



38th TOCPA International Conference

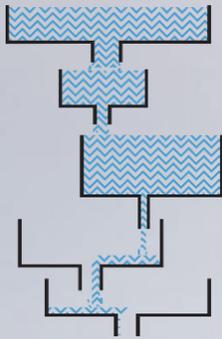
28-30 March 2018, Paris, France

The growing pertinence of the Theory of Constraints combined with Good Lean

Philip Marris

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Marris
Consulting



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 200 companies in all industrial sectors.
- CEO of Marris Consulting based in Paris, France.

Motto: *Factories, People & Results*

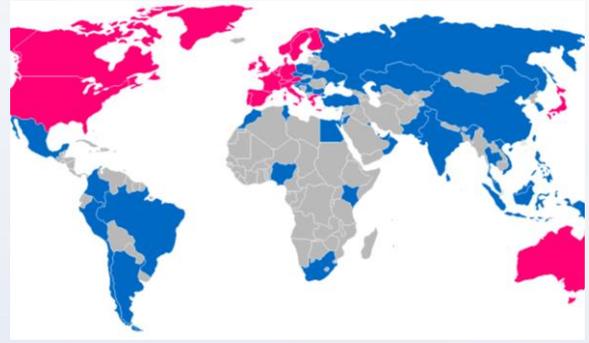


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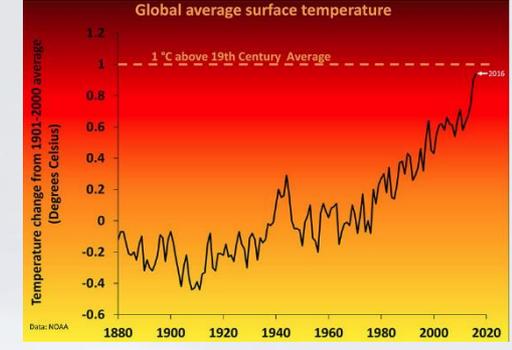
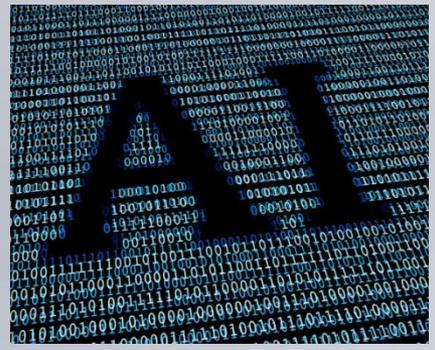
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The world is ever-increasingly volatile and unpredictable



Direct Metal
3D Printing



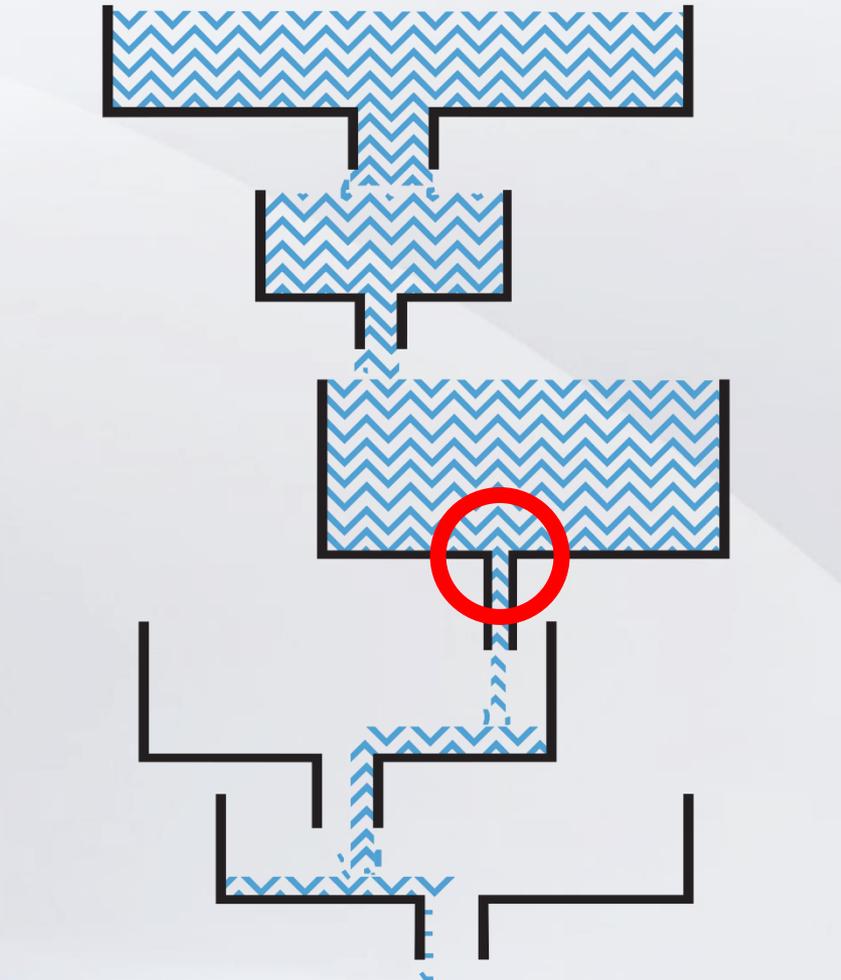
And yet the inertia of our companies basically remains unchanged

- It still takes about the same amount of time:
 - To choose and install a new machine
 - To recruit and train a new person



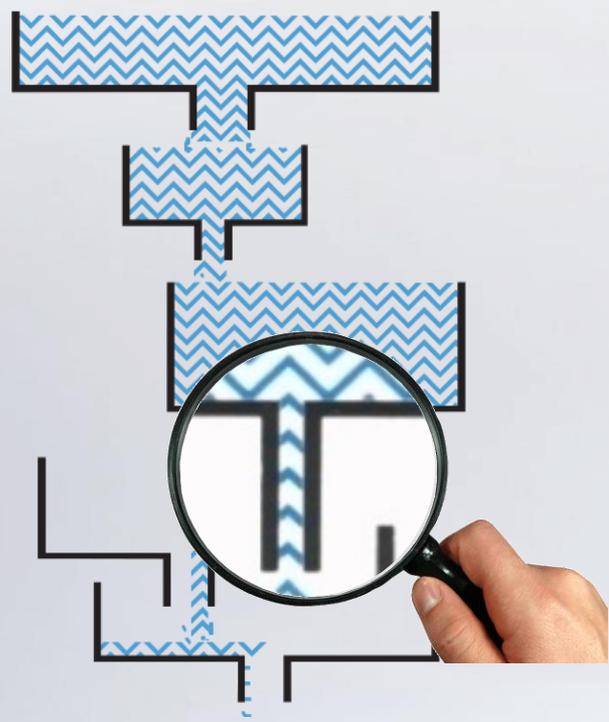
And so it is no longer possible to put the right amount of capacity everywhere

- It is no longer possible to put the right amount of capacity in the right place at the right time
- And so we have resources
 - that don't have enough capacity: bottlenecks or constraints
 - That have "too much" capacity: non-bottlenecks

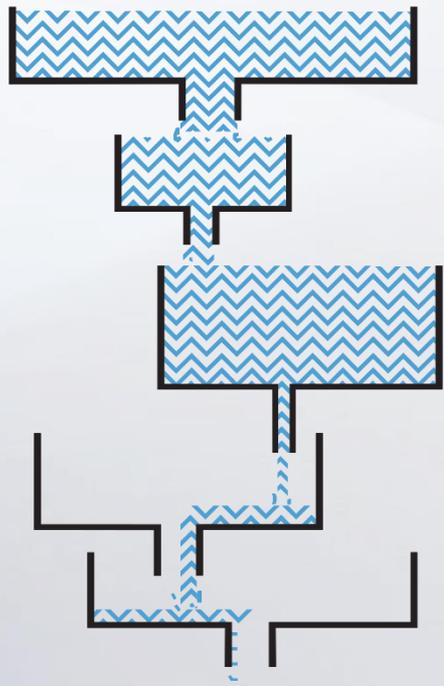


We must use Theory of Constraints reasoning

- So our decision making systems and our management systems must take this reality into account...this is what the Theory of Constraints does.



Local optimums are harmful



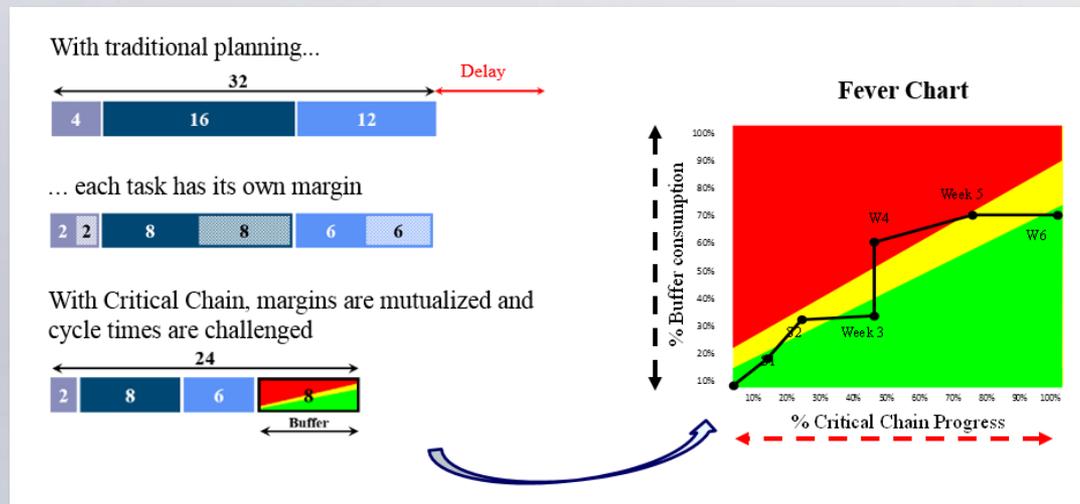
*The sum of local optimums
is not equal to the global optimum*

Annual budgets and the accompanying departmental targets are dangerous



To use Critical Chain or not to use Critical Chain, it's your choice...

- Finish on time, within budget and with full specifications
- Finish projects twice as fast and do twice as many projects
- And there is no alternative solution!



So the Theory of Constraints is more and more pertinent

Includes bonus presentation by the author

Eliyahu M. Goldratt and Jeff Cox

THE GOAL

A PROCESS OF ONGOING IMPROVEMENT

30th Anniversary Edition



Eli Goldratt has been described by *Fortune* as a “guru to industry” and by *Business Week* as a “genius”. His book, *The Goal*, is a gripping fast-paced business novel.

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Success Magazine

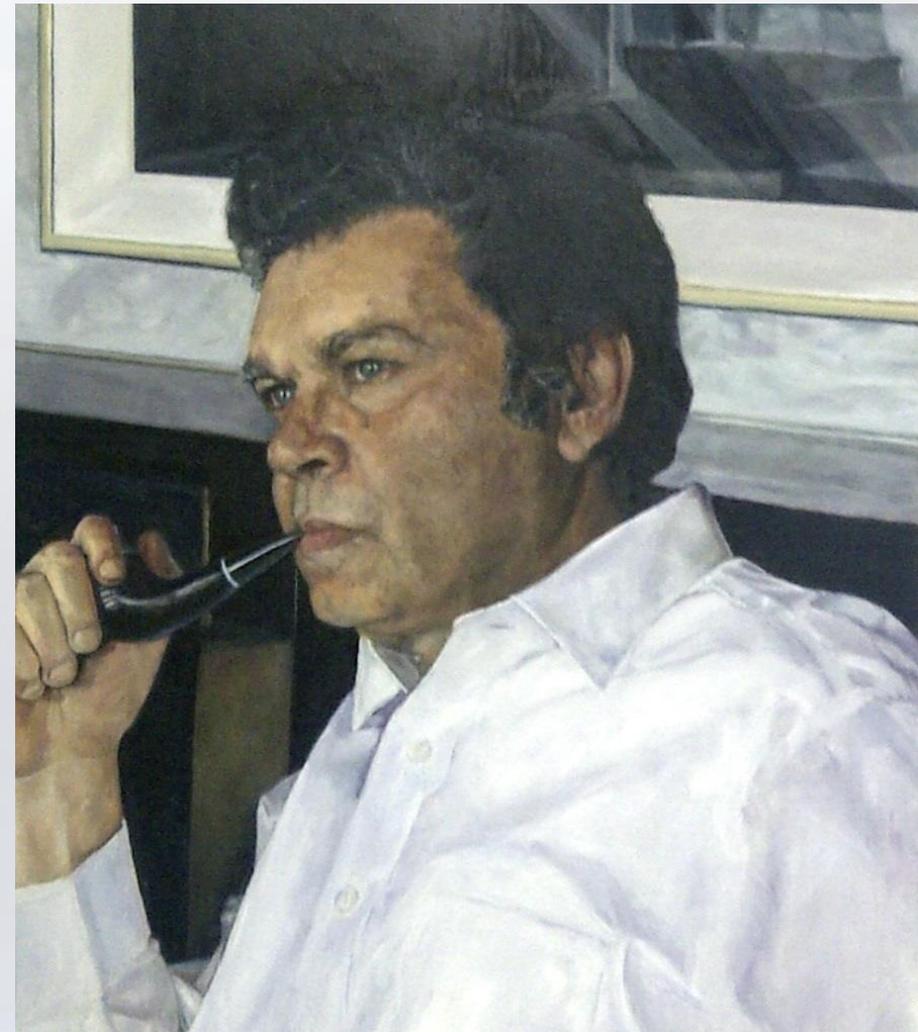
“A factory may be an unlikely setting for a novel, but the book has been wildly effective...”
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THE BEST-SELLING BUSINESS NOVEL THAT INTRODUCED THE

THEORY OF CONSTRAINTS

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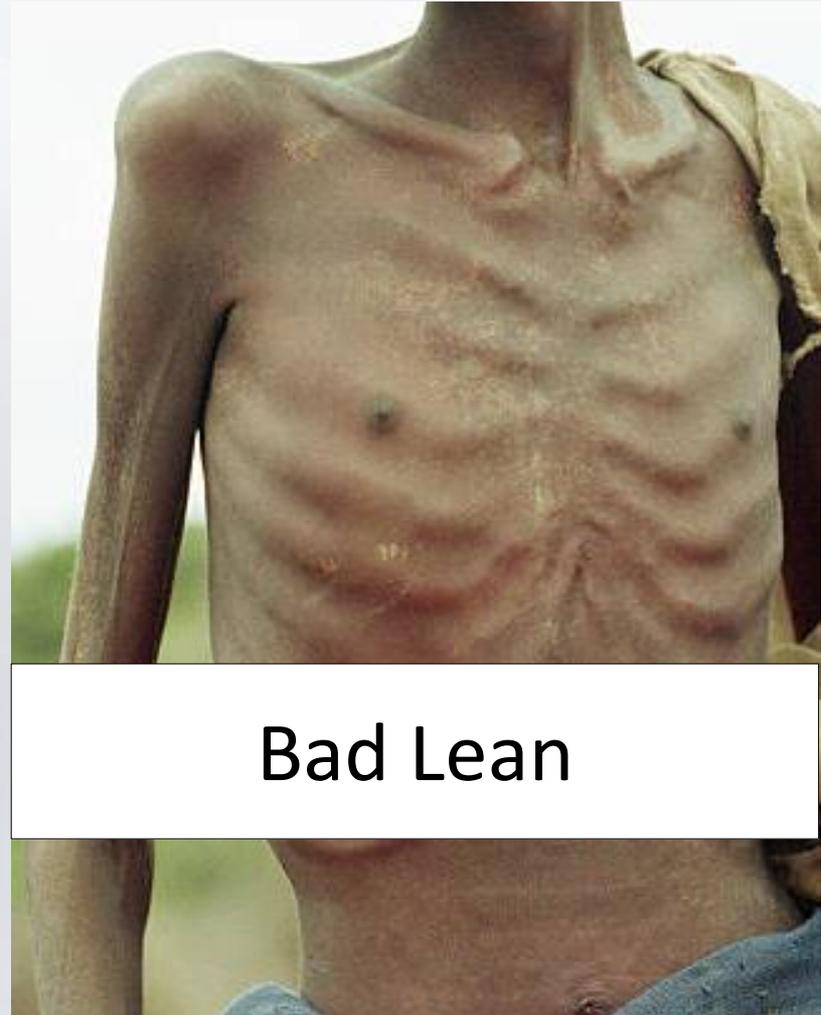
What about Lean?



To understand Lean we need to differentiate between Good and Bad Lean

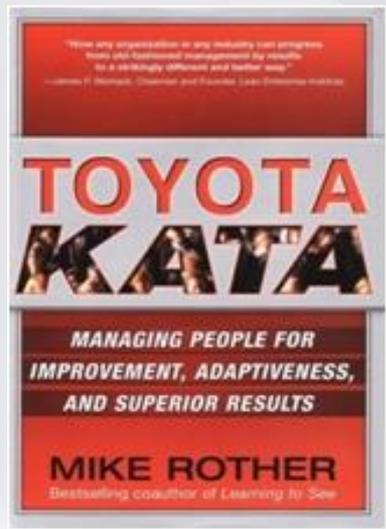
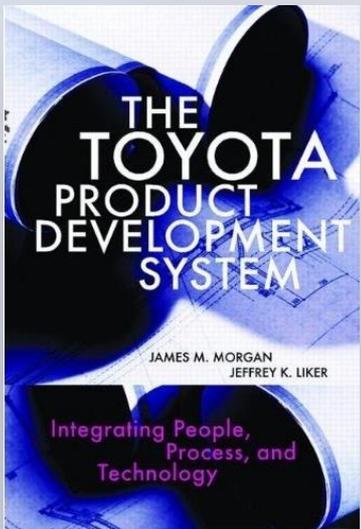
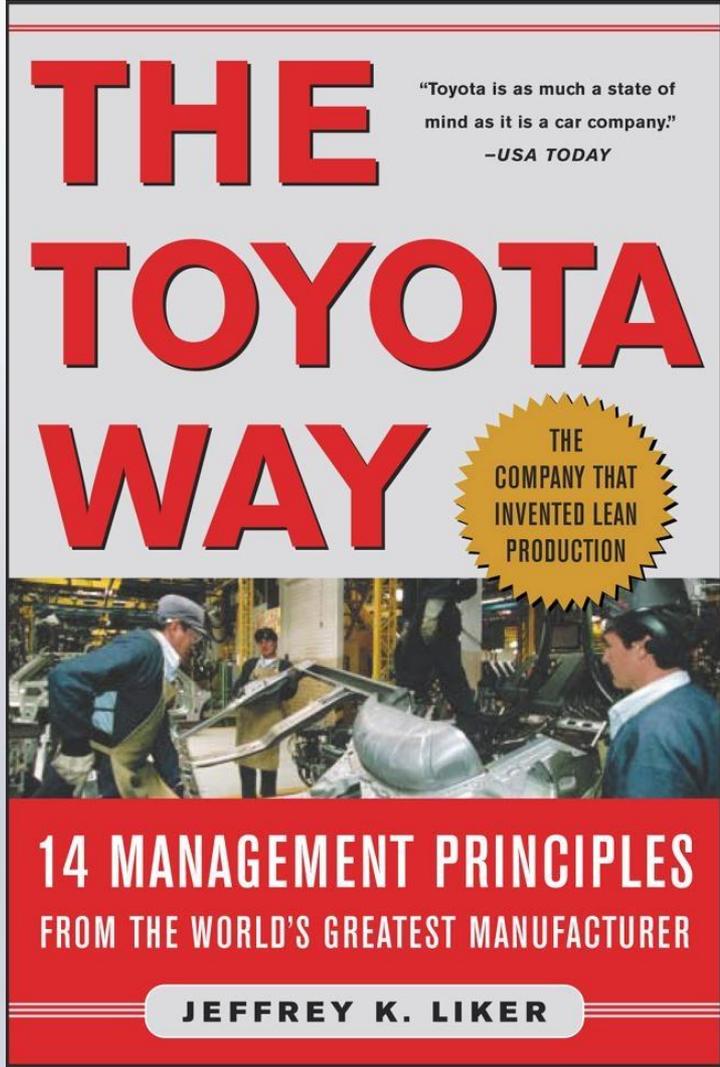


Good Lean



Bad Lean

Good Lean is "The Toyota Way"



Key ingredients of Good Lean: Flow



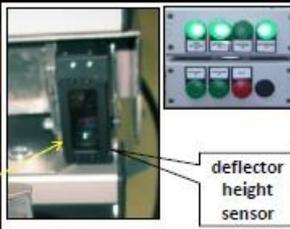
Key ingredients of Good Lean: Quality

PPM

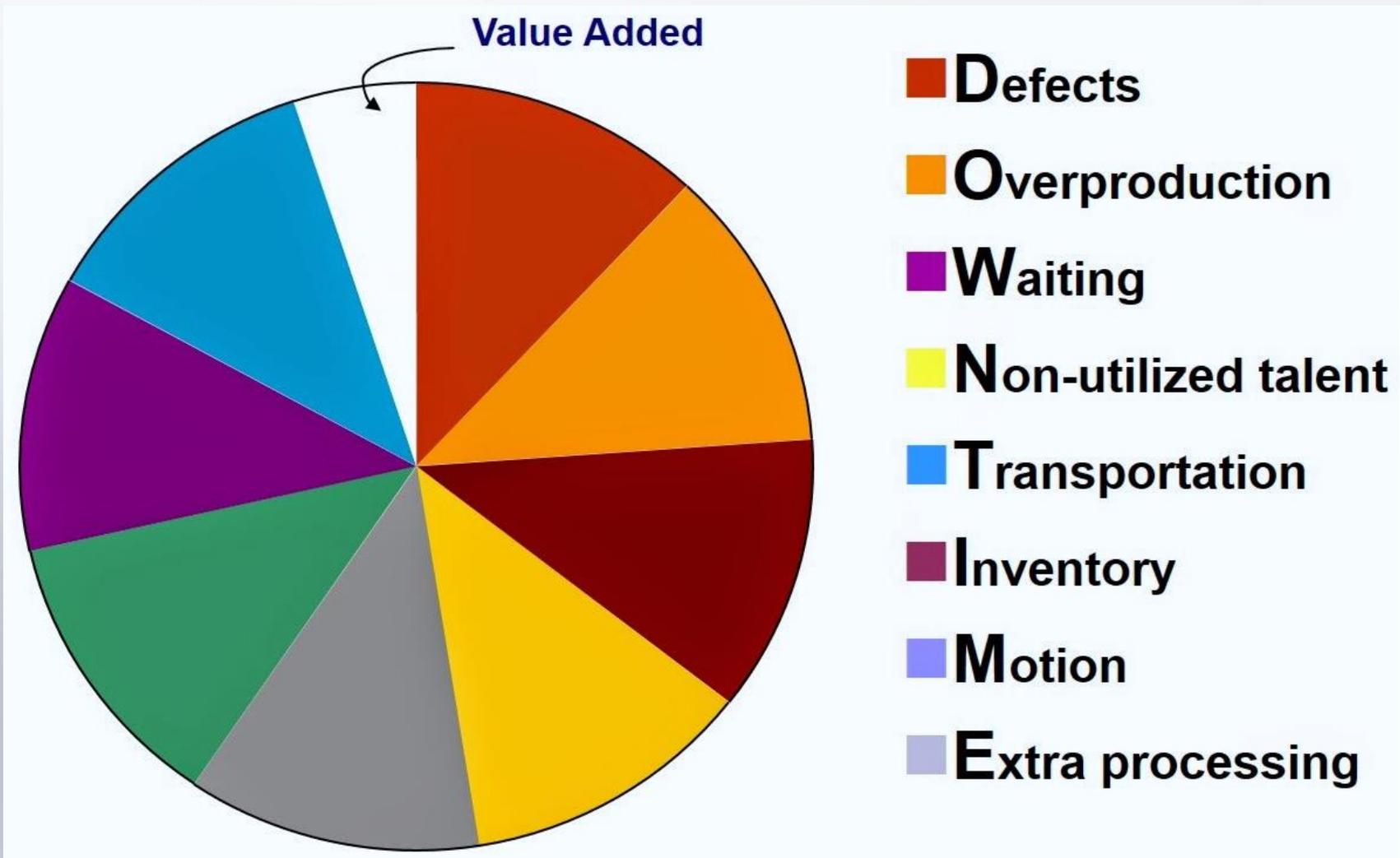
Parts Per Million

Key ingredients of Good Lean: Standards

"Don't seek performance with extraordinary people using faulty processes, use exceptional processes and normal people"

APA		WORK INSTRUCTION			D	
PI		WORK AND VERIFICATION INSTRUCTION			Revision:	008
Product:		OPEL S4530 626850802 / 626850803			Line	SG04/SG05
Operation:		Module installation			Station	10/20
Issued by:		Approved by:		Data:	see: PLM	
Electronically approved		PLM No.:		E1558702		
STEP OF OPERATION / VERIFICATION*		DESCRIPTION OF OPERATION / VERIFICATION	Specific characteristics (SC) or (CC)*	EFFECT OF ERROR*	REACTION PLAN*	
ST. 10   		OPERATION: Embed the deflector onto the last screw of the inflator - as in the figure (the sensor on the right will check the position / height of the deflector), then press the CAPTRON button.	CC	 It affects the next step of the process.	 Manualy  It affects the total loss of proper  Correction on the same station	
 		VERIFICATION: The deflector is embedded on the inflator, the second indicator is lit on the control panel.				

Key ingredients of Good Lean: Waste hunting



Key ingredients of Good Lean: Respect for people

“Helping people create more value on their own represents one of the highest forms of respect.”

- John Shook



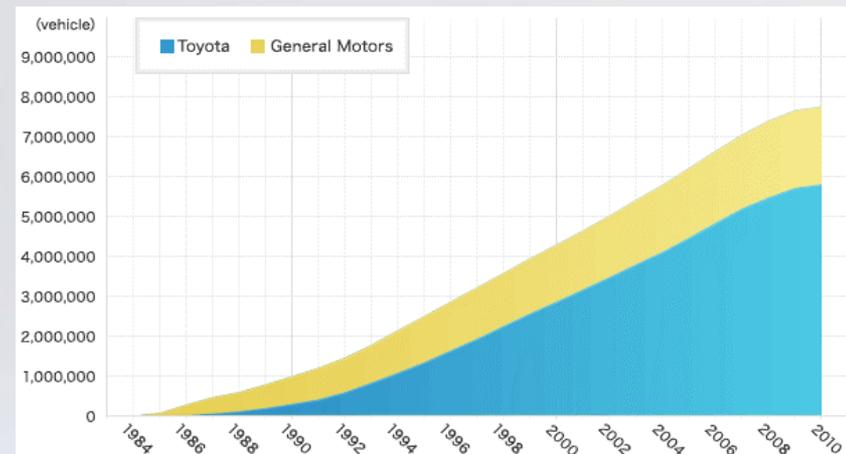
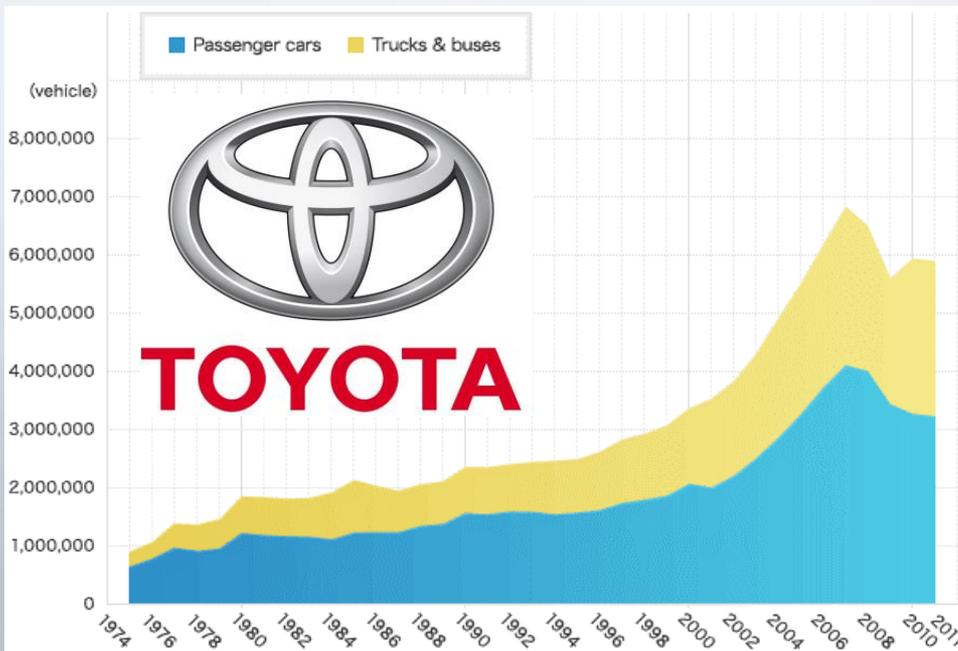
Key ingredients of Good Lean: Going to the Gemba

- Going and seeing for yourself
(going to the Gemba)



Key ingredients of Good Lean: A growth project

- Annual growth > Increase in labour productivity to avoid headcount reductions

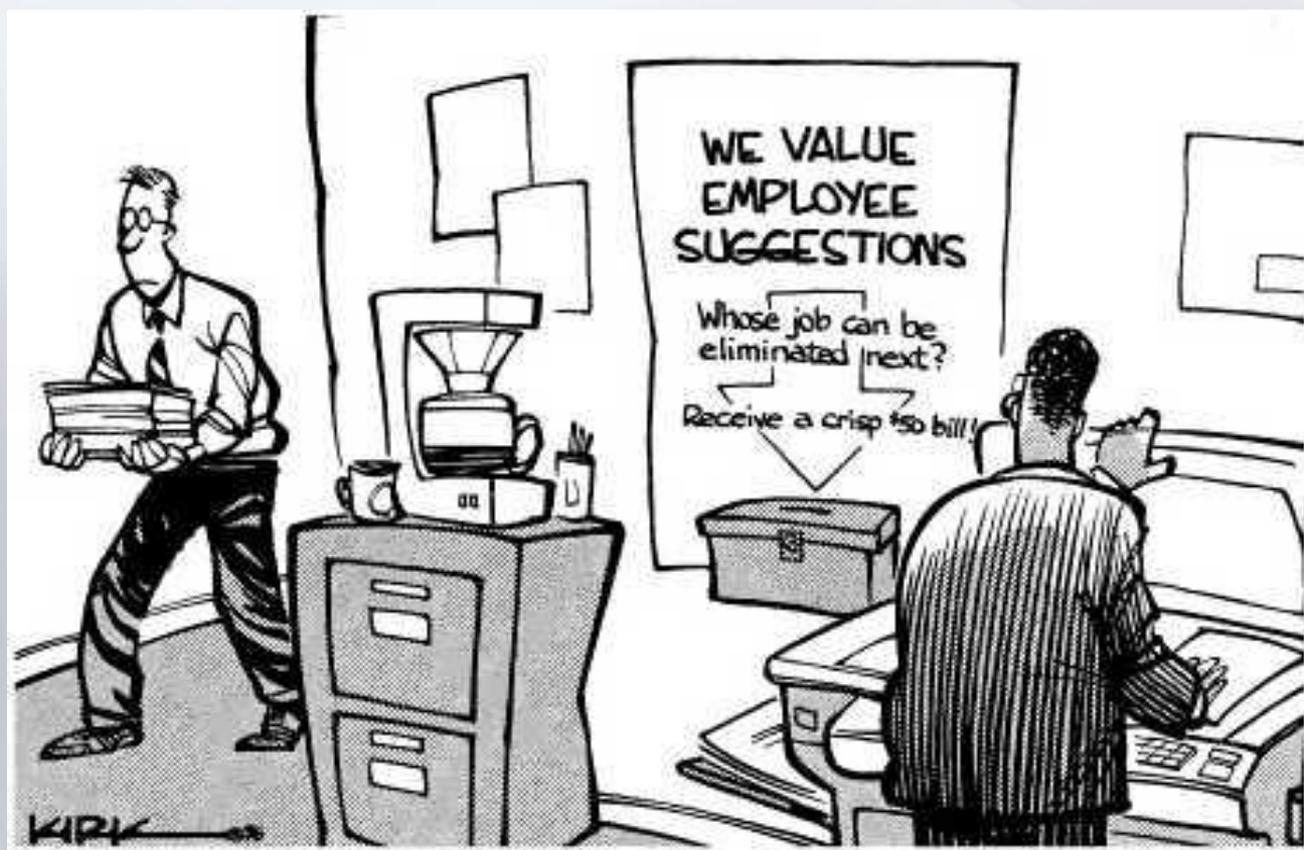


P.S. My apologies
I know I should provide fresher data.

- Flow
- Quality
- Standards
- Waste hunting
- Respect for people
- Going and seeing for yourself (Gemba)
- A growth project

Bad Lean is what the majority of companies do

- A process of continuous down-sizing using japanese words



Symptoms of Bad Lean

- A lot of posters in messy workshops
- Lots of failed 5S initiatives
- One or two failed SMEDs
- OEE very low
- No work instructions
- >2% scrap
- >2% machine breakdowns
- Poka what!?





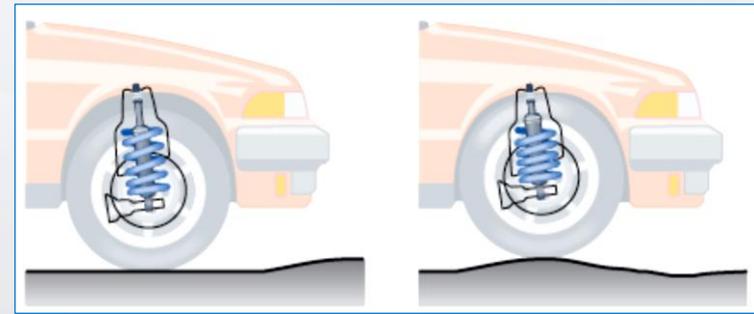
The combination of ToC and Good Lean is what you should use



Focussed Lean

There is only one important TOC/Lean difference: buffers versus "zero stocks"

- Lean considers that you can eliminate variability
 - Hence a "zero stock" logic
 - And a "One Piece Flow" goal
- TOC considers that you cannot totally eradicate variability
 - Hence a buffer logic



WARNING

Don't fall asleep on your buffers



■ **And they are both right!**

You will also need to strengthen the TOC/Lean cocktail with some extra spices

- Innovation
- Lean Startup ideas & Agile
- Controlled risk taking in production processes and your new product designs
- ...



***You should make it your own proprietary "way".
Not a copy of anybody elses.
That is what Toyota does.***

- So our recommended cocktail is:
 - Theory Of Constraints
 - + Good Lean
 - + A few additional spices



Thank you for your time

Questions?