Software Project Management

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Prioritizing monitoring

So far we have assumed that all aspects of a project will receive equal treatment in terms of the degree of monitoring applied.

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

Critical path activities

- Any delay in an activity on the critical path will cause a delay in the completion date for the project.
- Critical path activities are therefore likely to have a very high priority for close monitoring.

Activities with no free float

- Free float – It is the amount of time that an activity may be delayed without affecting any subsequent activity.
- A delay in any activity with no free float will delay at least some subsequent activities even though, if the delay is less than the total float, it might not delay the project completion date.
- These subsequent delays can have serious effects on the resource schedule as a delay in a subsequent activity could mean that the resources for that activity will become unavailable before that activity is completed.
- So these activities should be given priority while monitoring.

Activities with less than a specified float

- If any activity has very little float it might use up this float before the regular activity monitoring brings the problem to the project manager's attention.
- It is a common practice to monitor closely those activities with less than, say, one week free float.

High risk activities

- A set of high-risk activities should have been identified as part of the initial risk profiling exercise.
- If we are using the PERT, we should designate as high risk to those activities that have a high estimated duration variance.
- These activities will be given close attention because they are most likely to overrun or overspend.

Activities using critical resources

- Activities can be critical because they are very expensive (as in the case of specialized contract programmers).
- Staff or other resources might be available only for a limited period, especially if they are controlled outside the project team.
- In any event, an activity that demands a critical resource requires a high level of monitoring.

Getting the project back to target

- Almost any project will, at one time or another, be subject to delays and unexpected events.
- One of the tasks of the project manager is to recognize when this is happening (or, if possible, about to happen) and, with the minimum delay and disruption to the project team, attempt to mitigate the effects of the problem.
- In most cases, the project manager, at least initially, tries to ensure that the scheduled project end date remains unaffected.
- This can be done by shortening remaining activity durations or shortening the overall duration of the remaining project.

Getting the project back to target cont ...

- This might not always be the most appropriate response to disruptions to a plan.
- There is little point in spending considerable sums in overtime payments in order to speed up a project if the customer is not overly concerned with the delivery date and there is no other valuable work for the team members once this project is completed.
- There are two main strategies to consider when drawing up plans to bring a project back on target.
  - Shortening the critical path
  - Altering the activity precedence requirements

Shorten the critical path

- The overall duration of a project is determined by the current critical path, so speeding up non-critical path activities will not bring forward a project completion date.
- There are several ways in which this might be done.
  - Adding resources - especially staff
  - Increase use of current resources
  - Reallocate staff to critical activities
  - Reduce scope
  - Reduce quality

Shorten the critical path

- By such means, we can attempt to shorten the timescale for critical activities until such time as either we have brought the project back to schedule or further efforts prove unproductive or not cost-effective.
- Remember, however, that shortening a critical path often causes some other path, or paths, to become critical.

Adding resources- especially staff

- Exhorting staff to 'work harder' might have some effect, although frequently a more positive form of action is required, such as increasing the resources available for some critical activity.
- For example, fact-finding, might be speeded up by allocating an additional analyst to interviewing users.
- It is unlikely, however, that the coding of a small module would be shortened by allocating an additional programmer
  - indeed, it might be counterproductive because of the additional time needed for organizing and allocating tasks and communicating.

Adding resources- especially staff

- While adding more staff may be able to speed up progress, this would be at an additional cost.
- In EV terms, negative schedule variance (SV) may be reduced, but at the price of increasing a negative cost variance (CV).

Increase use of current resources

- Resource levels can be increased by making them available for longer.
- Thus, staff might be asked to work overtime for the duration of an activity and computing resources might be made available at times (such as evenings and weekends) when they might otherwise be inaccessible.

Reallocate staff to critical activities

- The project manager might consider allocating more efficient staff to activities on the critical path or swapping resources between critical and non-critical activities.
- When a project is actually executed, the critical path may change as the actual durations of activities will vary from the original estimates and staff allocations may be adjusted to reflect this.

Reduce scope

- The amount of work to be done could be reduced by reducing the scope of the functionality to be delivered.
- The client may prefer to have a subset of the promised features on time
  - Especially if they are the most useful ones.
    - Rather than have the delivery of the whole application delayed.

Reduce quality

- Some quality-related activities such as system testing could be curtailed.
- This would probably lead to more corrective work having to be done to the ‘live’ system once it has been implemented.

Reconsider the precedence requirements

- If attempting to shorten critical activities proves insufficient, the next step is to consider the constraints by which some activities have to be deferred pending completion of others.
- The original project network would most probably have been drawn up assuming ‘ideal’ conditions and ‘normal’ working practices.
- It might be that, to avoid the project delivering late, it is now worth questioning whether as yet unstarted activities really do have to await the completion of others.

Reconsider the precedence requirements cont ...

- It might, in a particular organization, be ‘normal’ to complete system testing before commencing user training.
- In order to avoid late completion of a project it might, however, be considered acceptable to alter ‘normal’ practice and start training earlier.

Reconsider the precedence requirements cont ...

- One way to overcome precedence constraints is to subdivide an activity into a component that can start immediately and one that is still constrained as before.
- For example, a user handbook can be drawn up in a draft form from the system specification and then be revised later to take account of subsequent changes.
- If we decide to alter the precedence requirements in such a way, it is clearly important to be aware that quality might be compromised and to make a considered decision to compromise quality where needed.

Reconsider the precedence requirements cont ...

- It is equally important to assess the degree to which changes in work practices increase risk.
- It is possible, for example, to start coding a module before its design has been completed.
- It would normally, however, be considered foolhardy to do so since, as well as compromising quality, it would increase the risk of having to redo some of the coding once the final design had been completed and thus delay the project even further.

Getting back on track: options in nut shell

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

Summary

- Discussed the priorities that might be applied while monitoring different activities.
- Also, discussed how to get the project back to target.

References :

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Thank you