible
  - quality requirements e.g. response times additional information required from bidders



# Evaluation Plan

- How are proposals to be evaluated?
- Methods could include:
  - Reading proposals.
  - Interviews.
  - Demonstrations.
  - Site visits.
  - Practical tests.

# Invitation To Tender (ITT)

- Note that bidder is making an offer in response to ITT.
- Acceptance of offer creates a contract.
- Customer may need further information.
- Problem of different technical solutions to the same problem.

# Memoranda Of Agreement (Moa)

- Customer asks for technical proposals
- Technical proposals are examined and discussed
- Agreed technical solution in MoA
- Tenders are then requested from suppliers based in MoA
- Tenders judged on price
- Fee could be paid for technical proposals by customer

# How Would You Evaluate The Following?

- Usability of existing package could try out a demo or ask existing users
- Usability of application to be built you would have to make stipulation about the process e.g. on the development of interface prototypes; you could also specify performance requirements
- Maintenance costs of hardware this could be incorporated in a maintenance agreement and you could compare the terms offered by different potential suppliers; another approach is ask to current users of the hardware about their experience of it.

# How Would You Evaluate The Following? Con't

- Time taken to respond to support requests

This could once again be made a contractual matter and the terms offered by different suppliers could be compared; suppliers could be asked to supply evidence of their past performance (but they might refuse, or not tell the truth); you could ask for references from current customers of the supplier;

- Training

Once again references could be taken up; you could ask for the CV of the trainer; you could even get them to give a short presentation

# Contract Management

Contracts should include agreement about how customer/supplier relationship is to be managed e.g.

- Decision points - could be linked to payment.
- Quality reviews.
- Changes to requirements.