RESOURCE ALLOCATION, SCHEDULING RESOURCES AND CRITICAL PATHS

- The allocation of resources to activities will lead us to review and modify the ideal activity plan.
- It may cause us to revise stage or project completion dates.
- In any event, it is likely to lead to a narrowing of the time-spans within which activities may be scheduled.
- The final result of resource allocation will normally be a number of schedules including:
    - ❖ Activity schedule indicating the planned start and completion dates for each activity;
    - ❖ Resource schedule showing the dates on which each resource will be required and the level of that requirement
    - ❖ Cost schedule showing the planned cumulative expenditure incurred by the use of resources over time

SCHEDULING RESOURCES

Having produced the resource requirements list.

- The next stage is to map this onto the activity plan to assess the distribution of resources required over the duration of the project.
- This is best done by representing the activity plan as a bar chart and using this to produce a resource histogram for each resource.
- Each activity has been scheduled to start at its earliest start date – a sensible initial strategy, since we would, other things being equal, wish to save any float to allow for contingencies.
- Earliest start date scheduling, as is the case with Amanda's project, frequently creates resource histograms that start with a peak and then Mil off.
- Changing the level of resources on a project over time**,** particularly personnel, generally adds to the cost of a project.
- Recruiting staff has costs and even where staffs are transferred internally, time will be needed for familiarization with the new project environment.

Various ways of prioritizing activities, two are

- ❖ Total float priority
- ❖ Ordered list priority

Total Float Priority

- Activities are ordered according to their total float, those with the smallest total float having the highest priority.
- In the simplest application of this method, activities are allocated resources in ascending order of total float.
- However, as scheduling proceeds, activities will be delayed and total floats will be reduced.
- It is therefore desirable to recalculate floats each time an activity is delayed.

Ordered List Priority

- With this method, activities that can proceed at the same time are ordered according to a set of simple criteria.
- An example of this priority list, which takes into account activity duration as well as total float:
  - ❖ Shortest Critical Activity
  - ❖ Critical Activities
  - ❖ Shortest Non-Critical Activity
  - ❖ Non-Critical Activity With Least Float,
  - ❖ Non-Critical Activities

CRITICAL PATHS

- Scheduling resources can create new critical paths.
- Delaying the start of an activity because of lack of resources will cause that activity to become critical if this uses up its float.
- Furthermore, a delay in completing one activity can delay the availability of a resource required for a later activity.
- If the later one is already critical then the earlier one might now have been made critical by linking their resources.
- As a result of examining the progress information and comparing it against what was planned, some remedial action might need to be taken.
- Instructions may be formulated and passed down to a lower level of management.

- The lower level managers will have to interpret what needs to be done and formulate more detailed plans to fulfill the directive.
- As the directives filter down the hierarchy, they will be expanded into more detail at each level.

Levels of Decision Making and Information

- Each decision made in a project environment should he based on adequate information of the correct sort.
- The type of information needed depends on the level of decision making.
- Decision, can he group at Three Levels:
    - ❖ Strategic
    - ❖ Tactical
    - ❖ Operational.

Strategic Decision Making:

- In the case of the, the decision to become administratively independent could be regarded a strategic decision.
- In our example we were interested only in the payroll, but this might have been part of a wider programme which may have affected many other administrative functions.

Tactical Decision Making:

- The project leader who has the responsibility for achieving objectives will have to formulate a plan of action to meet those objectives.
- The project leader will need to monitor progress to see whether these objective are likely to he met and to take action where needed to ensure that the things remain on course.

Operational Decisions: Relate to the day-to-day work of implementing the project.