

Appendix I

Survey: How to Manage Multiple Projects When Resources Are Constrained

The detailed scheduling of all activities in multiple projects is a very hard computation problem to solve. Instead, project managers rely on heuristics (rules of thumb) to prioritize activities. An activity is any action that takes time.

The following is a short survey on priority rules in a Resource Constrained Multiple Project Scheduling Problem. Described below are seven priority rules for assigning activities for multiple projects.

- Please indicate if you use any of these priority rules.

1. First Come First Served (FCFS). Projects underway take precedence over new projects. A project manager would assign activities to complete the projects underway before assigning activities to begin new projects.

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|--------|------------|-----------|--------|-------|----------------|
| | | | | | |
| Always | Very Often | Sometimes | Rarely | Never | Not applicable |

2. Minimum Late Finish Time (LFT). All activities have an early finish time (EFT) and a late finish time (LFT). EFT describes the earliest an activity can be completed. LFT is the latest an activity can finish and not delay the following activity. The difference between EFT and LFT is slack for that activity. By choosing the minimum LFT, priority is given to the activity with the smallest slack in finishing times at the activity level.

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|--------|------------|-----------|--------|-------|----------------|
| | | | | | |
| Always | Very Often | Sometimes | Rarely | Never | Not applicable |

3. Minimum Late Start Time (LST). LST is the latest a project can start and not delay a subsequent activity. Similar to LFT above, each activity has an early start time (EST), which is the earliest time an activity can begin, and a late start time (LST), which is the latest day an activity can begin. The difference between EST and LST is another measure of the slack for that activity. By choosing the minimum LST, precedence is given to the activity with the smallest slack in starting times at the activity level.

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|--------|------------|-----------|--------|-------|----------------|
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| Always | Very Often | Sometimes | Rarely | Never | Not applicable |

4. Maximum Total Work Content (MAXTWK): Activities are assigned priority by largest work content at the activity level, where work content is the joint measure of duration and amount of resources across all resource types.

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|--------|------------|-----------|--------|-------|----------------|
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| Always | Very Often | Sometimes | Rarely | Never | Not applicable |

5. Most Total Successors (MTS): Priority is given to the activity with the most number of successor activities. Successor activities are activities that depend on completion of the current activity to begin.

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|--------|------------|-----------|--------|-------|----------------|
| | | | | | |
| Always | Very Often | Sometimes | Rarely | Never | Not applicable |

6. Resource Scheduling Method (RSM). RSM gives precedence to activities that will delay the project the most. In particular, it gives precedence to activities that have subsequent activities that have been waiting to start the longest.

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|--------|------------|-----------|--------|-------|----------------|
| | | | | | |
| Always | Very Often | Sometimes | Rarely | Never | Not applicable |

7. Shortest Activity for the Shortest Project (SASP). SASP gives precedence to activities that can be completed quickly to complete short projects.

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|--------|------------|-----------|--------|-------|----------------|
| | | | | | |
| Always | Very Often | Sometimes | Rarely | Never | Not applicable |

Part B: Please rank the top three as being the most appropriate to your project scheduling success.

First choice: _____

Second choice: _____

Third choice: _____

Part C: Please answer the following questions.

| | |
|--|--|
| What is the current number of projects you manage? | |
| What is the typical project length? | |
| What is the minimum project length? | |
| What is the maximum project length? | |
| What is the typical number of staff per project? | |