

# 36<sup>th</sup> International Conference of the TOC Practitioners Alliance - TOCPA

[www.tocpractice.com](http://www.tocpractice.com)

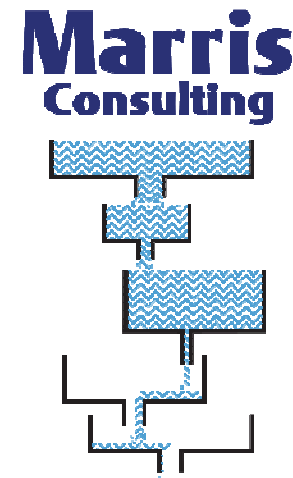
Friday 17<sup>th</sup> November, 2017 – Guangzhou, China

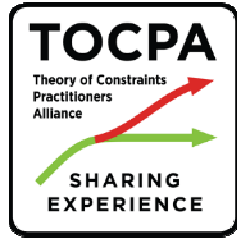


## How to identify bottlenecks in production and projects?

**Philip Marris, Marris Consulting, France**

**Guangzhou, China, 17<sup>th</sup> of November, 2017**





# Philip Marris

**Theory Of Constraints expert.**

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

**Lean expert.**

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

**>25 years of experience helping over 150 companies in all industrial sectors.**

**CEO of Marris Consulting based in Paris, France.**

**Motto: *Factories, People & Results***



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# A few examples of mistakes in identifying bottlenecks

# 404

## Not Found

The resource requested could not be found on this server!

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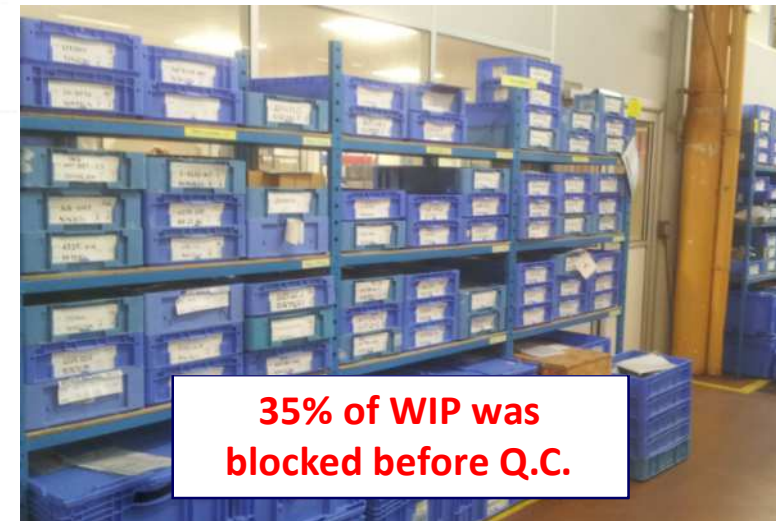
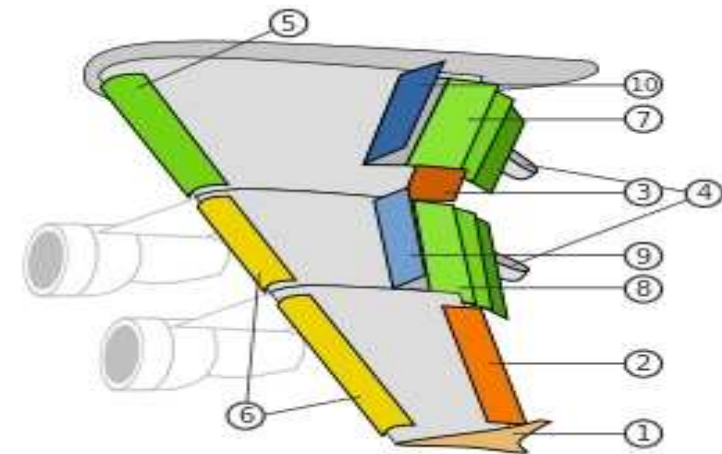
## My impressive rolling mill

- A steel manufacturer world leader.
- A 2,900 person factory with a steel mill, a rolling mill, heat treatment and finishing operations.
- They thought it was their big impressive rare sophisticated rolling mill.
- In fact it was their 6 (boring) heat treatment furnaces.



# What is not in SAP doesn't exist

- A 400 person factory making Flight Control Systems for airplanes.
- They thought that their 5 most expensive machines were the constraint.
- In fact it was their Quality Control.
- But their ERP/MRP system could not see this.
- This is a sad case because the huge pile of WIP before the constraint was hiding in plain sight.

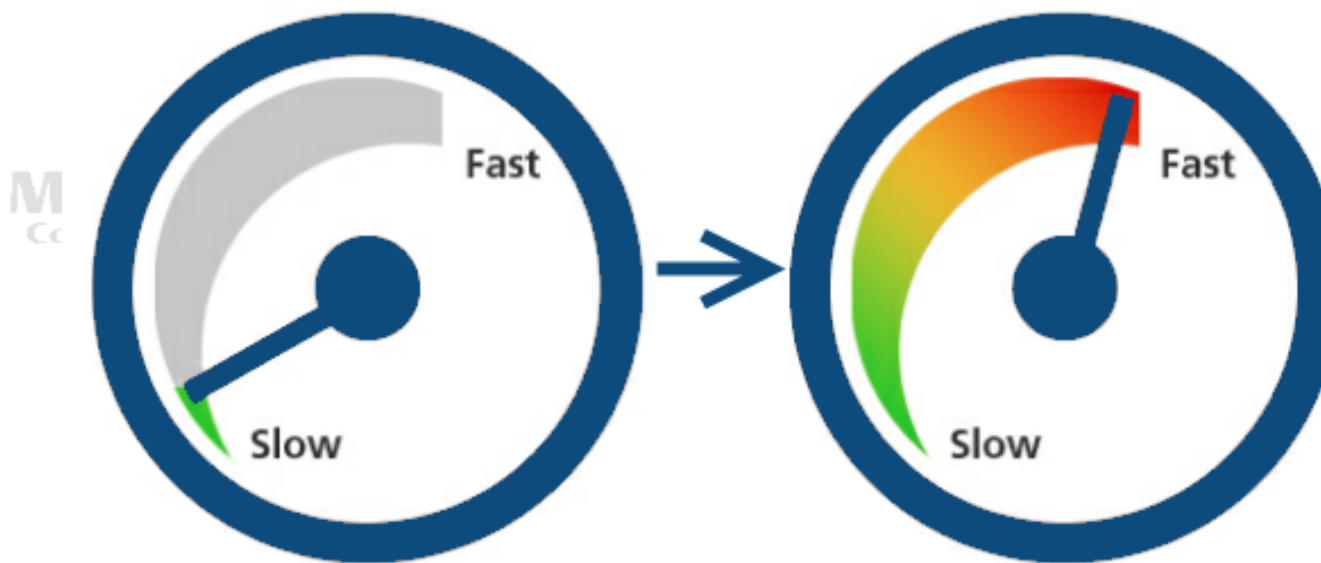


**35% of WIP was  
blocked before Q.C.**



# Lessons learned

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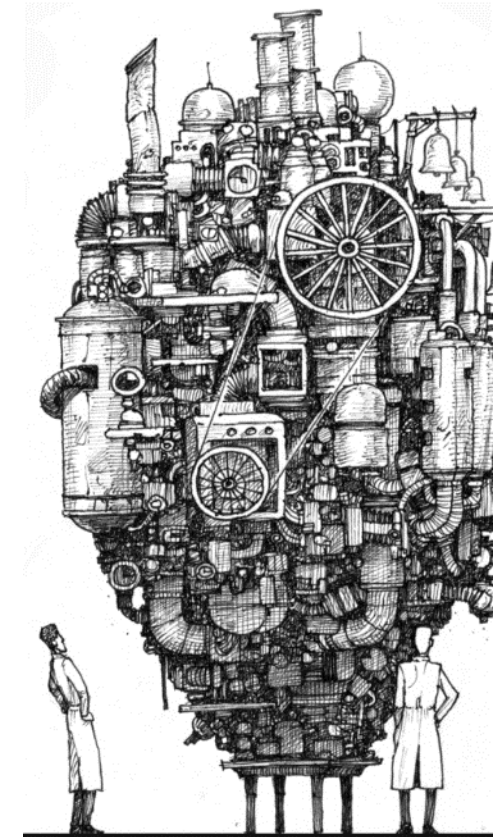
# My big and beautiful bottleneck

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*The only difference  
between an adult and a child  
is the price of his toys*

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- We find that management often falls into the trap of wishful thinking.
- They confuse where the constraint should be and where it really is.





## Your analysis is probably out of date

- To help find the real bottlenecks ask yourself what has changed over the past 5 years:
  - New quality requirements
  - New cost cutting initiatives
  - New technology or machines
  - New management with new rules
  - Etc.

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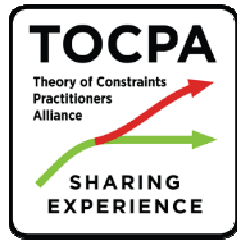
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# Capacity constraints in projects (continued)

- Companies are trying to develop today's product portfolio with yesterday's resource pool.
- Typically in New Product Development the new competencies are understaffed.
- Examples: electronics, regulatory, software development, quality management ...





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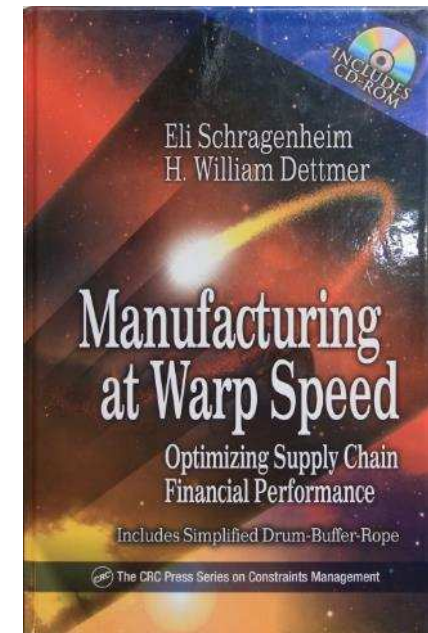
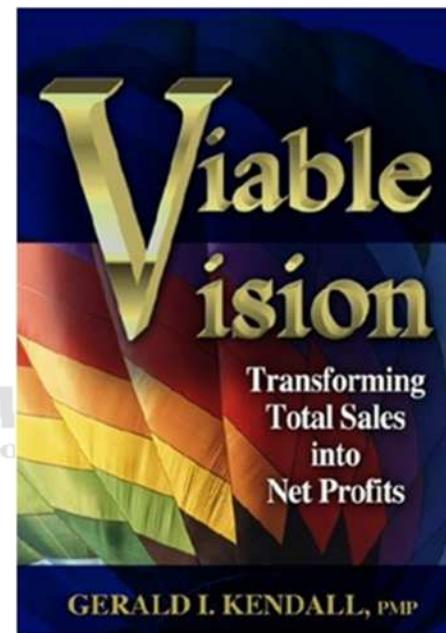
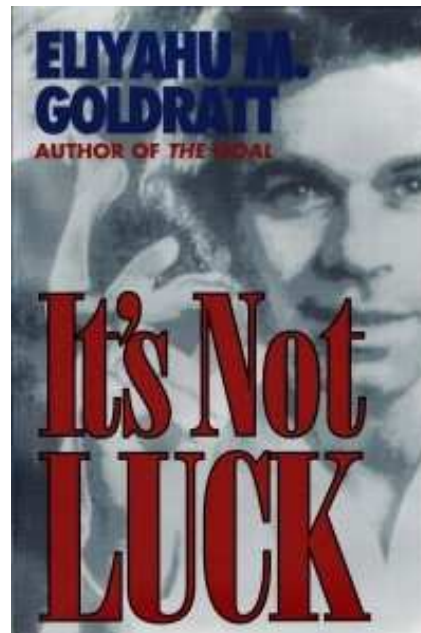
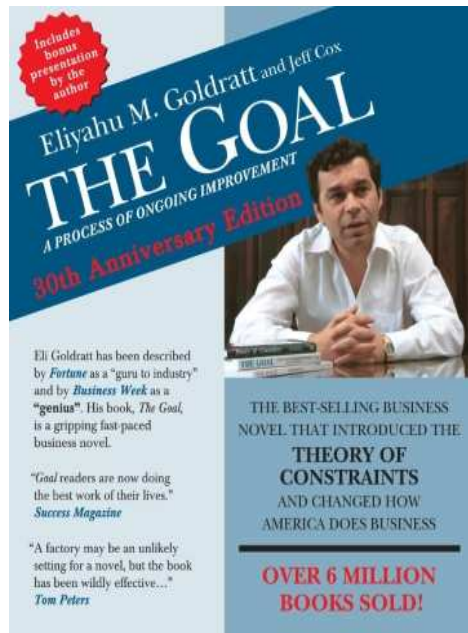
# Conclusion

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# Theory of Constraints books

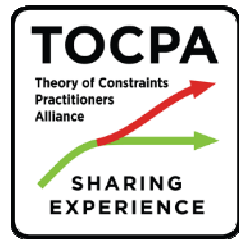


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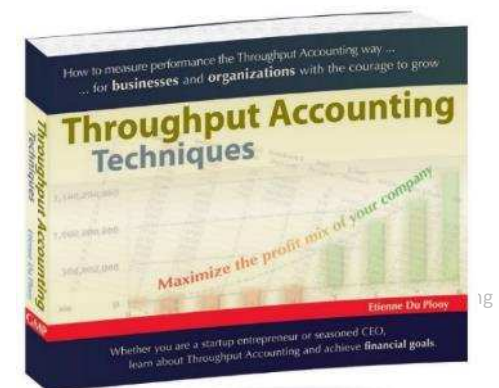
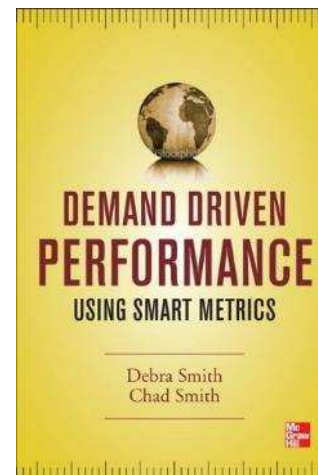
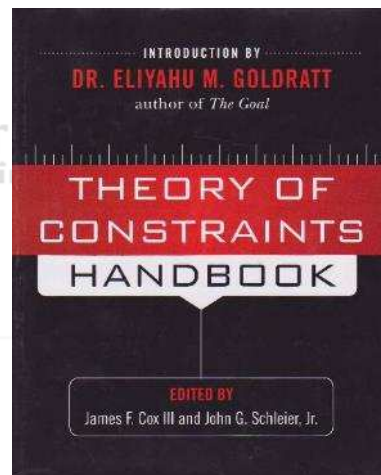
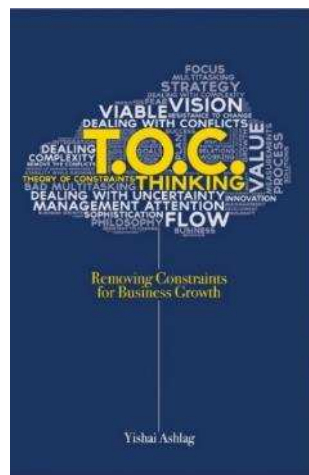
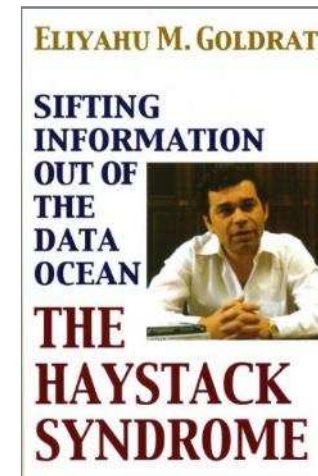
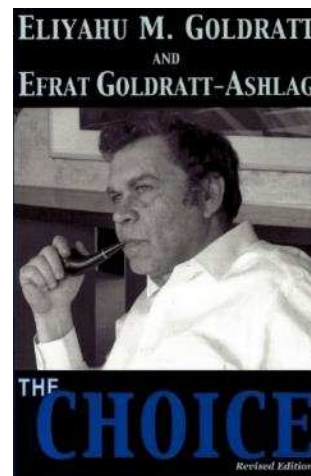
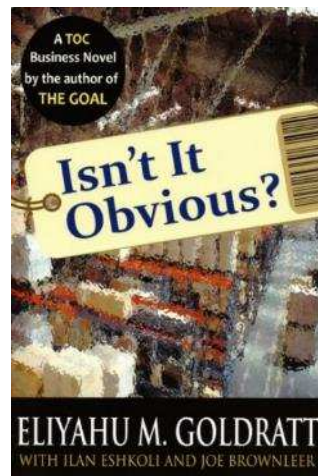
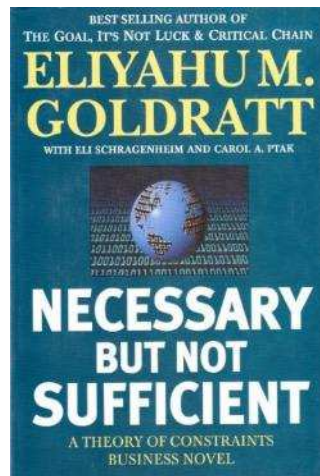
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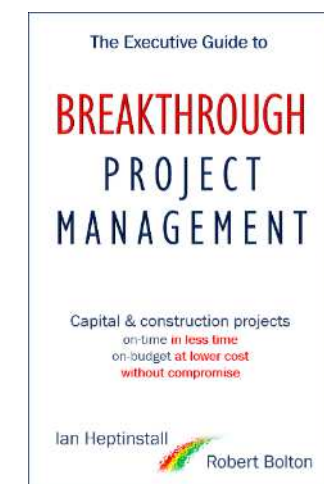
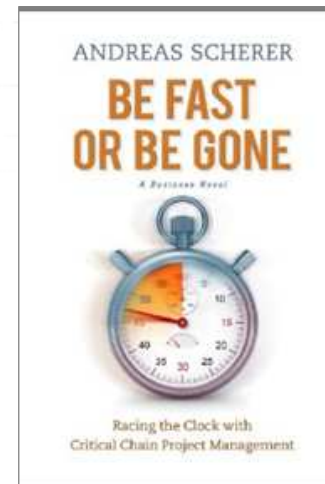
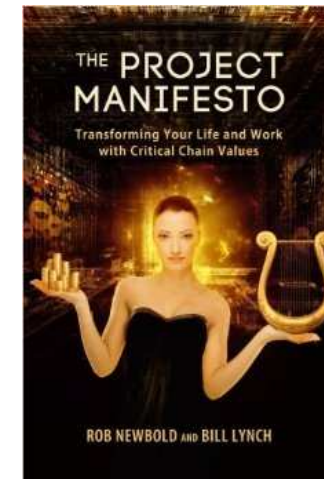
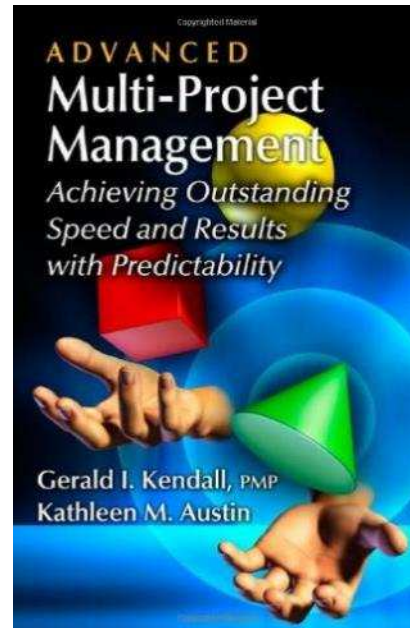
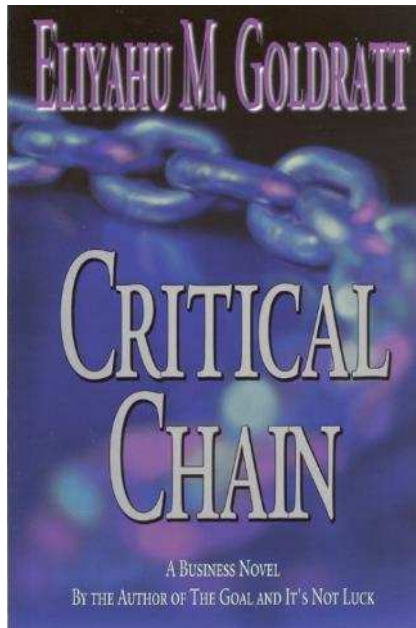




## Other ToC books

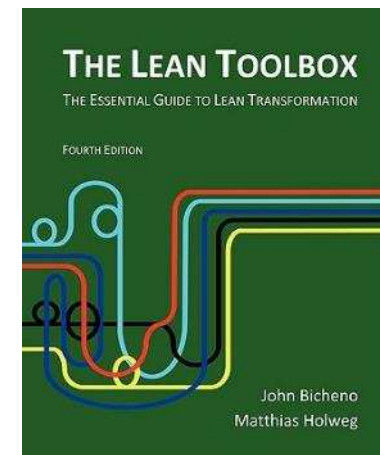
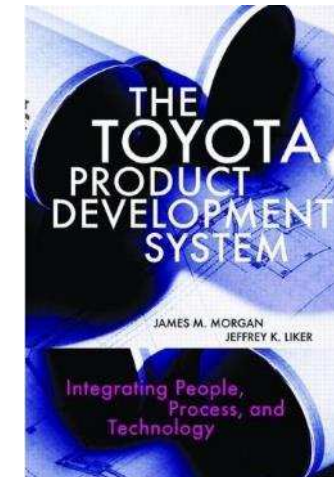
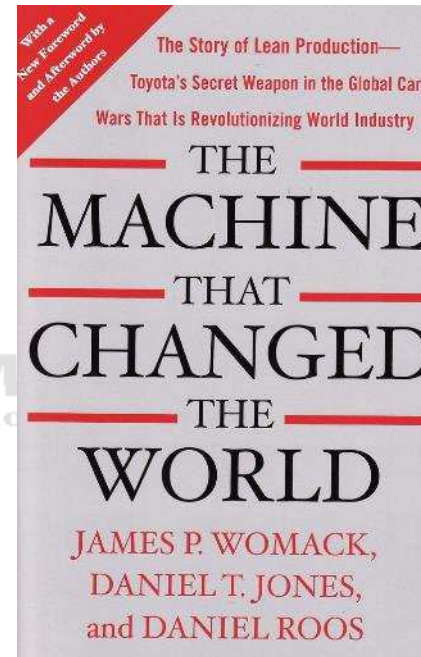
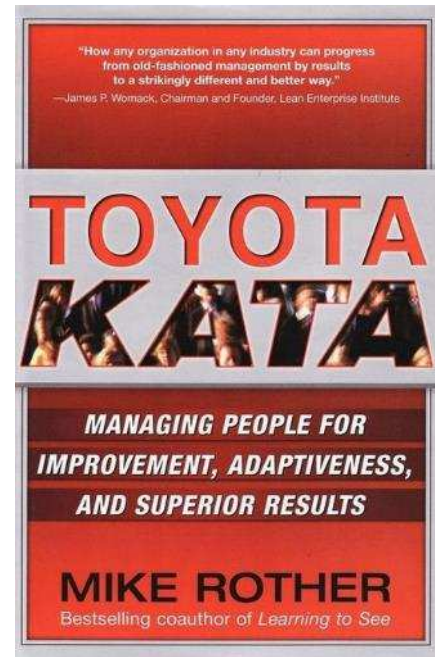
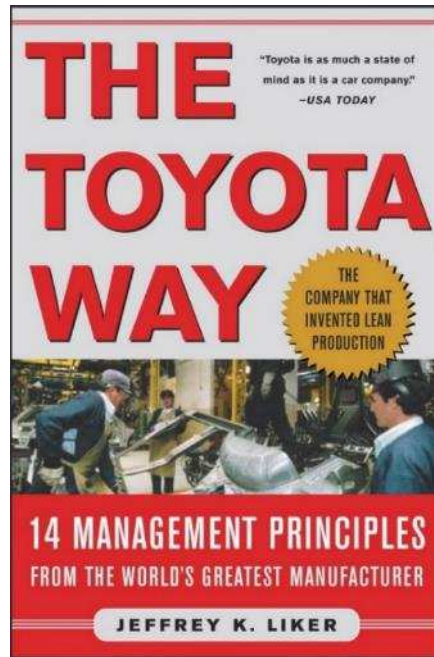


# Critical Chain books

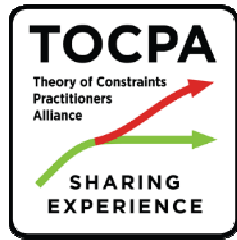




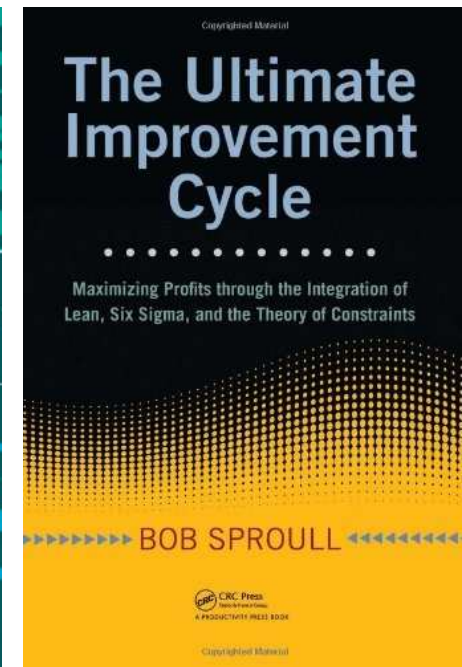
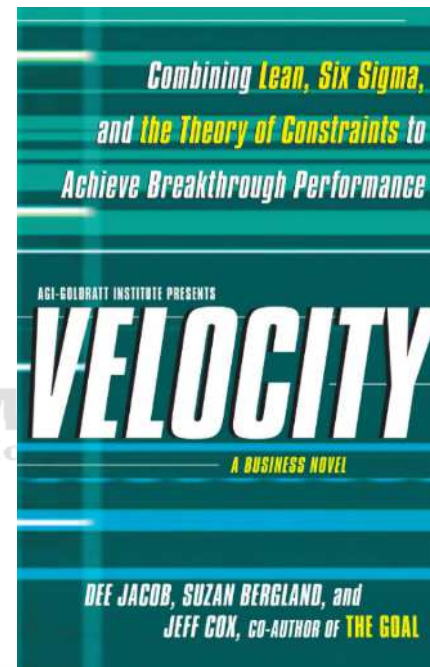
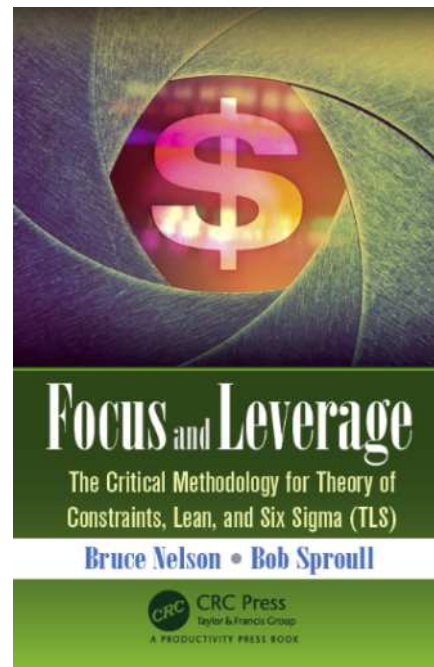
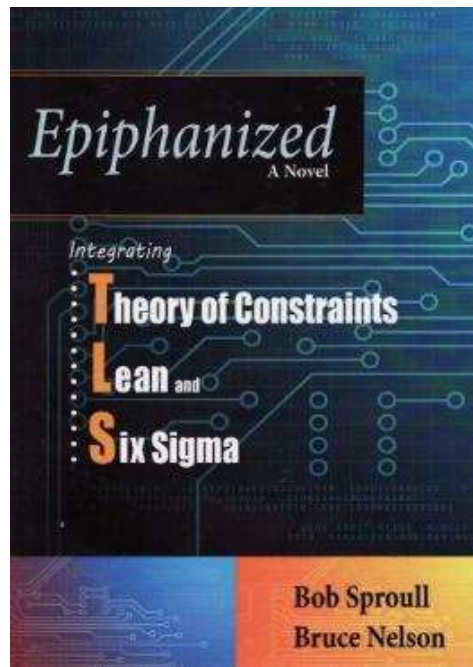
# Lean books







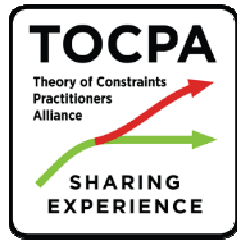
## TLS books



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## Marris Consulting 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
- >120 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, Viadeo, Etc.





## Philip Marris, Founder and CEO of Marris Consulting Business transformation, Theory Of Constraints and Lean expert



32 years of experience, 57 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).

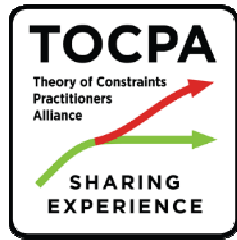
### SECTORS / CLIENTS

- 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

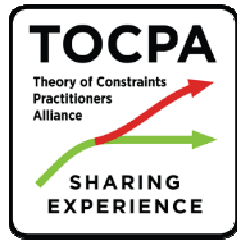
- **Production, Operations & Supply Chain (sample):**
  - Worldwide automotive OEM tier 1 supplier: increase in Throughput of 17% in 15 minutes. Savings >\$400M per year. saved relationship with largest customer.
  - Large MRO (Maintenance, Renewal & Overhaul) Division of a major European railway operator (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...





Factories, People & Results



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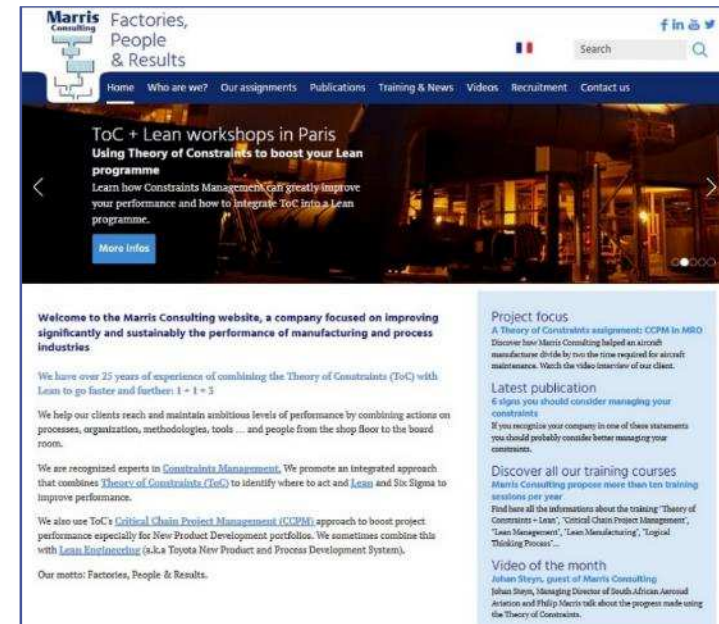
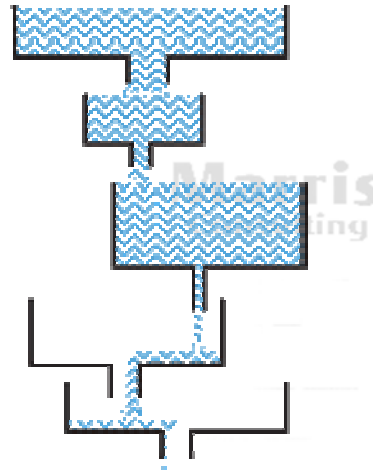
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