

Critical Chain Program Management (CCPM)

Problem

How to shorten a project schedule?

Difficulty

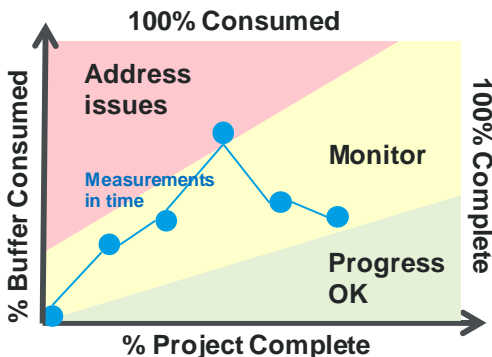
Work with an SME

Critical Chain Definition

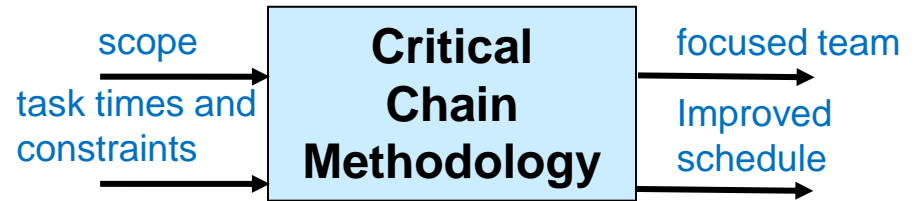
The longest chain of dependent tasks with resources de-conflicted and individual safeties removed and added back in as a project buffer

If resources are unlimited then **critical chain** and **critical path** are similar.

- **Critical Chain Program Management (CCPM)** is a management methodology which provides information on the right tasks at the right time to ensure on-time delivery.
- **CCPM** is based on the *Theory of Constraints*. In any schedule, at any time, there is **one activity** that is **gating** the progress. The goal is to **identify** that activity and **improve** it.



A "fever chart" tracks progress and indicates when corrective action is needed.



1. Develop a robust project plan

- Use *Reverse Planning* to create a schedule.
- Have workers create both *aggressive* and *low risk* duration estimates for tasks.
- Work to the aggressive duration estimates.
- Size and create a buffer based on the difference in duration estimates.

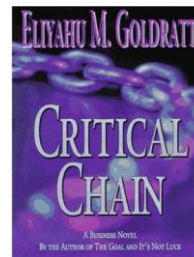
2. Identify constraints & plan Corrective Actions

3. Change the culture

- Critical Chain tasks get highest priority
- Minimize multi-tasking

4. Proactively manage the system

- Manage variation via the buffer



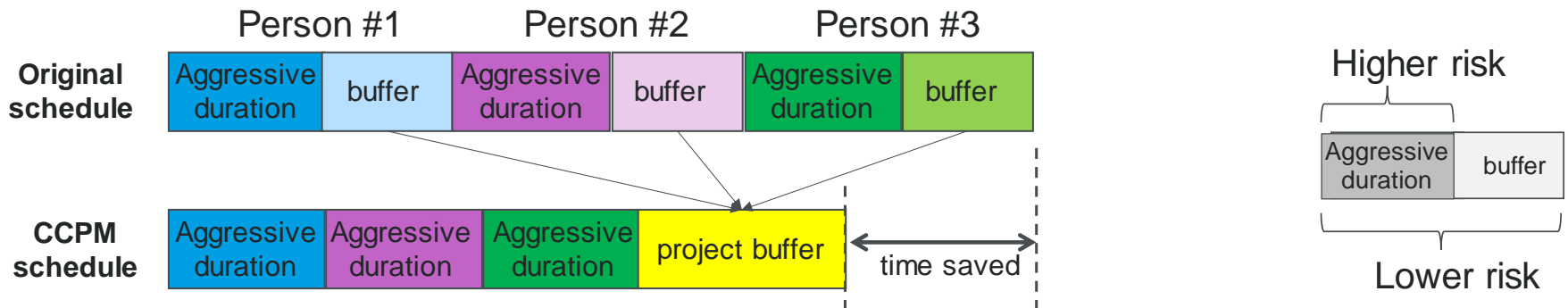
CCPM was defined in the book *Critical Chain* by Eliyahu M. Goldratt

<https://en.wikipedia.org/wiki/File:CriticalChain.jpg>

CCPM – Example – The CCPM Project Buffer

Consider a job that requires 3 people to perform sequential tasks.

1. Each person
 - A. Knows the aggressive (shortest) duration it will take them to perform their task.
 - B. Will naturally include a buffer since they don't want to fail (and, perhaps, a task is more challenging than anticipated, or there may be interruptions or sickness).These individual buffers increase the overall time for the job.
2. In CCPM, the aggressive durations are placed end-to-end and the *individual buffers* are statistically aggregated into a overall *project buffer*. This reduces the overall time since some, but not all, of the tasks will take longer than the minimal time.
3. Management challenges include:
 1. Ensuring realistic aggressive durations; failing to meet these time estimates can be both expected and desired.
 2. Rescheduling is required when some tasks take more than the minimal duration.



CCPM – Notes

Slide 1

1. In any project there is a single gating activity that controls the project duration. If the gating activity is delayed a day (or a week), then the entire project takes a day (or a week) longer.
2. The TOC process, which is also used for CCPM, has the steps:
 - *Identify*
 - *Pamper*
 - *Synchronize*
 - *Improve*
 - *Repeat*
3. Benefits of CCPM include:
 - Significant reductions in project duration
 - Better resource utilization
 - Better management information
4. CCPM is more useful for larger projects.
5. There is a commercial tool for CCPM (ProChain) from <https://www.prochain.com/>

Slide 2

1. The example shows the use of a *project buffer* for the critical path.
2. While every project always has one critical path, there will be other paths that should be addressed, to best utilize resources.
3. In CCPM, the critical paths, and the other paths, each have a *feeding buffer*.