

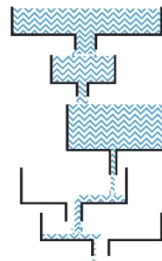


Critical Chain Project Management

(Theory Of Constraints)

Webinar

**Marris
Consulting**



Paris, Wednesday 17th of June 2020

Version 1.0





Agenda

- Introduction
- Critical Chain planning principles
- Project execution the Critical Chain way
- Critical Chain project portfolio management
- Continuous improvement the Critical Chain way
- The TOC 5 focusing steps and Critical Chain
- Agile and Critical Chain combination
- Case studies
- Conclusion
- Appendices





Organization of the webinar

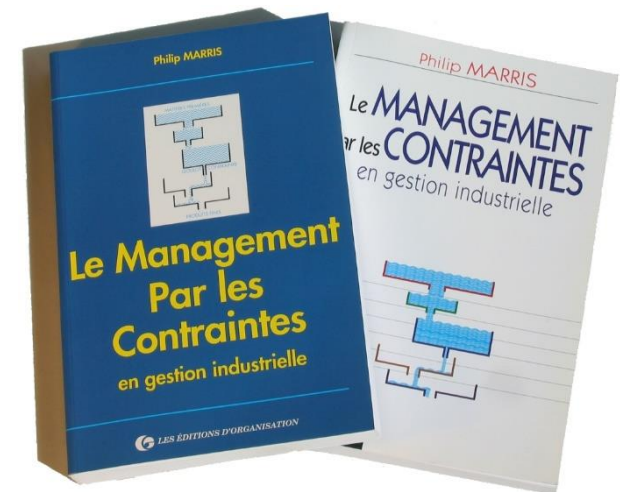
- Presentation : 60 minutes
- Followed by a Question & Answer session: 30 minutes
- You can ask questions and make written comments throughout the webinar using the "Q. and A." feature at the bottom of the screen (mouse over).
- Presentation material can be downloaded on our website at the end of this webinar.
- There will be surveys during the webinar.
- The webinar is managed by 2 people:
 - **Philip Marris the "speaker"**
 - **And a webinar manager whose role is:**
 - To read the written questions as the webinar progresses
 - To manage the question and answer session (choice of questions, opening / closing the microphone, etc...)





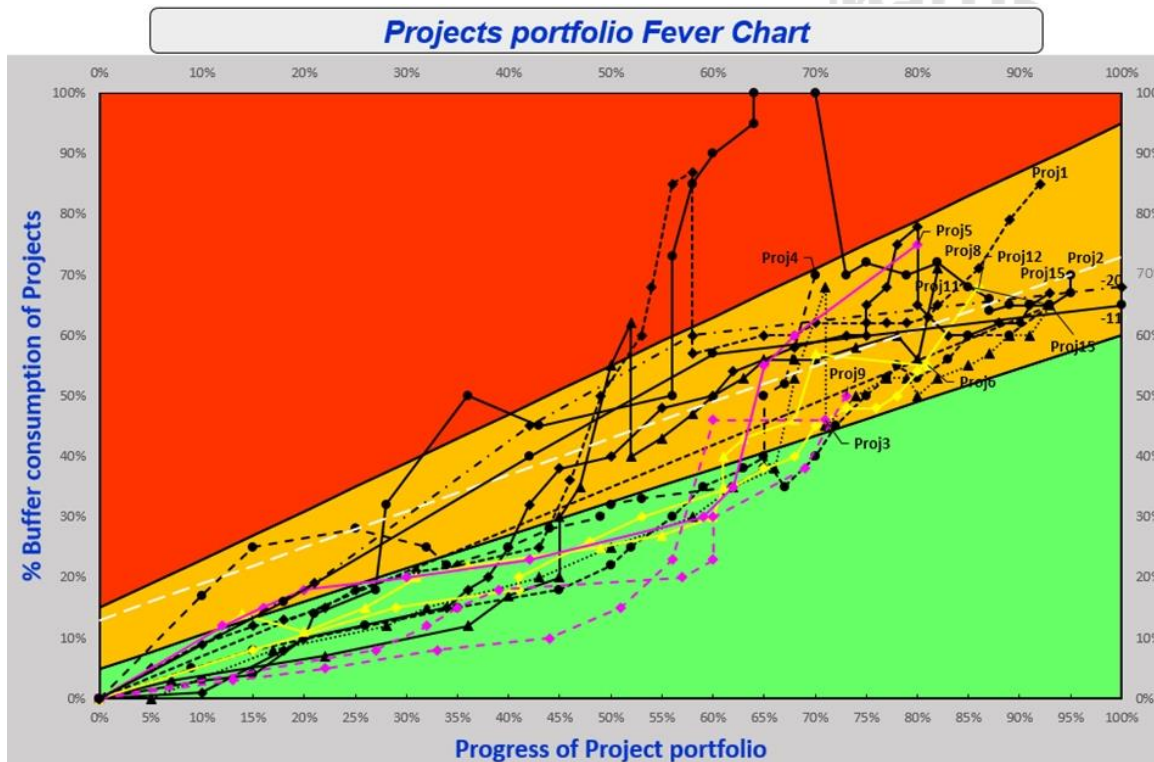
Philip Marris: CEO, Marris Consulting

- English...and European. Bilingual & bicultural English/French. Consultant (sorry).
- Started using Lean in industry in 1984.
- Has been implementing TOC since 1986, when he worked with Eli Goldratt, founder of Theory Of Constraints/TOC).
- Implementation of TOC and Lean (+ Six Sigma, DDMRP, PMBOK, Agile, ...) in >260 companies around the world.
- Author of the French reference book on TOC in production: *Le Management Par les Contraintes*.
- Founder in 2005 of Marris Consulting.



Why you should already have implemented Critical Chain Project Management #1/4

- The results are literally extraordinary:
 - To finish nearly all your projects on time (and within budget and full specifications)
 - And simultaneously to do your projects twice as fast as before
 - And at the same time doing twice as many projects per year with the same resources.



The case of Aerosud's portfolio of new aeronautical product development projects after 2.5 years of CCPM
 > 98% finished on time

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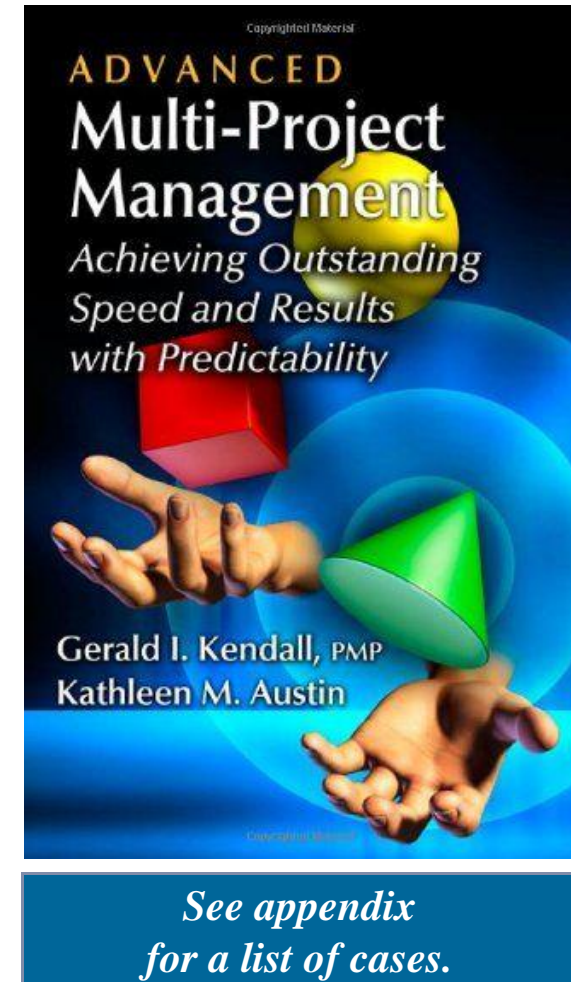
Video available on the Marris Consulting YouTube channel by Aerosud.
 1 hour with all the details



Why you should already have implemented Critical Chain Project Management #2/4

- The results are literally extraordinary:
 - To finish nearly all your projects on time (and within budget and full specifications)
 - And simultaneously to do your projects twice as fast as before
 - And at the same time doing twice as many projects per year with the same resources.


Results	Average	Worst case	Best case
Project durations	- 39%	- 13%	- 78 %
Number of projects completed in a given time	+ 70 %	+ 15%	+ 222%
Throughput	+ 53%	+ 14%	+ 150%




Source: “Advanced Multi-Project Management Achieving Outstanding Speed and Results with Predictability” 2013 book by Gerald I. Kendall & Kathleen M. Austin, page 95. The analysis is based on public information available concerning 60 different organizations working in different industries that had applied CCPM.

Why you should already have implemented Critical Chain Project Management #3/4



- The PMI 2019 Best Project Of The Year was awarded to Embraer for developing a new airplane using Critical Chain and breaking many industry performance records.



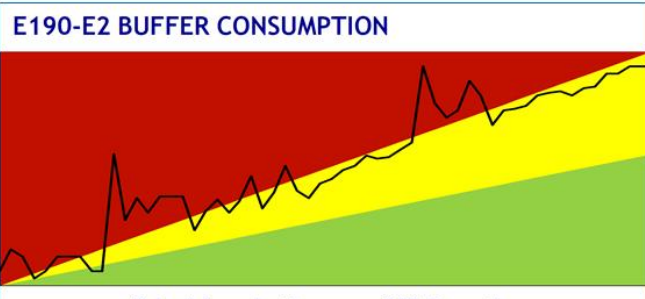
Best project of the Year 2019 Award



E-Jets E190-E2





Using
Critical Chain
Project Management
approach



E190-E2 BUFFER CONSUMPTION

Schedule reduction was of 22.5 months



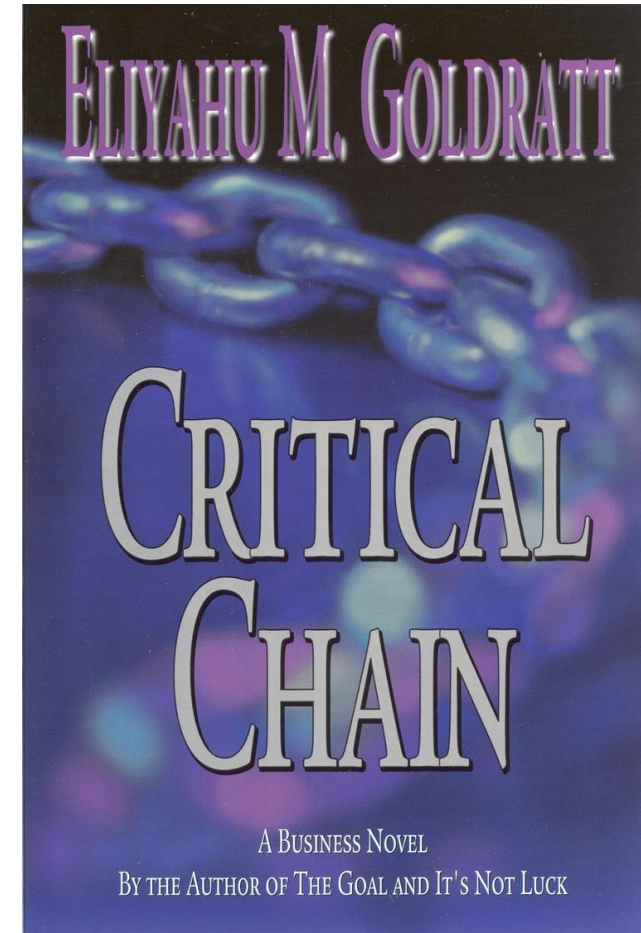
* *Project Management Institute, international association of 1,000,000 members*



Why you should already have implemented Critical Chain Project Management #4/4

- The number of implementations worldwide:
 - Over 3,000? (*See Appendix*)
 - Failures are rare
 - The results are lasting (this is not a fashion)
- Because it's easy
 - This webinar aims only to give you an "Executive summary" and to seduce you, but to understand 80% of CCPM* it takes only 8 hours.
- Because of its impact on the working environment
- You don't really have a choice: either your projects fail or you use Critical Chain

We will see at the end of this presentation how many of you are convinced that you must implement CCPM as soon as possible*

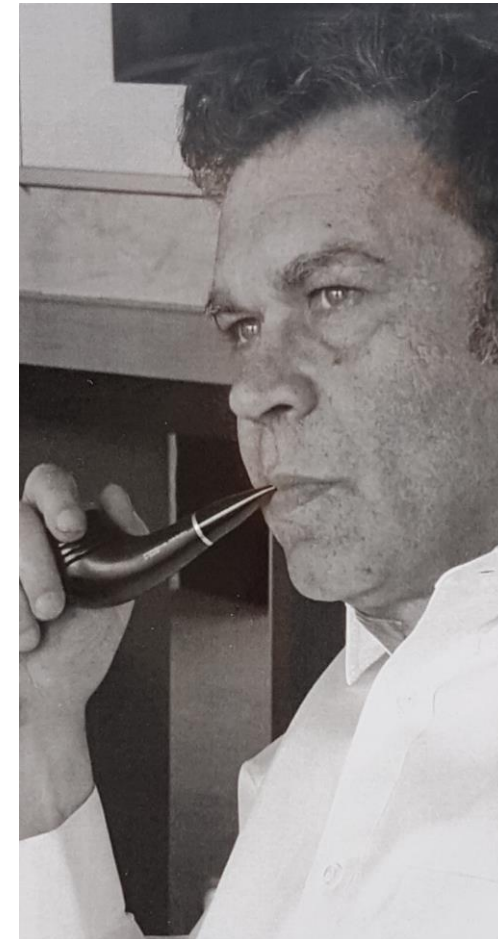


* CCPM: Critical Chain Project Management



The hidden side of the Theory of Constraints*

- The Theory of Constraints is often understood as only dealing with capacity constraints and flow control
- But another facet of ToC is just as important: its explicit management of variability and the unpredictable whatever the cause
 - Machine breakdowns, quality uncertainties, unforeseen fluctuations in demand, etc.
- And it is this facet that the Critical Chain approach exploits .
- Because project environments are unpredictable
 - The duration of a design task, the number of iteration loops during a product development, the characteristics of a product that does not yet exist, etc.
- Thus, for example, the duration of a task cannot be described with a single number, at least 2 are needed: the average and the standard deviation.

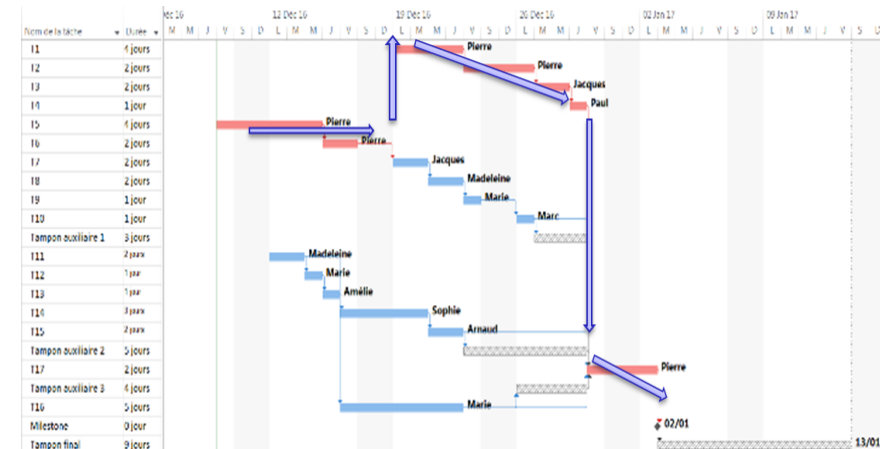


** See the replay of our webinar about Theory Of Constraints
Available on our Marris Consulting YouTube Channel*



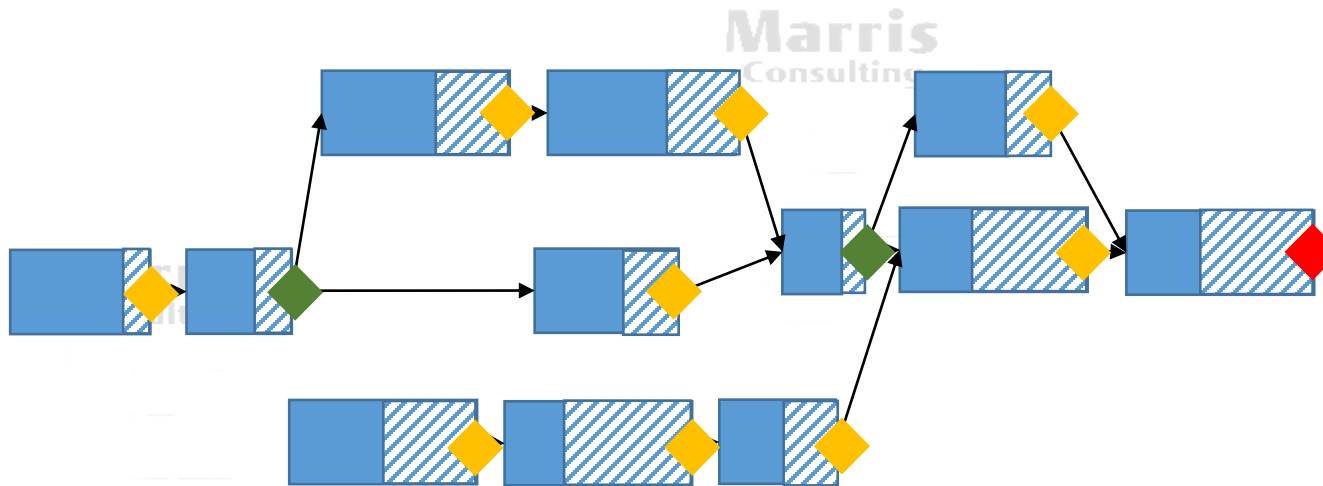
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Project managers try to compensate for the uncertainties inherent in projects

- Commitment on dates for each task completion
- Micro-management and more and more detailed schedules
- Local margins added to each task duration



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- ◆ Main intermediate milestones
- ◆ Intermediate milestones
- ◆ Final milestone

Actual task duration

Added margin



The Critical Chain method accepts the inherent uncertainty of projects and aims at protecting the whole project, not the individual tasks

- All project tasks have significant security margins, but they are wasted.
- With the Critical Chain approach, these margins are reduced and mutualized in a buffer at the end of the project.

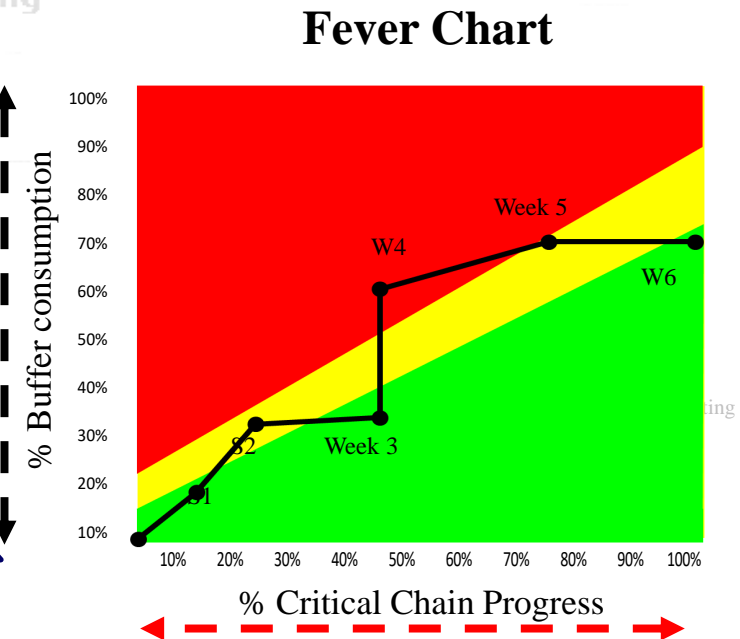
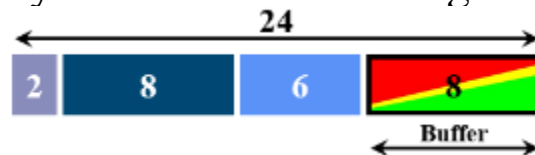
With traditional planning...



... each task has its own margin

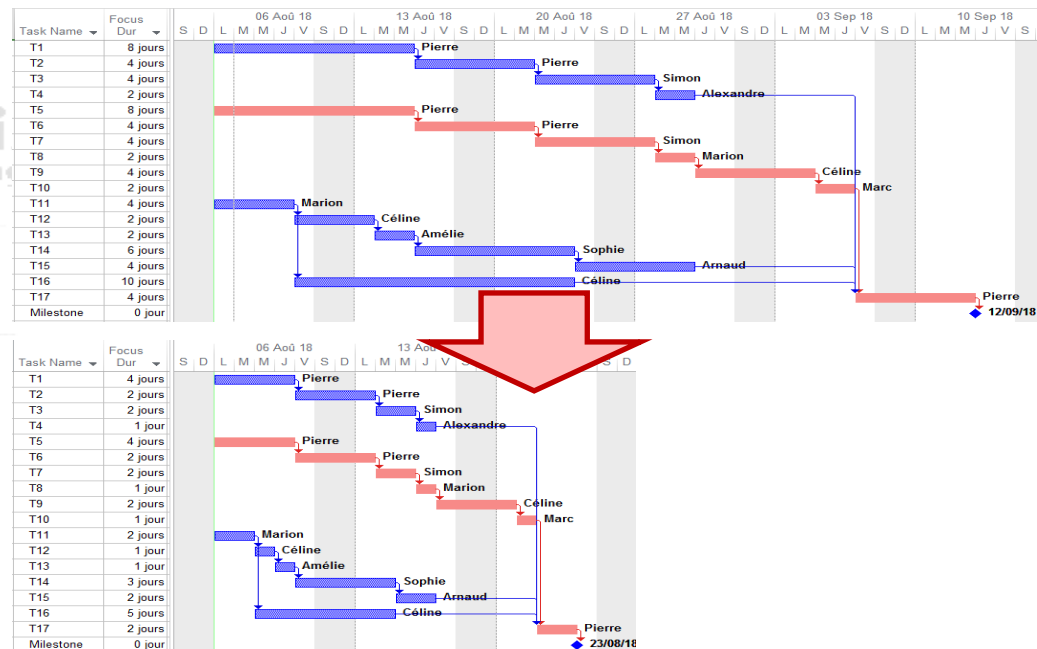


With Critical Chain, margins are mutualized and cycle times are challenged



With Critical Chain planning, the planned duration of tasks is reduced by 50% on average (!)

- In the Critical Chain, task durations are “focused” durations with no added safety margins. **The "focused" duration** is the working time required on **average** to complete the activity: in **perfect working conditions** (no multitasking), with all the necessary information available (full-kit) and without interruptions.
- The focused duration should be estimated. It is not a commitment. There is a 50% probability of exceeding it.

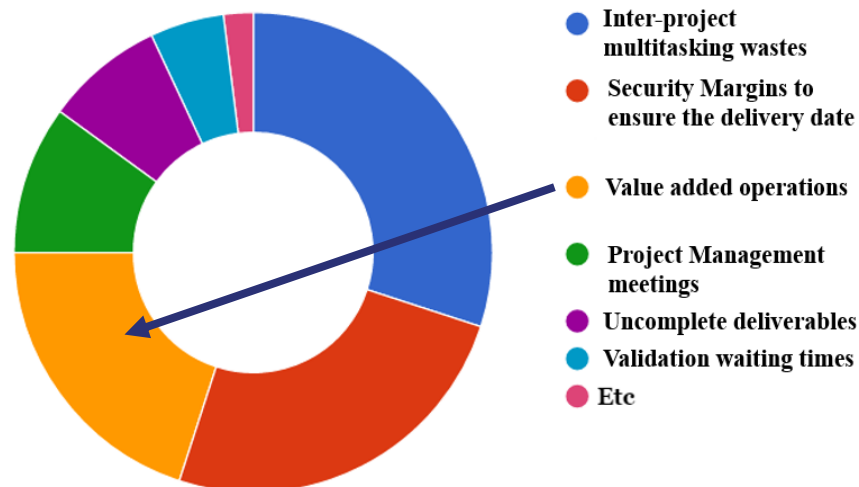


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Getting everyone to accept very short focused durations is easy!

- To reduce the duration of tasks by about 2:
 - We formally advise against the approach that is too often recommended: a top-down decision.
 - **We recommend to trust the seductive capacity of the Critical Chain: train all those who must predict the durations (one day of training) then ask them to re-estimate their "focused" durations.**
- We find that durations can be reduced by more than 50% on average. Note that some tasks will go from 2 weeks to 1 day, others will be incompressible (e.g. stability test of a drug or traditional sub-contracting).

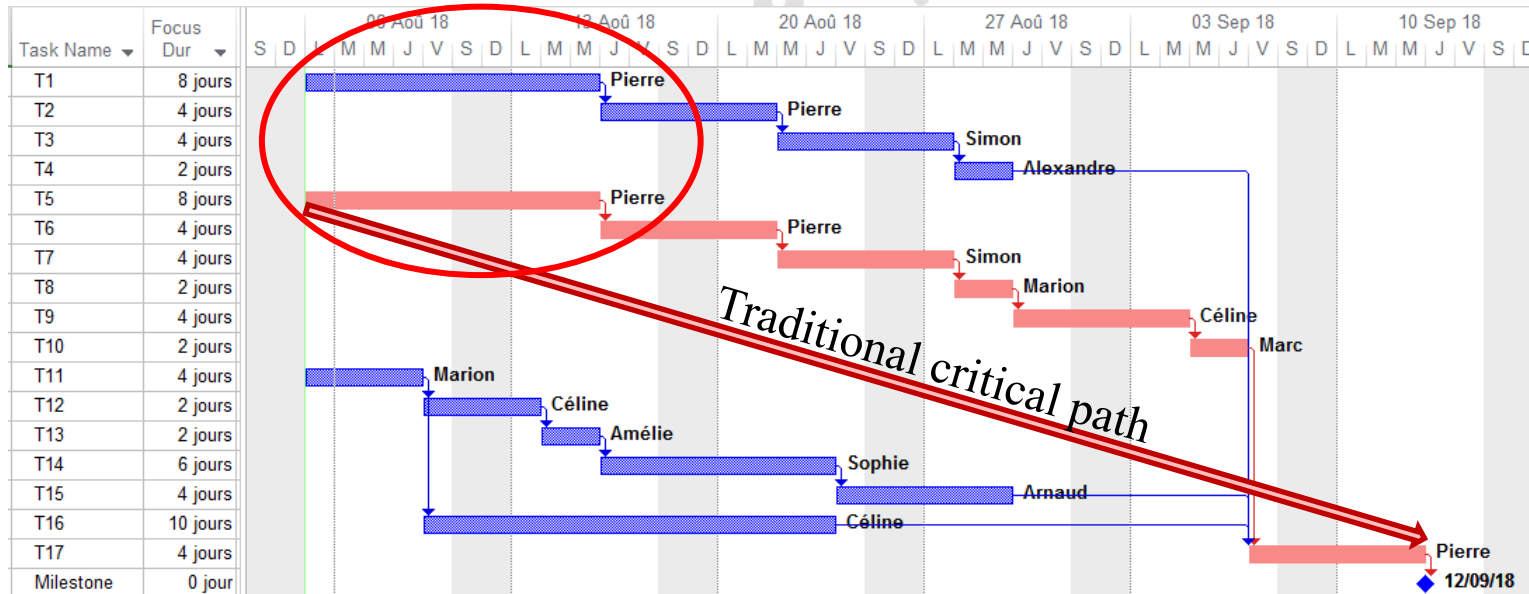


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Unlike traditional approaches (such as the critical path), planning is here at finite capacity

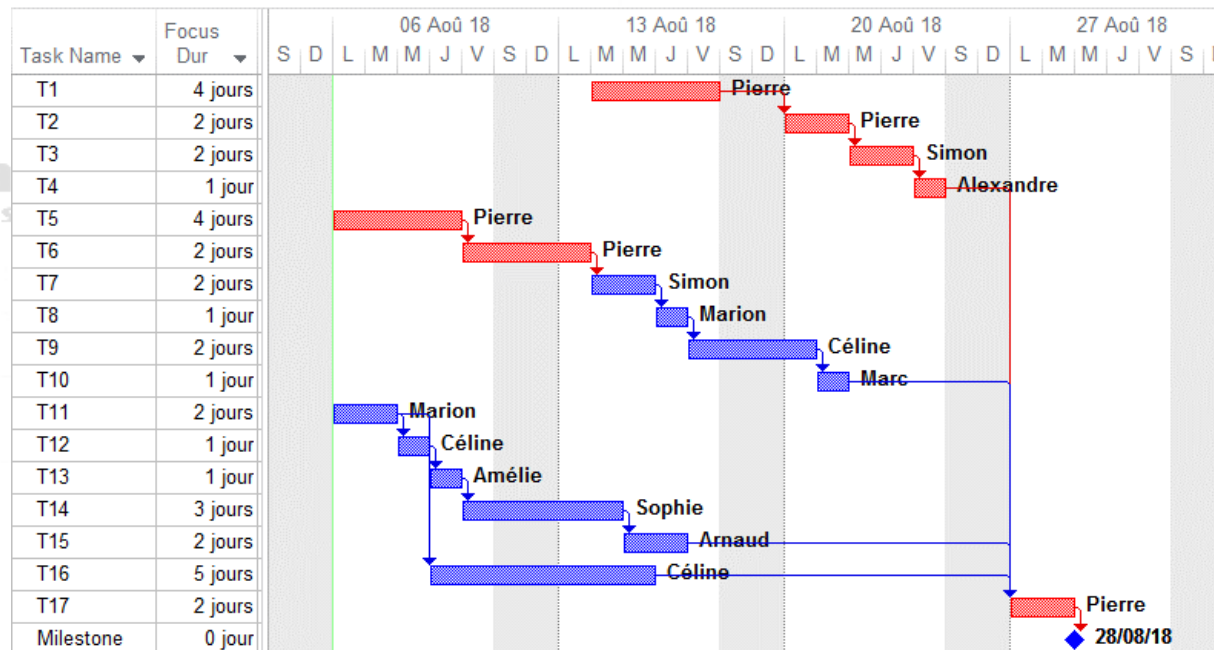
- Resources are rarely taken into account during planning, so:
 - The same resource can have tasks scheduled at the same time (no leveling)
 - The "critical path" (the traditional approach) ignores resource constraints

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The Critical Chain is a kind of “leveled critical path”
(taking into account the availability of resources)

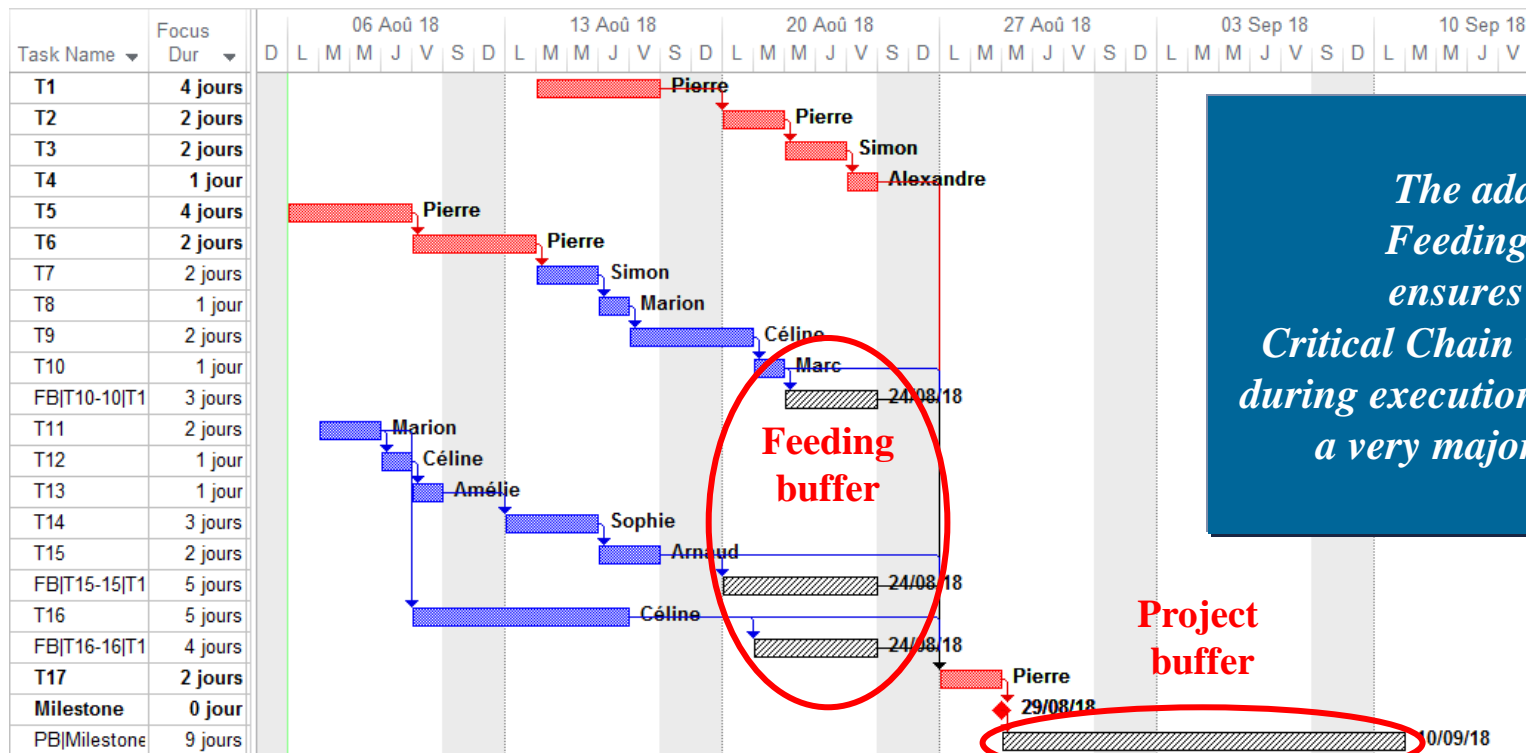
- **The Critical Chain is the longest path of a project, taking into account logical links and resource dependencies.**
- It is achieved by leveling tasks so as not to schedule multitasking.
- The duration of the project is determined by its constraint: the Critical Chain.



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The total duration of the project is equal to the Critical Chain plus a shared buffer

- The project buffer pools the safety margins of critical tasks; it represents a third of the total project duration.
- The Critical Chain is protected from non-critical tasks by “Feeding buffers”



The addition of Feeding Buffers ensures that the Critical Chain will not change during execution (unless there is a very major disruption)



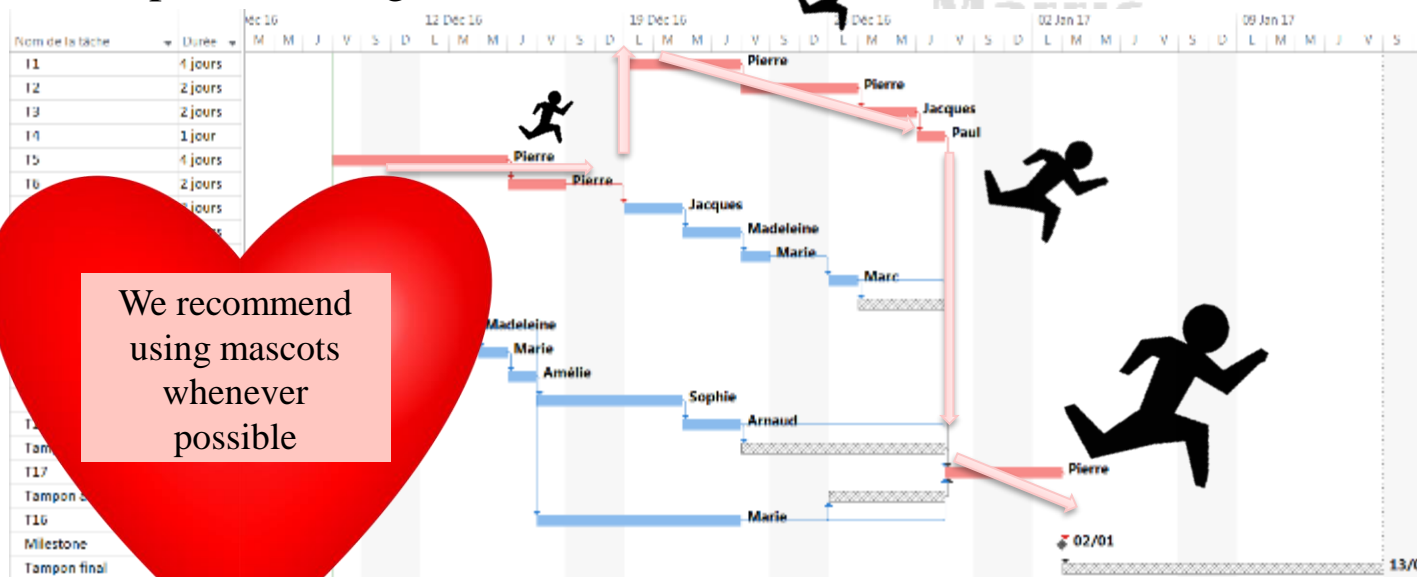
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Then during the project execution, we focus on the smooth execution of tasks on the Critical Chain

- The project is carried out according to the relay race throughout the Critical Chain.
- Having a mascot (a noticeable object) enables one to follow physically the successive offices and workstations the Critical Chain passes through.



We recommend
using mascots
whenever
possible



*By asking less than 1% of the resources to run,
it's in fact the whole company that goes faster*

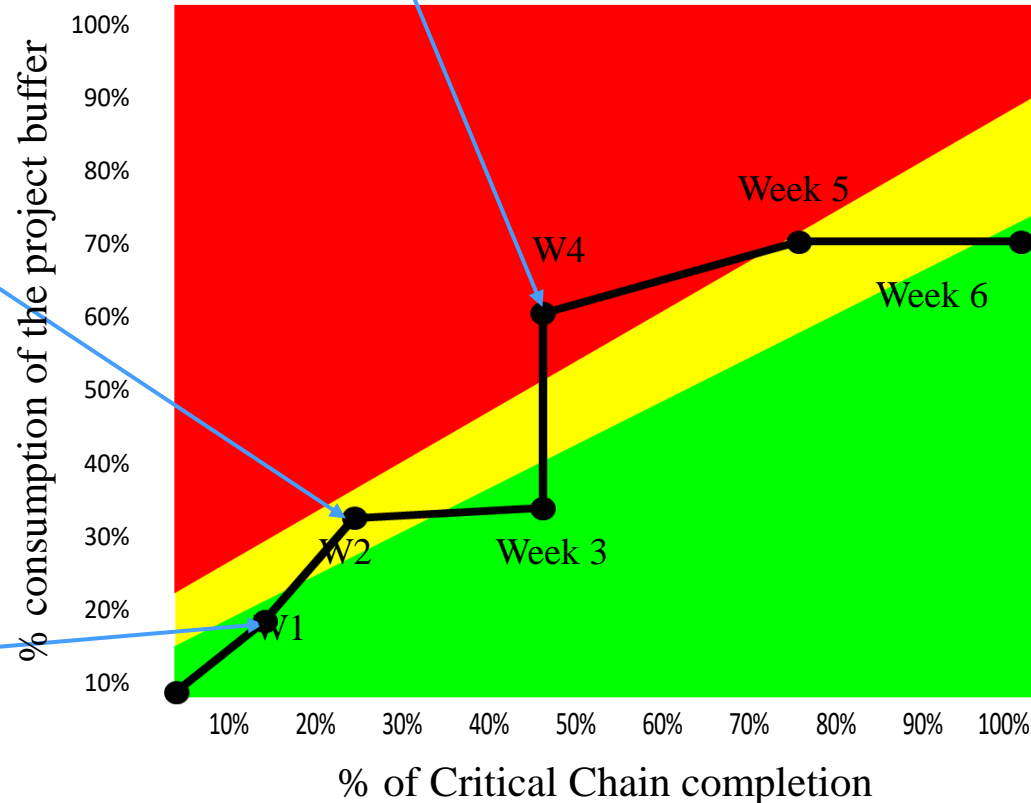
Project monitoring is much easier thanks to the Project Fever Chart

© Marris Consulting

Yellow zone = warning zone → identify main cause of delay and prepare action plan

Red zone = risky zone → start right now corrective actions

Green zone = comfort zone → no action needed



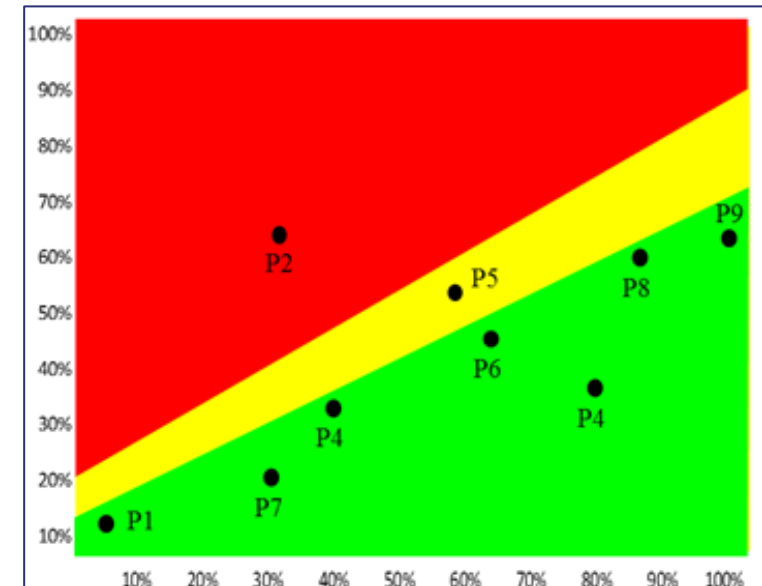
Finished project with project buffer not fully consumed

This means that the project finished **before** the end date



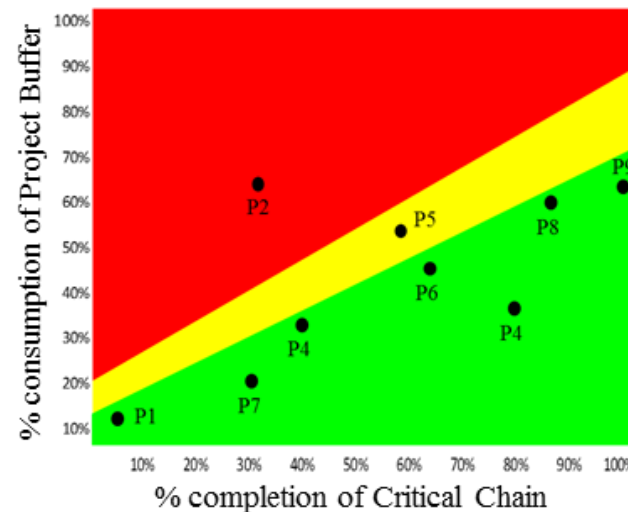
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Managing a project portfolio the Critical Chain way is easy

- If each project in the portfolio is well planned taking into account the uncertainties, available resources and practicing the “relay race” on the critical chain - if each project has a good chance of finishing on time - then managing a portfolio of healthy projects is relatively easy!
- It is sufficient to have a good system for identifying the priorities allowing all the actors to know what they have to do at any time by referring to a shared and objective system.



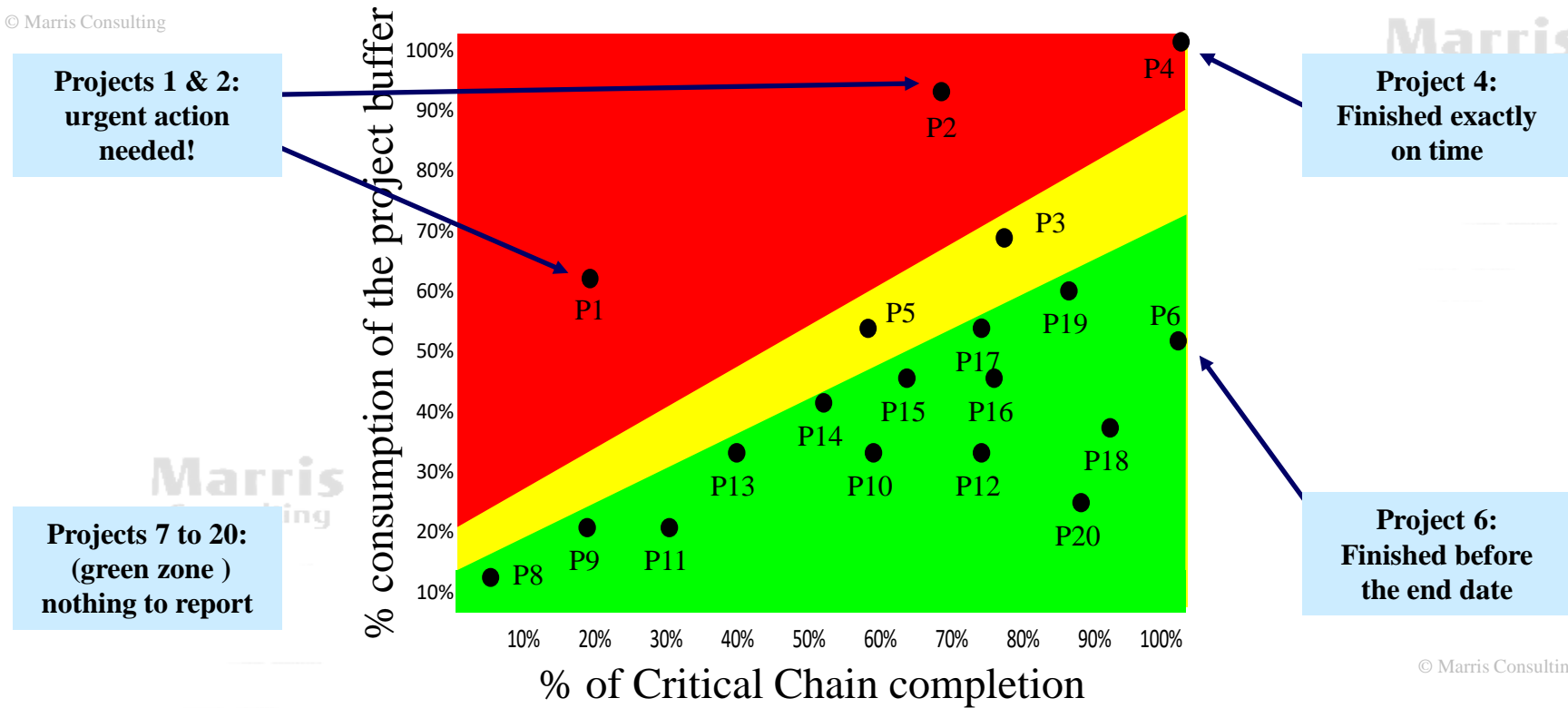
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The portfolio Fever Chart: the dream in postcard format

The Portfolio Fever Chart

greatly facilitates dynamic arbitration between projects

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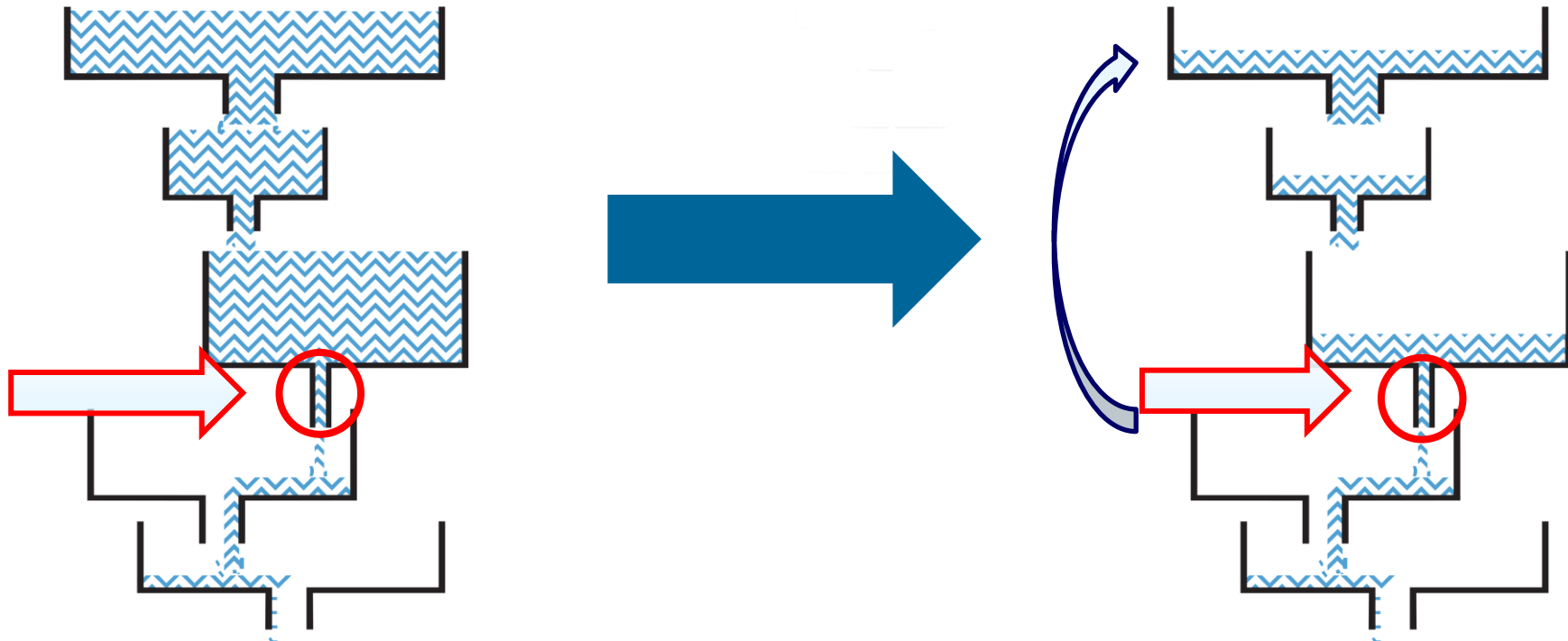
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The Portfolio Fever Chart helps to quickly track all the projects in the portfolio with objectivity and transparency



To limit the number of ongoing projects, do not launch projects too early

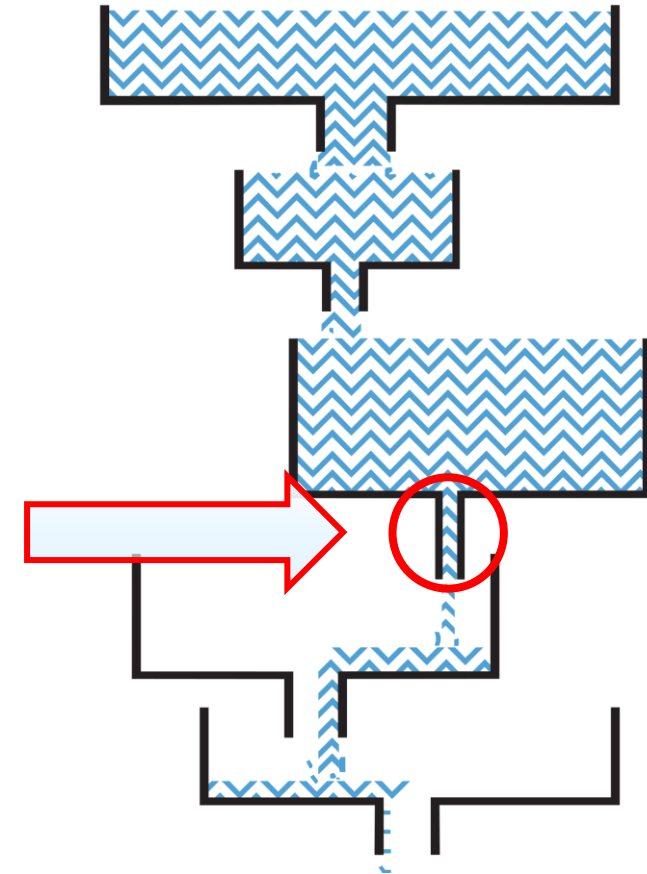
- Traditionally, people try to level resources between all projects
- With the Critical Chain approach, we only consider the capacity constraint
- Projects are launched according to the constraint's availability
- Thus we avoid unnecessary WIP that generate (very) bad multitasking





Focus on the constraint of the portfolio and increase the efficiency of the resources implemented

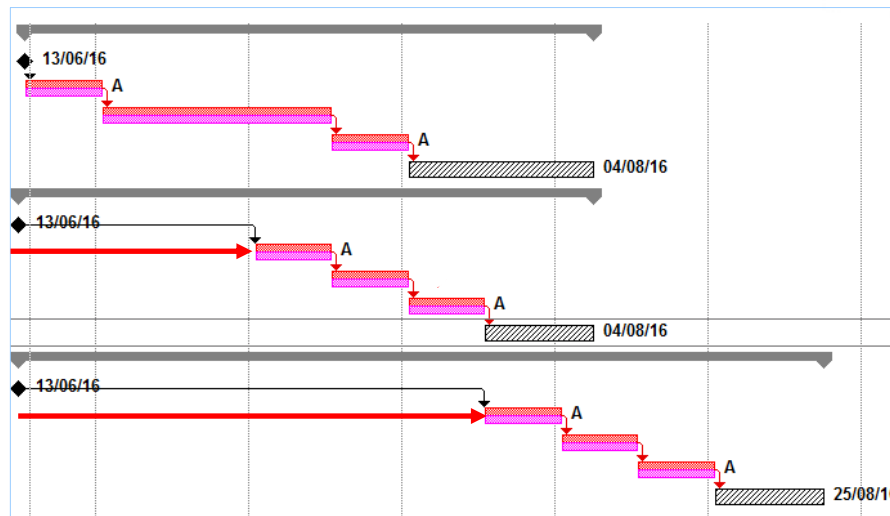
- As a reminder, the Theory of Constraints stipulates that to increase the performance of the assembly, it suffices to focus on the constraint of the system.
- In project environments, there are 2 types of constraints:
 - The constraint of a project is its Critical Chain.
 - The constraint of a project portfolio is a resource (or group of resources). We often see that it is:
 - From one of the business services,
 - Or one or two people with critical and unique skills,
 - Or the testing phases*



** See the replay our previous webinar about identifying the constraint
Available on our Marris Consulting YouTube Channel*

The identification of the portfolio constraint is the key to determining realistic project due dates

- A project portfolio is a set of projects for a given resource pool. There can't be any resource contention between 2 project portfolios
- The projects start dates within a Critical Chain projects portfolio depend on the availability of the capacity constraint of the portfolio
- Shifting the start dates of the projects according to the bottleneck is called « staggering »



The start date of the second and third projects were shifted according to the availability of the resource A which is the capacity constraint of the portfolio.

→ = staggering of the start date

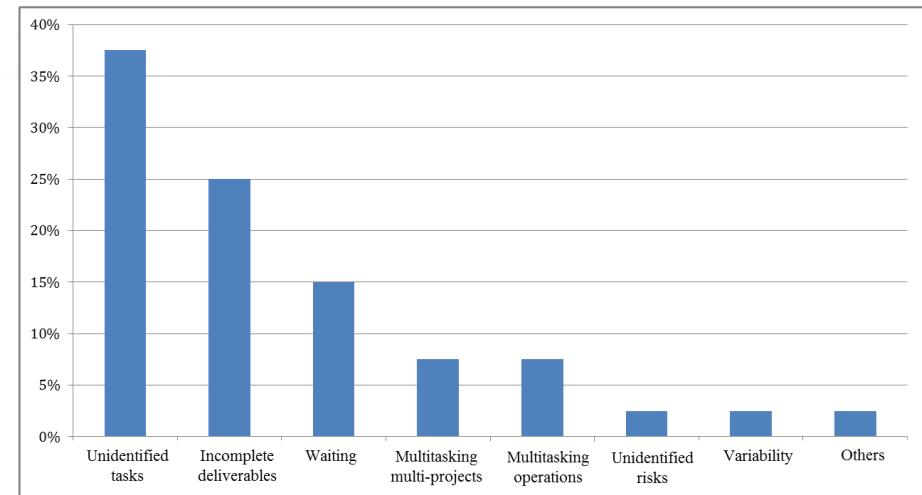
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The staggering of projects reduces the work-in-progress



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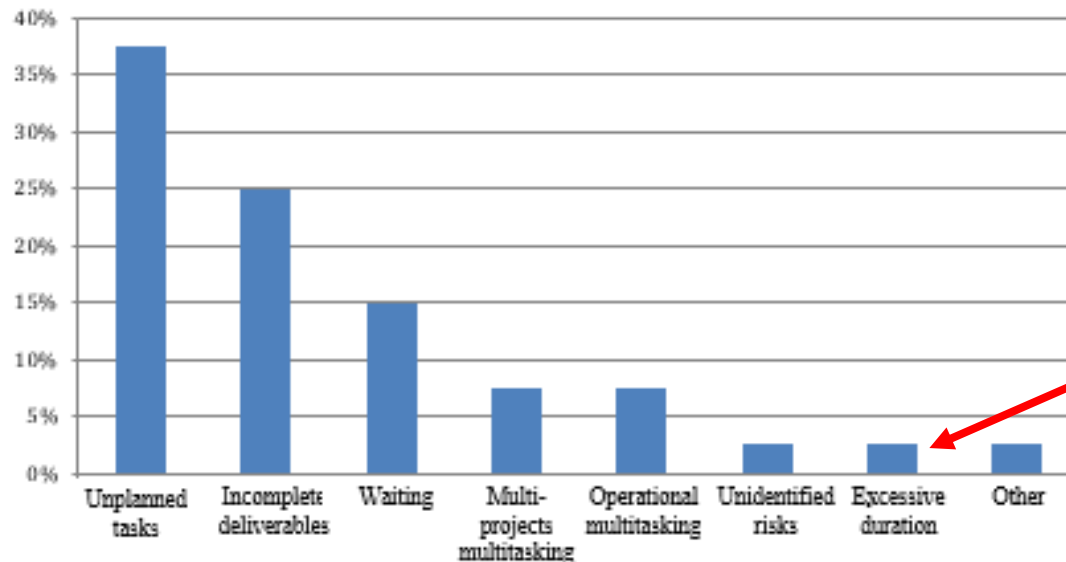
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The analysis of the buffer consumption is the key to identifying what should be improved

- Each time an activity on the Critical Chain takes more time than initially planned, the buffer will be consumed in the same proportion. It is important to understand why the buffer is consumed, in order to start a process of project management continuous improvement.
- At the beginning of Critical Chain implementation, buffers are usually consumed because of wrong reasons, as shown in the example below:



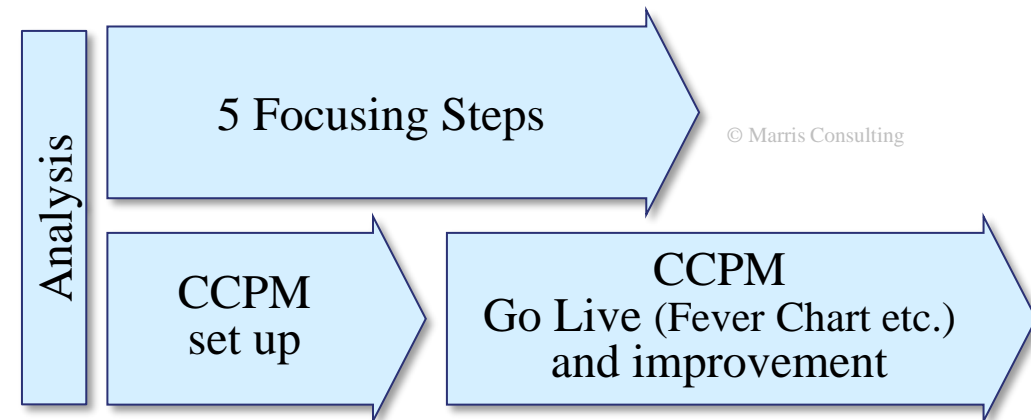
Everybody is mistaken !

Variability of task duration is actually never a major cause of delays!



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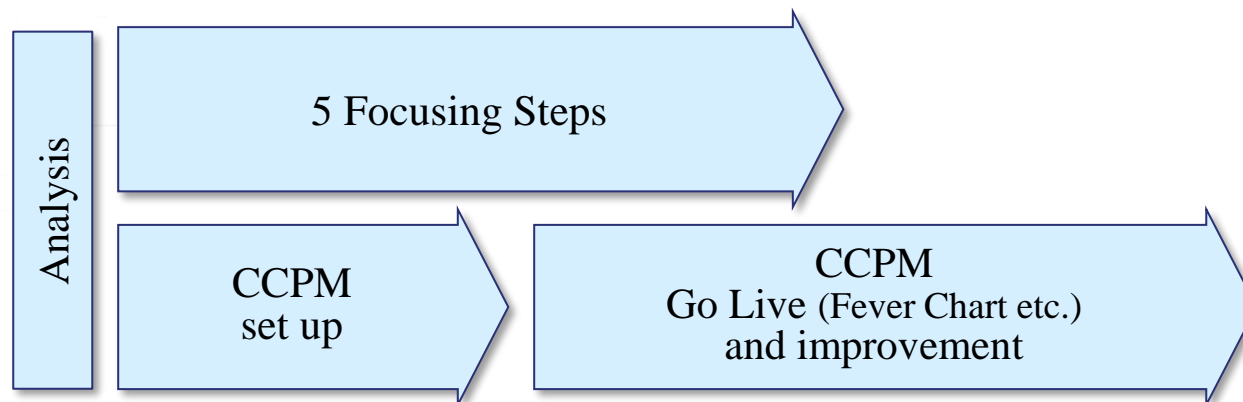
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The implementation of the Critical Chain can start by increasing the performance of the portfolio capacity constraint

- The capacity constraints in the project portfolio can be immediately exploited to produce 2 or 3 times more. This can be done before you even implement CCPM.
- For this, we use a simplified version of the Theory of Constraints “5 focusing steps” :
 - **Identify** the constraint (of capacity) by looking for the largest queue.
 - **Exploit** the constraint, often by reducing multitasking and removing less important work.
 - This generally increases productivity by 2 or 3 times.
 - So then you repeat the process by finding the new bottleneck.



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Just use 3 of the "5 focusing steps"

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1. **IDENTIFY** the constraint of the system.
2. Decide how to **EXPLOIT** it
3. **SUBORDONATE** everything else to the above decision.
4. **ELEVATE** the constraint of the system.
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 constraint.

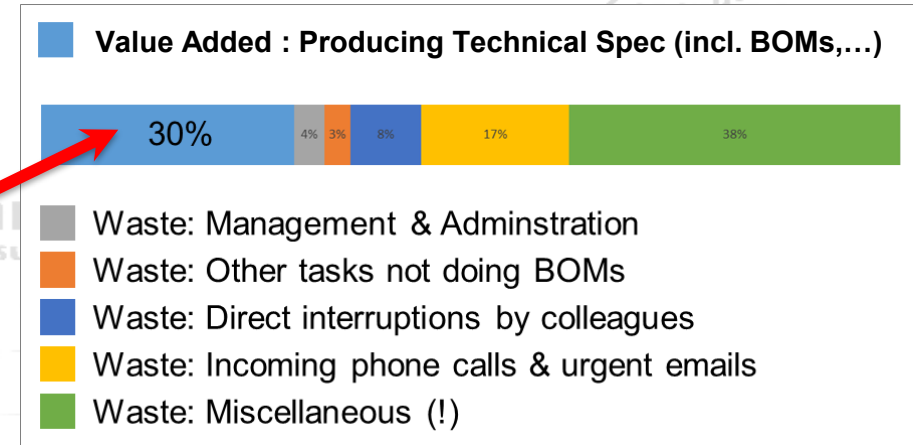
Example of a world leader in luxury(>\$3mds)

■ First iteration:

(step 1 then 2 then 5)

Bottleneck = Definition of the technical specifications (there is a 4-month queue in a 15-month process).

- Analysis of the activity with a DILO (Day In the Life Of): 30% efficiency
- Exploit: increase the flow
 - + 100% improvement in one week
 - + 70% improvement in one month
- Lead time reduction of 77% over 5 months.





Example of a world leader in luxury

■ Second iteration:

- Bottleneck = Purchasing (ordering of components).
- Exploit = + 60% in 2 weeks.

■ Third iteration :

- Xxxxx machine shop.
- Currently being processed

$$100\% + 70\% + 60\% = 230\%$$
$$\Rightarrow 230\% \text{ of improvement} \Rightarrow \mathbf{x\ 3.3}$$



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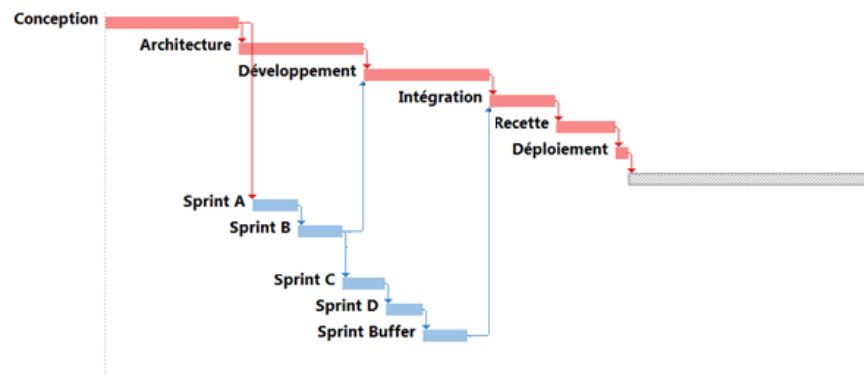
To achieve the project objectives, one must choose the most appropriate method or a combination of these two approaches

- The Critical Chain is particularly suitable to manage uncertainty in basic tasks times, scarce resource management and multi-project conflicts. An Agile approach is better suited to handle high uncertainty in customers' needs.

	AGILE	CRITICAL CHAIN
Pros	Reactivity and autonomy of the project teams - Improvement of the relationship with the customer	Respect of project deadlines, overall vision of the project - Taking into account the capacities of the company
Cons	Blurred long-term vision of the project The (expensive) need to perform tests throughout the project	The Critical Chain method requires a strong change in the corporate culture. The project buffer must be understood and accepted by the management.
When must it be used?	On projects where an iterative process is possible (example software development)	On all types of projects (as long as the need is clearly defined)
Other differences	Project teams are dedicated to a project and autonomous, there are no resource conflicts between projects	The Critical Chain can integrate the Agile method, the opposite does not seem feasible.

In projects using both methods, SCRUM sprints can easily be integrated in a global CCPM schedule

- Each sprint is modelled as a fixed duration task (without variability by definition) with a dedicated team.
- An additional sprint acts as a functional and temporal buffer (see sprint or scope buffer). Its duration and its variability are according to the level of risk that one wishes to take on the content (user stories) and the point of integration with the global planning.
- The product backlog tracking permits to update the sprint buffer and update the overall Fever Chart.
- The duration of the sprint buffer is refreshed based on the remaining work and the updated velocity (number of story points completed per week).



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Critical Chain can improve any type of project

- New product or service development (project or portfolio)
- Non-repetitive Engineering To Order (ETO) and Make To Order (MTO)
- Construction projects, public works and large engineering projects
- Maintenance, Repair and Overhaul (MRO)
- Software development
(often associated with an "Agile" approach like Scrum)
- ERP implementations
- Etc.



MRO – Maintenance Centre for Executive Jets

Executive Jet Turn Around Time reduction

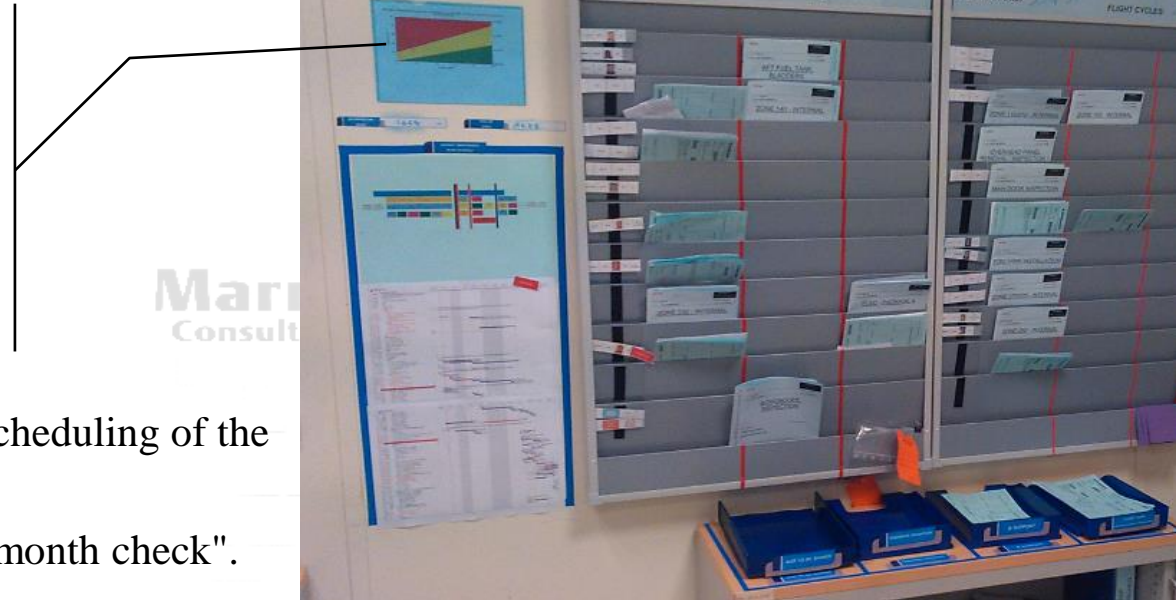
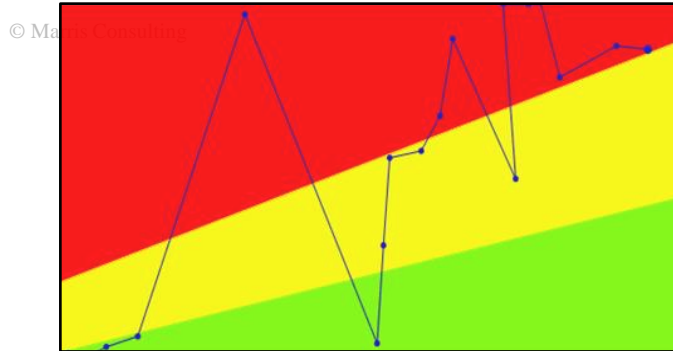


Fixing planes twice as fast
with Critical Chain

EMBRAER
Executive Jets



See videos on
YouTube



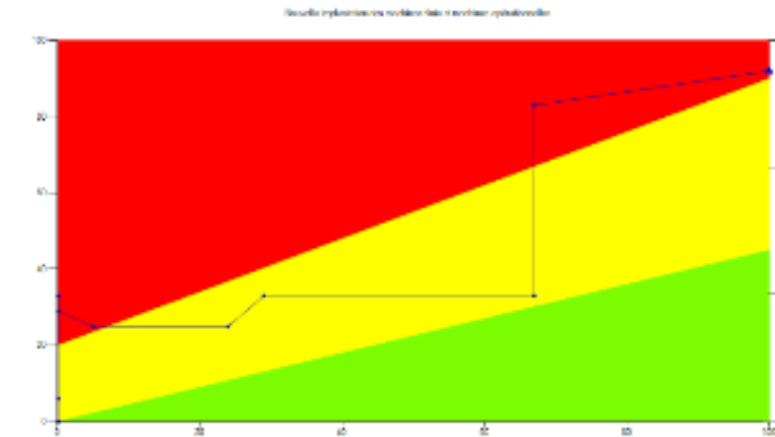
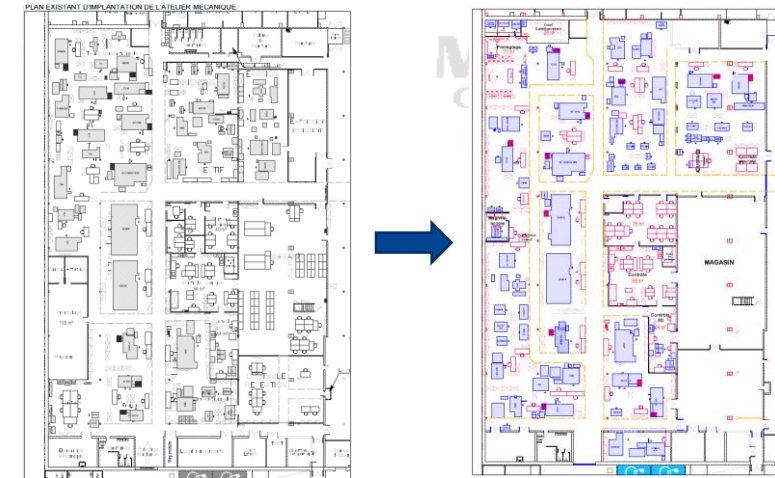
- Deployment of Critical Chain for dynamic scheduling of the work of mechanics.
- Initial pilot: "C-Check" maintenance or "96 month check".
- Reduction in aircraft downtime duration of over 50 % (from >10 to 5 weeks). Current target is to further reduce to 3,5 weeks.
- Increase of labour productivity by more than 70%.
- Reduction in the level of stress. Stability and clarity of the priorities set by management. Reduction in multitasking.
- Implementation of "pipelining" of aircraft. Development of a hangar portfolio Fever Chart.





When a maintenance manager discovers the Critical Chain

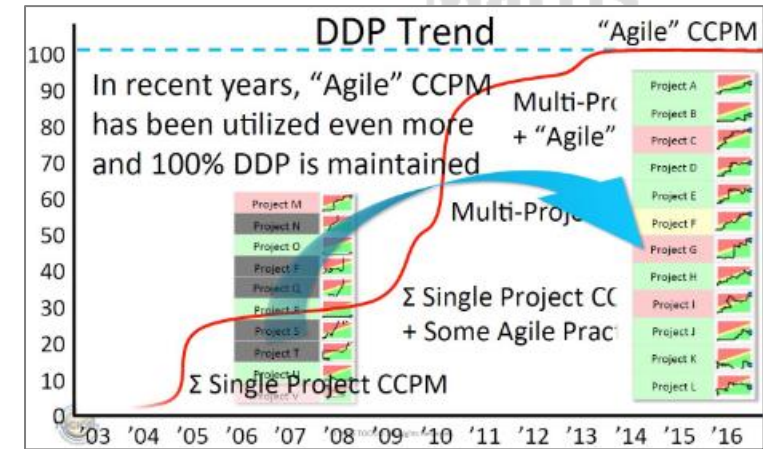
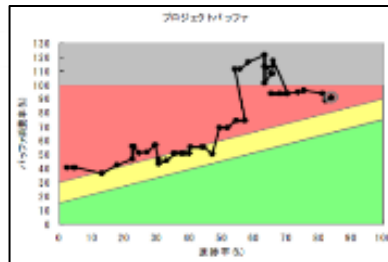
- 2 weeks were granted to the Maintenance Manager to completely reorganize the mechanical workshop in order to simplify the flows by moving 45 machines between 300kg and 10 tons
- Estimated project duration of 8 weeks to 2 weeks using Critical Chain planning
 - Creation of the schedule thanks to the established plans
 - Anticipation of work before the 2 weeks of downtime
 - Identification of the critical resource
 - Quantification of the investment to meet the deadline
- Day-to-day monitoring of project progress via the Fever Chart



Total relocation of machines from a factory in 6.5 days instead of 8 weeks


Mazda, car manufacturer, after a 10 year roll out the first complete cars "Made by ToC" are now available

- Initially used to develop a new engine family, SKYACTIV.
- Project duration was divided by 2 and cars using that engine (CX5, Mazda 6, ...) won 73 rewards around the world in 2012 and 2013.
- Notable increase of New Product Development capacity & increase in productivity.
- CCPM then rolled-out to all the company's development projects.
- Note: This is not a Marris Consulting reference.




Project Management Institute (PMI) Best Project of the Year: Embraer using Critical Chain



- The PMI 2019 Best Project Of The Year was awarded to Embraer for developing a new airplane using Critical Chain and breaking many industry performance records.



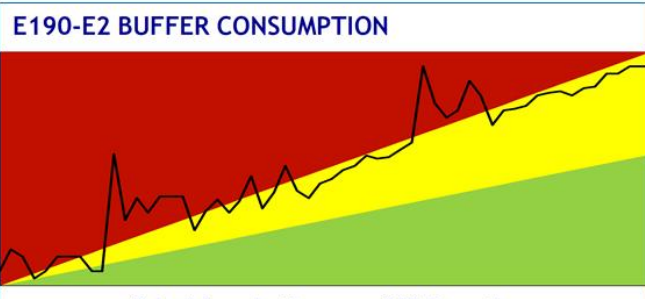

Best project of the Year 2019 Award



E-Jets E190-E2

Using
Critical Chain
Project Management
approach

* *Project Management Institute, international association of 1,000,000 members*


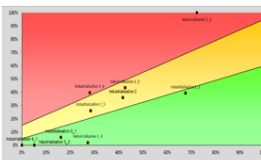


And many more...



Equipment manufacturer for aeronautical industry
New product development and industrialisation portfolio

- European leader in aeronautical equipment: flight control systems, aircraft engines, ...
- The Critical Chain approach was applied to the entire New Products Development and Industrialisation portfolio of one of the factories in 4 months.
- Average project duration reduced by more than 50%.
- On time delivery improved spectacularly.
- Number of projects completed per year increased significantly.
- Recognized as a very powerful decision making tool:
 - Very easy arbitration of resources allocation between different projects.
 - Possibility to simulate the consequences of forcing a new project into the portfolio on the other projects.
 - Etc.







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CCPM Training V1.0 Ex 20200429

Critical Chain – "Will you dare to finish all your projects on-time?"
Training material – Dec, 20th to 21st May 2019

European leader in water meters
Time To Market reduction using CCPM & Lean Engineering

- Implementation of CCPM on the whole portfolio. Pilot, family portfolio & roll out.
- Project durations were reduced by several months.
- Very significant impact on the due date performance of their New Product Development.
- Development of 6 different standard WBSs for each family of project.
- Used CCPM to reply to a mega Call For Tender which they won. The project was then executed using CCPM.
- Re-engineering of the Critical Chain after 6 months to design out some sub-contractors.
- Mascots were used for each project with great success.

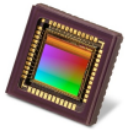
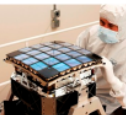




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Critical Chain – "Will you dare to finish all your projects on-time?"
Training material – Dec, 20th to 21st May 2019

e2v – Manufacturer of complex electronic components
The first company to implement CCPM in France (in 2007)

- The Grenoble facility (>400 people) designs and produces very high technology silicon chips for: aeronautical, space, medical and many other industries.
- All its development activities (R&D, products, process) are managed as projects (concept – design – validation – industrialization – production).
- After many years of using the Critical Chain approach they continue to improve year by year: faster and faster, more and more efficient, nearly perfect reliability.
- Control and high speed execution of their projects is crucial in their business. Their results have allowed them to conquer many key markets.
- Note: This is not a Marris Consulting reference.


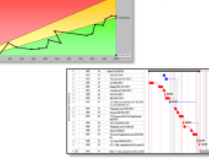

	Av. Planned project cycle time (months)	Av. Lateness (%)	On time (%)	Av. Actual duration (months)
Before CCPM	27	55	25	38
Results up-to-date	19.5	20	64	23
Improvements	28%	64%	156%	40%

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Critical Chain – "Will you dare to finish all your projects on-time?"
Training material – Dec, 20th to 21st May 2019

European leader in aeronautical equipment
Development of a complex avionics system

- Deployment of Critical Chain on a complex pilot program (14 work batches, 10 000 tasks, 150 people on 4 different sites).
- Development of 14 schedules (1 planning per work batch) converted to the Critical Chain principles.
- Development of a scheduling synchronization system for the overall program planning.
- Management of multiple end/exit points and therefore of several simultaneous Critical Chains within the programme.
- Huge improvement in visibility and quality of project monitoring.
- Focus on Critical Chains and acceleration of project execution.
- Control of exchange of deliverables and linkage between the work batches (critical and spectacular).
- In view of the success of the pilot project summarized above the company is currently generalizing Critical Chain to the entire Business Unit (>1,000 engineers, 60 new product programs, 5 different facilities).


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Critical Chain – "Will you dare to finish all your projects on-time?"
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French terrestrial armament European leader
Critical Chain to manage several key projects

- Implemented Critical Chain combined with Agile / Scrum to manage the portfolio of projects.
- Solved numerous problems of key critical resources that were involved in several different projects simultaneously.
- Created a CCPM based system to reply to the large Call For Tenders with as a result a very significant increase in the speed and quality of the proposals. This involved managing conflicts between projects and Call For Tenders that were inserted into the portfolio with short response times.
- Implemented Fever Charts to follow all projects and dynamically arbitrate all resource conflicts.




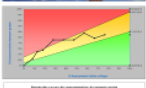
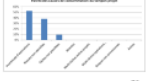


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Critical Chain – "Will you dare to finish all your projects on-time?"
Training material – Dec, 20th to 21st May 2019

Space industry European leader. CCPM to save a crucial overdue project
Project duration reduced from >9 months to <4.5 months and delivered on time

- One of the major actors in the design and production of satellites in the world. More than 7,000 employees.
- Just a few months before the Critical Chain implementation, management had no visibility on the odds of meeting the promised end date for the completion of a satellite. A quick audit showed that it would end at least 5 months late.
- More than 100 million € at stake if the satellite was late and political embarrassment with a foreign nation.
- Thanks to the Critical Chain approach, the project went back on track and local final testing was optimized until the last minute.
- Project in 2014.

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Critical Chain – "Will you dare to finish all your projects on-time?"
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Watch the replay of our webinar presenting 15 cases of TOC implementations including 8 CCPM cases
Available on our Marris Consulting YouTube Channel



Agenda

- Introduction
- Critical Chain planning principles
- Project execution the Critical Chain way
- Critical Chain project portfolio management
- Continuous improvement the Critical Chain way
- The TOC 5 focusing steps and Critical Chain
- Agile and Critical Chain combination
- Case studies
- Conclusion

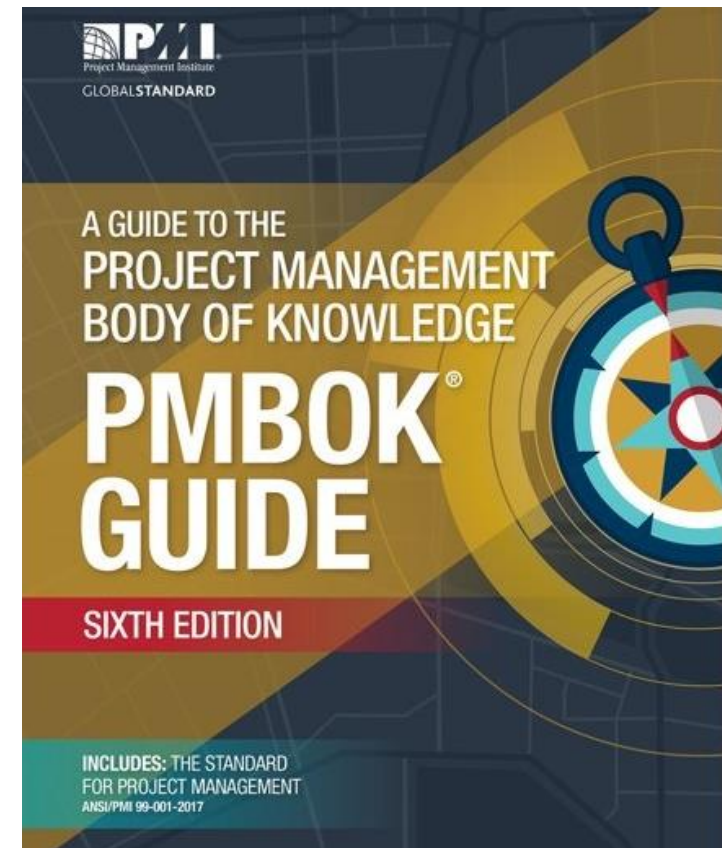
- Appendices





The Critical Chain has proven itself but is not yet integrated into the PMBOK of PMI

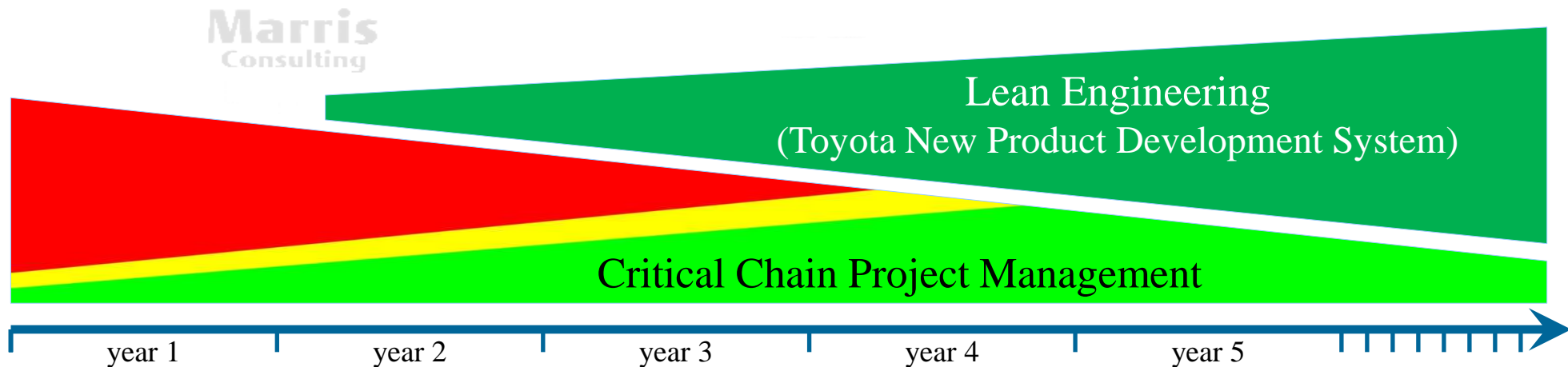
- The Critical Chain is not mentioned in the latest edition of the PMBOK of the PMI (Project Management Institute, 1,000,000 members).
- This is obviously a concern for many companies considering using CCPM.
- We hope this will change soon.
- Especially since, in our opinion, the Critical Chain, which creates a less chaotic environment, allows companies to better implement the recommendations of the PMBOK.
 - Risk management
 - Construction and optimization of Work Breakdown Structure
 - Scope management
 - Etc.





For new product development projects, the Critical Chain allows you to embark on a "Lean Engineering" journey

- The main advantage of Toyota today is not in its production system but in its "Toyota New Product Development System" (see Allen Ward & al.)
- But this "Lean Engineering" is not accessible if the development activity is frantic and barely under control ... we will never find enough time to "do Lean Engineering".
- We recommend using the Critical Chain first in order to put product development under control, and then to try Toyota's daring product development system.



A website dedicated to Critical Chain
www.critical-chain-projects.com

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**New also available
in English!**



Home

The Method ▾

Our point of view

To go further ▾

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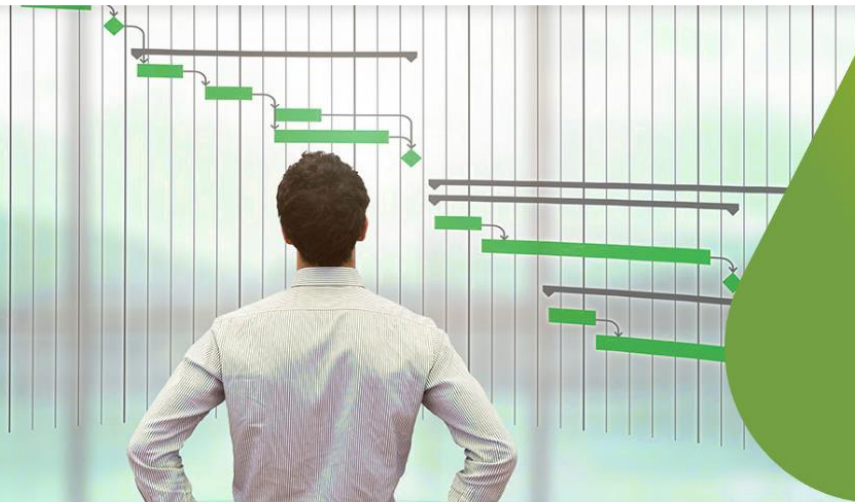
Diagnosis

Contact Us



FR | EN

GO / NO GO
 Project Planning
 WBS
 Resources
 Schedule
 Costs
 Planning finished
 Project Execution
 Subtask 1
 Initiating
 Executing
 Deliverable
 Subtask 2
 Initiating
 Executing
 Deliverable
 Project closing
 General deliverable



Critical Chain

an innovative method of
project management

THE METHOD →

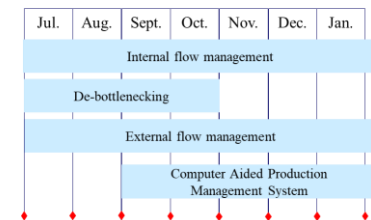
Dare to finish all your projects on time

This approach, stemming from Theory of Constraints (TOC),
allows to answer 2 recurring questions:



You can boost your improvement process now

- New webinars are being programmed for the coming weeks
- Due to the Covid-19 context, we have transformed all of our services into online services.
- “Remote” Diagnostics and assignments
- Currently >90% of our business is outside of France (Germany, China, USA, Spain, Africa ...)
- Our next online inter-company training sessions:
 - **June 30th to July 3rd : Critical Chain in English (8 hours over 4 days)**
 - Critical Chain in French (To be scheduled in June or July 2020)
 - TOC in Production in French or English (To be scheduled in July 2020)
- You can register to our free webinars and our trainings on our website





Next week! The online conference of the TOCICO in June and learn more Theory Of Constraints

- Online, from 22nd to 26th of June
- Lots of world class presentations by: McDonald's, Aerosud, BAE Systems, Ariane Rockets, Tata Stell, etc. and lots of world class Theory Of Constraints experts.
- To register: <https://www.tocico.org/2020>



THEORY OF CONSTRAINTS
TOCICO
INTERNATIONAL CERTIFICATION ORGANIZATION

REACHING THE GOAL

18th Annual International Virtual Conference
June 22-26

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Thank you for your time

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Questions ?

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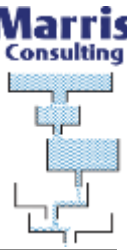
Do not hesitate to connect with me on LinkedIn

[linkedin.com/in/philipmarris](https://www.linkedin.com/in/philipmarris)





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Over 300 videos on the Marris Consulting YouTube Channel

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The screenshot shows the Marris Consulting YouTube channel page. The banner features a night view of the Eiffel Tower with the text "Factories, People & Results" and the website "www.Marris-Consulting.com". The channel name "marrisconsulting" has 2,01 k abonnés. A red "S'ABONNER" button is visible. The navigation bar includes ACCUEIL, VIDÉOS, PLAYLISTS, COMMUNAUTÉ, CHAÎNES, and À PROPOS. Below the navigation bar, there are two rows of video thumbnails. The first row includes "Theory of Constraints in production - 5 min. summary", "Theory Of Constraints Crash course by Philip Marris", "How to identify bottlenecks in production and projects", "La Théorie des Contraintes en Production", and "Critical Chain Project Management - 5 min....". The second row includes "# 1 of 7 Logical Thinking Process", "TLS: Good TOC + Good Lean", "Règle '2 pour 1' pour", "Management de Projets Chaîne Critique", and "Tutoriel - Planification et".

Consulting

Useful web links

To get the latest news about Theory Of Constraints

- 5 permanent news website dedicated to Theory of Constraints
(www.Scoopit.com)

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

- >300 Videos (Marris Consulting YouTube Channel)

- Discussion groups (LinkedIn)

- Critical Chain Project Management
- Theory Of Constraints
- TLS: TOC, Lean and Six Sigma
- Logical Thinking Process

- Others:

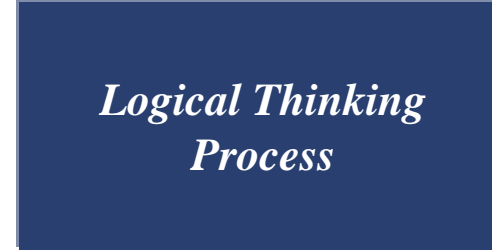
- Twitter, Facebook, etc...





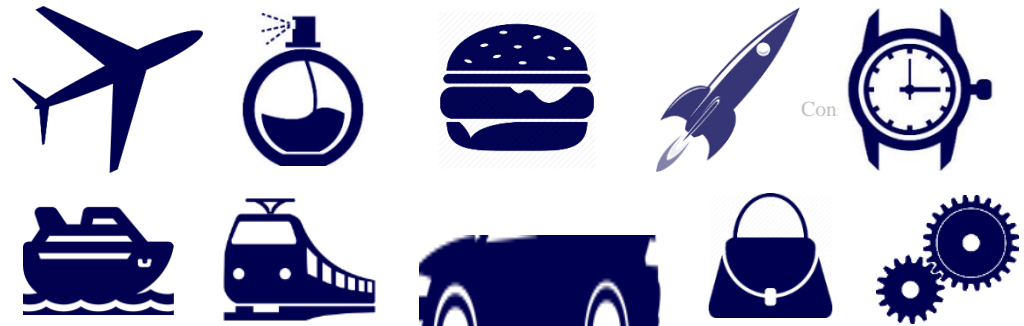



Marris Consulting organizes more than 30 inter and intra-company training session per year



Presentation of Marris Consulting

- Marris Consulting, founded in 2005, is a consulting company specializing in improving the operational performance of companies in the industrial world.
- The approach of Marris Consulting is based on the combination of Theory of Constraints (TOC), - and its various applications including Project Management by the Critical Chain -, and Lean and other Six Sigma type methodologies when it helps our customers' issues.
- Marris Consulting has a reputation for its ability to be pertinent in all kinds of industry. We have worked in over 250 companies helping in designing, making, selling and distributing:
 - cars, hamburgers, airplanes, perfume, trains, rockets, industrial equipment, pharmaceuticals, home delivery services, computer chips, chips (food), maintenance / repair / overhaul (MRO) of planes and trains, luxury handbags, corrugated cardboard production, the defense industry, Swiss watches, steel manufacturing, plastics, bank notes, satellites, gold mines
- We are committed, viscerally, to producing results. Results that are well beyond our clients' expectations. And results that last. Better still we incessantly seek to strengthen the process of on-going improvement; we want to see our ex-clients getting better and better many years after we intervened.
- Marris Consulting is based in Paris, but operates throughout France, Europe and around the world



How we do it

- We understand that the hardest part of what we do is to change "people". Apart from the pertinent ideas that we must have we must directly and indirectly change individual and collective behavior.
- We work simultaneously at all levels of the company from the front line to the board room.
- We are recognized experts in many different fields: "Lean" (manufacturing/engineering/management/..., the Theory Of Constraints, Six Sigma, Industry 4.0, DDMRP ...
- One of our key strengths is that we analyze each of our new client's business & culture and then we mix up the right cocktail of solutions. We never impose a so called industry best practice.
- We like simple solutions. Simple is beautiful.



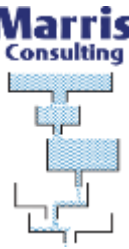
Philip Marris presents the
38th TOCPA Conference program

They already trusted us....





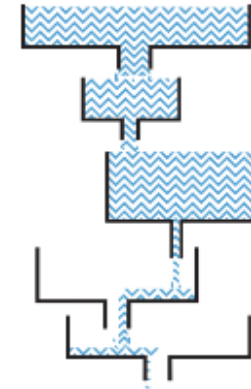
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