

Project Management the TOC Way

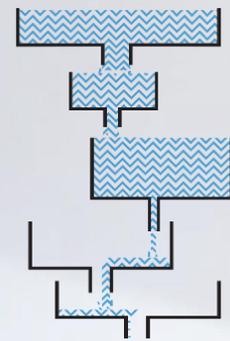
Combining Critical Chain Project Management
and the 5 Focusing Steps
for astounding results

Philip MARRIS

Marris Consulting

France

Marris
Consulting



Theory Of Constraints expert.

33 years of TOC experience. Started working with the founder Eliyahu Goldratt in 1986.

Lean expert.

35 years of experience in Lean. Assists some of the Leanest organizations in the world.

>30 years of experience helping over 200 companies in all industrial sectors.

CEO of Marris Consulting based in Paris, France.

Motto: *Factories, People & Results.*



contact@marris-consulting.com

+33 1 71 19 90 40

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>30 years of TOC, >200 times

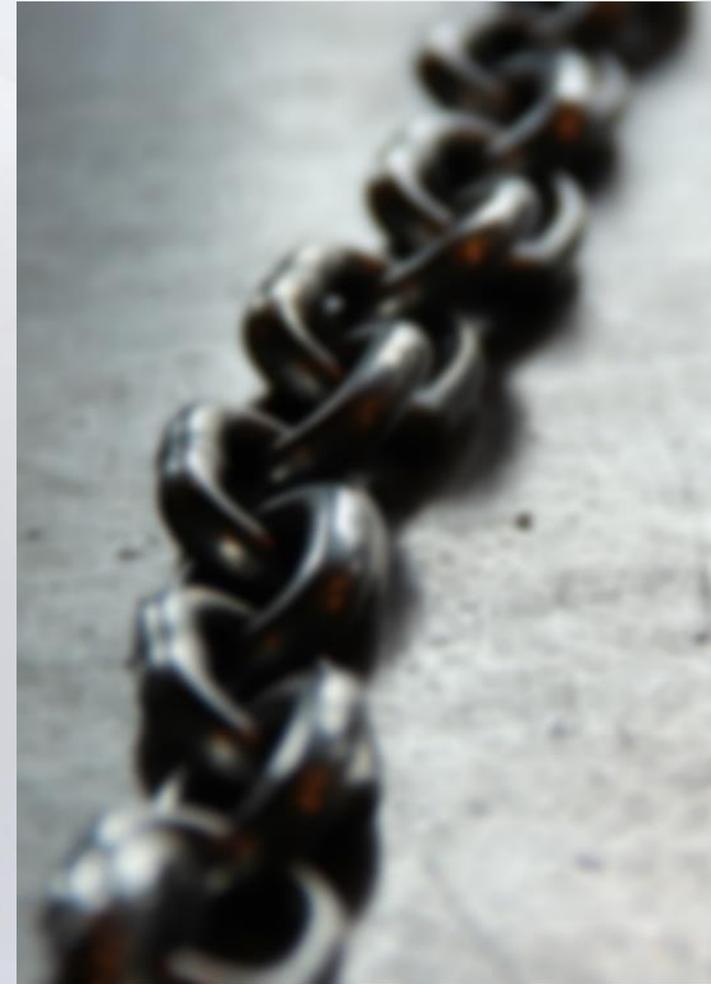
- 40% projects, 40% production.
- 16 TOC implementations live at the moment.
- All kinds of industries: Aero, Pharma, Luxury Goods, Aero MRO, Auto, Fast Food...



Presentation outline

- Introduction
- A few examples
- Conclusion

- Appendices

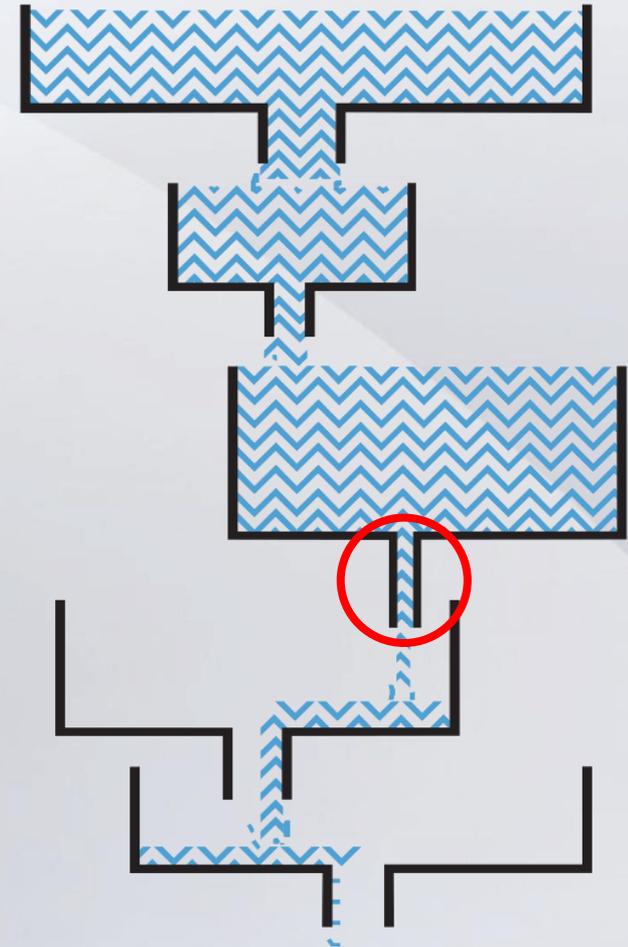


Introduction

The combination of
Critical Chain Project Management
and the Theory Of Constraints'
5 Focusing Steps
enable extraordinary results to be obtained
in an unbelievably short time.

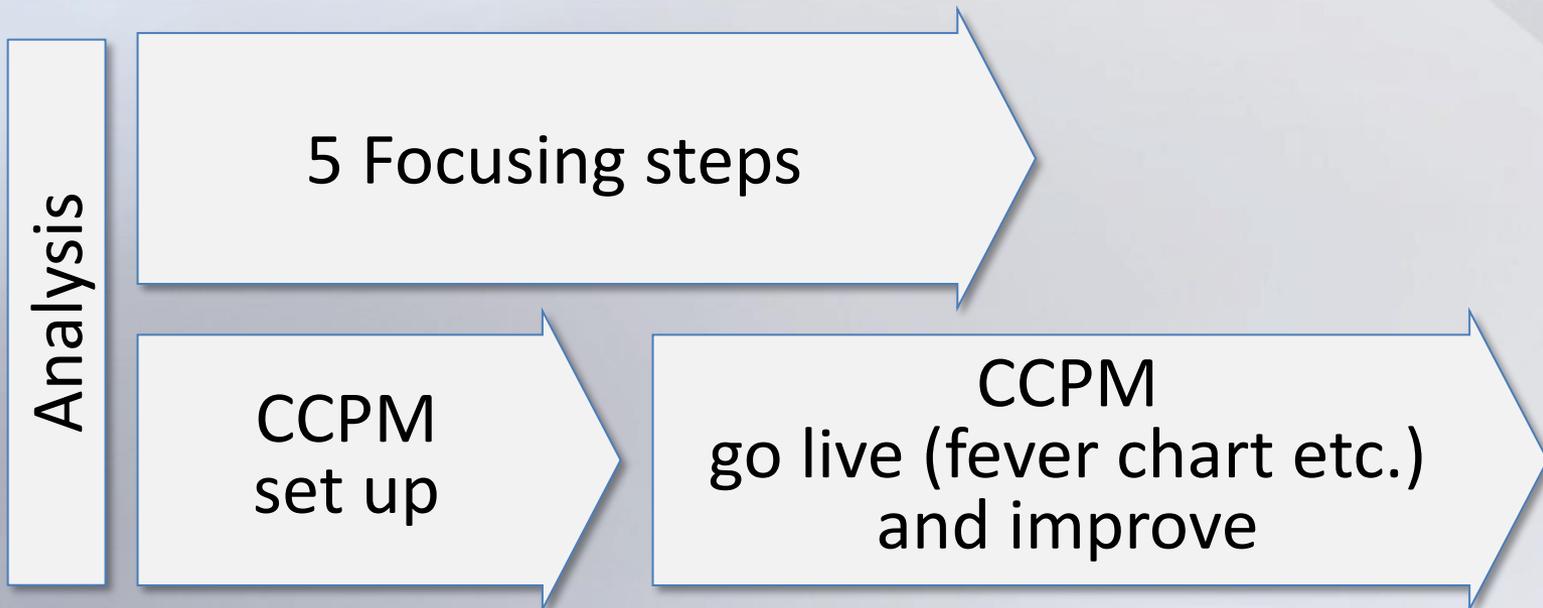
Portfolios of projects have capacity constraints

- We consider that there are two types of constraints in project environments.
 - The constraint of a single project is its Critical Chain: it determines the project duration.
 - The constraint of a project portfolio is a resource: it is the constraint that prevents the system producing more projects per year.



You can kick-start a Critical Chain implementation

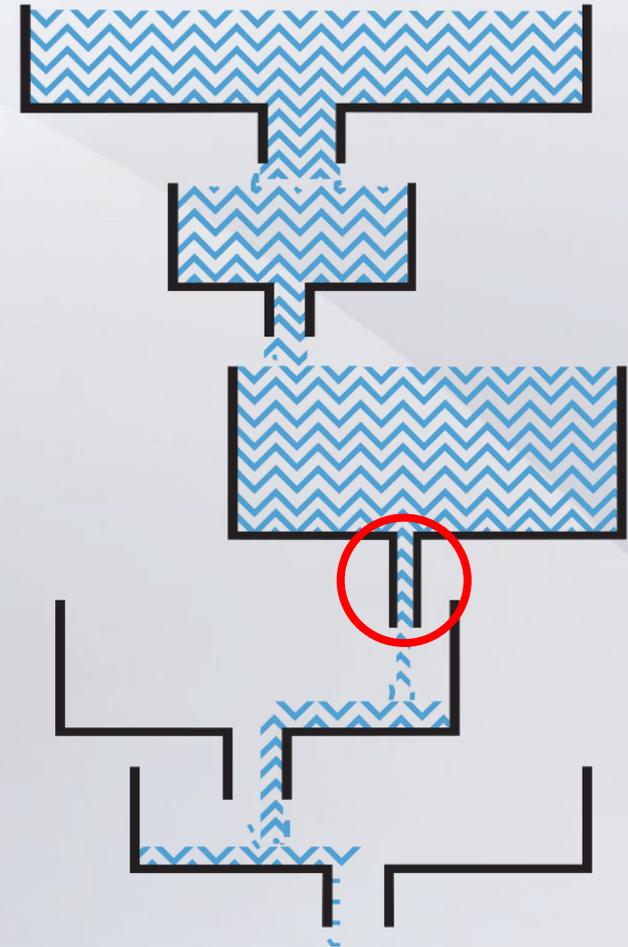
- Capacity constraints in project portfolios can be immediately exploited to produce 2 or 3 times more. This can be done even before you go live with CCPM.



Step 1: Identify

- We believe there are nearly always capacity constraints (bottlenecks) in multi-project portfolio environments.
- Experts disagree on this subject.
- But in Marris Consulting's experience

THERE ARE SIGNIFICANT BOTTLENECKS.



Step 1: Identify

Find the biggest queue

- Find the bottleneck by finding the biggest queue.
- This is easy whether or not you have a project management software.
- Warning: the queue can be smaller than a shoe box or even "invisible" (hidden in computers).



Find the biggest queue of work

The very good news

It is easy to multiply
throughput and productivity
by 2 or 3
very quickly



A few examples



In the following examples, several data have been modified for confidentiality reasons.
In all cases the real figures are more spectacular than those presented here.

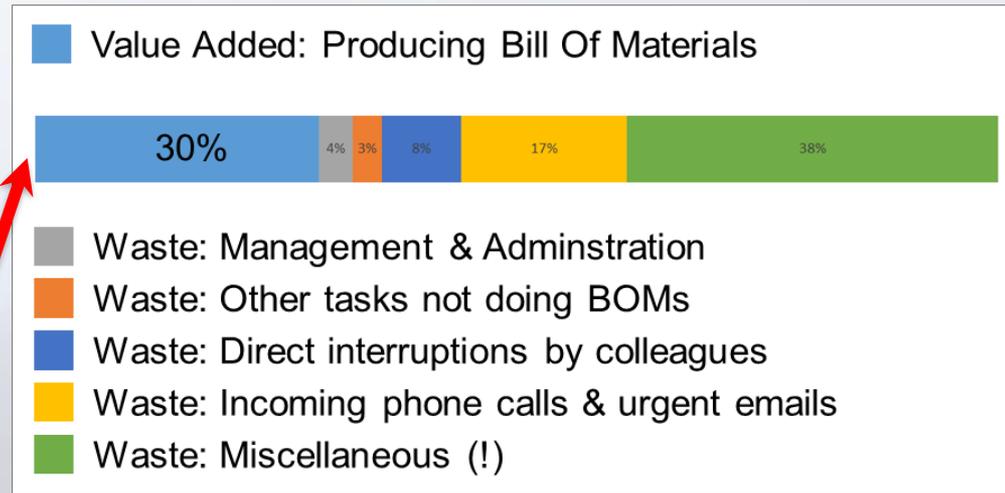
We use just 3 of TOC's 5 Focusing Steps (5FS)

- 1. IDENTIFY** the system's constraint(s).
- Decide how to **EXPLOIT** the system's constraint
- 3. SUBORDINATE** everything else to the above decision.
- 4. ELEVATE** the system's constraint
- 5. WARNING!!!!**

If **in the previous steps a constraint has been eliminated, go back to step 1,**
but do not allow INERTIA
to become the system's constraint.

Example of world leader in luxury goods (>\$3 billion)

- First iteration: (of Steps 1 then 2 then 5)
 - Bottleneck = Defining Bill Of Materials (it had a 5 month queue in an 15 month process).
 - DIL0 to analyse activity: 30% efficiency.
 - Exploit
 - + 100% Throughput in one week
 - + 70% Throughput in one month
 - Lead time reduction of 77% in 5 months.



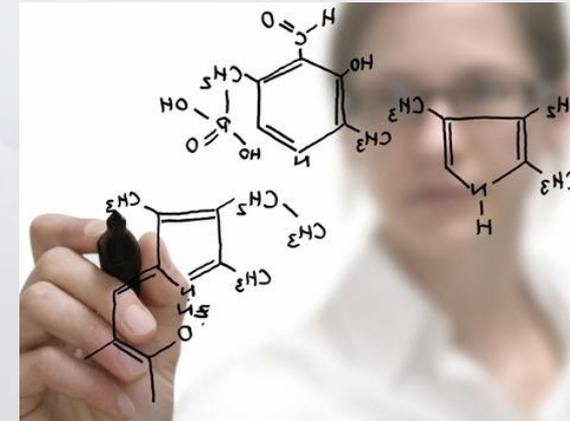
(continued) Example of world leader in luxury goods

- Second iteration:
 - Bottleneck = Purchasing (ordering the components).
 - Exploit = +60% in 2 weeks.
- Third iteration:
 - Woodworking machine shop.
 - Currently being dealt with.

$100\% + 70\% + 60\% = 230\%$
 $\Rightarrow 230\%$ increase so far \Rightarrow **x 3.3**

Example in pharma product development

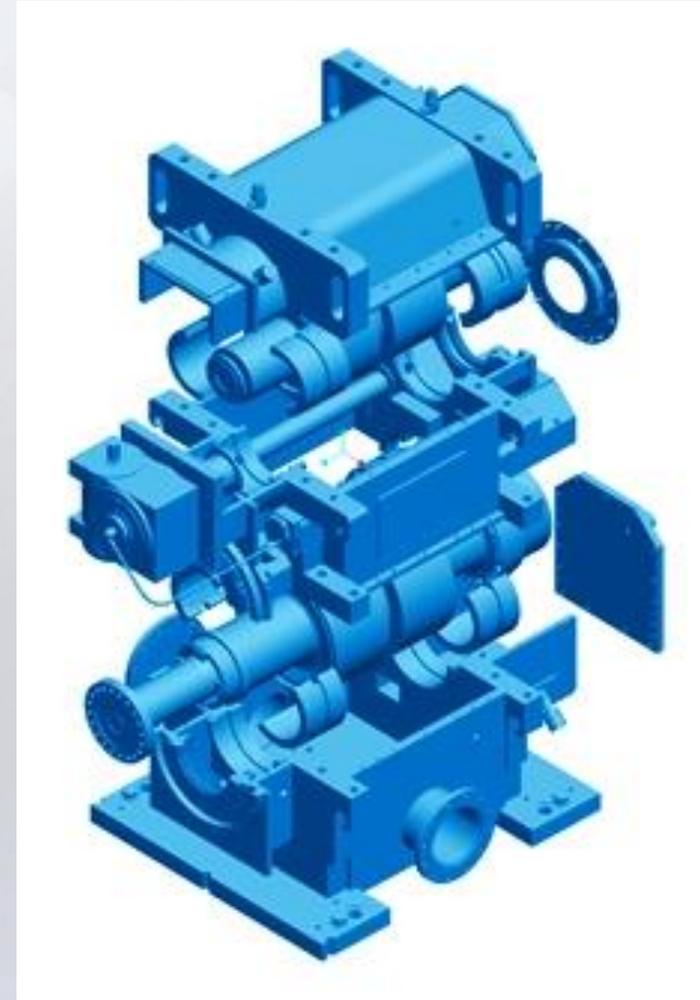
- A 280 person R&D Department of a leading Animal Health Pharmaceutical firm.
- They thought that the constraint was their 19 key expert research scientists.
- In fact it was their Industrialization Department. This had tripled the workload on the 9 people in this department.
- So the new block buster drugs developed were all waiting for this department to define how they were going to be produced.
- Exploit & Elevate: **>+200%** Throughput.



(continued) Example in ETO & MTO

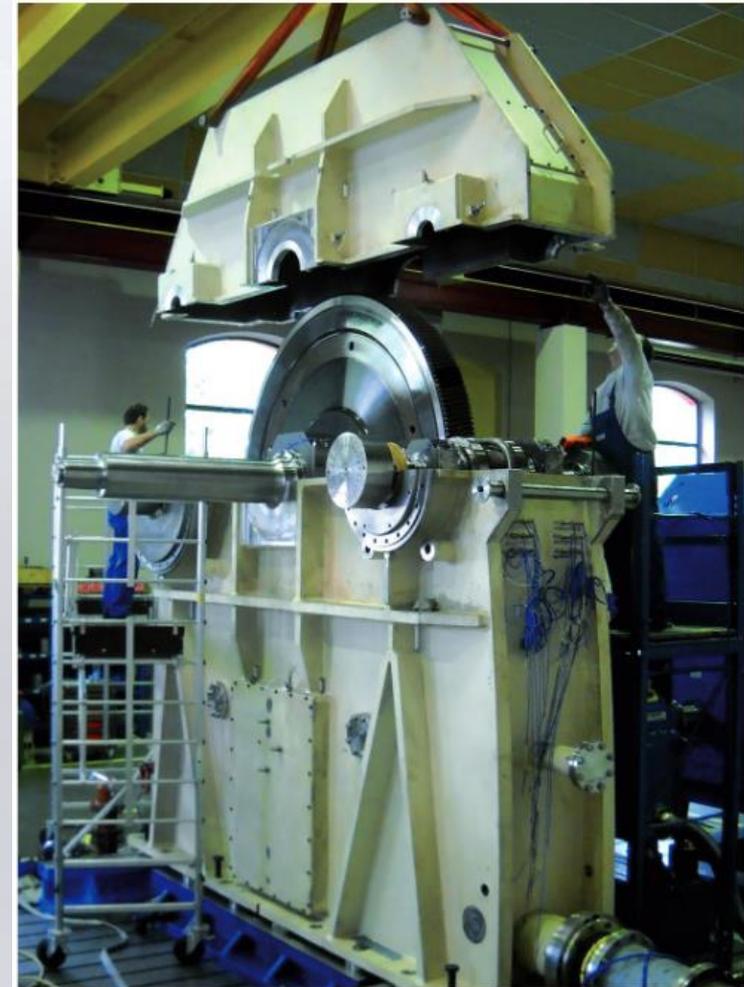
- 500 person company part of a very big (>300 000 people) organization.
- It is an Engineering To Order (ETO) and Make To Order (MTO) business.
- Designs and builds special big gearboxes.

Example: Gearbox between a gas turbine and a generator in a power plant.



Example in Engineering To Order (ETO) & MTO

- The bottleneck was in the Design Office in the Engineering Department. It was flooded: 90 projects in progress, 50 weeks of lead time, 1,8 projects (designs) finished per week.



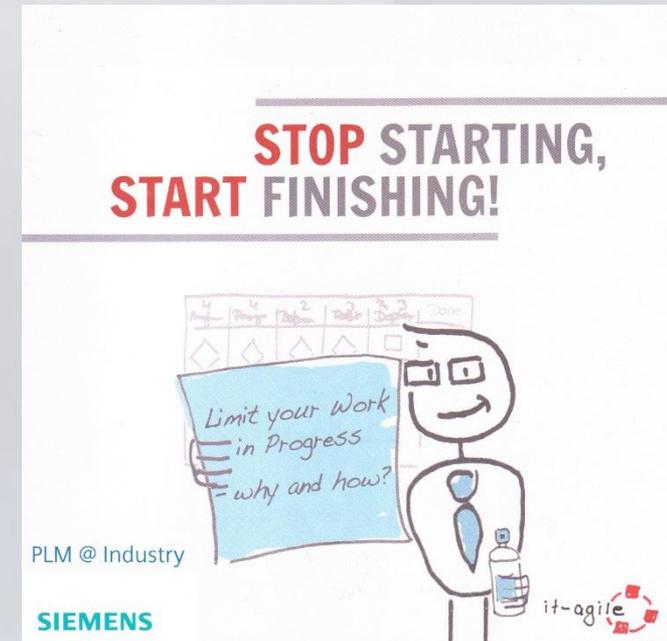
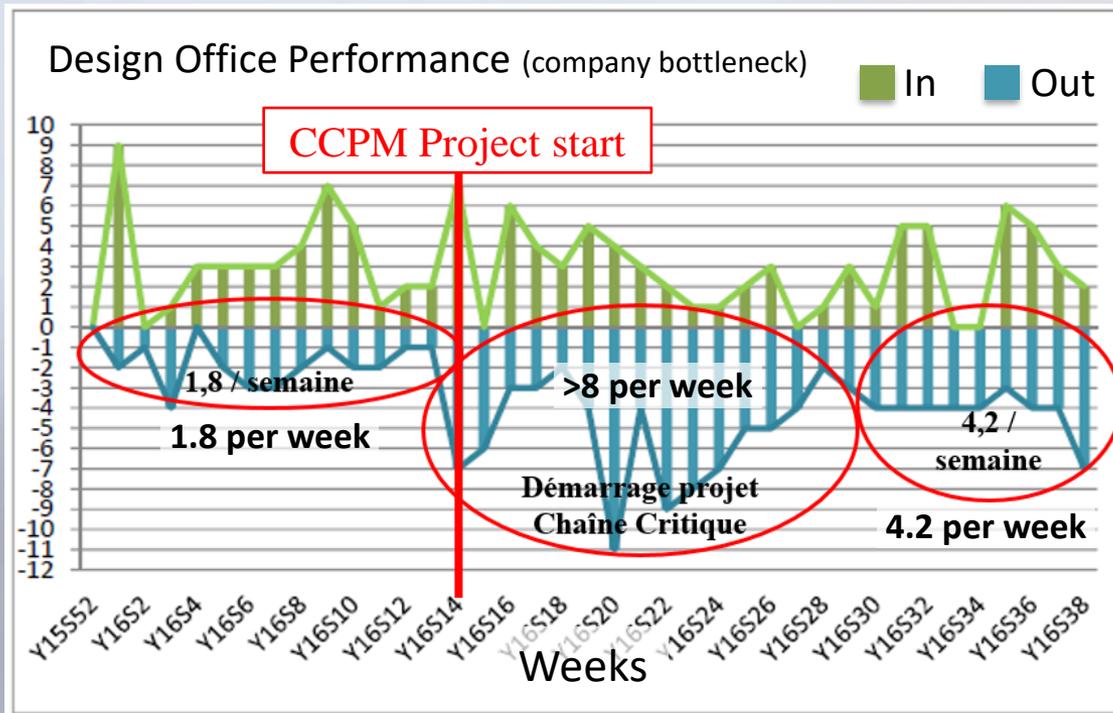
(continued) Example in ETO & MTO

- Initially the working conditions in the Design Office were very bad.
- A DILO (Day In the Life Of) analysis revealed **massive multi-tasking**.
 - Switching tasks >60 times per day.
i.e. an average of 7 minutes per task.
 - This reduced productivity by 70 to 90%.
 - It also generated many "silly" quality problems
(for example numerous errors in the Bill Of Materials).

WARNING: multi-tasking kills

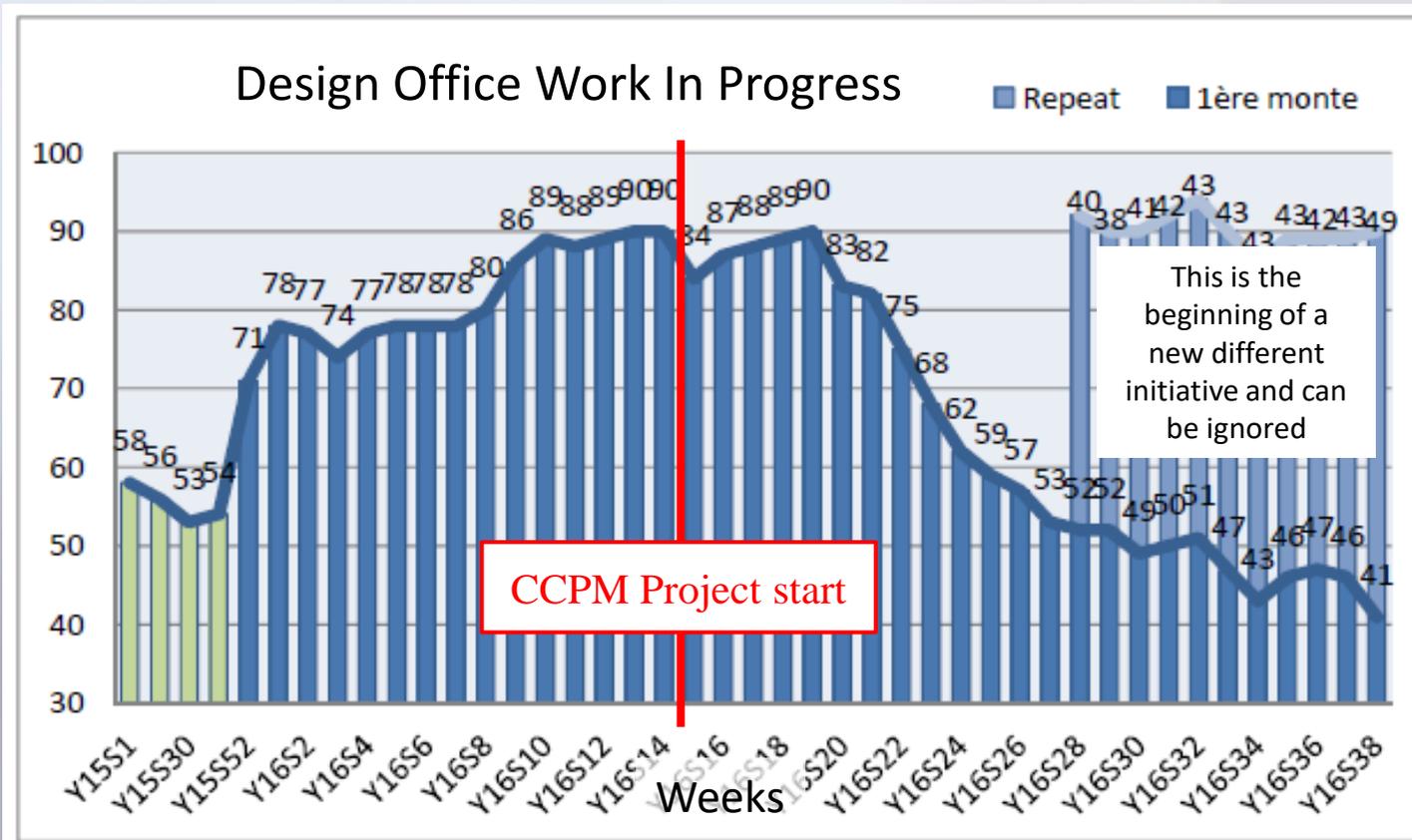
(continued) Example in ETO & MTO

- New rule: "Start finishing and stop starting".
- Throughput and productivity improved by 130%.
- And during the flushing process by >400%.



(continued) Example in ETO & MTO

- Lead times were reduced in the Design Office from 50 weeks to 8 weeks.



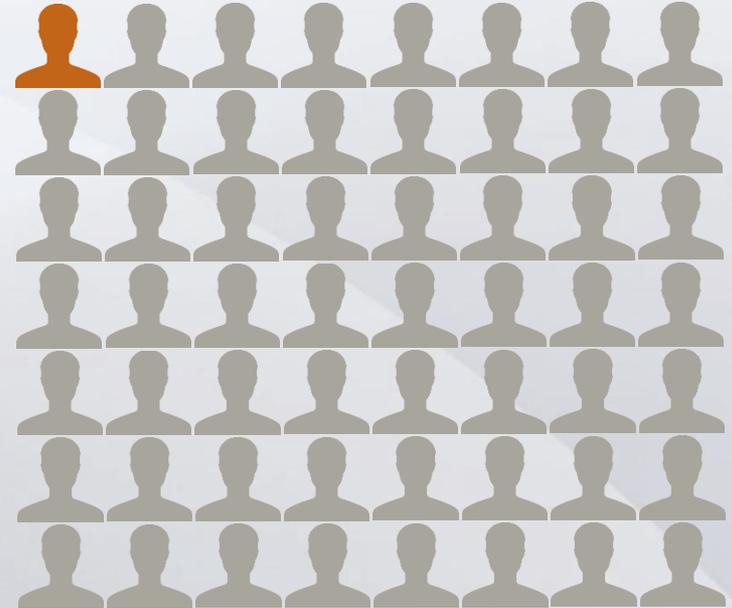
Example in a \$10 billion company

- Anonymous, > \$10 billion in sales and >20% annual growth.
- After analysing the difficulties that the company had in increasing annual growth using a "Goal Tree" approach (cf. Bill Dettmer)...
- ...the constraint was identified as the I.T. function (1 200 people internal & externalized).
- Project just about to start. No results yet.

We are finding that I.T. is often the constraint that limits the growth of a company

Example in a Medical Devices Manufacturer

- 250 person company part of large firm.
- Portfolio managed: all the big improvement projects (22).
- Bottleneck one person in IT.
- DILO: 30% efficiency (once again!)
This critical resource also managed access badges for the company...
- 5FS:
 - Exploit: + 80%.
 - Elevate (underway):
Hire another person of course.



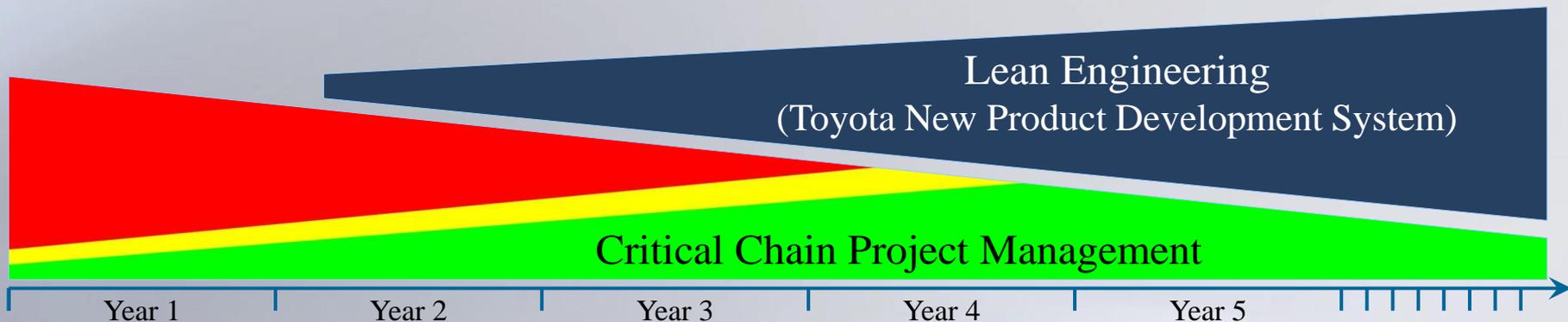
The capacity constraint determining the future performance of the company was just one person out of 250

Please note: bottlenecks are quite often in I.T.

Conclusion

The real challenge should be to do good projects with excellent outcomes

- The goal should not be just to finish one's projects on time and within budget.
- Critical Chain can put the organization under control and provide excellent project execution performance.
- But this should then be the foundation for doing projects that deliver exceptional results (exceptional products and services)...
- ...by implementing things such as Lean Product & Process Development.



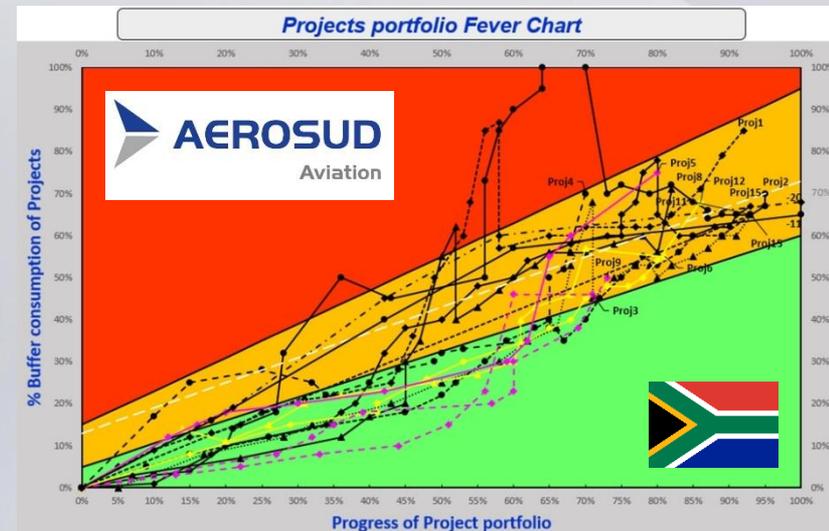
Project performance often determines a company's future

- Underlying the goal:
"To Make More Money Now And In The Future"
means (we believe) that there are simultaneously 2 constraints in all companies.
 - One that determines short term sales.
 - One that determines sales in the future.
- Building future sales is one or 2 portfolios of projects:
 - New product development portfolio.
 - Strategic improvements portfolio.
- So increasing the efficiency and throughput of these portfolios determines the future of organizations.



You should already have started your Critical Chain journey

- Using a combination of the 5 Focusing Steps and Critical Chain Project Management enables companies to:
 - Increase project Throughput and productivity x2 or x3,
 - Reduce project durations by 50% to 80%,
 - Finish nearly all projects on time.



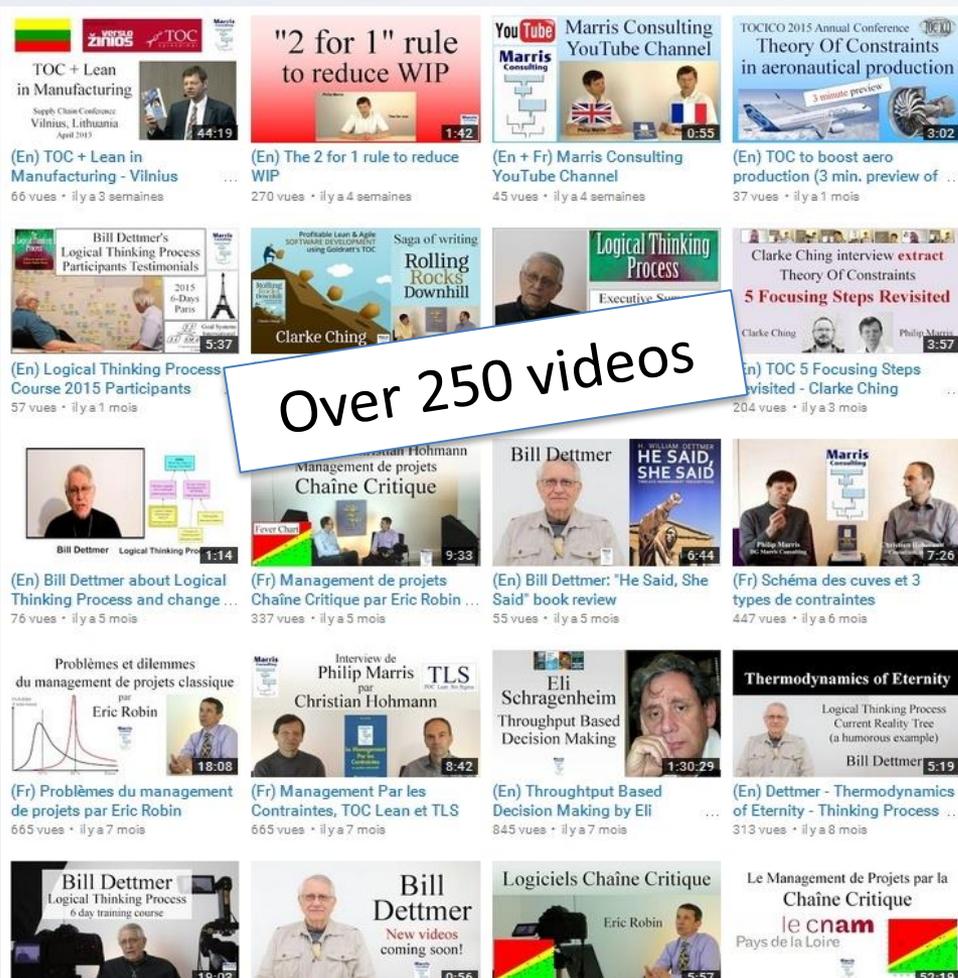
Thank you for your time.

Any questions?

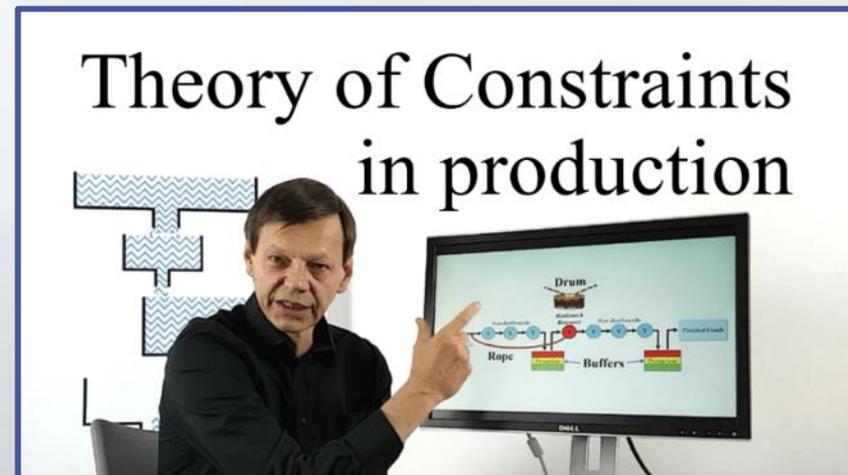
P.S. Do have a look at the 20 pages of information
in the appendices to this presentation.

Appendices

A video website: Marris Consulting's YouTube Channel
Name of channel: "marrisconsulting" (attached)
<https://www.youtube.com/user/marrisconsulting/videos>



Over 250 videos



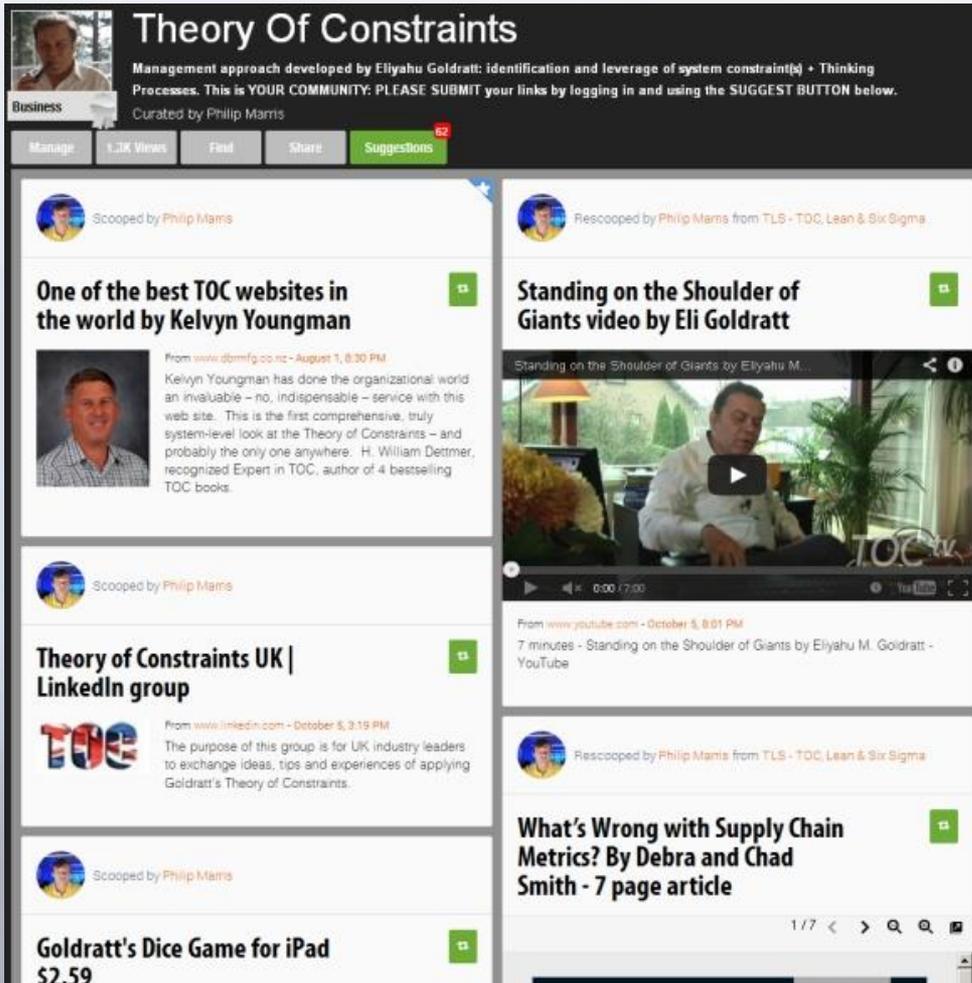
(En) Theory of Constraints in production - 5 min. summary



A brief 5 minute summary of how one applies the Theory of Constraints in a production environment. It covers: the axiom of the unbalanced plant, the existence of bottleneck, the Drum – Buffer – Rope flow control mechanism and the improvement strategy (the 5 focusing steps).

To facilitate viewing and video selection use the playlists:

- English videos
- Critical Chain videos
- Etc.



Theory Of Constraints
Management approach developed by Eliyahu Goldratt: identification and leverage of system constraint(s) + Thinking Processes. This is YOUR COMMUNITY: PLEASE SUBMIT your links by logging in and using the SUGGEST BUTTON below.
Curated by Philip Marris

Manage 4.3K Views Feed Share Suggestions

Scooped by Philip Marris

One of the best TOC websites in the world by Kelvyn Youngman

From www.tbmf.co.nz - August 1, 8:30 PM
Kelvyn Youngman has done the organizational world an invaluable – no, indispensable – service with this web site. This is the first comprehensive, truly system-level look at the Theory of Constraints – and probably the only one anywhere. H. William Detmer, recognized Expert in TOC, author of 4 bestselling TOC books.

Scooped by Philip Marris

Theory of Constraints UK | LinkedIn group

From www.linkedin.com - October 5, 3:19 PM
The purpose of this group is for UK industry leaders to exchange ideas, tips and experiences of applying Goldratt's Theory of Constraints.

Scooped by Philip Marris

Goldratt's Dice Game for iPad \$2.59

Rescooped by Philip Marris from TLS - TOC, Lean & Six Sigma

Standing on the Shoulder of Giants video by Eli Goldratt

Standing on the Shoulder of Giants by Eliyahu M. Goldratt

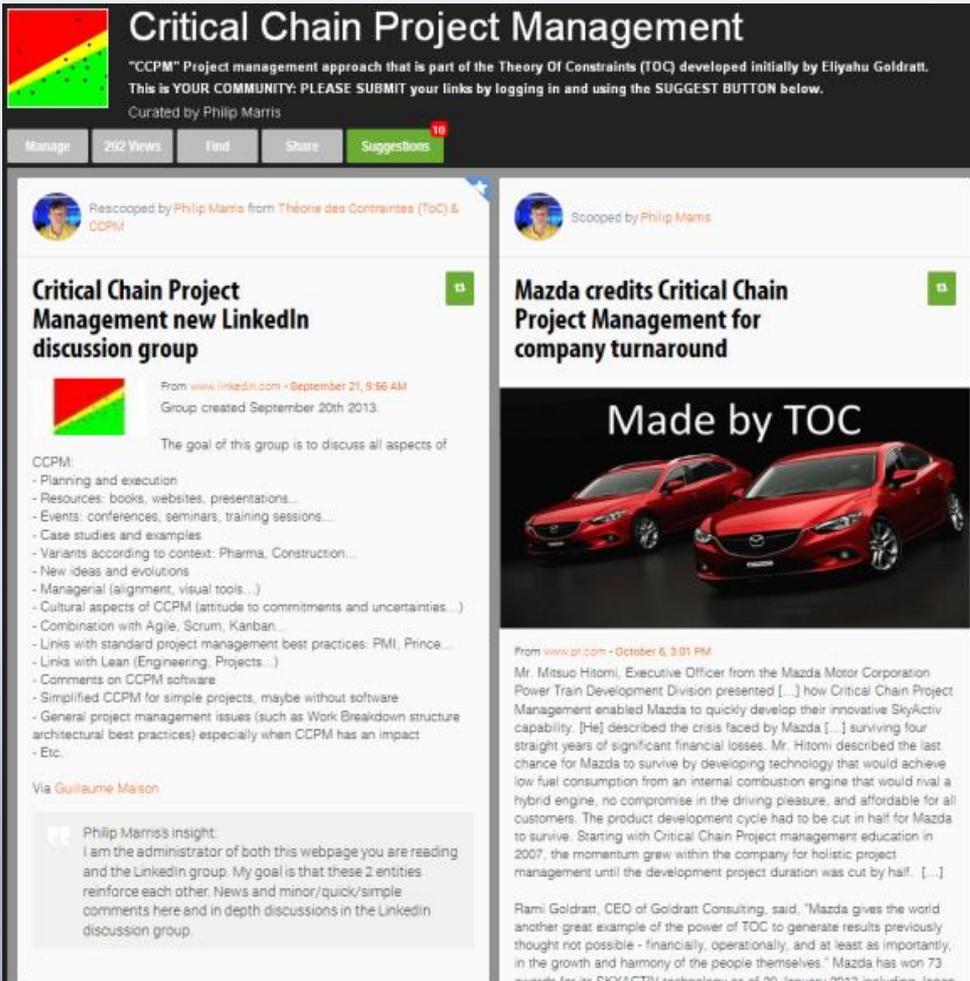
From www.youtube.com - October 5, 8:01 PM
7 minutes - Standing on the Shoulder of Giants by Eliyahu M. Goldratt - YouTube

Rescooped by Philip Marris from TLS - TOC, Lean & Six Sigma

What's Wrong with Supply Chain Metrics? By Debra and Chad Smith - 7 page article

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<http://www.scoop.it/t/theory-of-constraints-by-philip-marris>



Critical Chain Project Management

"CCPM" Project management approach that is part of the Theory Of Constraints (TOC) developed initially by Eliyahu Goldratt.
This is YOUR COMMUNITY: PLEASE SUBMIT your links by logging in and using the SUGGEST BUTTON below.
Curated by Philip Marris

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Rescoped by Philip Marris from Théorie des Contraintes (ToC) & CCPM

Critical Chain Project Management new LinkedIn discussion group

From www.linkedin.com - September 21, 9:56 AM
Group created September 20th 2013.

The goal of this group is to discuss all aspects of CCPM:

- Planning and execution
- Resources: books, websites, presentations...
- Events: conferences, seminars, training sessions...
- Case studies and examples
- Variants according to context: Pharma, Construction...
- New ideas and evolutions
- Managerial (alignment, visual tools...)
- Cultural aspects of CCPM (attitude to commitments and uncertainties...)
- Combination with Agile, Scrum, Kanban...
- Links with standard project management best practices: PMI, Prince...
- Links with Lean (Engineering, Projects...)
- Comments on CCPM software
- Simplified CCPM for simple projects, maybe without software
- General project management issues (such as Work Breakdown structure architectural best practices) especially when CCPM has an impact
- Etc.

Via [Guillaume Mason](#)

Philip Marris's insight:
I am the administrator of both this webpage you are reading and the LinkedIn group. My goal is that these 2 entities reinforce each other. News and minor/quick/simple comments here and in depth discussions in the LinkedIn discussion group.

Scooped by Philip Marris

Mazda credits Critical Chain Project Management for company turnaround

Made by TOC

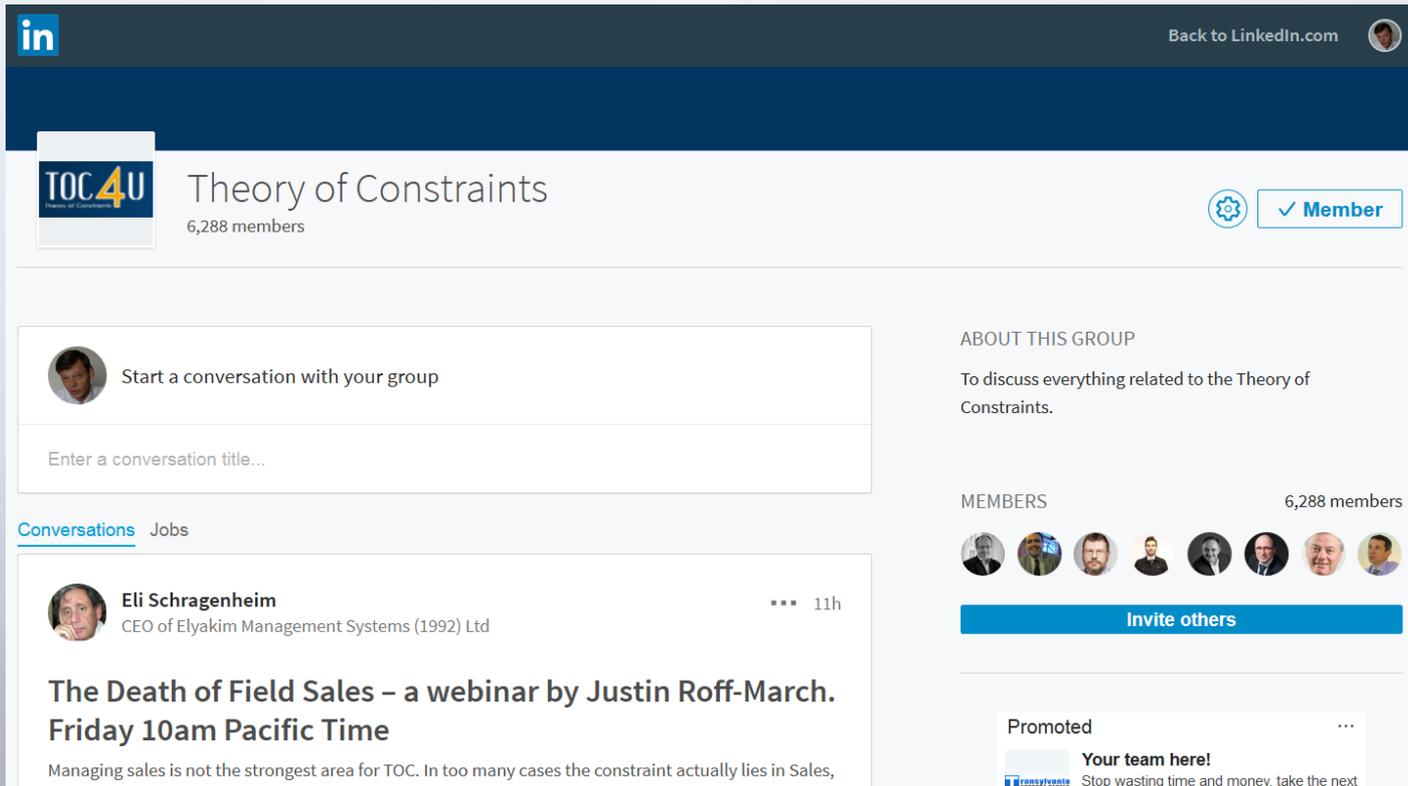
From www.br.com - October 6, 3:01 PM

Mr. Mitsu Hitomi, Executive Officer from the Mazda Motor Corporation Power Train Development Division presented [...] how Critical Chain Project Management enabled Mazda to quickly develop their innovative SkyActiv capability. [He] described the crisis faced by Mazda [...] surviving four straight years of significant financial losses. Mr. Hitomi described the last chance for Mazda to survive by developing technology that would achieve low fuel consumption from an internal combustion engine that would rival a hybrid engine, no compromise in the driving pleasure, and affordable for all customers. The product development cycle had to be cut in half for Mazda to survive. Starting with Critical Chain Project management education in 2007, the momentum grew within the company for holistic project management until the development project duration was cut by half. [...]

Rami Goldratt, CEO of Goldratt Consulting, said, "Mazda gives the world another great example of the power of TOC to generate results previously thought not possible - financially, operationally, and at least as importantly, in the growth and harmony of the people themselves." Mazda has won 73 awards for its SKYACTIV technology as of 20 January 2013 including Japan

<http://www.scoop.it/t/critical-chain-project-management>

A LinkedIn Discussion group dedicated to Theory Of Constraints

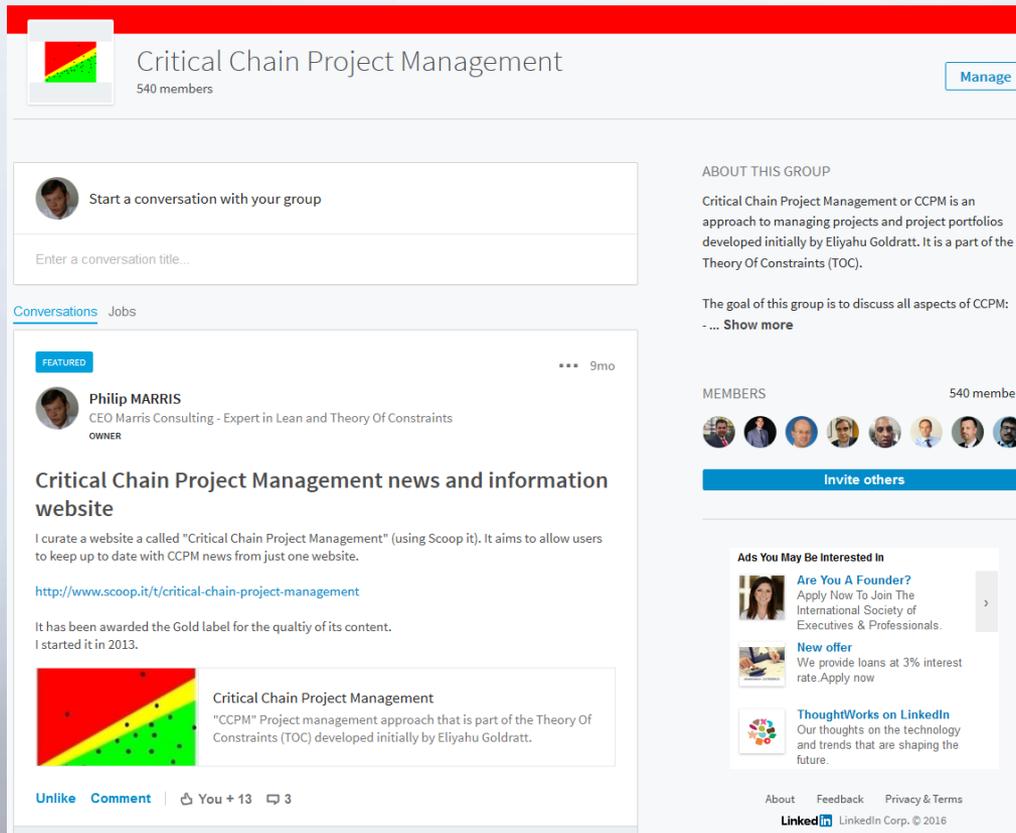


The screenshot shows the LinkedIn group page for 'Theory of Constraints'. At the top, there is a navigation bar with the LinkedIn logo and a 'Back to LinkedIn.com' link. Below this is the group header, which includes the group name 'Theory of Constraints', the member count '6,288 members', and a 'Member' button. A 'Start a conversation' section is visible, with a text input field for a conversation title. On the right side, there is an 'ABOUT THIS GROUP' section with the description 'To discuss everything related to the Theory of Constraints.' Below that is a 'MEMBERS' section showing a row of member profile pictures and a '6,288 members' count, along with an 'Invite others' button. At the bottom of the screenshot, a 'Promoted' post is visible with the text 'Your team here! Stop wasting time and money, take the next'.

A LinkedIn account is required to access the group
<https://www.linkedin.com/groups/84002>

Beware there are several with similar names. This one is named: *Theory Of Constraints*

A LinkedIn Discussion group dedicated to Critical Chain Project Management



Critical Chain Project Management
540 members

Start a conversation with your group

Enter a conversation title...

ABOUT THIS GROUP

Critical Chain Project Management or CCPM is an approach to managing projects and project portfolios developed initially by Eliyahu Goldratt. It is a part of the Theory Of Constraints (TOC).

The goal of this group is to discuss all aspects of CCPM: - ... [Show more](#)

MEMBERS 540 members

[Invite others](#)

Featured Post:

Philip MARRIS
CEO Marris Consulting - Expert in Lean and Theory Of Constraints
OWNER

Critical Chain Project Management news and information website

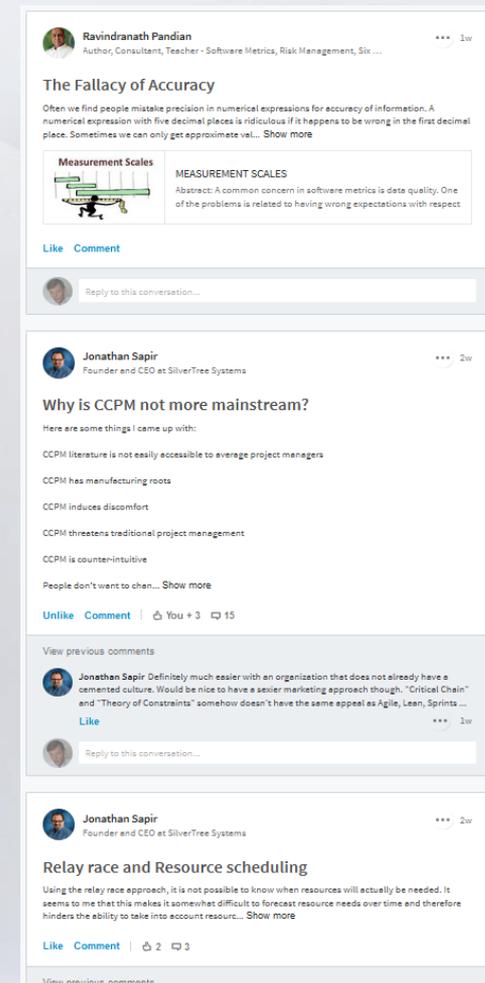
I curate a website called "Critical Chain Project Management" (using Scoop.it). It aims to allow users to keep up to date with CCPM news from just one website.

<http://www.scoop.it/t/critical-chain-project-management>

It has been awarded the Gold label for the quality of its content. I started it in 2013.

Critical Chain Project Management
"CCPM" Project management approach that is part of the Theory Of Constraints (TOC) developed initially by Eliyahu Goldratt.

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Ravindrath Pandian
Author, Consultant, Teacher - Software Metrics, Risk Management, Six ...

The Fallacy of Accuracy

Often we find people mistake precision in numerical expressions for accuracy of information. A numerical expression with five decimal places is ridiculous if it happens to be wrong in the first decimal place. Sometimes we can only get approximate val... [Show more](#)

Measurement Scales

MEASUREMENT SCALES
Abstract: A common concern in software metrics is data quality. One of the problems is related to having wrong expectations with respect

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Reply to this conversation...

Jonathan Sapir
Founder and CEO at SilverTree Systems

Why is CCPM not more mainstream?

Here are some things I came up with:

- CCPM literature is not easily accessible to average project managers
- CCPM has manufacturing roots
- CCPM induces discomfort
- CCPM threatens traditional project management
- CCPM is counterintuitive

People don't want to chen... [Show more](#)

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Jonathan Sapir Definitely much easier with an organization that does not already have a cemented culture. Would be nice to have a simpler marketing approach though. "Critical Chain" and "Theory of Constraints" somehow doesn't have the same appeal as Agile, Lean, Sprints ...

[Like](#)

Reply to this conversation...

Jonathan Sapir
Founder and CEO at SilverTree Systems

Relay race and Resource scheduling

Using the relay race approach, it is not possible to know when resources will actually be needed. It seems to me that this makes it somewhat difficult to forecast resource needs over time and therefore hinders the ability to take into account resource... [Show more](#)

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TOCPA is an international professional platform aimed to share experience of bringing companies and organizations to operational excellence using Theory of Constraints.

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Welcome to the TOC in Project Management Portal

Success Stories » Project Management Portal



We're excited to provide free access to 6 of the 87 (and growing) Theory of Constraints (TOC) project management presentations ranging from a workshop presenting the basics of critical chain project management (CCPM) to its use in information technology and software development projects, to and implementations in the Lithuanian government Department of Economy, in a pharmaceutical research and development corporation and in a massive maintenance, repair and overhaul center for a large airline. These selections illustrate the universal use of CCPM across industries and across geographically separated and

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Article Title: "You" vs "We" with success of Goldratt's Theory of Constraints of CC and PDSA gives us very promising results: our ODP in 2005 was 80%. As we took on more projects and more complex projects we found a number of other project improvement results from the team (right) were necessary to maximize a high ODP. Using the TP in our own organization to understand the problems and develop and implement solutions, we have been able to consistently improve our performance. In the last three years this has resulted in 95%+ cost and performance on our TP projects.

Anderson, D. J. (2004). TOC software engineering solution with lean & agile solutions. TOCICO International Conference: 2nd Annual Worldwide Gathering of TOC Professionals, Miami, FL, Golden Marketing Group.

This presentation seeks to explain the TOC solution of critical chain project management (CCPM) for use in modern software engineering. Key learning points include: 1. How to use lean buffer stock (DBS) with software engineering; 2. How to use throughput accounting (TA) with software engineering; 3. Understanding useful variables in software engineering; 4. Finding a TOC model maturity model for software organizations; 5. Identifying what's fundamentally wrong with the SD, CRD and ST-CRIS; 6. The important parts of a TOC software solution with an agile, DevOps and Toyota Production System (TPS) perspective and lean thinking. Benefits to students: 1. Benefits of applying DBS, CCPM and TA to technology development; 2. Current use of the TOC approach with traditional approaches; 3. Benefits of using lean thinking first diagrams for the DBS solution.

Rachalska, M. (2012). Implementing CCPM in the Quality Fund of Department of Economic Bankruptcy Management under the Lithuanian Ministry of Economy: use oriented to order payments of delayed or unpaid relative to the volume of bankruptcy companies. This article is the first step in a very important social role – quite often after a person loses his job. The Fund gets money which the company owes to the system. So it is very important to ensure the application processes time to be as fast as possible. At the beginning of 2009 Quality Fund faced some key challenges including a backlog of old applications for Bank and long processing times, a sharp increase in bankruptcy and new applications (more than double), and a reduction of government spending (not possible to increase in 2009).

Kucinskias, R., et al. (2012). Implementation of CCPM in the Pharmaceutical Industry. TOCICO International Conference: 12th Annual Worldwide Gathering of TOC Professionals, and Nashville, Germany, Theory of Constraints International Certification Organization.

In this paper, I take you through the journey of CCPM implementation in our company (Dr. Rado's Lithuanian Limited, Critical Chain Project Management (CCPM) is implemented as part of "Value Stream Mapping" initiated in 2005 with the help of Golden Consulting LLC. During the entire implementation, it was found that many projects are under development and that an always on-going project is held due to resource availability / change in business priorities. Some products are under development for years together with delayed efforts. Many projects are stuck during execution due to "logistical resources" / material issues. Due date performance and cycle time are not measured via original start date and original due date but via continually adjusted systems. Throughput is measured and directed to the end user financial user. After going through the TOC Critical Chain methodology with senior executives of the organization, the team was approached to find a way to go for "To implement and institutionalize a procedure for managing the product development." To significantly improve and sustain the cost and performance (ODP, cycle time and production) performance, GC has customized the project management strategy & metrics (SAP) into a guideline for the implementation in Critical Chain and PDSA. CCPM implementation is done in a phased manner with the support of a dedicated facilitator team from Dr. Rado's and GC consultants. Learning of each phase implementation is used in subsequent phase implementation.

Jones, G. (2006). Delta Air Lines: Meeting challenges in major maintenance. TOCICO International Conference: 6th Annual Worldwide Gathering of TOC Professionals, Las Vegas, NE, Golden Marketing Group.

In 2002 Delta Air Lines filed for bankruptcy. Prior to its merger with North West Airlines, Delta was a \$17 billion airline serving 100 million passengers annually with approximately 10,000 employees. After merger in 2003 Delta was \$27 billion big, had 100 million passengers with the same number of employees, routes, and aircraft (SAP) employees. As part of the bankruptcy plan, major maintenance was required to reduce cost and inventory, which, in the same time, increase productivity. In 2002 the CEO had received \$77 million and in 2005 the revenue was \$470. The implementation for arrival airport was not with Theory of Constraints when quarterly, annual

TE WHARE WĀNANGA O TE ĀPOKO O TE ĀKĀ A MĀU
VICTORIA UNIVERSITY OF WELLINGTON

SCHOOL OF MANAGEMENT

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You are here: [Home](#) > [Research](#) > [Theory of Constraints](#)

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 - Background
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Theory of Constraints: A Research Database



Welcome to the Theory of Constraints (TOC) online resource, which aims to support collaboration between researchers and practitioners in the field.

About the Theory of Constraints database

A database of TOC articles, books and conference papers was started back in 1996, with our first bibliography published in 2000.

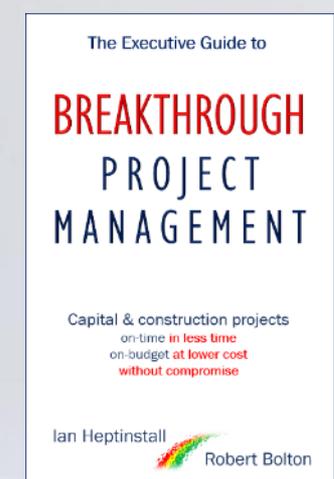
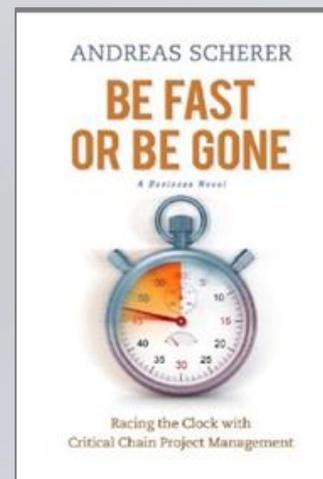
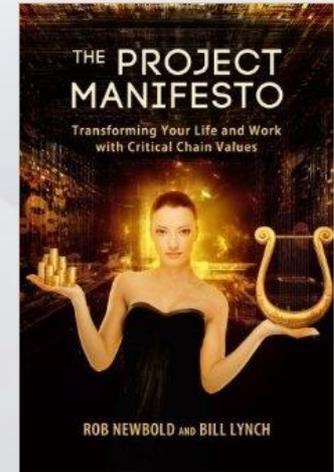
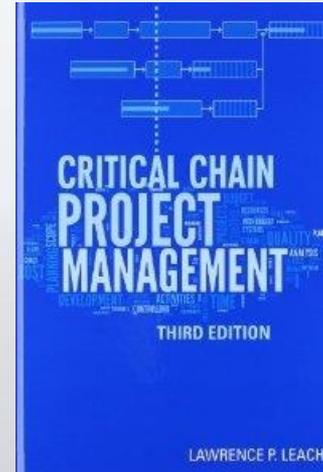
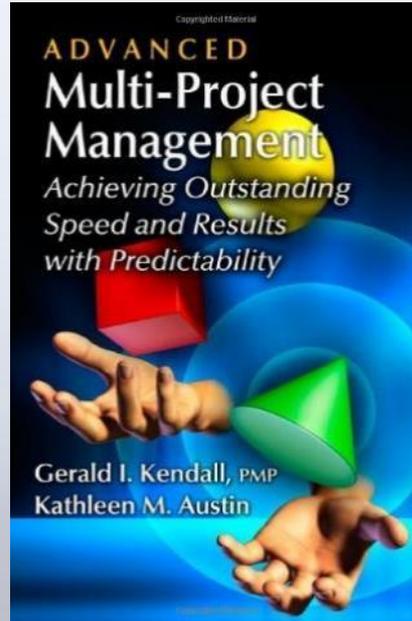
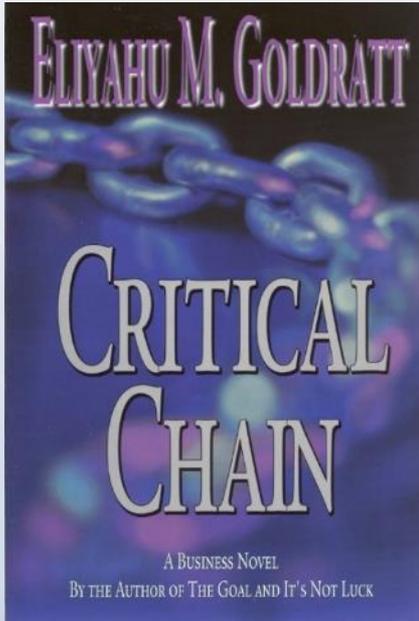
We have recently searched the literature and updated our records and have now assembled over 4000 articles, books, and conference papers, on all areas of TOC. The database here contains journal articles and conference papers, to complement the [listing of TOC books compiled by Prof Jim Cox](#), which is available on the TOCICO website.

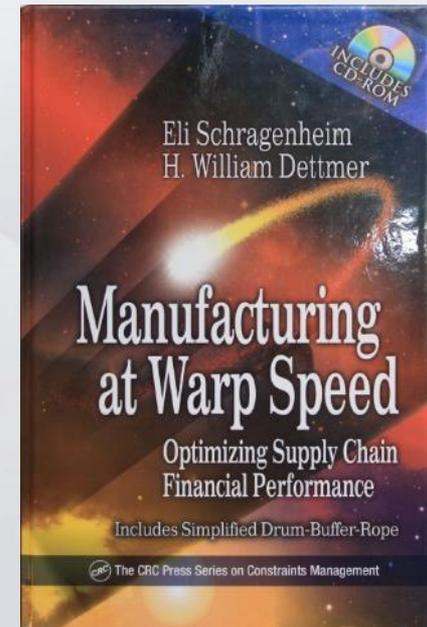
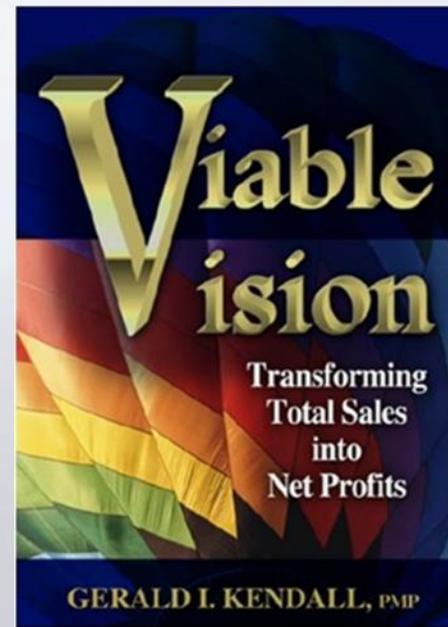
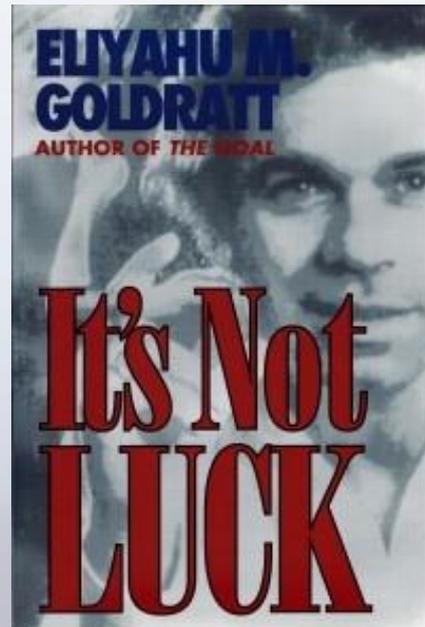
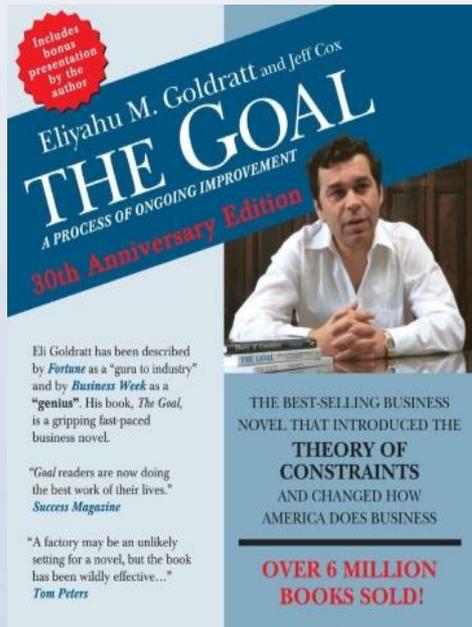
This evolving database will be published via regularly updated spreadsheets that build on the great work done to date, and available as a downloadable resource for researchers and practitioners alike.

Database Categories	File size	File type
Critical Chain Project Management (CCPM) (updated April 2016)	6 MB	Excel spreadsheet
Thinking Processes (updated April 2016)	5,967 KB	Excel

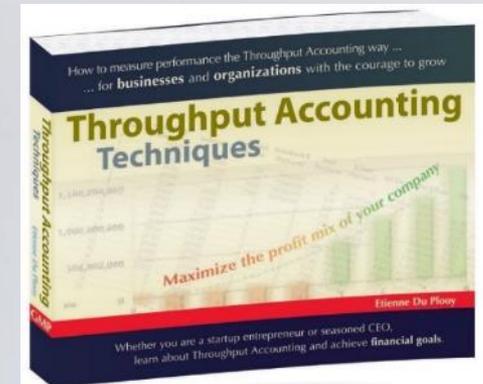
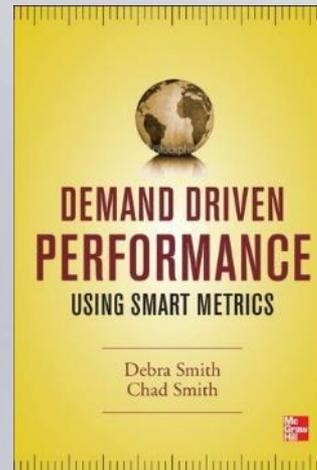
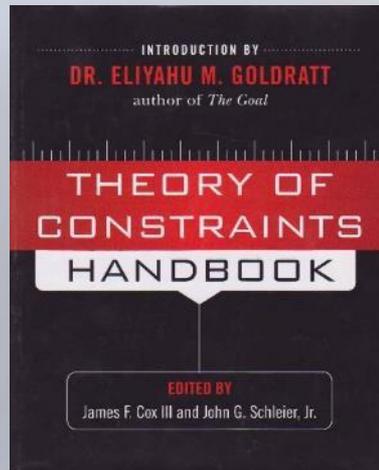
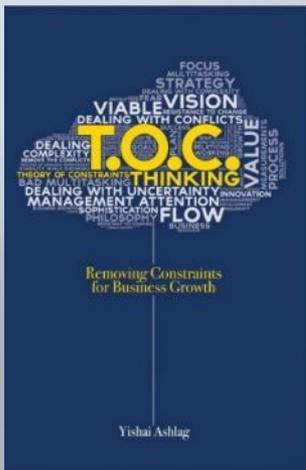
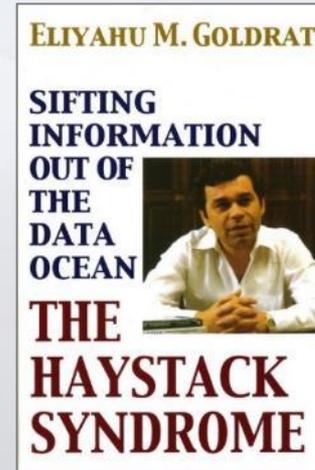
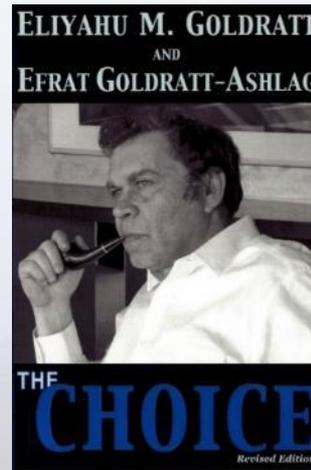
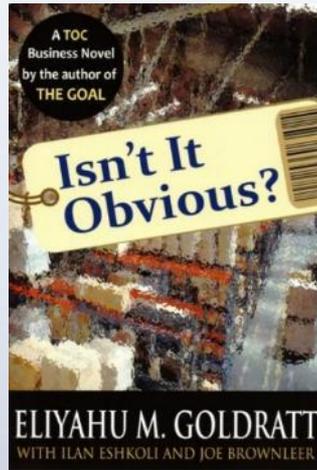
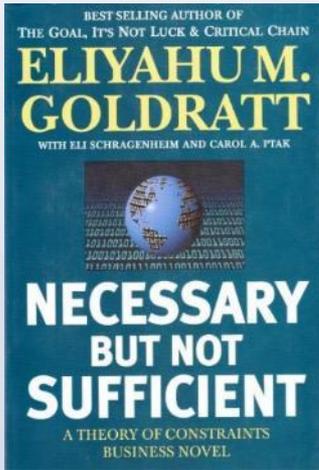
Reference Type	Year	Title	Author	Publication	Abstract	URL
A+ Journal	2016	Zhang, Janguang; Song, Xiaoli; Diaz, Estrella	European Journal of Operational Research	Project buffer sizing of a critical chain based on comprehensive resource tightness	A buffer sizing method based on comprehensive resource tightness is proposed in order to better reflect the relationships between activities and improve the accuracy of project buffer determination. Physical resource	http://www.sciencedirect.com
Book Section	2016	Critical Chain Project Management (CCPM)	Elk, George	Project Management in Product Development	This chapter presents critical chain project management (CCPM). The chapter starts with an overview of the method and then relates it to the Theory of Constraints, the foundation of the technique. A step-by-step	http://dx.doi.org/10.1016/j
A+ Journal	2015	Quantitative Analysis of Rate-Driven and Due Date-Driven Construction: Production Efficiency, Supervision, and Controllability in Residential Projects	Arashpour, Mehdi; Wakefield, Ron; Blimas, Nick; Abbasi, Zahra	Journal of Construction Engineering and Management	Concerns about production efficiency, quality, and affordability in the residential construction indicate there may be benefits in adopting alternative production control strategies to those traditionally used. Reducing adverse	http://ascelibrary.org/doi
A Journal	2015	Optimization of critical chain sequencing based on activities' information flow interactions	Zhang, Janguang; Song, Xiaoli; Chen, Hongyue; Shi, Ruijin	International Journal of Production Research	One critique for the classic critical chain sequencing methods is that only resource constraints and logical relationships between activities are considered, while interactions of information flows are ignored. However,	http://www.tandfonline.co
Other Journals	2015	Productivity of product design and engineering processes	Hueckelshyn, Johannes; Deckers, Rob; Kreuzfeld, Jochen	International Journal of Operation and Production Management	Purpose – Maintaining and improving productivity of product design and engineering processes has been a paramount challenge for design-driven companies, which are characterised a high degree of development of	http://dx.doi.org/10.1108/
C Journal	2015	Inclusion of strategic management theories to project management	Parker, David W.; Parsons, Nicholas; Ishiyanto, Fint	International Journal of Business Projects in Business	Purpose – The purpose of this paper is to explore the benefits of integrating the theory of constraints (TOC), resources-based theory (RBT), resource advantage theory (RAT), with a structured project-based methodology. e.g.,	http://www.emeraldinsigh
Other Journals	2015	A Model for Continuous Improvement at a South African Minerals Beneficiation Plant	Ras, E.; Vasser, Jk	South African Journal Of Industrial Engineering	South Africa has a variety of mineral resources, and several minerals beneficiation plants are currently in operation. These plants may be operated effectively to ensure that the end-users of its products remain internationally	http://www.scielo.org.za/
A Journal	2015	Dynamic monitoring and control of software project effort based on an effort buffer	Zhang, Janguang; Shi, Ruijin; Diaz, Estrella	Journal of the Operational Research Society	The improvement to the monitoring and control of efficiency of software project effort is a challenge for project management research. We propose to overcome the challenge through the use of a model for the buffer	http://www.palgrave-paui
A Journal	2015	Project management for uncertainty with multiple objectives: optimization of time, cost and reliability	Jeang, Angus	International Journal of Production Research	This research adopts an approach that uses computer simulation and statistical analysis of uncertain activity time, activity cost, due date and project budget to address quality and the learning process with regard to	http://dx.doi.org/10.1080/
B Journal	2015	Improving performance in project-based management: synthesizing strategic theories	Kareusa, Cullen; David, W. Parker	International Journal of Productivity and Performance Management		http://dx.doi.org/10.1108/
Other Journals	2014	A decomposition heuristics based on multi-bottleneck machines for large-scale job shop scheduling problems	Zhai, Yangu; Liu, Changjun; Chu, Wei; Guo, Ruifeng; Liu, Xiang	Journal of Industrial Engineering and Management	A decomposition heuristics based on multi-bottleneck machines for large-scale job shop scheduling problems (JSP) is proposed. In the algorithm, a number of sub-problems are constructed by iteratively decomposing the large-	http://www.jiem.org/index
Other Journals	2014	COMFRC Addresses Legacy Helmet Readiness	Walters, Andrea	Naval Aviation News	According to PMA-265, 114 aircraft have completed inspections and are designated for service life extensions beyond 8,000 flight hours, with an additional 102 aircraft undergoing high-flight-hour inspections at Fleet	http://web.helvetoshost.co
Other Journals	2014	Software Project Management: Theory of Constraints, Risk Management, and Performance Evaluation	Asseman, Antoine; Akraak, Nada Ashgar; Salim, Marwan; Rezk, Mohamed	The Journal of Modern Project Management	Constraints and risks are two critical factors that affect software project performance. More attention needs to be paid to constraints and risks in order to improve performance. In this paper, investigation will take place to	http://www.journalmodern
Book Section	2014	Critical Chain Project Management		A Handbook for Construction Planning and Scheduling	Critical Chain Project Management™ (CCPM) is frequently presented as a revolutionary new project management concept, an important breakthrough in the history of project management. CCPM focuses on the uncertainty in	http://dx.doi.org/10.1002/
Other Journals	2014	Critical Chain Method in Traditional Project and Portfolio Management Situations	Amantamali, Vital S.; Webb, James B.	International Journal of Information Technology Project Management (IJITPM)	Critical Path (CP) method has been under scrutiny in recent years as the next evolution of project schedule development, the Critical Chain (CC) project management is gaining attention. Advocates of the Critical Chain	http://www.igi-global.com
Other Journals	2014	Theory of Constraints and Its Application in a Specific Company	Lilhart, Jakub; Skokrovska, Janom; Brnensky, Ondrej	Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis	This article analyses the possibilities of the practical utilization of Critical Chain Project Management methodology. One study analysed key processes related to the implementation and utilization of such a tool in a concrete	http://acta.mendelu.cz/62/
Conference Proceedings	2014	Multi-objective optimization model for multi-project scheduling on critical chain	Wang, Wei-xiao; Wang, Xu; Ge, Xiao-kang; Deng, Lei	Advances in Engineering Software	In this paper, a multi-project scheduling in critical chain problem is addressed. This problem considers the influence of uncertainty factors and different objectives to achieve completion rate on time of the whole projects. This	http://www.sciencedirect.com
C Journal	2014	Mitigating behavioral outcomes in a multiproject environment: a modified CCPM model	Agarwal, Atul; Larson, David	Academy of Information and Management Sciences Journal	Organizations continue to struggle in managing projects that lead to successful conclusions. While tools such as PERT and CPM have helped the project management process, they have not produced the level of success as	http://search.proquest.com
C Journal	2014	Mitigating Behavioral Outcomes in A Multi-Project Environment: A Modified CCPM Model	Agarwal, Atul; Larson, David	Academy of Information and Management Sciences Journal	Organizations continue to struggle in managing projects that lead to successful conclusions. While tools such as PERT and CPM have helped the project management process, they have not produced the level of success as	http://search.proquest.com
C Journal	2014	Critical chain and theory of constraints applied to scheduling shipbuilding: a case study	Bevilacqua, Maurizio; Ciurapica, Filippo Emanuele; Marzotto, Roberto	International Journal of Project Organisation and Management	Product development projects, like many other types of projects, often can exceed their planned schedule by 50% to 100%. Often this is attributed to uncertainty or the unforeseen. To compensate for this age-old dilemma	http://www.inderscienceo
Conference	2014	The ITLS (TM) model Integration of Theory of Constraints, Lean Manufacturing and Six Sigma: A	Nayandi, Carlos I. M.; Celso, Menezes G.	Proceedings of the 2014 International and Systems	Recently the three most applied approaches into the Operations/Continuous Improvement on Theory of Constraints (TOC), Lean Manufacturing and Six	http://search.proquest.com

There is quite a lot of material on *Critical Chain Project Management*

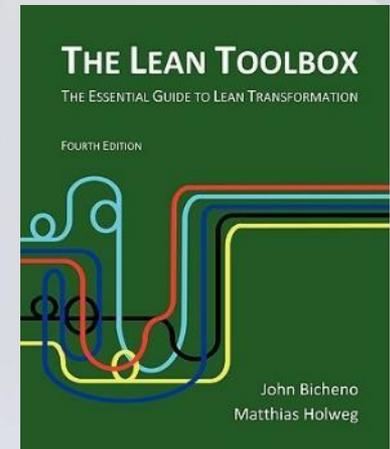
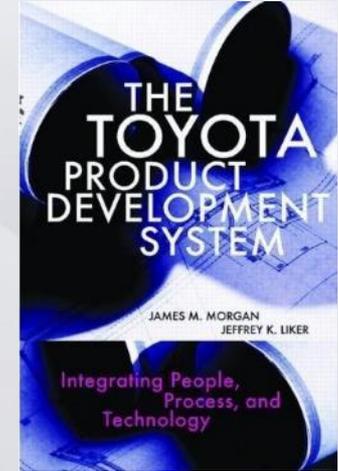
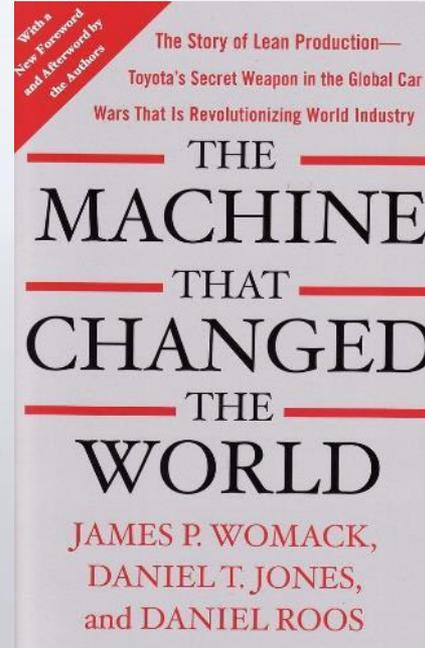
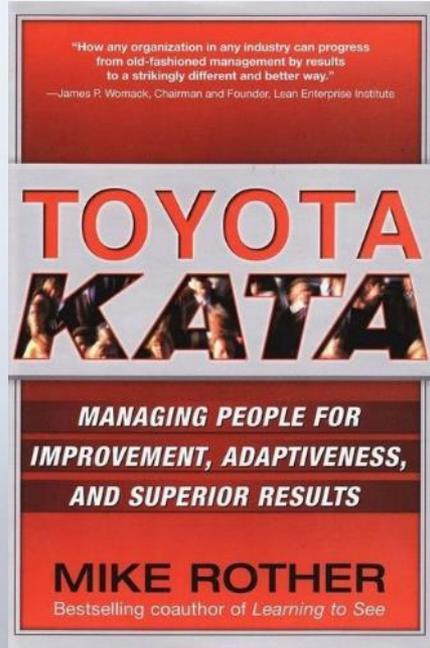
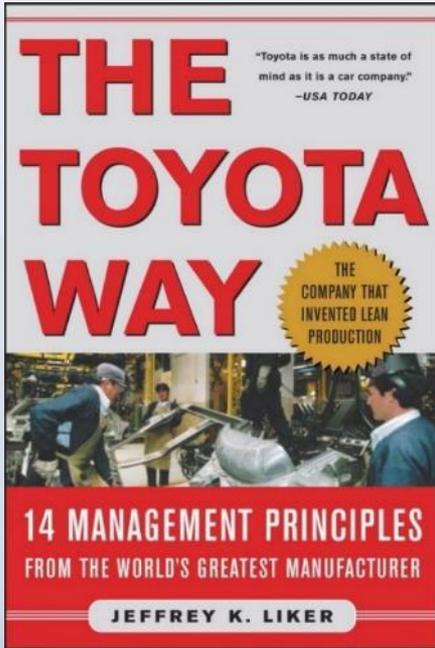




Other ToC books



Lean books



Theory of Constraints marketing & awareness activities

5 Permanent news websites (www.Scoopit.com)

- Theory Of Constraints (English & French)
- Critical Chain in (English & French)
- TLS: TOC + Lean + Six Sigma



>250 Free Videos (YouTube Channel)



Discussion Groups (LinkedIn)

- Critical Chain
- TLS: TOC, Lean and Six Sigma



2 dedicated websites in French

- TOC in Production
- TOC in Projects



Others:

- Twitter, Facebook, Etc.



33 years of experience, 58 years old, Manufacturing & Supply Chain expert Bilingual & bicultural English/French

COMPETENCIES

- **Transformation programs in industry**
- **Industrial Excellence Expert (manufacturing and product development).** Recognized expert in Lean, Six Sigma and Theory Of Constraints. Often combines these ("TLS").
- **Author** of an industrial management bestseller in France: *Le Management Par les Contraintes en gestion industrielle*, Editions d'Organisation [1994, 1996, 2000, 2nd Edition currently underway).

FORMER POSITIONS

- Cap Gemini Ernst & Young / Bossard Consultant: In charge of Manufacturing Operations for France & Europe (>200 consultants)
- Cap Sogeti Industrie
- Creative Output: collaborated with E. Goldratt author of *The Goal*
- Vallourec: Shop floor foreman, Methods Engineer
- Professor at HEC Management School (Supply Chain & Manufacturing).

SECTORS / CLIENTS

- Over 150 engagements in industry.
- Aeronautical
- Pharmaceuticals
- Automobile industry: car makers and suppliers
- Process industry: steel, glass, cardboard, extruded plastic
- World leader in ball bearings
- MRO rail and aeronautical
- Packaging: cardboard, steel, plastic
- Electrical power systems: world wide leader
- Furniture manufacturer, Marine engine manufacturer, Armoured vehicles manufacturer, Electronics: printed circuit boards, ...

MISSIONS / RESULTS

- **Production, Operations & Supply Chain (sample):**
 - Worldwide automotive OEM tier 1 supplier: increase in Throughput of 17% in 15 minutes. Savings >\$400M per year. saved relationship with largest customer.
 - Large MRO (Maintenance, Renewal & Overhaul) Division of a major European railway operator (France, 25 000 p.): in one of the main factories (940 p.) reduction of the production lead-times for the renovation of high speed trains from 126 days to 38 days . Further lead-time reductions are underway over 2 years after the end of our assignment.
 - Labour productivity: furniture manufacturer +35% in 6 weeks, M.R.O: 80% in 2 months, manufacturing equipment (assembly) +70%, ...
 - Automotive Supplier (France, 350p.): Increase in the O.E.E. of the bottleneck resource by more than 30%, change from 5x8 shifts to 2x8 while providing the same output.
 - Complete reengineering of the Supply Chain of a steel manufacturer: Long term strategic planning, Sales & Operations Planning, Scheduling. Implementation of TOC/MPC. Increase in 40 points of the due date performance
 - Manufacturer of large machines for cardboard packaging: reduction in the delivery lead-time by over 50% and a reduction in the number of hours of labour per machine of over 30%.
 - Aircraft MRO: reduced durations by over 50% and increased productivity by over 80% in 2 months.
- **R&D & Industrialisation / Engineering / New Product Development (sample):**
 - Aeronautical product industrialisation portfolio: reduced durations and projects finish on time
 - Complete transformation of an Engineering department of 150 people. Reduction in project durations of over 40%. Improvement in productivity of over 25%. Projects completed on time went from less than 30% to over 85%.
 - Several aeronautical product development and industrialisation projects involving up to 500 people per project in up to 6 different simultaneous facilities with budgets up to 20M€ each.
 - New product development and product relooking: reduction of over 45% of average project duration, increase in number of projects completed each year of over 50%.
 - New product portfolio analysis and development strategy
 - Quotation process reengineering: handling speed multiplied by 4.

We are honoured to have been able to help...



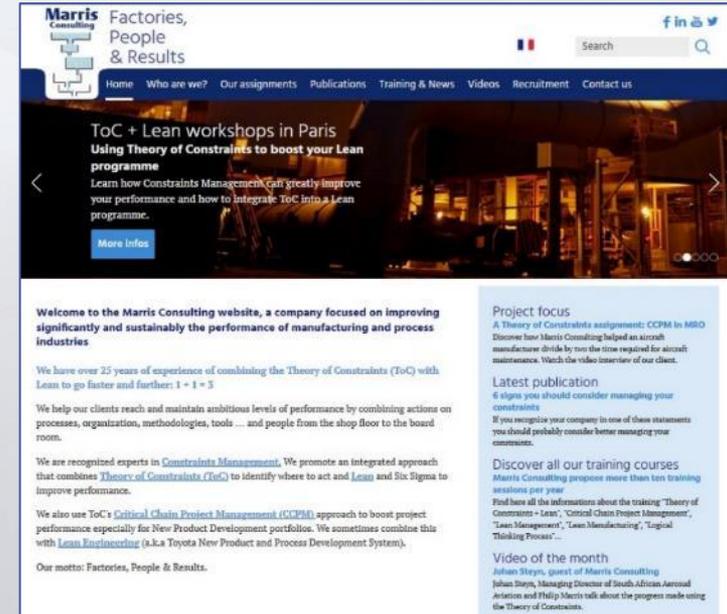
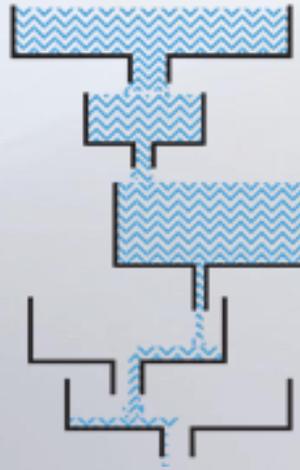
Marris Consulting

Factories, People & Results

Tour Maine Montparnasse
27th floor
33, avenue du Maine
Paris 75755 Cedex 15
France
Tel. +33 1 71 19 90 40



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