TOCPA
Theory of Constraints Practitioners Alliance
SHARING EXPERIENCE

31st International Conference of the TOC Practitioners Alliance - TOCPA

www.tocpractice.com

KUKONASKEL

9 March, 2017 – Helsinki, Finland

TOC Thinking and Management Trends

9 March, 2017

Bio: Jürgen Kanz

Jürgen Kanz
Systemic Thinking

- Diplom Ingenieur in Electrical Engineering
- Several Certifications from Universities and Institutes
- Almost 30 years of experience in Management of Innovation and Operations in Photonics and Power Electronics Industries
- TOCICO certified in Thinking Processes
- Co-author and translator of „Do-It-Yourself Theory of Constraints“ eBooks for „Production, Project Management and Distribution“ in German language, https://leanpub.com/u/juergenkanz
- Personal interests: Systems Thinking, Theory of Constraints, Management Science, and Mathematics
- The combination of analytical and synthetical thinking skills, called 'Systemic Thinking' , is his preferred way to get deeper insights into systems.

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Topics of TOC Thinking for today

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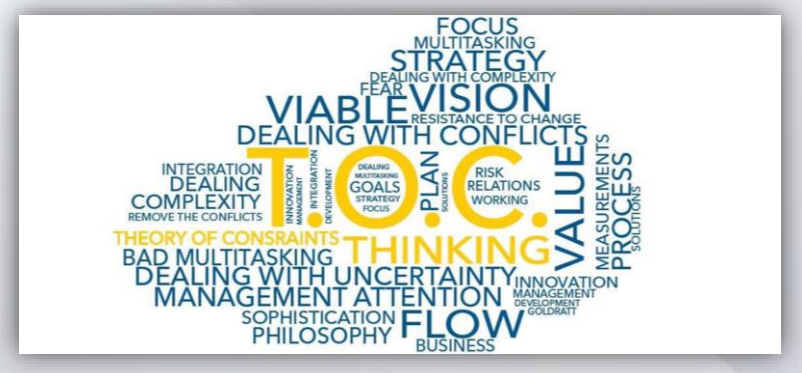
1. Refreshment of TOC Thinking & Strategy Tools
2. Clock and Cloud Problems
3. What is Complexity?
4. Types of Complexity
5. Management Trends
6. How to tackle trends?



Source: TOC Club North America | Goldratt Consulting | www.tocclub.org

Refreshing: TOC Thinking & Strategy Tools

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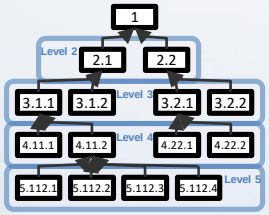

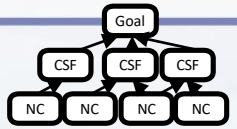

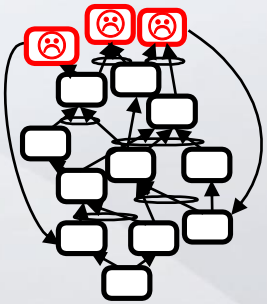

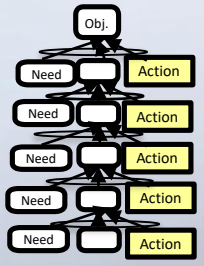

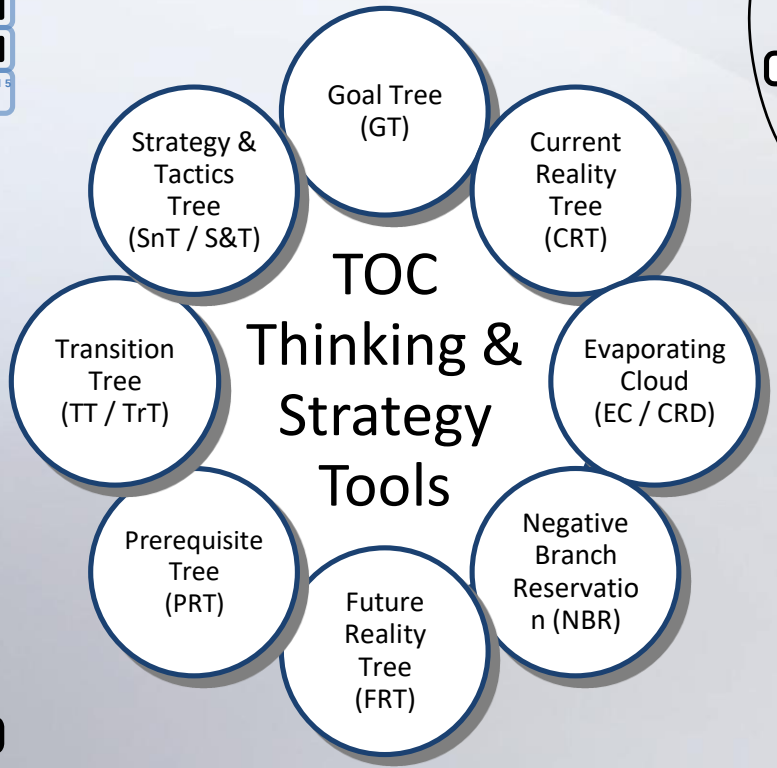

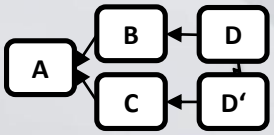

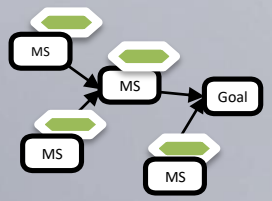

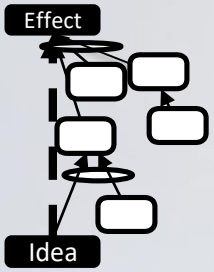

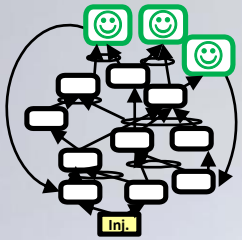

Refreshing: TOC Thinking → Full Analysis

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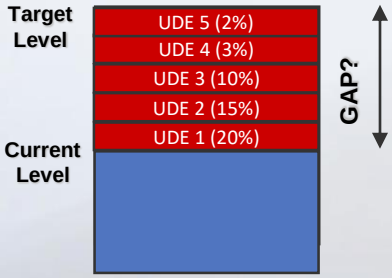
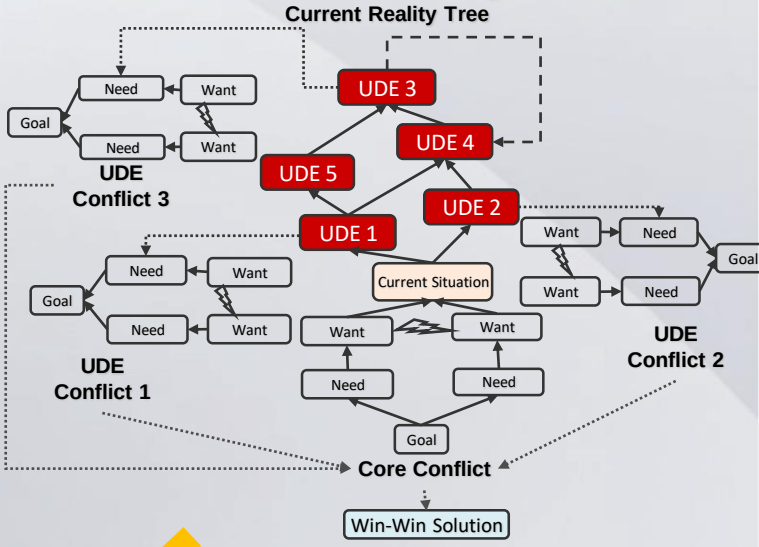
Step 1 Why change?

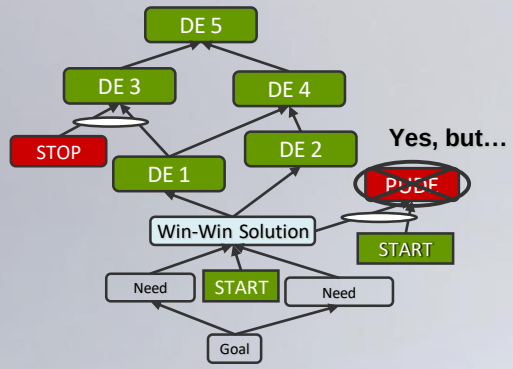
DEFINE SYSTEM, GOAL & GAP



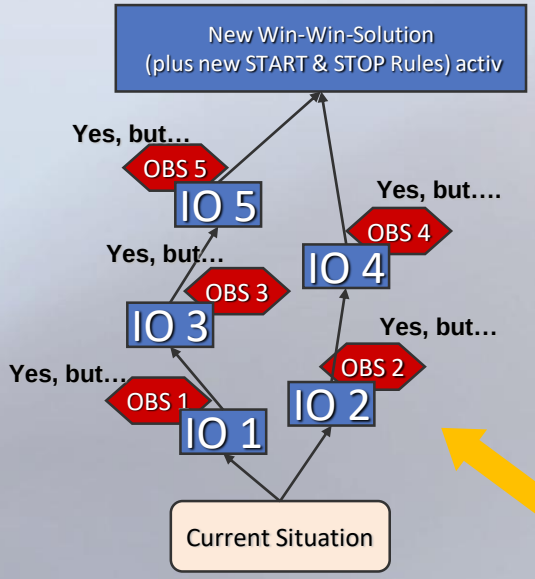
Step 2 What to change?



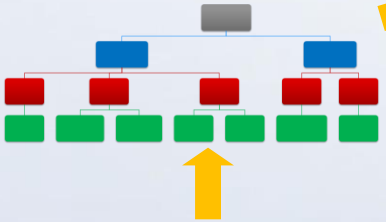
Step 3 What to change to?



Step 4 How to cause the change?



Step 5 Implementation via S&T Tree



LEGEND

- UDE = Undesired Effect
- PUDE = Potentially Undesired Effect
- DE = Desired Effect
- STOP = It's not allowed to apply old „Rules"
- START = Only apply new „Rules" in future
- OBS = Obstacle
- IO = Intermediate Objective

Goal Tree as a Strategy Tool

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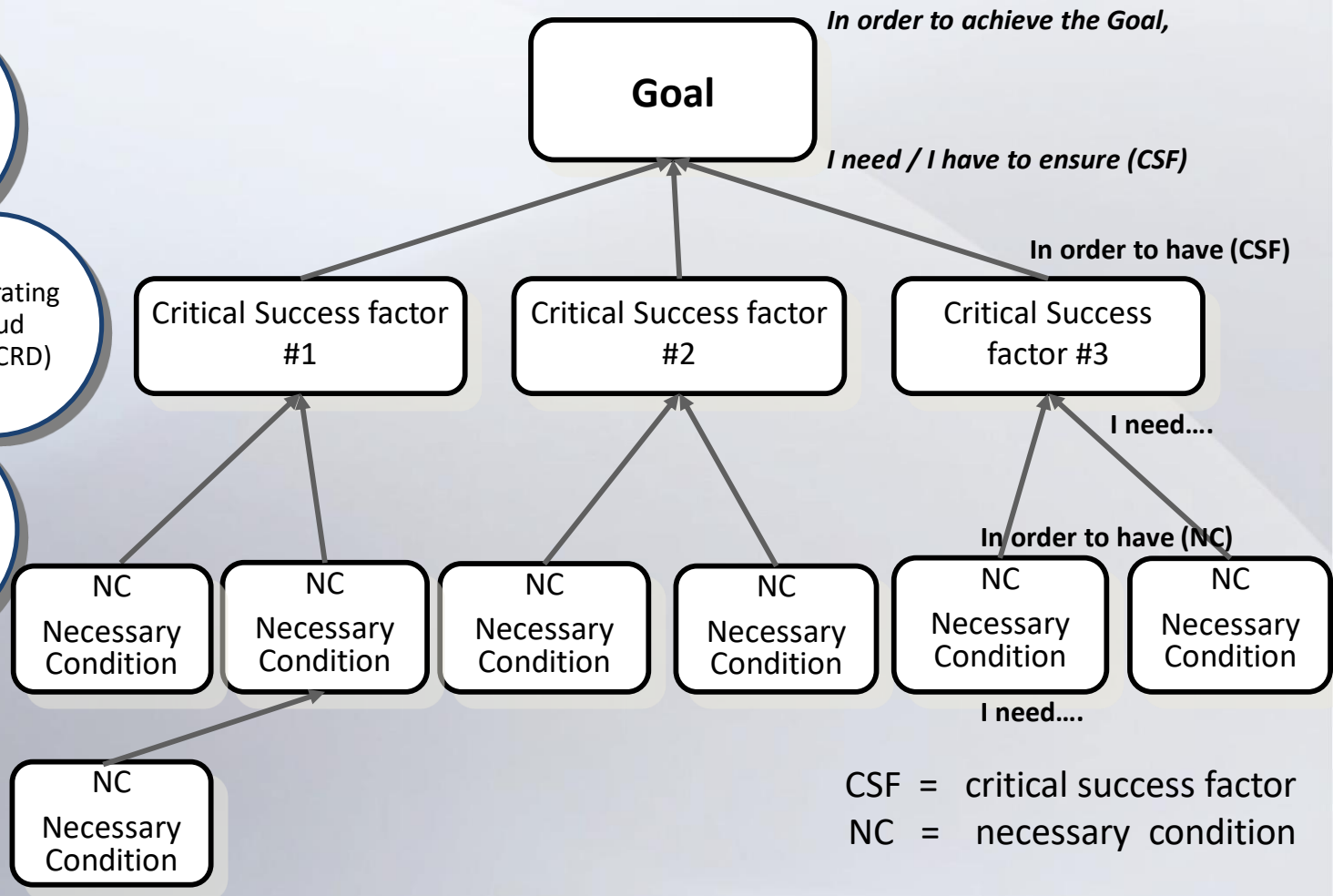
TOC Thinking & Strategy Tools

- Goal Tree
- Current Reality Tree (CRT)
- Evaporating Cloud (EC / CRD)
- Negative Branch Reservation (NBR)
- Future Reality Tree (FRT)



1 Goal
3-5 CSF
1-3 NC-Levels

CSF = critical success factor
NC = necessary condition

adapted from Bill Dettmer, 2007. The Logical Thinking Process, ASQ Quality Press.

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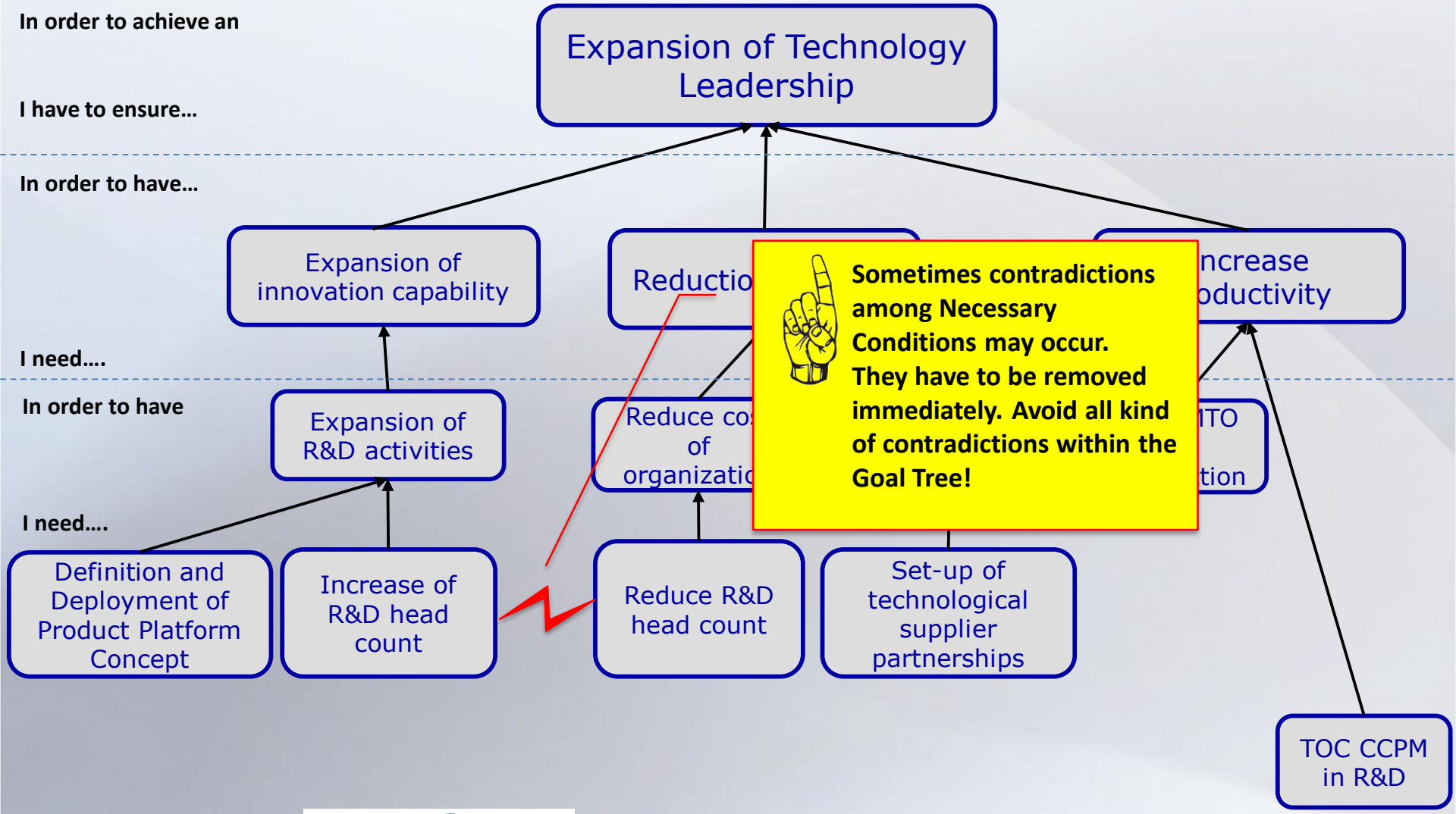
Snapshot in time - Goal Tree development



Example of a finalized Goal Tree

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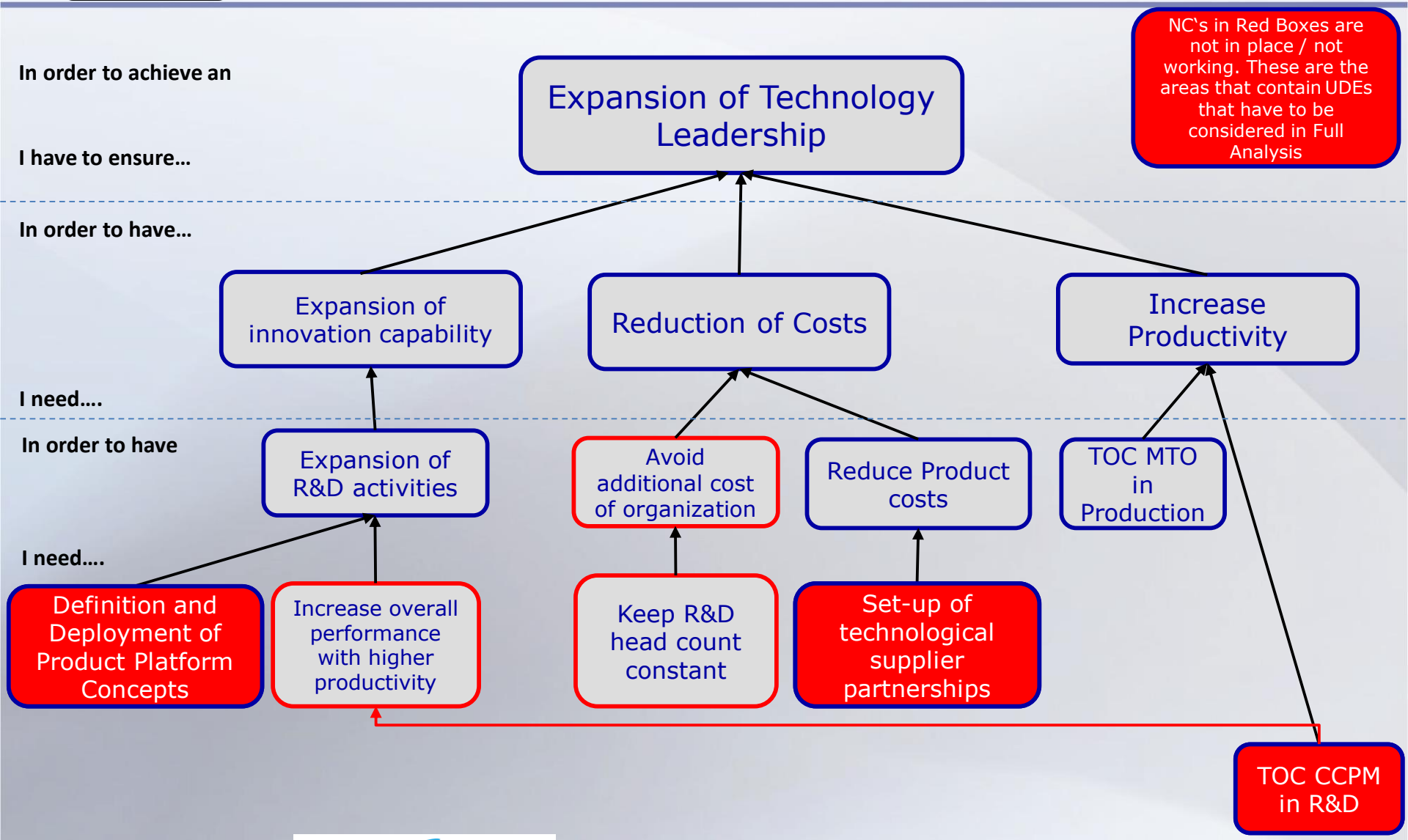

Refreshing: Negative Branch Reservation

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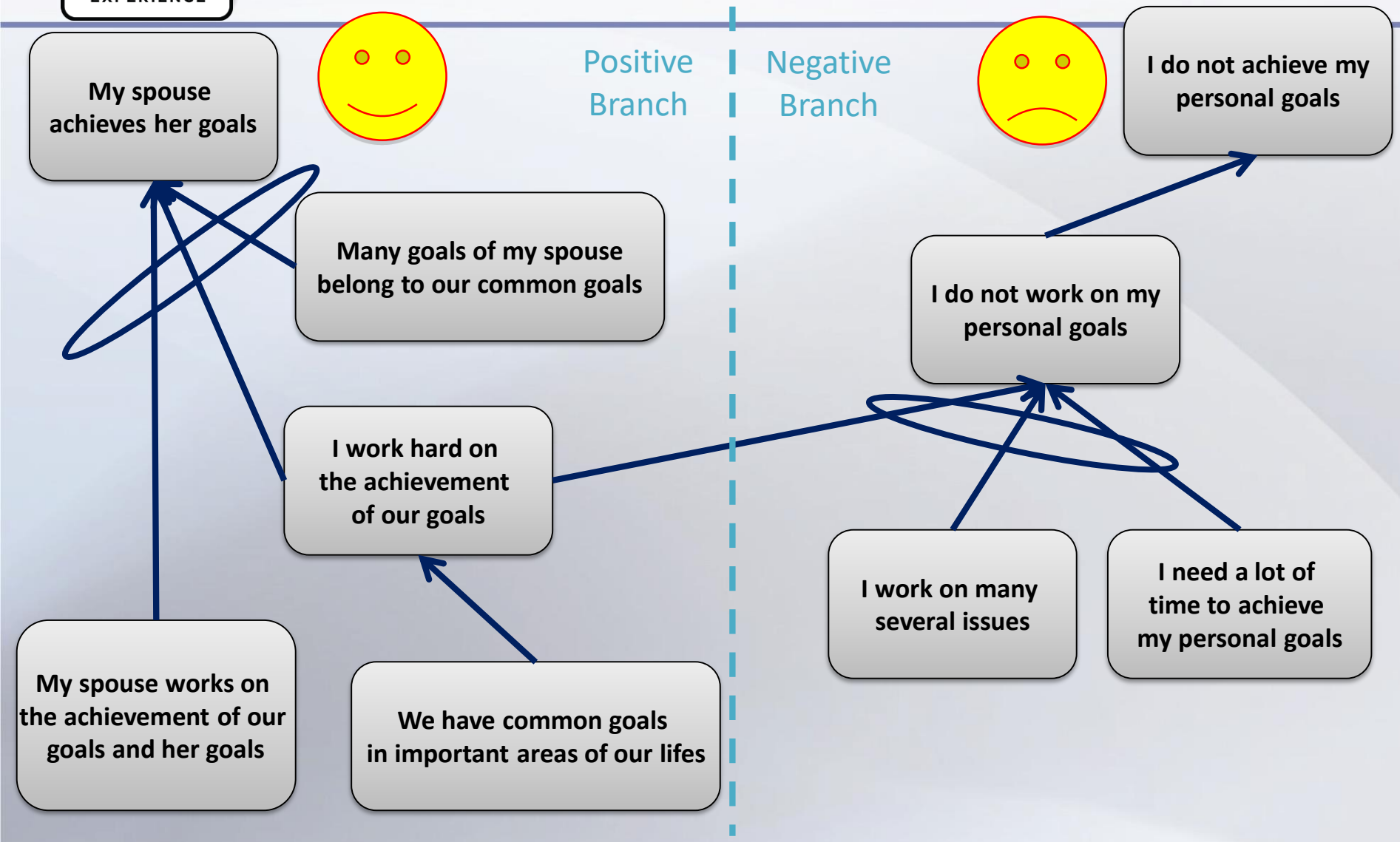

Refreshing:
Negative/Positive Branch Reservation

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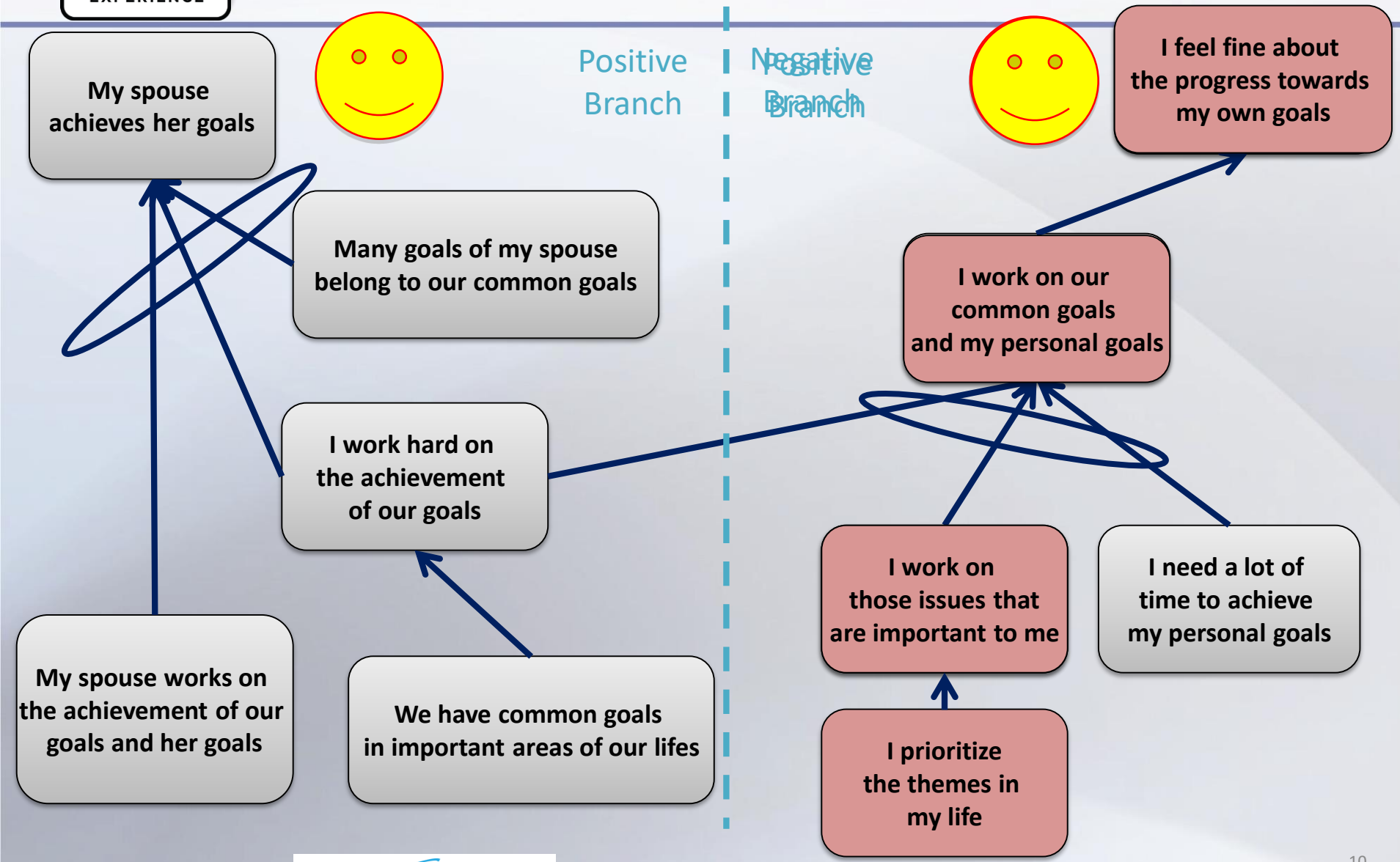

Thinking Processes - Clarification

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- Please, be aware

  - Cause and effect are often not closely related in time and space.
  - The TP is NOT a quantitative tool. It is strictly qualitative. It was designed to express, in a logical way, the intuition of the tree-builder.
  - The TP is a mental model (mindset) representation of the tree-builder. Any tree-builder's intuition is a function of verifiable fact, experience, documentary evidence, and his or her ability to integrate all these in their own mind.
  - There is no such thing as perfect information. So, any logic tree always has a risk of inaccuracy in the content information. The conclusions drawn from the tree are likewise subject to error.
  - There is no idea creation machine embedded that is automatically producing injections.

Two different types of Problems

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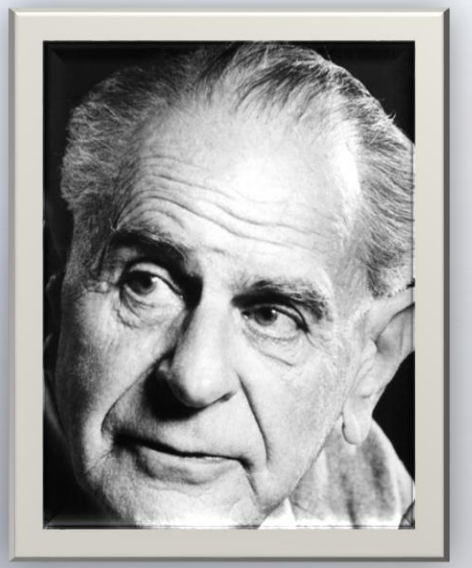
Clock - Problems



Sir **Karl Popper**
Philosopher of Science
(1902 – 1994)

Cloud - Problems

Two tasks to explain the differences

1. You must build the highest, most robust tower.

2. You must build the best toy for children.

Source: LEGO System A/S

1. You must build the highest, most robust tower

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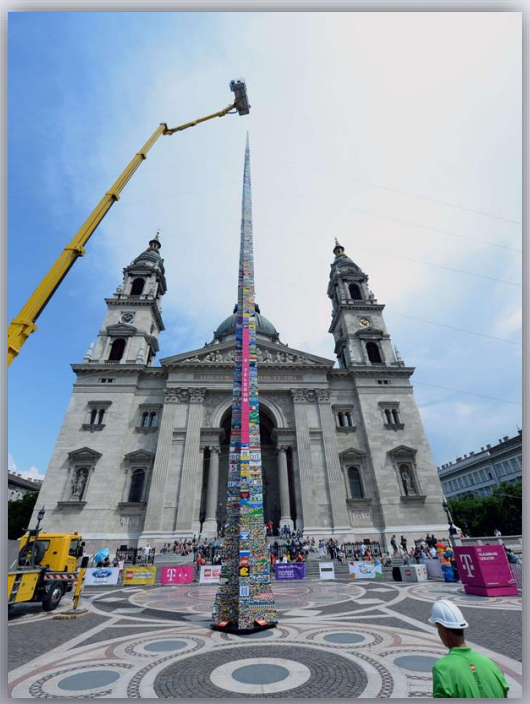
Clock - Problem



- world tallest Lego brick tower in Brazil
- height of 31.09 m
- ≈ 500000 bricks
- realized by thousands of children
- with a bit of help from parents and a crane

2. You must build the best toy for children

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Cloud - Problem

Source: LEGO System A/S

3. What is Complexity?

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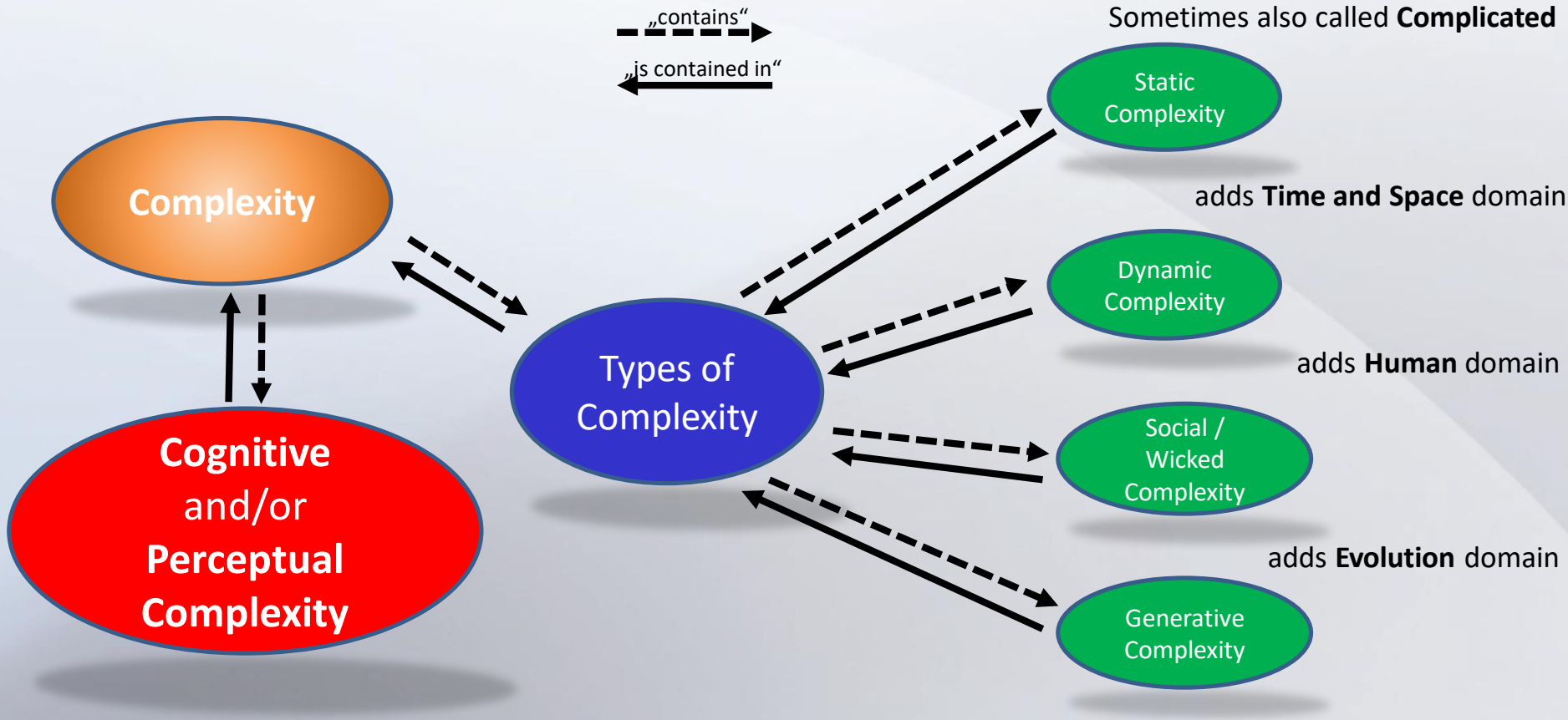

Scientists like ***Eli Goldratt*** and ***Yaneer Bar-Yam*** define complexity as: **“Complexity is a measure of the inherent difficulty to achieve a desired understanding. Simply stated, the complexity of a system is the amount of information necessary to describe it.”**

Inherent Simplicity

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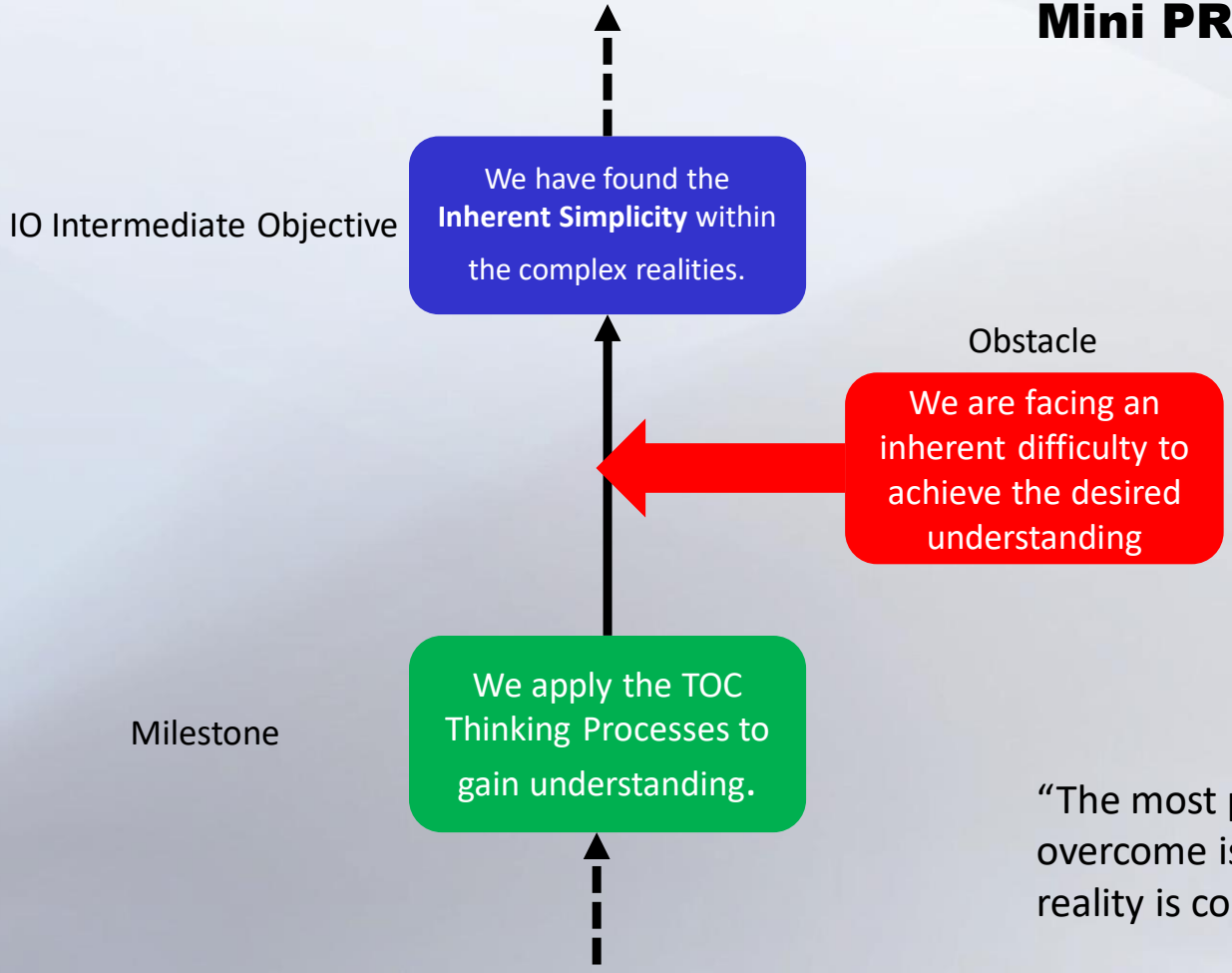
Mini PRT – Prerequisite Tree



„In order to find the inherent simplicity within the complex realities, we apply TOC Thinking Processes, to achieve the desired understanding.“

“The most profound obstacle we need to overcome is our ingrained perception that reality is complex.”

Eli Goldratt

Example: Mass Customization in Practice -- Volkswagen A-Platform

Static Complexity

Plattform	VW	Audi	Skoda	Seat	Rolls-Royce/ Bentley	Lamborghini	Bugatti?
Sportwagen*	W12 Coupé/ Roadster					Diablo SV/ Diablo VT Roadster	EB 110
D	Luxuslimousine	A8 (Nachfolger)			Silver Seraph/ Arnage*		EB 112*
B/C	Passat Plus Passat	A4/A6					
A	Golf, Bora, Beetle	A3 TT Coupé/ Roadster	Octavia	Toledo (Nachfolger)			
A 00/ A 0	Polo, Lupo	A_2	Felicia (Nachfolger)	Ibiza/ Cordoba, Arosa			

VW Golf IV

(3+5 door, station wagon, convertible, and Minivan)

VW Bora

(Bora sedan, coupe, convertible, and station wagon)

VW Beetle

(New Beetle, New Beetle convertible)

Skoda Octavia

(Octavia sedan, and station wagon)

Audi A3

(3+ 5-door)

Audi TT coupe

Audi TT roadster

Seat Toledo Successor

(Toledo, coupe, station wagon, and convertible)

- VW planed for 19 vehicles based on A-platform
- 60% re-use of components

Example: The Story of Eddy

Dynamic Complexity

Wicked Problems

Wicked Complexity

Characteristics of Wicked Problems:

1. every wicked problem can be considered to be a symptom of another wicked problem
2. the problem is not understood until after the formulation of all conceivable solutions;
3. they have no stopping rule; there is always a better solution possible
4. their solutions are not right or wrong; only better or worse
5. every problem is essentially novel and unique;
6. there is no ultimate test of a solution for a wicked problem, because a wrong solution can make the problems' symptoms even more wicked.

Based on: Rittel and Weber, "Dilemmas in a General Theory of Planning", 1973

Examples of 'Wicked Problems'

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Wicked Complexity

- In Business:
  - ❑ Incomplete or contradicting information
  - ❑ A large diversity of opinions and possible solutions that obstructs the achievement of any definite strategy
  - ❑ Stakeholders are not fully engaged and have unequal or incongruent desires and stakes
  - ❑ The real problem is not addressed because suggested solutions are too simple, too technical or too naïve. Those solutions can even worsen the problem.
  - ❑ There is no realistic business case for the solution, so its financial sustainability is limited
  - ❑ People creating complexity to secure their jobs & positions
  - ❑ Conflicts in general
  - ❑ …

in other words: all other ill-defined complex problems related to humans

Trend → Generative Complexity

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Generative complexity. Where the problem hasn't occurred often before and is still evolving. When it is high, you may not even know what the problem is or who the key players are to involve.

Generative Complexity

A Trend implies Generative Complexity, because it is still evolving.

A trend can have a positive, neutral or negative impact on the system.

General Management Trends

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Globalization

The melting of barriers among nations and their increasing interconnectedness, accelerated by technology, has led to a change in the world order that has had a profound impact on global business.

Technology

If the current wave of globalization has been the driving force behind the most far-reaching and powerful changes in business, then information technology has indisputably been the facilitator.

The *Fourth Industrial Revolution* will lead to tremendous changes in industrial and social systems.

General Management Trends

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Sustainability and Corporate Social Responsibility

For business to be sustainable, and even profitable, our planet has to be sustainable - this realization has hit businesses perhaps the hardest in recent times. We are likely to see a lot of focus directed towards applying management principles to solutions of complex social issues such as environmental sustainability, energy security, access to healthcare etc. This will also underline the need for increased interdisciplinary interaction and influence on business management.

The Study of Psychology

Speaking of interdisciplinary influences on business, the study of human psychology - probing into cognition, motivation, behavior and performance - has become a key pillar of organizational management. From employee management to customer satisfaction and social engagement, satisfaction of business objectives requires effective analysis of both individual and institutional psychology.

Key Trends for the Consulting Industry

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The Uberization of Consulting

Companies that hire consultants still seem to focus on the cost of hiring a consultant rather than the value that this professional can bring to the company. There is a prediction that in the coming years, consulting services may be seen as a more commoditized, transactional type of interaction rather than as a professional long-term service partnership.

Potential Disruptors to the Consulting Industry

Disruption in the consulting market will ultimately come from new consulting firms deploying more flexible organizational structures such as a flexible layer of freelance consultants, reducing unstaffed time of human capital, and offering similar quality against a lower price.

Impact of Technology for Consultants

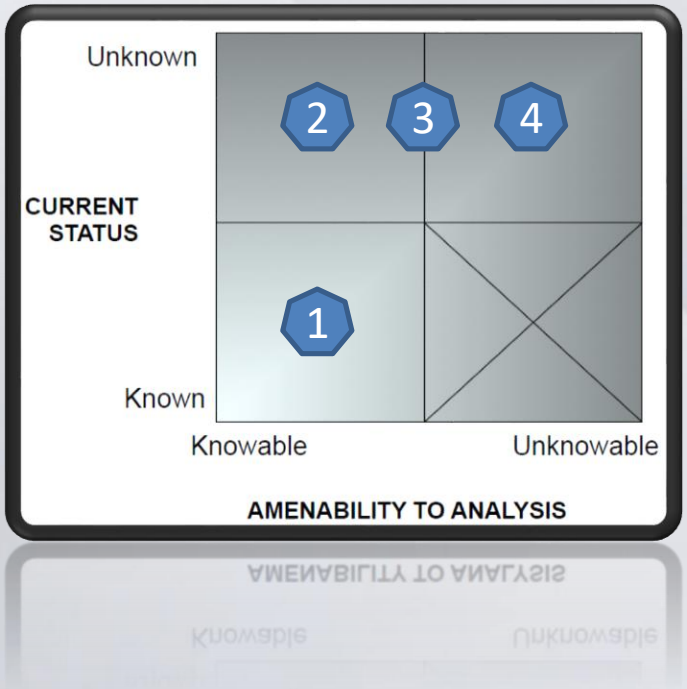
Ever changing and increasingly sophisticated technology -- perhaps performing some tasks that human beings used to provide -- is yet another trend that will continue.

Complexity causes Uncertainty

Uncertainty is a situation in which there is no unique and objective understanding of the problem.

"The message is that there are known knowns - there are things that we know that we know. There are known unknowns - that is to say, there are things that we now know we don't know. But there are also unknown unknowns - there are things we do not know we don't know. And each year we discover a few more of those unknown unknowns."

Donald Rumsfeld, US Secretary of State for Defence, 2004



How to tackle trends?

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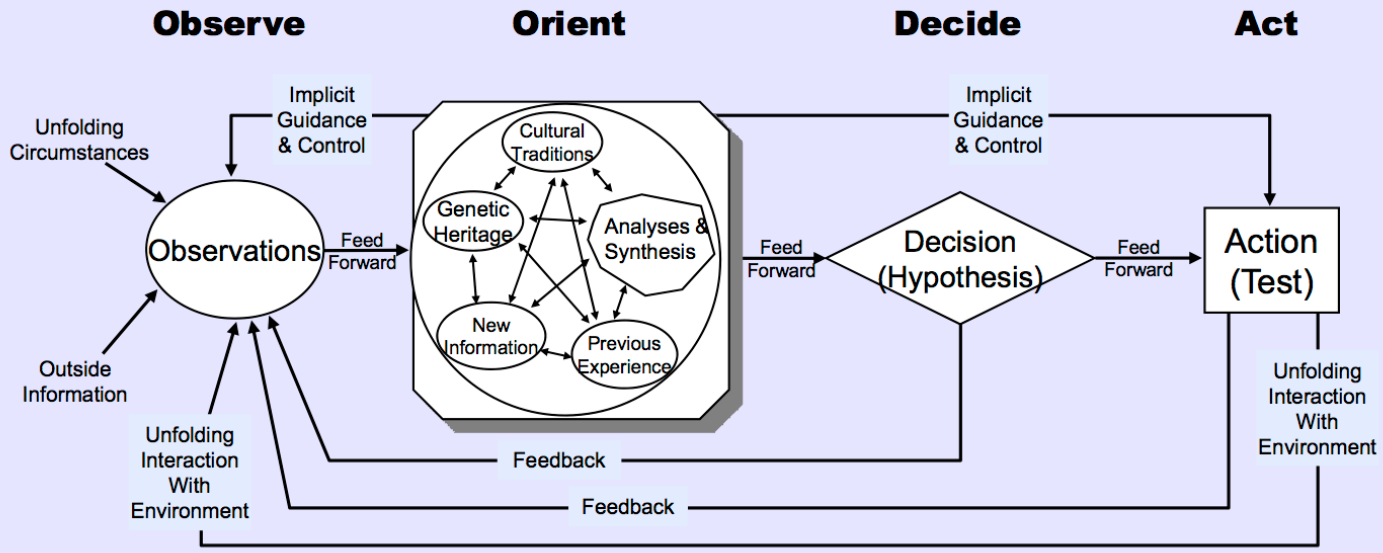
Be „**Agile**“

Colonel **John Boyd**
(1927 – 1997)

The OODA “Loop” Sketch



„The concept that all combat, indeed all human competition from chess to soccer to business, involves a continues cycle of Observation, Orientation, Decision, and Action.“

How to tackle trends?

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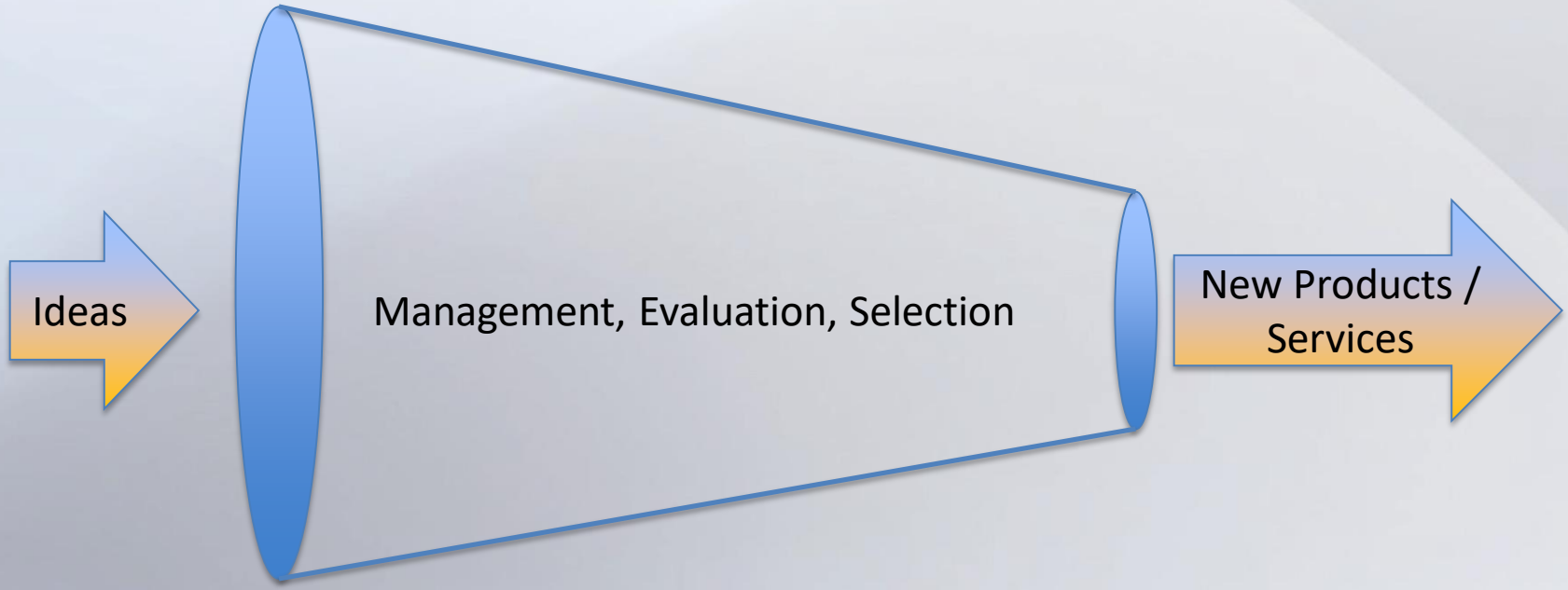
From **Innovation Management** we know the

Traditional Idea Funnel



How to tackle trends?

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Part of **Business Planning** Process

Trend Funnel

Process Alignment

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Application Intelligence
Technology Intelligence
Market Intelligence
Idea Management
Product Roadmaps

Business Planning

Innovation Planning

xxx Planning

Programming
Resource Planning

Knowledge Generation Process

Product Realization and Introduction Process

B Realisation Evaluation → A Preparation → Project Brief → Preparation 0 → Feasibility → 1 Realisation Introduction → 2 Sales → 3

What is the impact and what are the consequences on system level?

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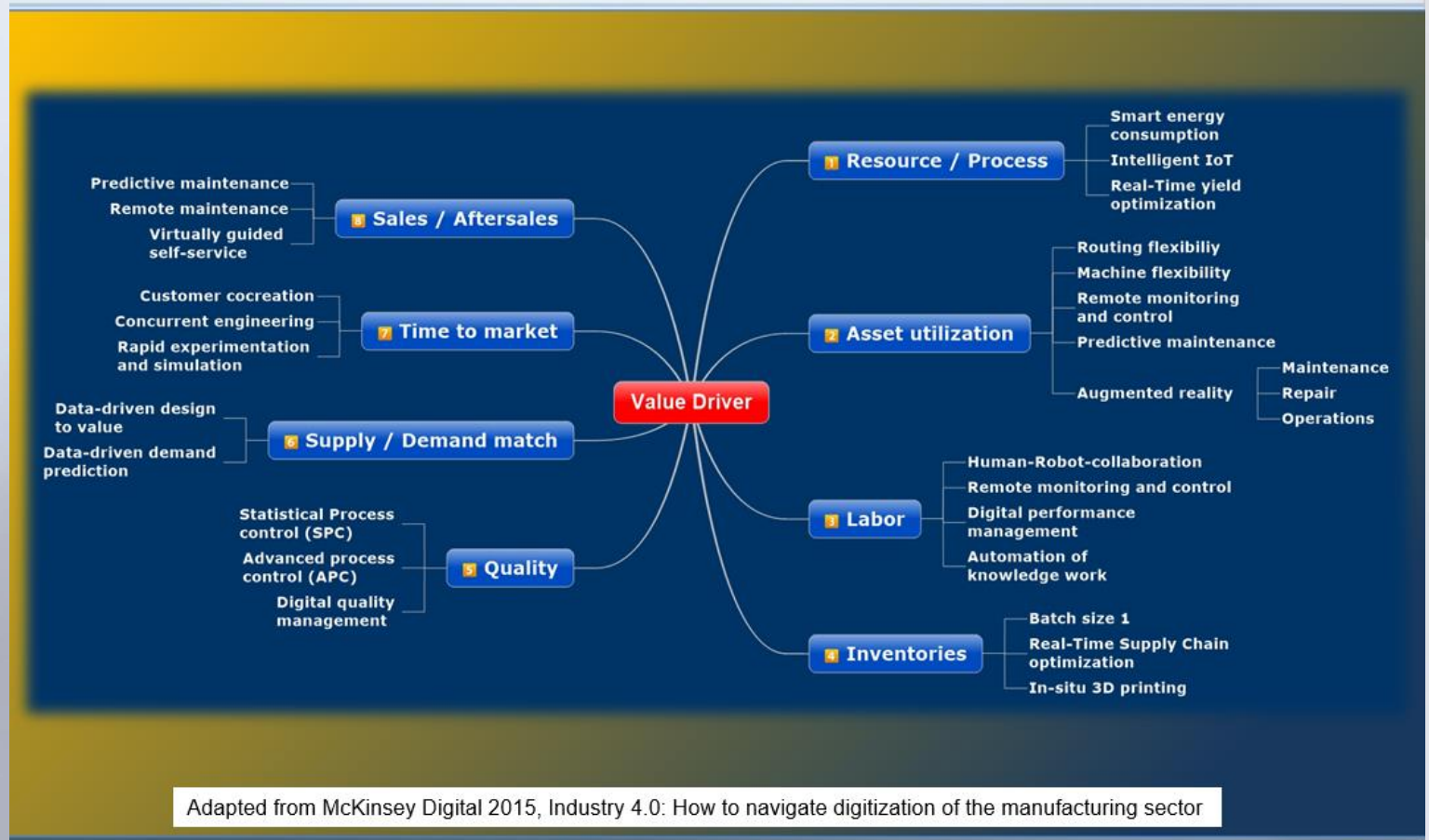
Industrie 4.0: Improvement Areas



Adapted from McKinsey Digital 2015, Industry 4.0: How to navigate digitization of the manufacturing sector

Find the Gap during Knowledge Generation Process

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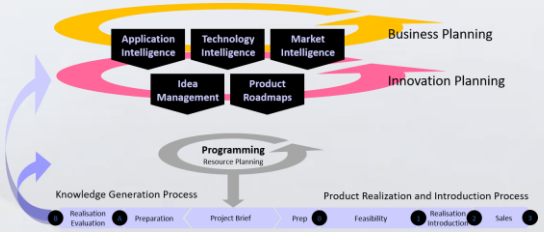
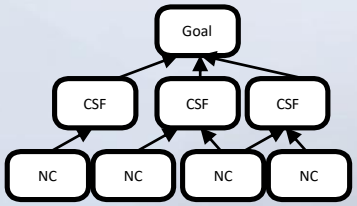
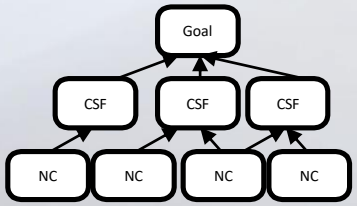
Business Planning ⇨ Knowledge Generation Process

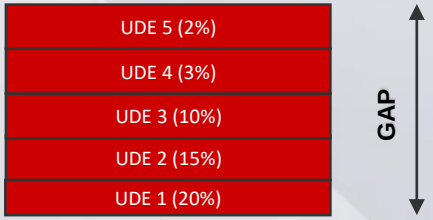




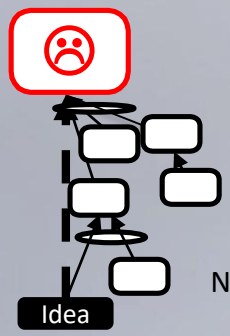
Dynamic Goal Tree for Trend Vision during Funnel phase



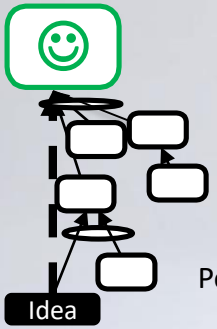
Static Goal Tree which describes situation of today



In parallel:

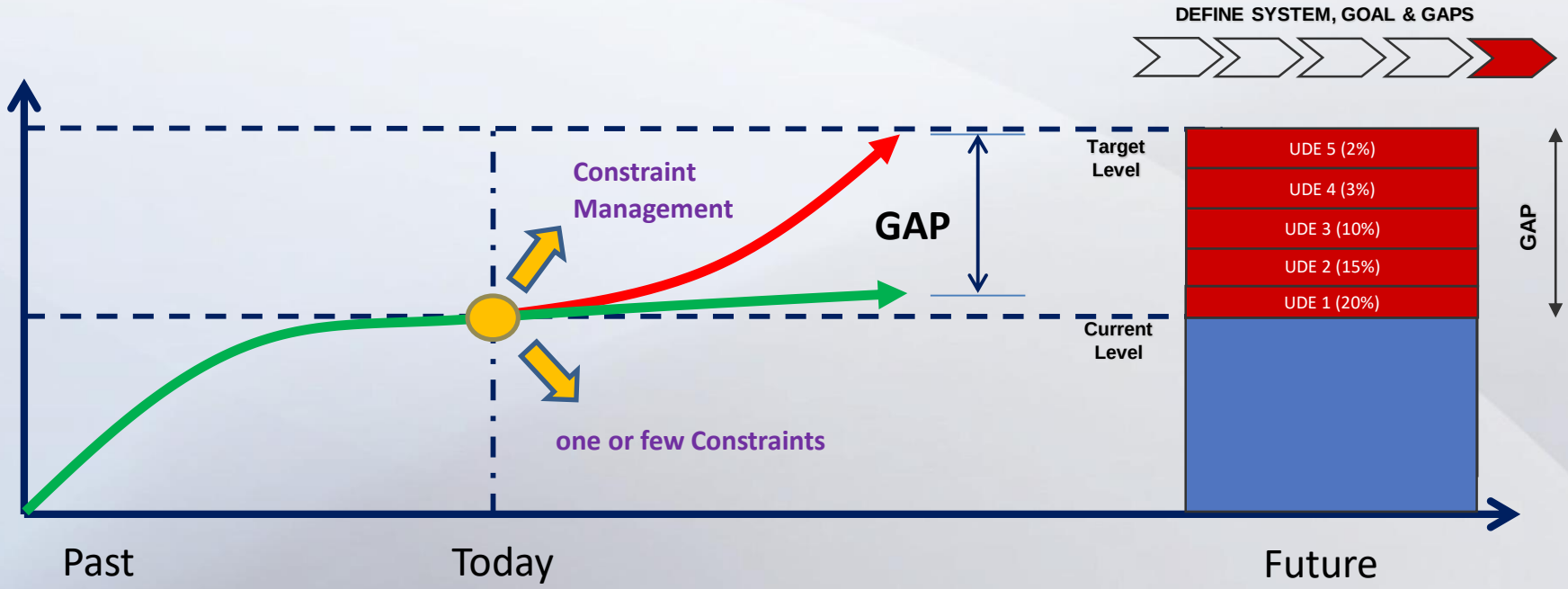


Negative Branch(es)



Positive Branch(es)

Setup for Full Analysis



UDE = UnDesirable Effect

adapted from Oded Cohen and Jelena Fedurko, 2011

System Improvement

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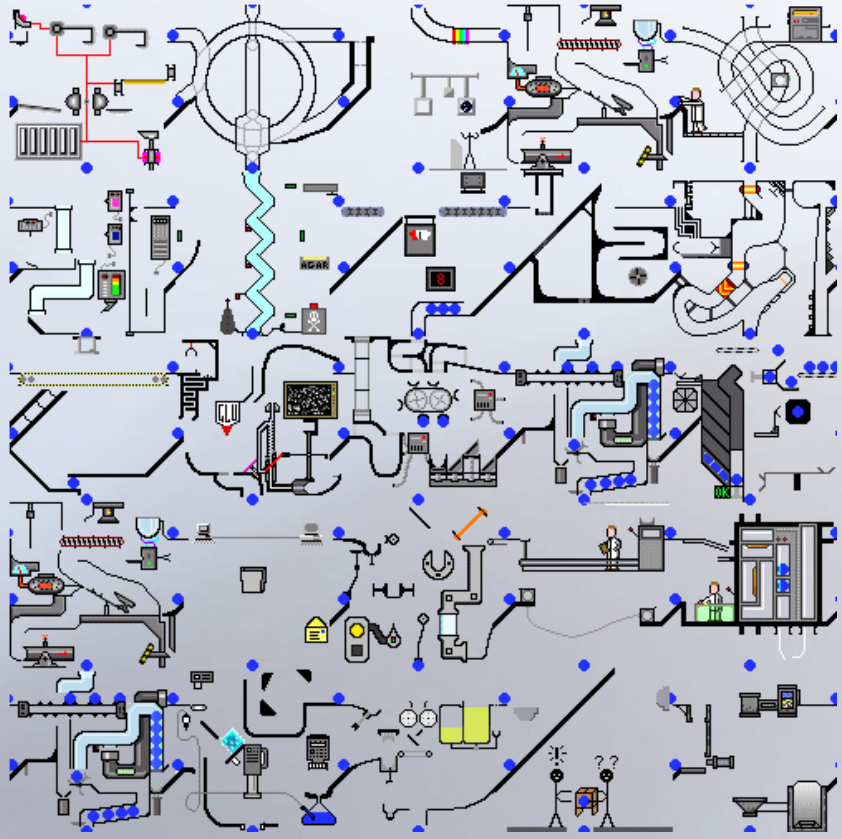

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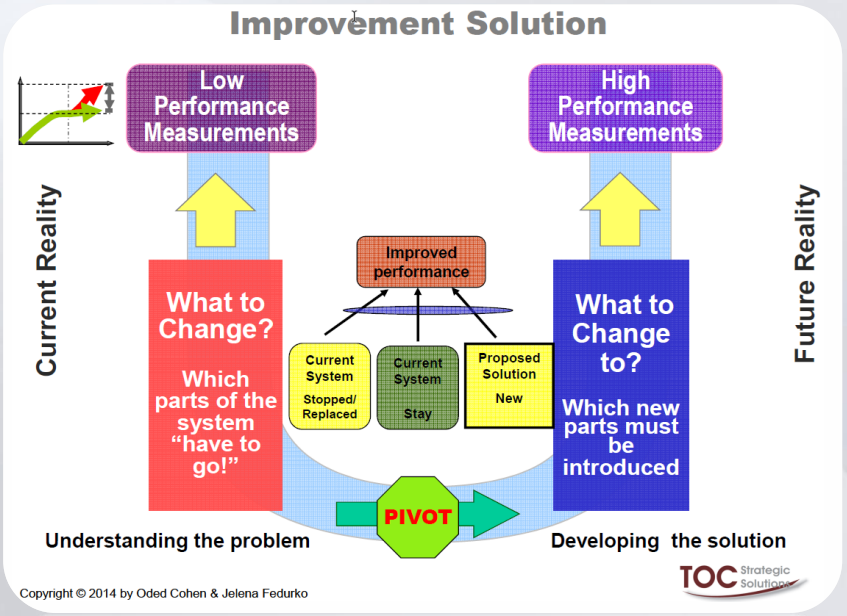

Thanks for attention !

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תודה רבה

Kiitokset

Suur tänu

Många tack

Labai ačiū

Mange takk

Большое спасибо

Liels paldies

Any question ?