

“Never Say I know” – Series

Webinar no. 5



**Discussing the
boundaries of
CCPM**

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The boundaries of this discussion

- ⦿ I'm **not** going to argue the CCPM specifications
 - Note that Rob Newbold is going to challenge the feeding buffers at the TOCICO conference in Germany 2013
- ⦿ I ask: **what project-oriented environments do not fit the CCPM approach?**
- ⦿ Managing a single project – **does CCPM always provide added value?**
- ⦿ What **support** outside the frame of CCPM is **necessary for managing projects in a superior way?**
 - Avraham Mordoch will deliver a Master Class on some of the organizational issues at the TOCICO conference in Germany 2013
 - These aspects will not be covered here
 - Performance measurements for professionals is an issue

The key assumptions behind CCPM

1. It is critical that the project(s) would **complete on time**
 - There is a meaningful **wished-for-completion-date** that is known at the start of the project!
 - The time element is more important than **fully exploiting the capacity of critical resources**
 - Meeting the due-dates is more important than early completion
2. At the start of the project we have a very good idea of the **output of the project** and what is required to achieve it
3. Completing the project is only a question of time
4. The time required for completing a task usually includes a considerable time buffer
5. The time to complete a task uses 100% of the capacity of the resources involved

The objectives of CCPM

1. Providing management with solid **prediction of the completion time and amount of resources** required for a particular project or a portfolio of projects
2. Providing the project manager with **good tools to handle the uncertainty in the timing elements**, including getting timely warnings when the completion of the project might be delayed
3. Eventually CCPM leads to being able to **do more projects with the same level of resources**
 - But, this is LESS important than the two objectives above

The impact of the due-date on projects

- ◎ The buffering scheme of projects aims at **protecting the completion date**
 - What happens when we like **to finish as soon as possible**?
 - The project buffer protects a specific date – **does it encourage earlier completion?**
 - What completion date would **YOU** give to a project you strive to finish fast?
 - One option is to get the task times, cut them aggressively, and attach the project buffer, so a **reasonable** due-date is achieved
 - Another option is cutting the task times without any buffer
 - Can you explain why you need a project buffer when you do not have a due-date but wish to finish ASAP?
 - What do we do when the resulting date from the CCPM planning is considerably later than the date we truly need to supply?

Between the need-date and the safe-date

- ◎ Very often there is a considerable difference between the **date we need the output** and the **date we can reliably commit to**
 - TOC assumes we look primarily to the **safe-date**
 - Especially as CCPM is able to promise safe-dates that are better than the current actual completion dates
- ◎ The more we get used to CCPM we go into the **conflict between the due-dates**
 - Can we develop **a method of using the two dates?**
 - Trying seriously to reach the early need-date
 - This would also mean planning the project with the best resources
 - While having the safe-date as a “worst-case” scenario

When the due-date changes

- ◎ We expect that for projects that are done for clients who manage higher level projects - **many times the actual delivery can be delayed without any damage**
 - When other parts of the bigger project are delayed
 - Or because changes in the economy makes the quick completion of the project undesirable
 - Question: **should we re-plan?**
 - What are the NBRs of (frequently) re-planning when the due-date is pushed later in time?
 - What are the NBRs if we do not re-plan – keep the original due-date in place?

When the outcome of the project is not clear at the very start

- ◎ A true **research project**
 - Every step in such a project depends highly on the results of the previous step
 - How can we identify the critical chain in such a case?
- ◎ Search for oil or any other highly uncertain project that depends on the results of various tests
- ◎ We assume that a valid solution for the above is to **dissect the project to smaller parts** for which there is good enough information how to go on
 - Could be the small parts are not projects – just one or two tasks
 - And then CCPM has very little value
- ◎ **Should we plan the full set of features at the very start of the project?**

Planning and execution in the TOC Way

- ⦿ Planning, making decisions for later in time, should be restricted to the **absolutely necessary details**, done as late as possible and include **buffers** to protect the planning objectives
 - Isn't this what we have learned from the TOC handling of MTO and MTA in production environment?
- ⦿ Execution the TOC way is given more **responsibility and flexibility** to manage their priorities and by that achieve the objectives
- ⦿ What are the ramifications for projects that include a lot of “nice to have” features?

The ramifications on CCPM

- ◎ Projects with many “nice to have” features
 - The first objective of the CCPM planning is to assess **the safe date** for completion of a **reasonable outcome**
 - This should be done based only on the **must have** features
 - The minimal viable outcome
 - The set of features that without even one of them there is no product
 - We should manage a group of nice-to-have features, already expressed as a small network of tasks, and **include some of those features in the project when appropriate**
 - When we have the resources and it's not going to delay the project

Simplified CCPM

- ◎ James Holt presented at the TOCICO conference 2011 the topic of Simplified-CCPM
 - One buffer – the project buffer
 - Priorities of only two colors: Red and Green (red and not-red)
 - Effective Fever-Chart where the Y axis is $\frac{1}{2}$ of the X axis
 - Thus the scale for both X and Y are the same
 - As the buffer is 50% of the chain it protects
- ◎ This idea is inline with the principles of planning and execution when the following assumption apply:
 - The project mainly consists of one clear chain of tasks
 - So, the overall problem of synchronization of several chains running in parallel and integrating into one chain does not exist
 - Note though that all other assumptions of CCPM have to valid

When Parkinson law is not valid

- ◉ The formal verbalization of Parkinson Law:
Work expands so as to fill the time available for its completion
- ◉ CCPM assumes Parkinson Law is valid in projects:
 - Because the professionals are measured by on-time performance
 - The project manager looks for on-time completion of every task
 - And there is a lot of uncertainty in the project's tasks
 - TOC interprets Parkinson Law as having time buffers on each task
- ◉ What happens when the professionals intentionally **distort the task times, by quoting very short times**, in order to make sure the project would be confirmed by management?

When Parkinson law is not valid - continued

- ⦿ The problem for a project that is based on a super optimistic way:

The first objective, giving management a reasonable date and amount of resources, is violated!

- ⦿ More problems would emerge:
 - When the project buffer is fully penetrated then the project manager loses sight of what is going on
 - It could lead to distrust CCPM as a reliable tool!
- ⦿ The only remedy is to understand the circumstances that cause this behavior and then be ready to make decisions under severe uncertainty
 - The cloud between management and the scientists and engineers who want the project must be verbalized and analyzed!

Between Projects and Manufacturing

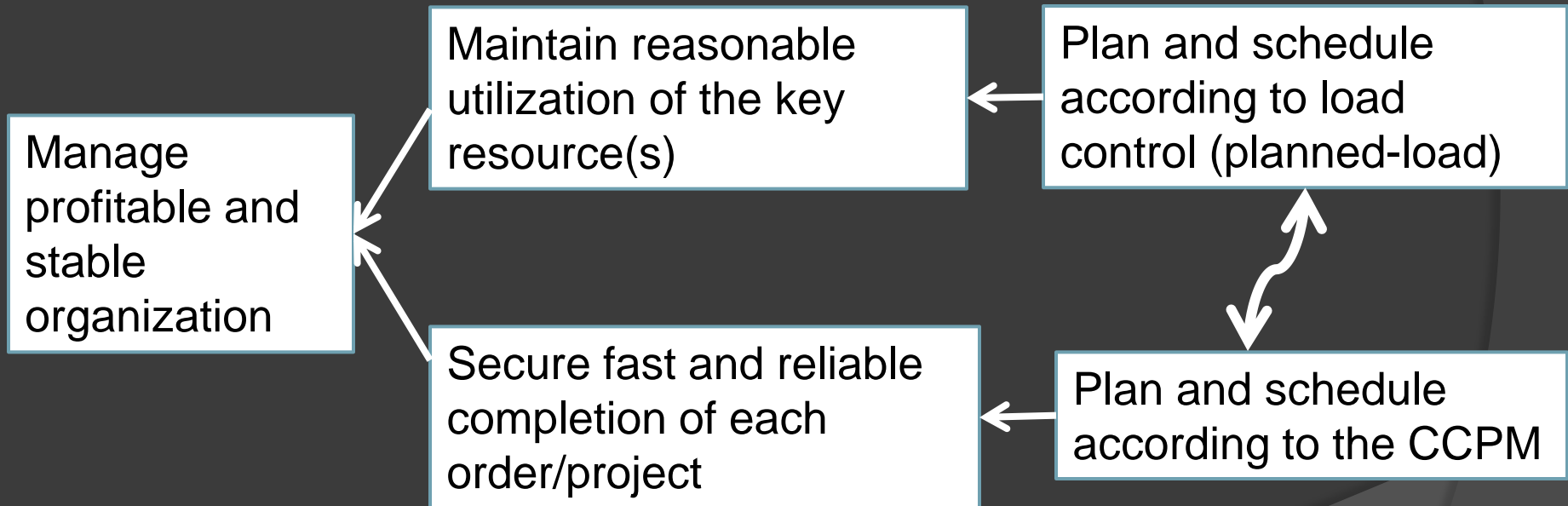
- ◎ The key difference that impacts the scheduling:
 - Projects are **NOT supposed to be on-hold** without progress!
 - Because the importance of the time element, the high value of the output and the long touch times require that **no work should wait for a human resource!**
 - In Manufacturing the normal procedure is to have a queue of work – thus **exploiting the capacity**
 - Even under TOC we recognize that wait time is normal, even for non-constraints
 - Good-enough due-date performance, where the lead time is much longer than the total touch time, is appropriate for manufacturing
 - Thus, CCPM looks hard on the critical chain and its progress, while critical chain is meaningless in manufacturing

Consultancy projects – inc. VV

- ⦿ Do TOC implementations progress continuously?
- ⦿ Do teams for solving problems progress continuously?
- ⦿ If you are writing a book – do you progress continuously?
- ⦿ Consultancy project's tasks typically involve several people
 - For each of them it is an addition to other tasks!
 - Is it bad multi-tasking?
 - Synchronizing the time table for several people makes the total duration of the task relatively long
- ⦿ With such projects in mind – **what is the meaning of the critical chain?**
 - When the touch time is much shorter than the task duration is it clear what the CC is?

The conflict of scheduling

Key assumption of the upper leg: We plan so the lead time of an order is significantly longer than the touch time – **orders wait for the resource**



Key assumption of the bottom leg: We plan so the progress of every project is not interrupted – **resources wait for their tasks**

Dealing with capacity of people

- ◎ CCPM bypasses the tricky problem of measuring capacity of people
 - We assume that assessing the 50% confidence of finishing a task is a good-enough assessment of capacity of the resources involved
 - In most projects the **key resources are people**
 - We do not have an effective way to know whether those people can do more tasks within the same period of time
 - Most people working on projects have other things to do that are not part of the multi-project planning
 - Managing the human resources have to assess whether they are able to face the predicted, or even known, future load
 - The managerial problem is: Given the prediction for future projects **are the capacity levels about right?**
 - The Drum is used, along its limiting assumptions, only when good enough CCPM plans for future projects are given

Projects and capacity constraints

- ◎ Eli Goldratt said that there cannot be any true capacity constraint in a multi-project environment!
 - Because in such a case projects would wait very long time until being even started
 - I've simulated a very large multi-project environment, under certain assumptions about the use of capacity and I've found out:
An average load of 85% on ONE resource causes such delays that the organization would not have tolerated it
 - The ramifications are: all resources have MORE than 15% excess on the actual load of projects
- ◎ With this in mind, even 80% load of a resource might restrict the organization from running more projects
 - So, the most restricting resource could be an active CCR!

Managing the capacity of people

- ◎ Using templates to simulate the future drum:
 - This is a process that needs to be implemented **very carefully**
 - The time horizon required for resource management has to include all the templates of projects that are expected to start
 - Under a certain level of confidence
 - **Then running the Drum on all those projects**
 - The drum itself is based only on either **one resource** or on **arbitrary number of projects** in the integration phase
 - It cannot predict the emergence of another resource as a constraint
 - When we assume each resource invests 100% of its capacity on every task we can display the graph of the load versus capacity
 - Can one deduce **something reasonable from such a graph?**

A proposed direction

- ◉ Measuring capacity of people is too tricky to accomplish
- ◉ An insight: **It is possible to note when a resource is loaded too much**
 - Having too many tasks that cause **the buffer to be red** signals pressure, but it could be already too late for a quick fix
- ◉ Suggestion from Eli Schragenheim:
 - Watch for tasks that should have been started, but wait for a resource to be available
 - Record the **number of days tasks waited for that resource**
 - Pareto chart of the waiting-task-days of every resource would point to the resource that is under bigger pressure than the rest
 - Use the value of the planned-load to signal the threshold for that resource
 - Planned load: the summation of all task times the resource is planned to do divided by the number of units

Performance measurement for project professionals

- ◉ Stating the problem:

TOC eliminates the on-time performance of tasks **as a valid personal measurement**, so how can management know how good a specific person is?

- ◉ Insight:

What is important is whether a certain person is no-good, rotten apple, a star or simply good enough

- ◉ If someone is either no-good or a rotten-apple then other people know and most of them are aware to the damage
- ◉ If someone is a star – again people know
- ◉ A direction of solution: **Periodical questionnaire that is target to identify those qualities**

Identifying rotten-apples and stars

- ◎ The basic assumption behind the questionnaire is:
People know their colleagues at work much better than any qualitative performance measurement
- ◎ So, the idea is to ask every employee to characterize the people they work with
 - The questions should reflect the **wishes of Management**
 - Like being ready to support the priorities of the organization
 - Being honest and caring about the organization
 - Having the required skills to do the job
- ◎ The main NBR is that when answering the questions people might consider other factors
 - Schemes that serve their self-interests
 - Human compassion for nice people without the skills

Personal measurements of professionals

- ◎ The main elimination of the NBR is by:
 - The more people are going through the questionnaire the more reliable it is
- ◎ Another NBR is that very unique people might come out as 'rotten-apples' – which requires damage control by the management
 - Special attention must be given to people who got very different reactions from their peers
- ◎ The important point is to refrain from giving marks to people who are good, but not stars and definitely not rotten-apples

The role of the project manager

- ◎ Does CCPM assume that there is a project manager?
 - There are environments where a project moves through several departments, but there is no one person managing the project
 - Very small projects might not need a project manager
 - Without an active project manager meeting that predicted due-date does not seem likely
 - Thus, indirectly we do assume that for CCPM to be effective there is a need to have a project manager in place
- ◎ How does the capacity of the project managers impact multi-project environments?
 - Real good project managers are not common
 - Thus, it could be that the capacity of the existing project managers is the constraint of certain multi-project environments

Discussion

- Let's discuss the topic further using the LinkedIn discussion group:

TOC4U Theory of Constraints group