Improve
QUALITY SERVICES

Systeemdenken

Denk out of jouw eigen box

TestNet 15-05-2018
Berry Kersten

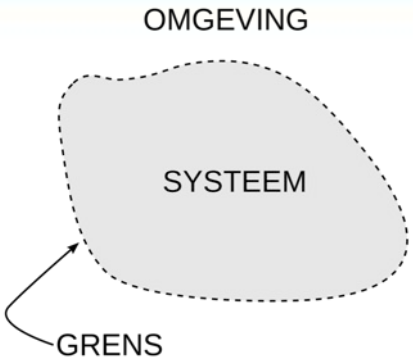
consult. train. practice.

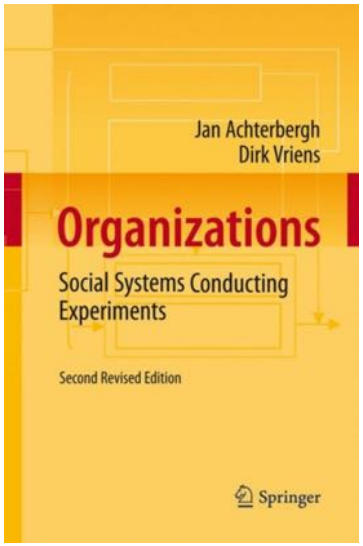
Als je denkt wat je altijd dacht,

dan zie je wat je altijd zag,

dan doe je wat je altijd deed,

en krijg je wat je altijd al kreeg!

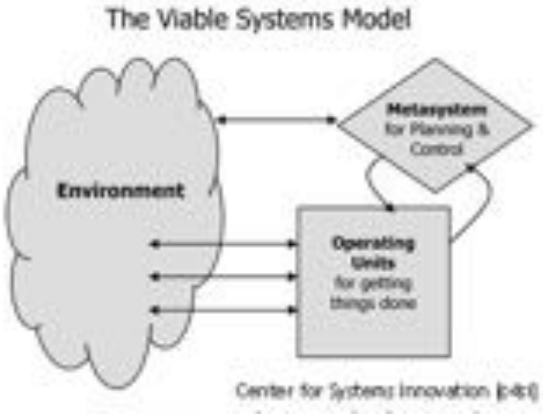




Cybernetica

Sociale / Klassieke Systeemtheorie

Sociotechniek

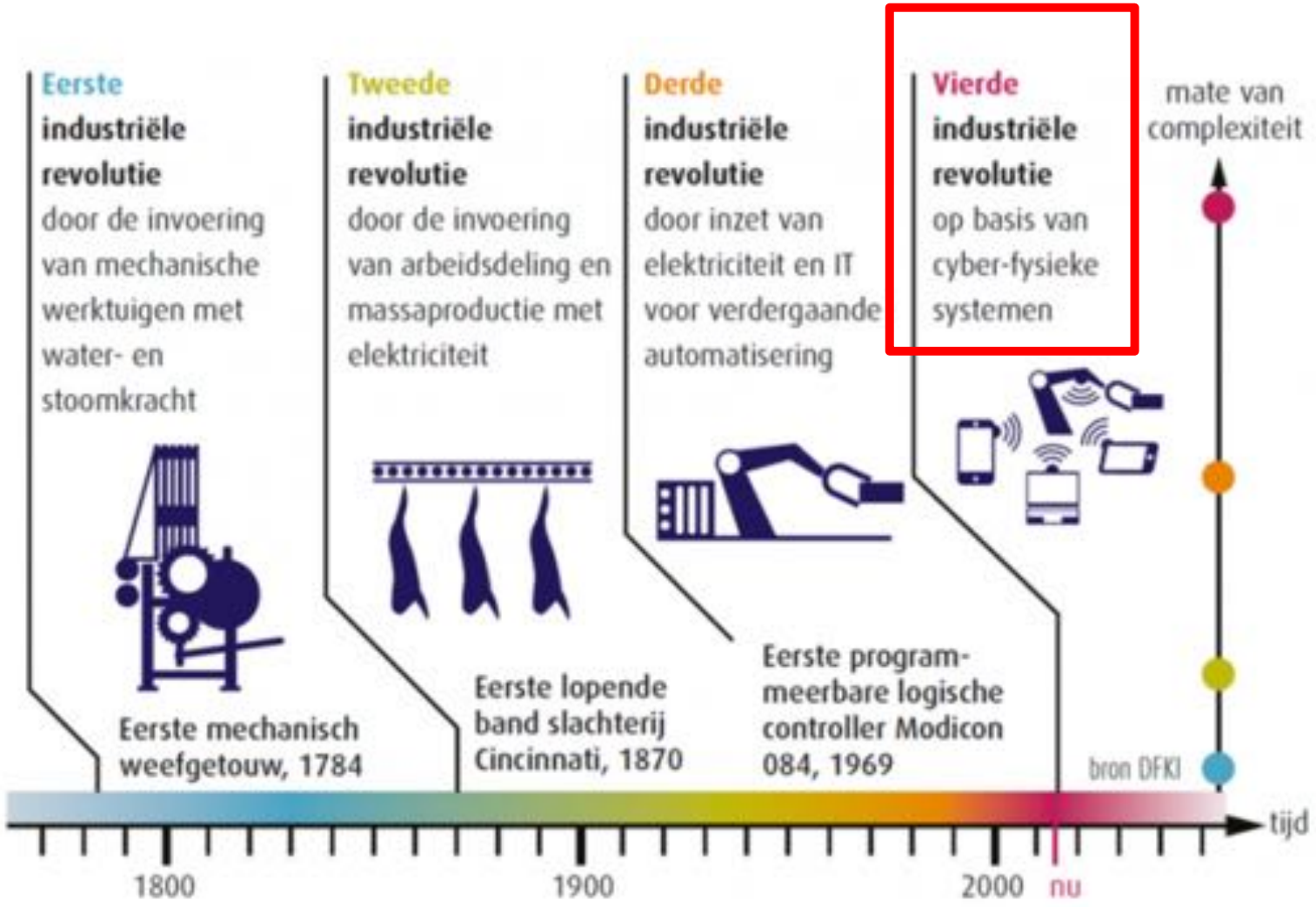


Global Challenge Insight Report
The Future of Jobs
Employment, Skills and Workforce Strategy
WORLD ECONOMIC FORUM
COMMITTED TO IMPROVING THE STATE OF THE WORLD

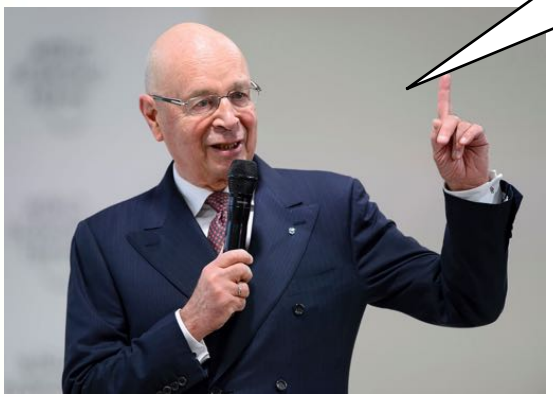
Top 10 skills

in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility


Eerste industriële revolutie door de invoering van mechanische werktuigen met water- en stoomkracht
Tweede industriële revolutie door de invoering van arbeidsdeling en massaproductie met elektriciteit
Derde industriële revolutie door inzet van elektriciteit en IT voor verdergaande automatisering
Vierde industriële revolutie op basis van cyber-fysieke systemen
mate van complexiteit
Eerste mechanisch weefgetouw, 1784
Eerste lopende band slachterij Cincinnati, 1870
Eerste programmeerbare logische controller Modicon 084, 1969
bron DFKI
tijd
1800
1900
2000
nu

The 4th Industrial Revolution is most useful as a **mental model** and describes how physical, digital and biologic technologies have collided and the resulting challenges and opportunities that presents.



Prof. dr. Klaus Schwab
Founder and Executive Chairman of the World Economic Forum

Complex Problem Solving

"Capaciteiten die benodigd zijn om nieuwe, slecht gedefinieerde problemen in een complexe actuele situatie op te lossen."

"Before I state the problem,
are there any solutions?"

SYSTEMS THINKING
understanding the complex

It's not my problem, the hole is in their side of the boat!
SPLOOSH!
DOOMED COMPANY

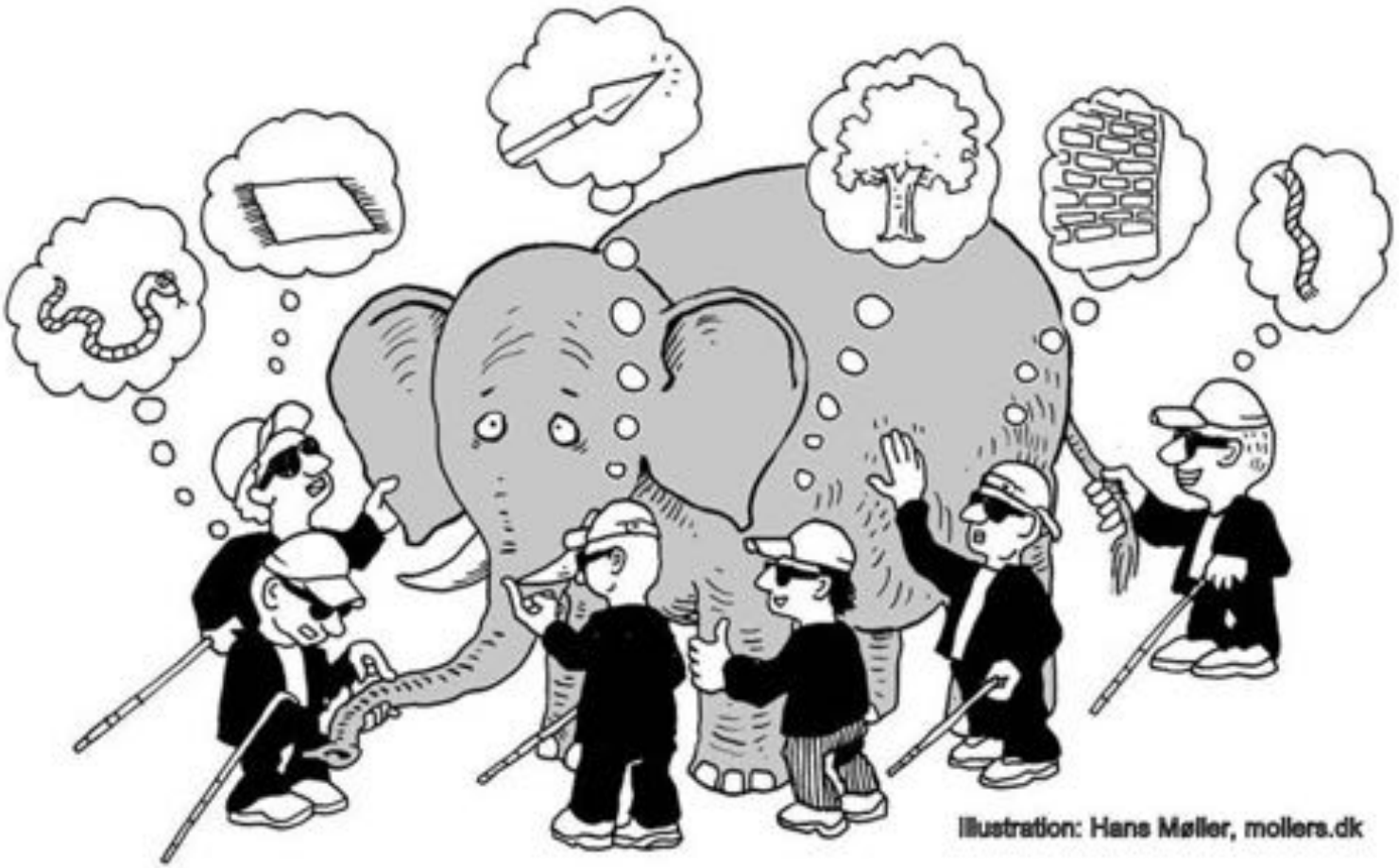


Illustration: Hans Møller, mollers.dk

Systeemdenken is....

- het grotere plaatje kunnen en willen zien
- een (andere) manier van kijken/denken naar de werkelijkheid
- een communicatiemiddel
- hanteren van een hulpmiddelen waarmee we een systeem kunnen visualiseren.
- verder kijken dan het topje van de ijsberg
- stoutmoedig (door)vragen / systemische vragen stellen
- oog hebben voor balans en context (van perspectief wisselen)

"Systems Thinking is at the base of the
ISO 9001 Quality Management System"

"Complex Adaptive Systems theory is one of the root threads
of agile development"

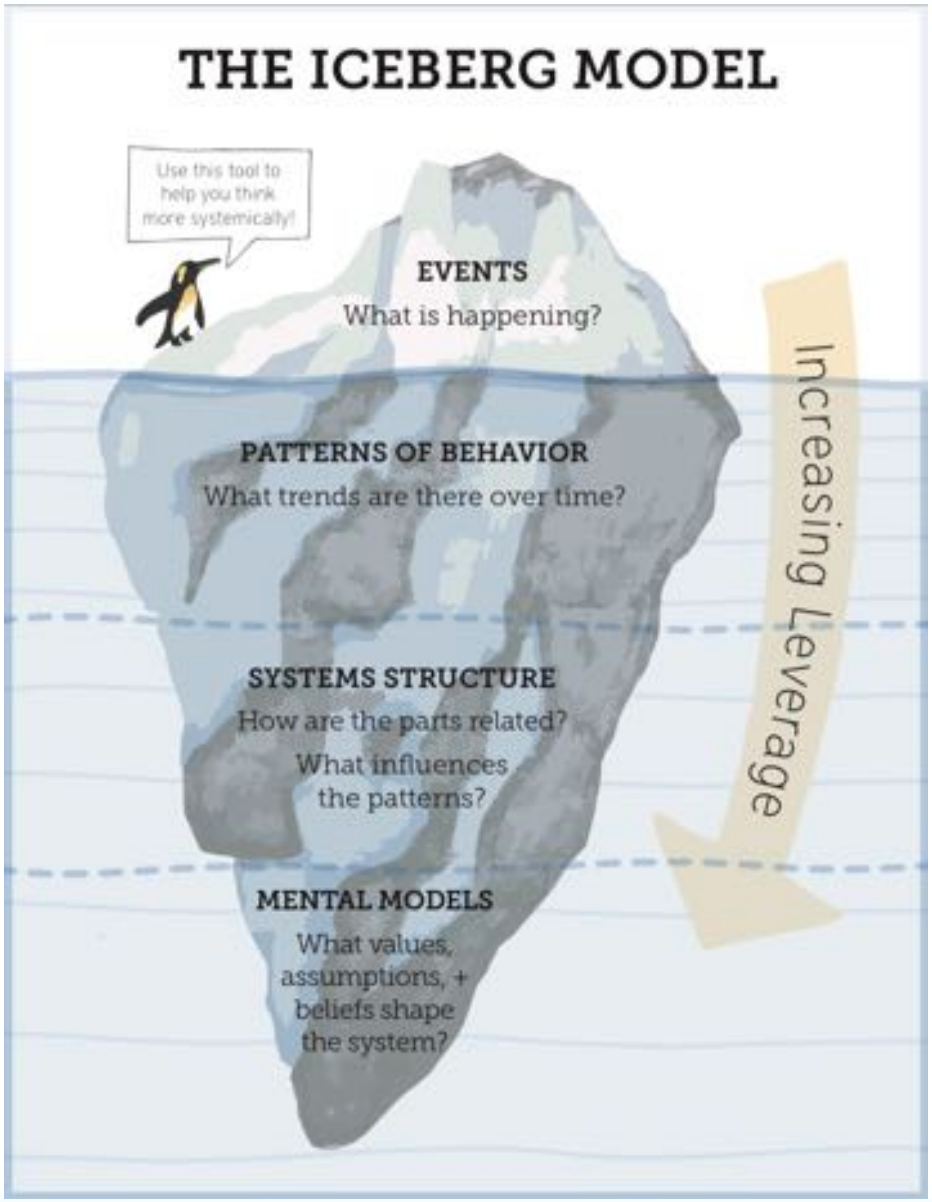
"Scrum derives from Complex Adaptive Systems theory"

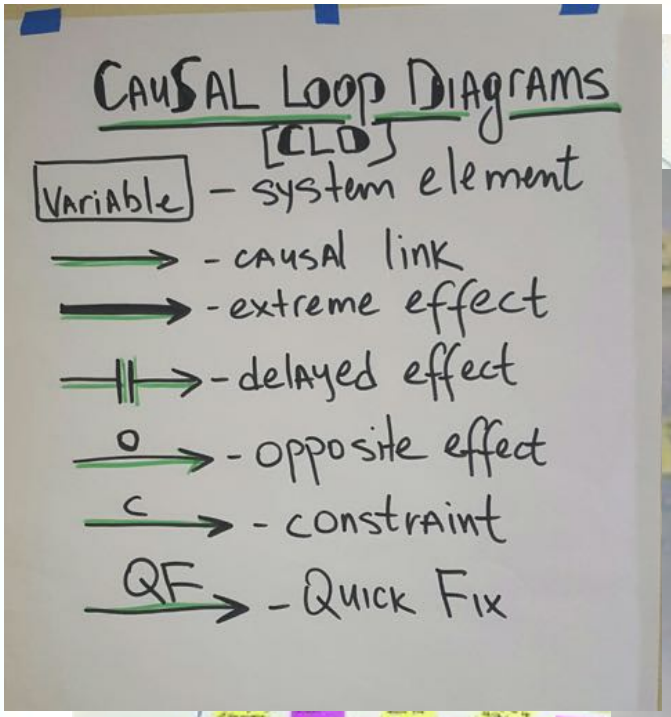
LeSS principle #4: Systems Thinking

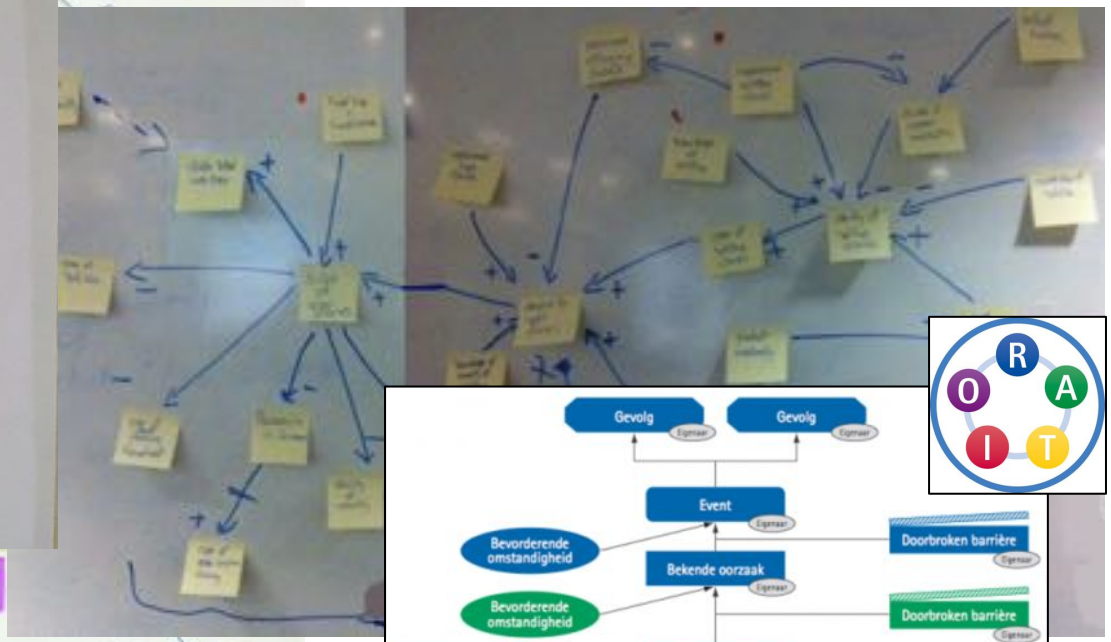
SAFe principle #2: Apply systems thinking

"DevOps describes a cultural movement in IT
focused on collaboration and innovation through systems thinking"

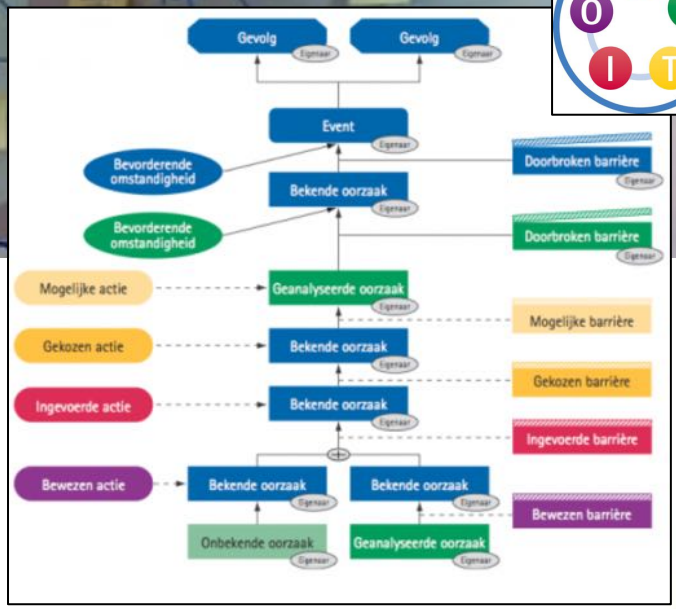
what's
in it for
ME?


THE ICEBERG MODEL
Use this tool to help you think more systemically!
EVENTS
What is happening?
PATTERNS OF BEHAVIOR
What trends are there over time?
SYSTEMS STRUCTURE
How are the parts related?
What influences the patterns?
MENTAL MODELS
What values, assumptions, + beliefs shape the system?
Increasing Leverage

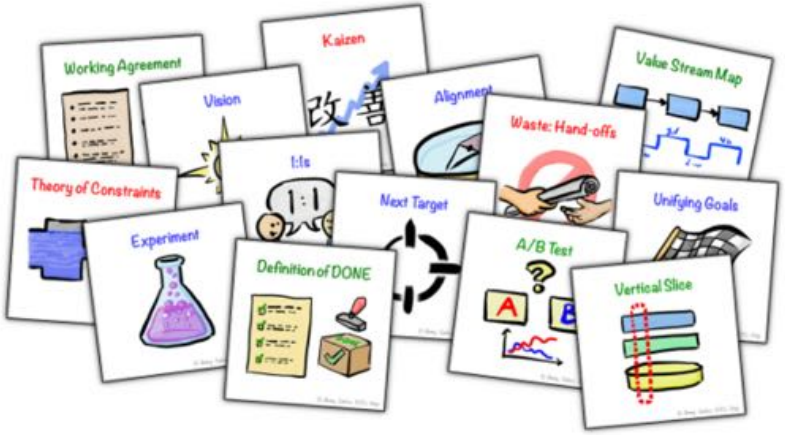

CAUSAL LOOP DIAGRAMS
[CLD]
VARIABLE - system element
- causal link
- extreme effect
- delayed effect
- opposite effect
- constraint
QF - Quick Fix

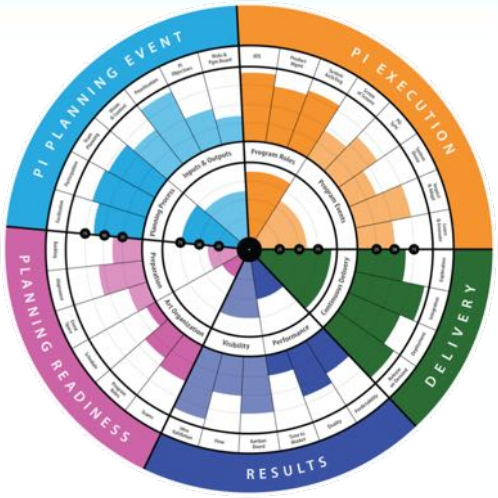


MENTAL MODELS

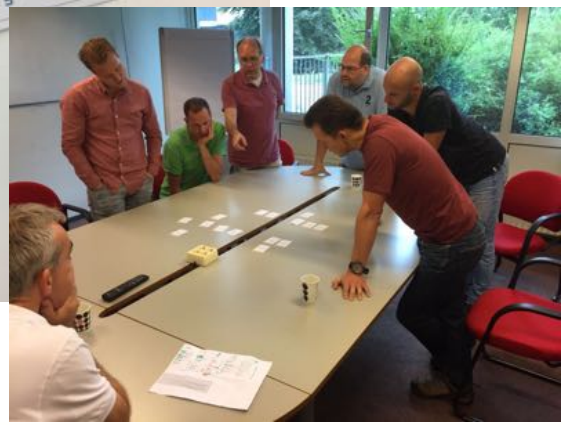

Gevolg
Gevolg
Event
Bevorderende omstandigheid
Bekende oorzaak
Doorbroken barrière
Bevorderende omstandigheid
Doorbroken barrière
Mogelijke actie
Geanalyseerde oorzaak
Mogelijke barrière
Gekozen actie
Bekende oorzaak
Gekozen barrière
Ingevoerde actie
Bekende oorzaak
Ingevoerde barrière
Bewezen actie
Bekende oorzaak
Bekende oorzaak
Bewezen barrière
Onbekende oorzaak
Geanalyseerde oorzaak

R
A
I
T
O


Working Agreement
Kaizen
Vision
Alignment
Value Stream Map
Waste: Hand-offs
1:1s
Theory of Constraints
Next Target
Unifying Goals
Experiment
A/B Test
Definition of DONE
Vertical Slice

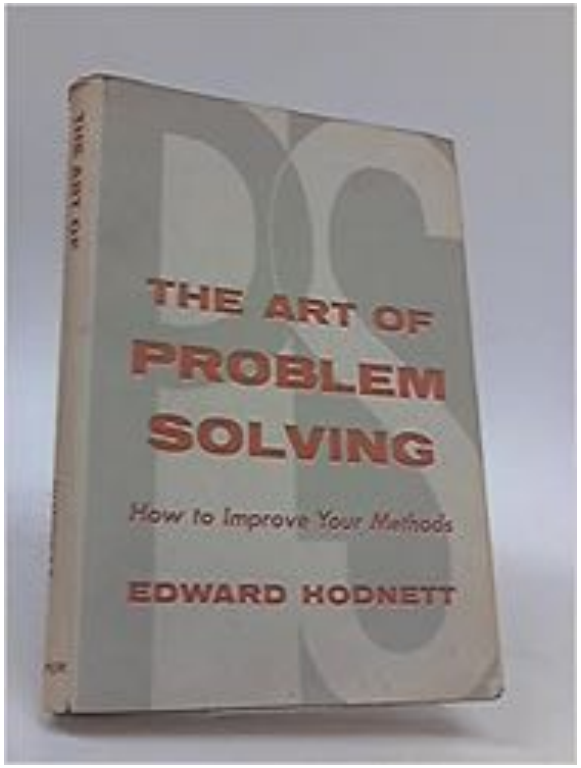

PI PLANNING EVENT
PI EXECUTION
PLANNING READINESS
DELIVERY
RESULTS

Planning & organization
Improve



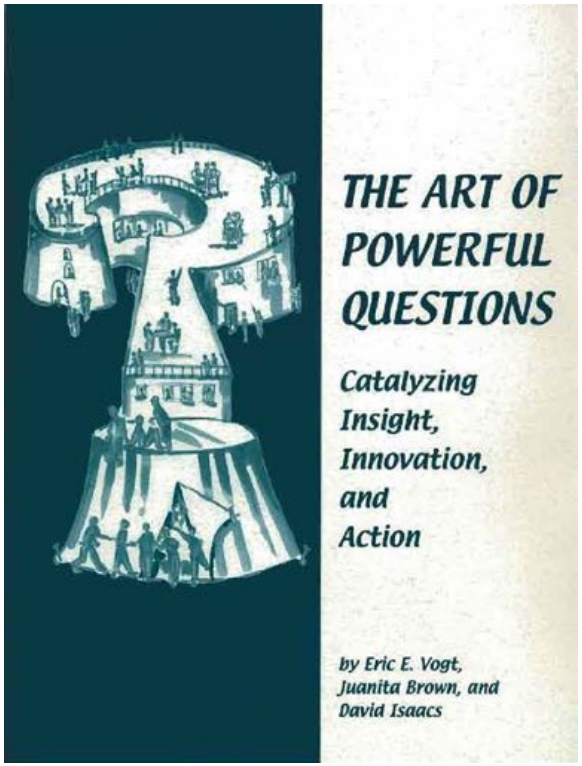
"If you don't ask the right questions, you don't get the right answers. . . Only the inquiring mind solves problems"

Edward Hodnett

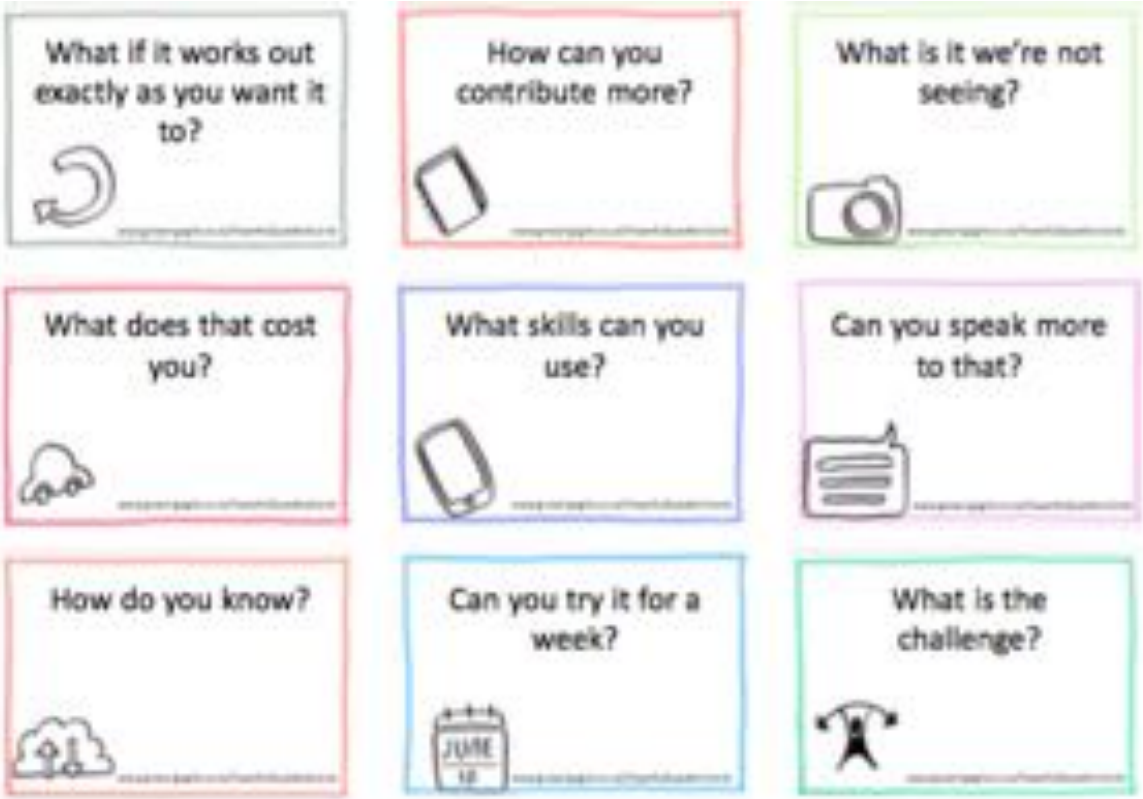


Powerfull Questions

- is simple and clear
- is thought-provoking
- generates curiosity in the listener
- channels attention and focuses inquiry
- surfaces underlying assumptions
- stimulates reflective conversation
- invites creativity and new possibilities
- generates energy and forward movement
- stays with participants
- touches a deep meaning
- evokes more questions



Powerfull Questions

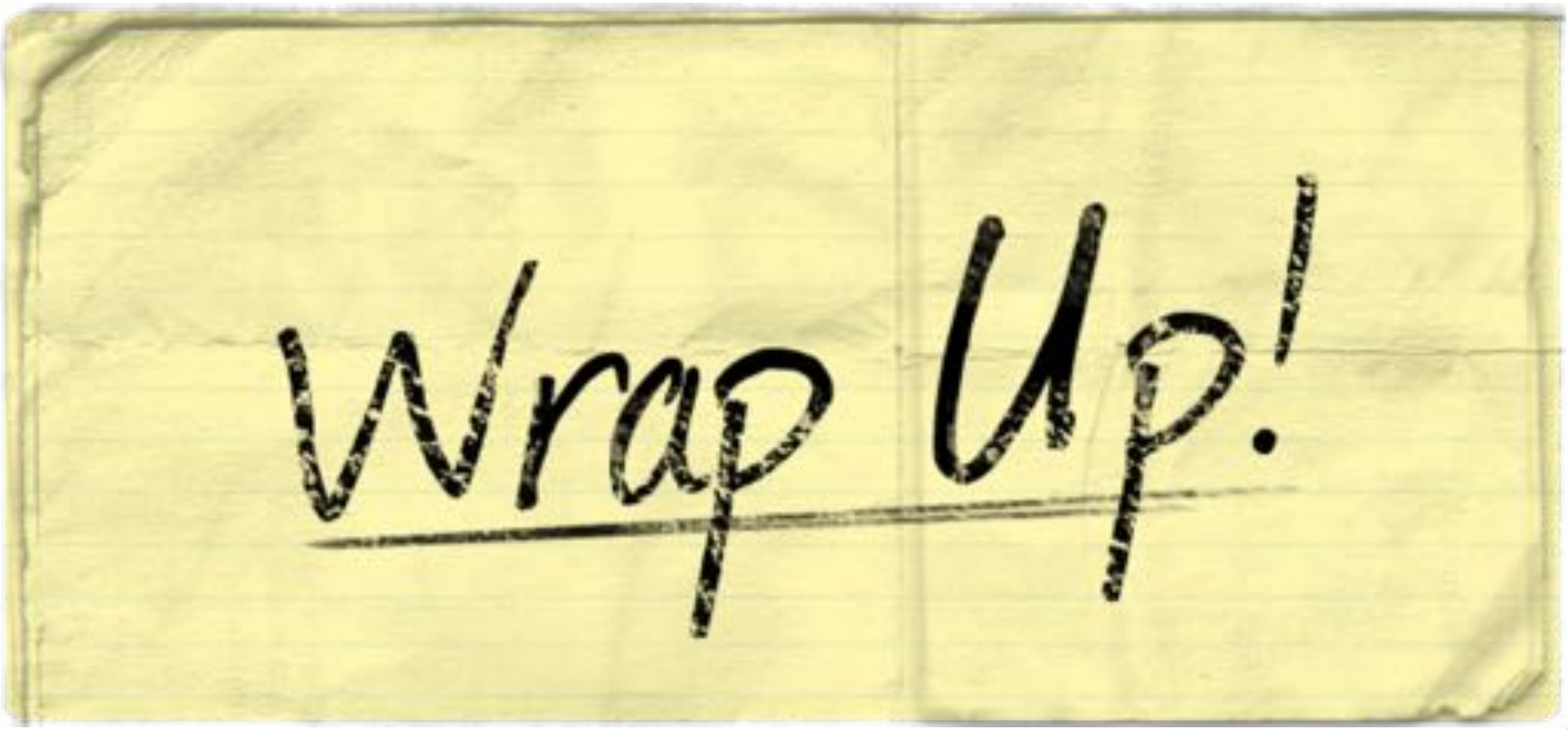


www.growingagile.co.za/powerfulquestioncards

Habits of a Systems Thinker

Considers short-term, long-term and unintended consequences of actions
BANK
Donut shop

Seeks to understand the
"big picture"
©2014 Waters Foundation, Systems Thinking in Schools
www.watersfoundation.org


Wrap Up!

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