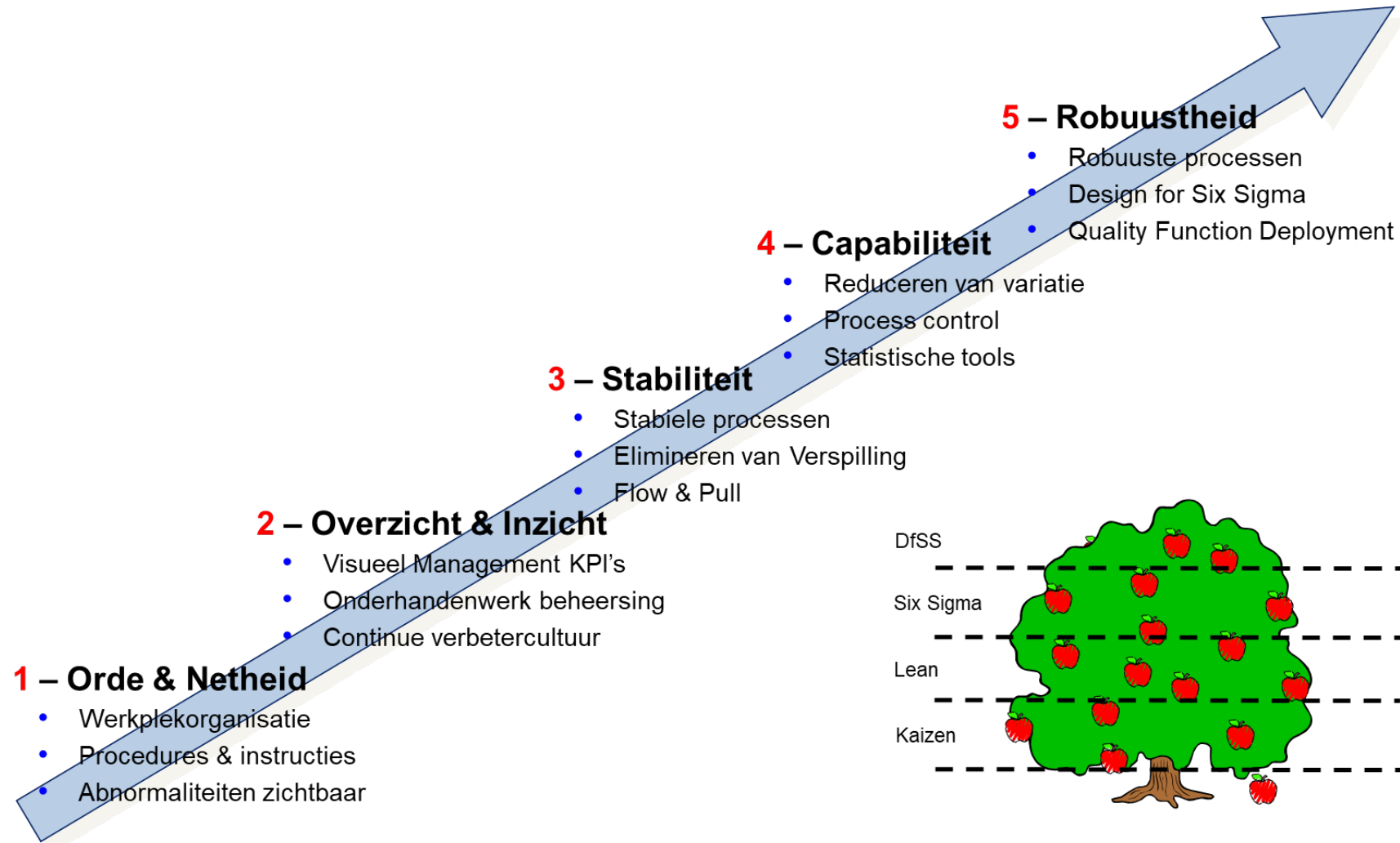


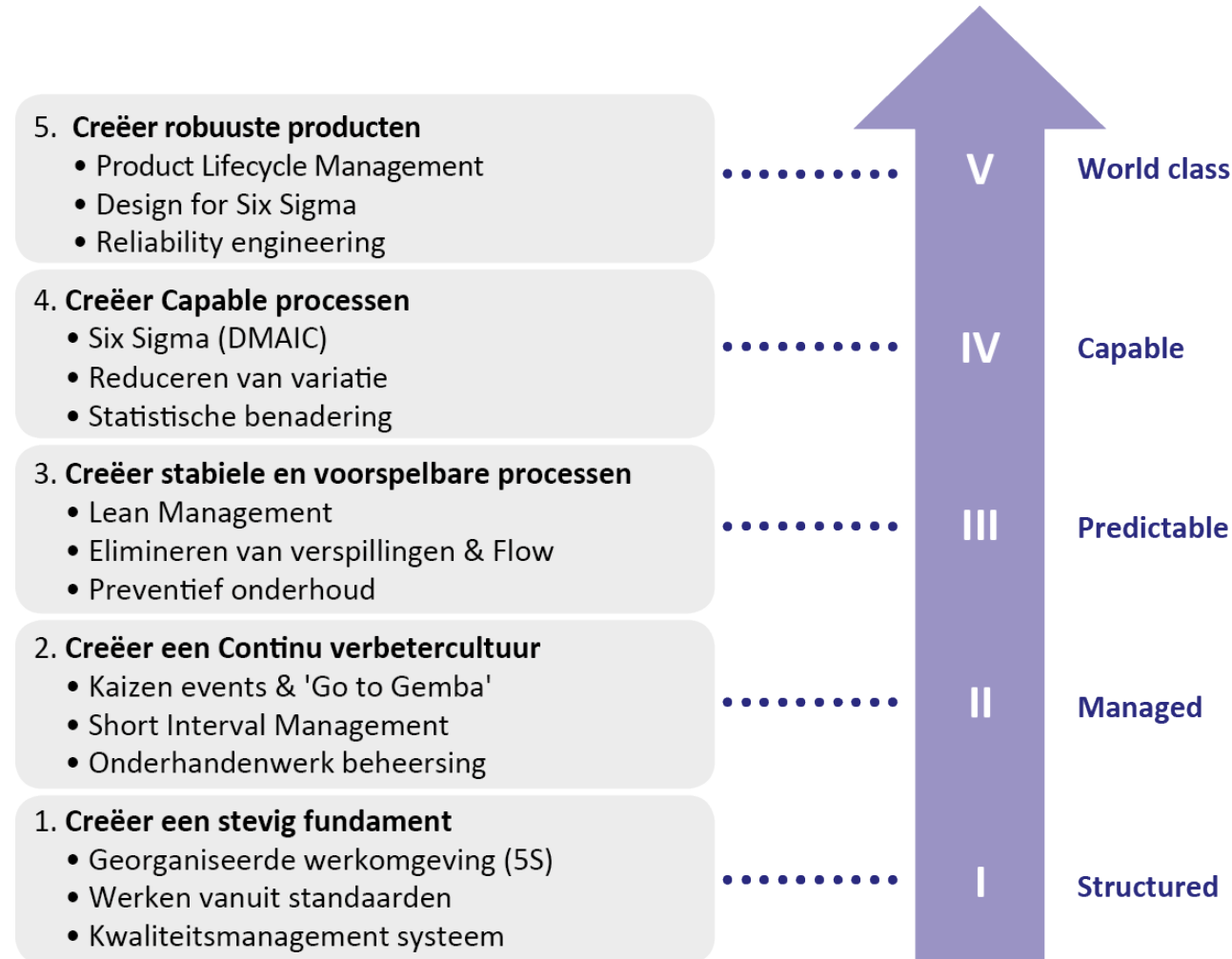
LEAN SIX SIGMA 4.0 ROADMAP

David van Eekhout

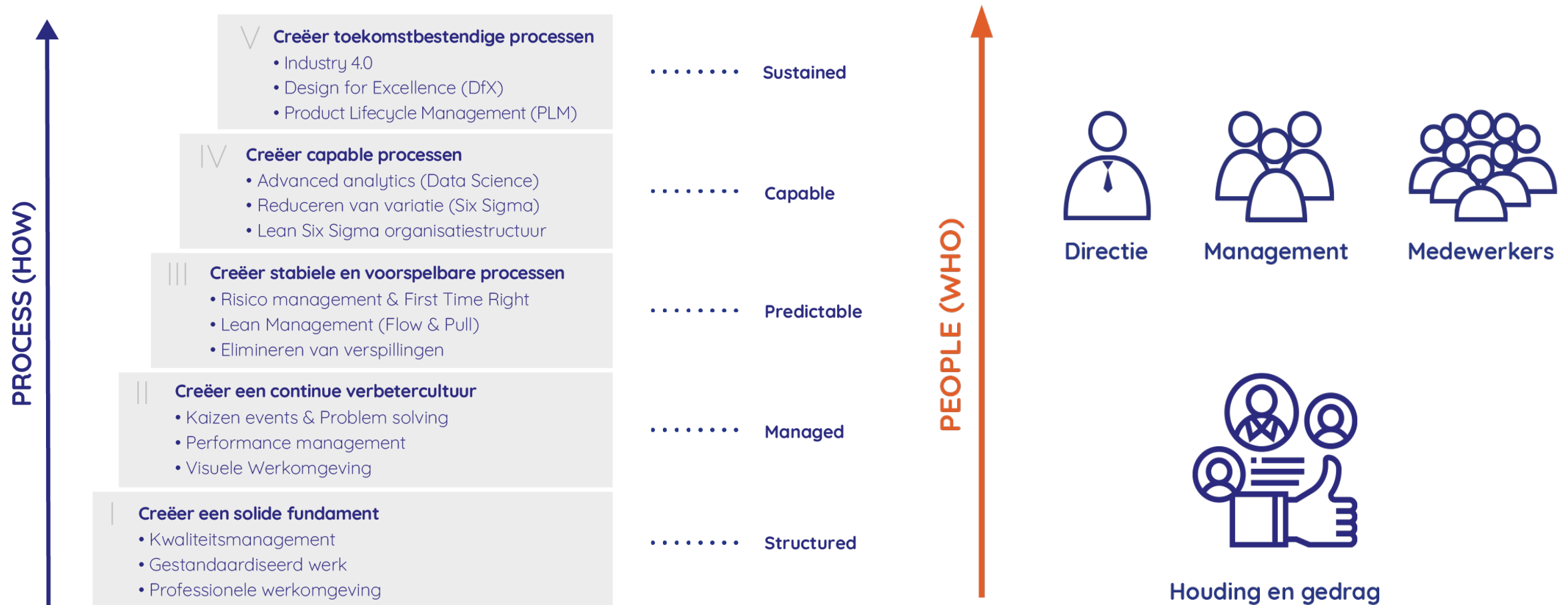
#DigitalTransformation

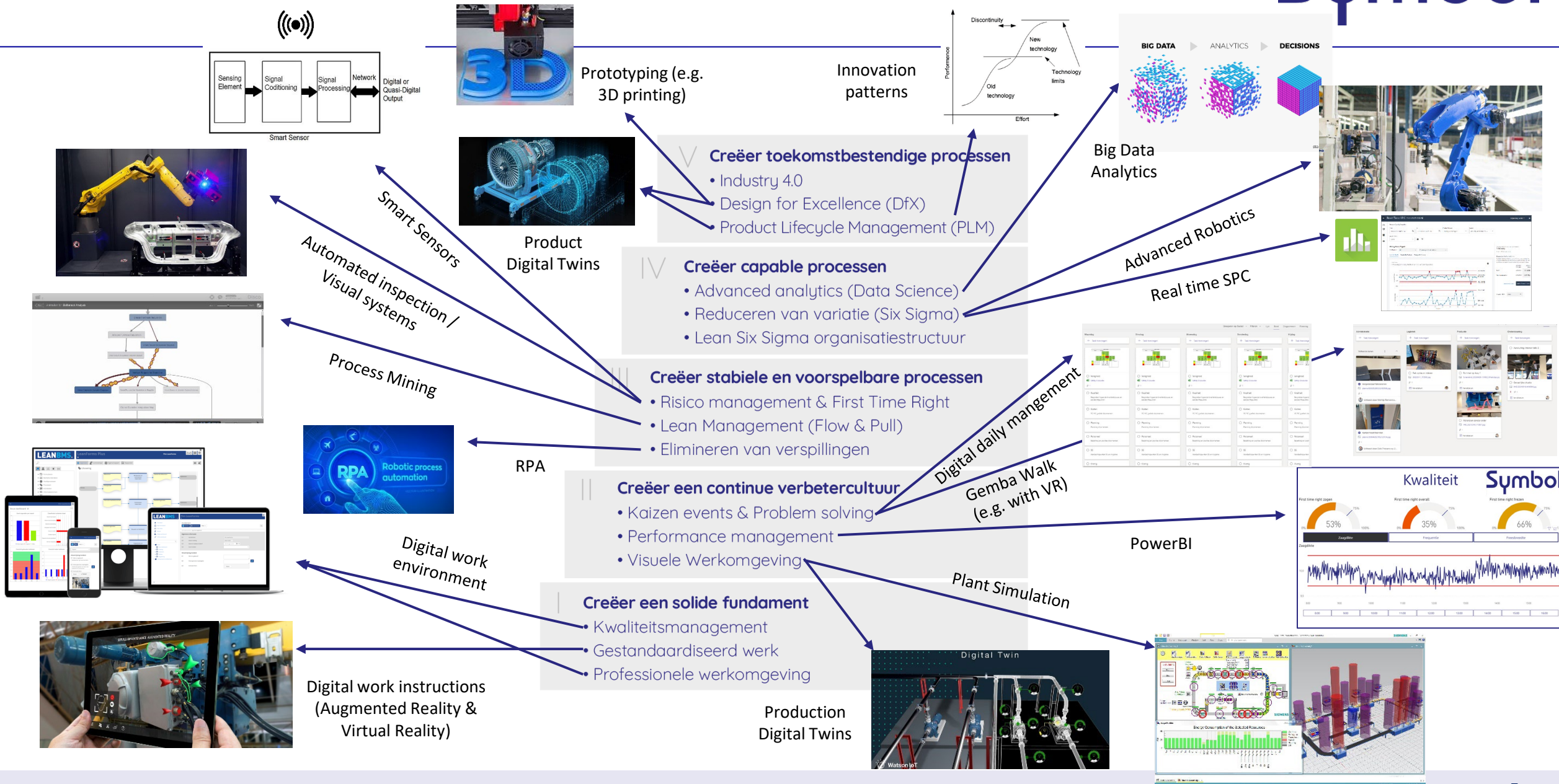




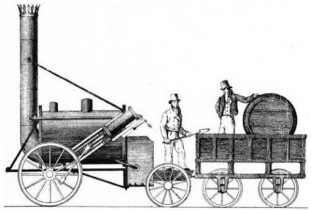


CONTINUOUS IMPROVEMENT MATURITY MODEL (CIMM) 3.0

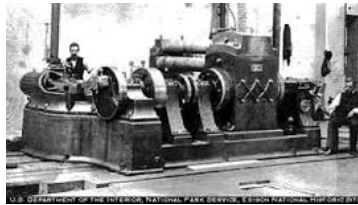




De 1^e Industriële Revolutie: van **Manueel** naar **Machines**



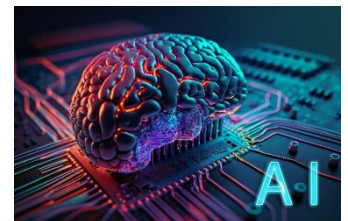
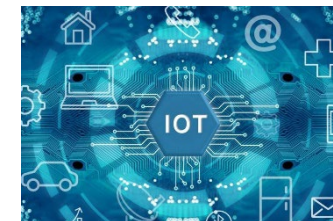
De 2^e Industriële Revolutie : van **Machines** naar **Massa productie**



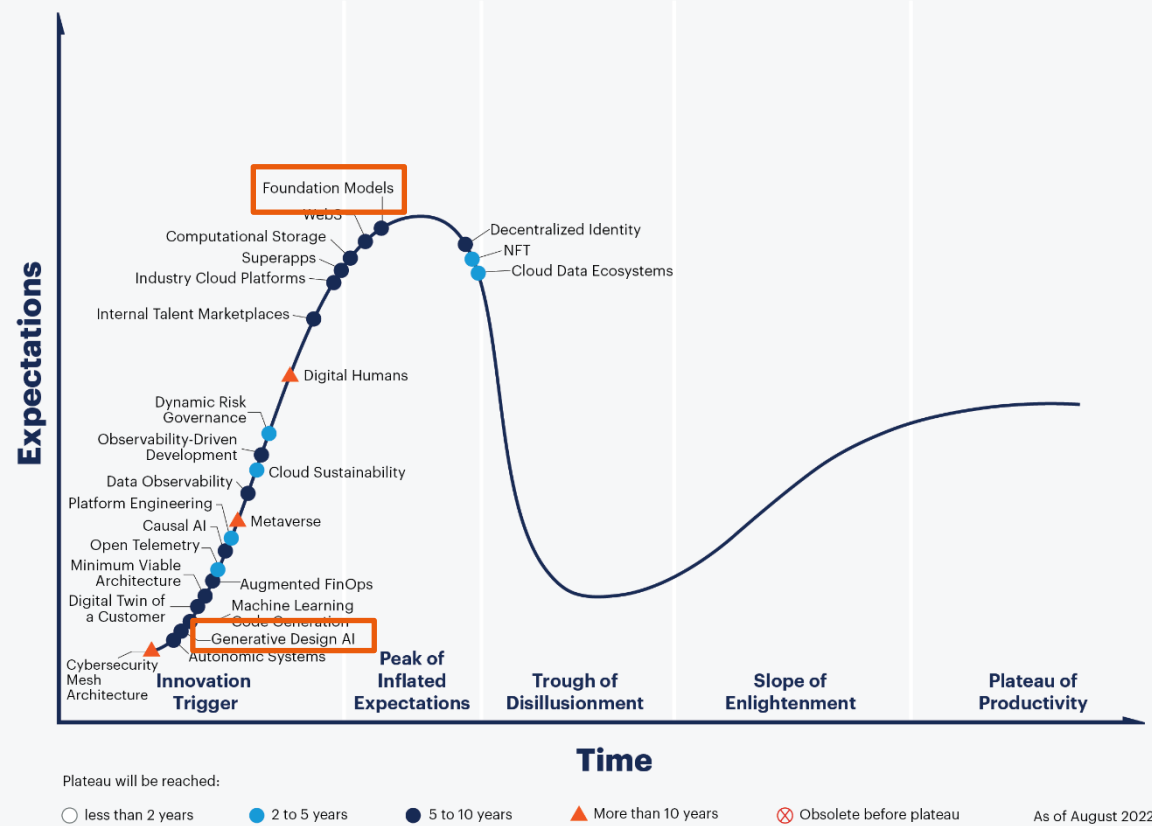
De 3^e Industriële Revolutie : van **Analoog** naar **Digitaal**



De 4^e Industriële Revolutie : **Synergie tussen systemen (SMART)**



Hype Cycle for Emerging Tech, 2022

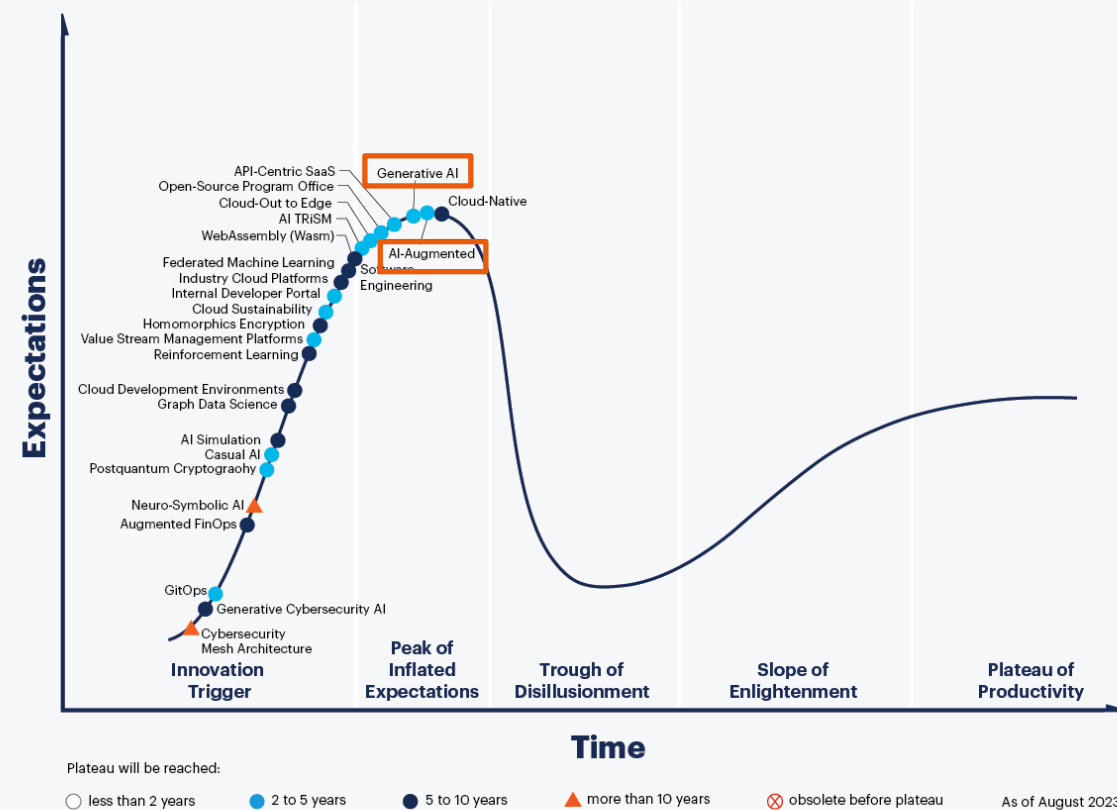


[gartner.com](https://www.gartner.com)

Source: Gartner
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Gartner

Hype Cycle for Emerging Technologies, 2023



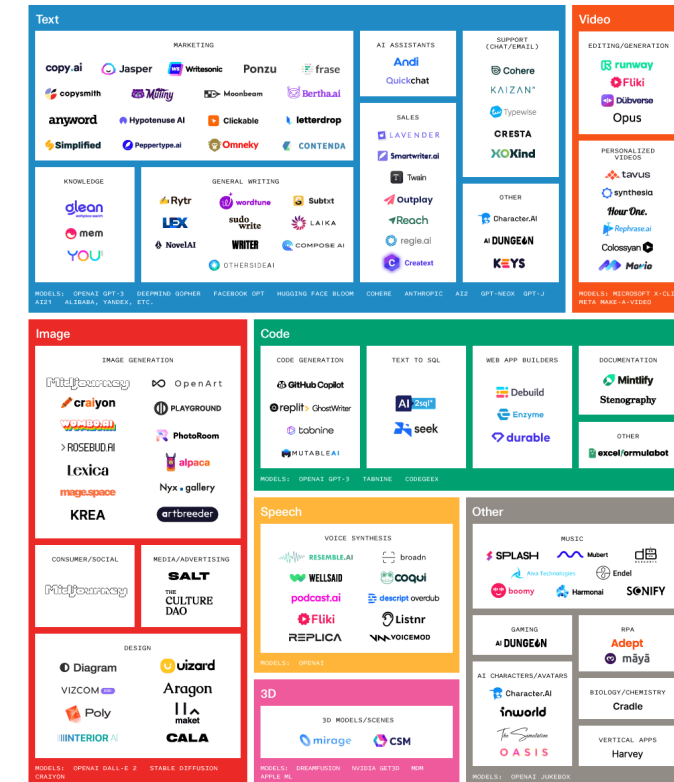
gartner.com

Source: Gartner
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Gartner

The Generative AI Application Landscape v2

A work in progress

Source: Sequoia Capital's [generative AI Landscape](#)



1950 →
Deming
Q & PDCA



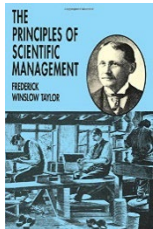
1950 - 1970
Nakajima
TPM



1950 →
Ohno & Shingo
Toyota TPS



1986 →
Imai
Kaizen



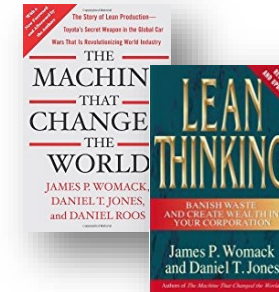
1911
Taylor
Scientific mngt



1912
Ford
Belt (Flow)



1979 – 1986 →
B. Galvin, Smith & Harry
Six Sigma Motorola



1991 - 1996
Womack & Jones
Lean



1996 →
Jack Welch
Six Sigma GE

Ontwikkelingen Lean Six Sigma

- **LSS 1.0 – Integratie tussen Lean & Six Sigma**
 - Focus op efficiency en winstmaximalisatie
- **LSS 2.0 – Groene benadering**
 - Focus op groene initiatieven met behulp van Lean Six Sigma
- **LSS 3.0 – Holistische benadering**
 - Focus op de integratie in een systeem van verbeteren (ongeacht cultuur, omgeving en tak)
- **LSS 4.0 – Digitale integratie**
 - Focus op de integratie van digitale technieken en de mogelijkheden met AI en grote datasets.



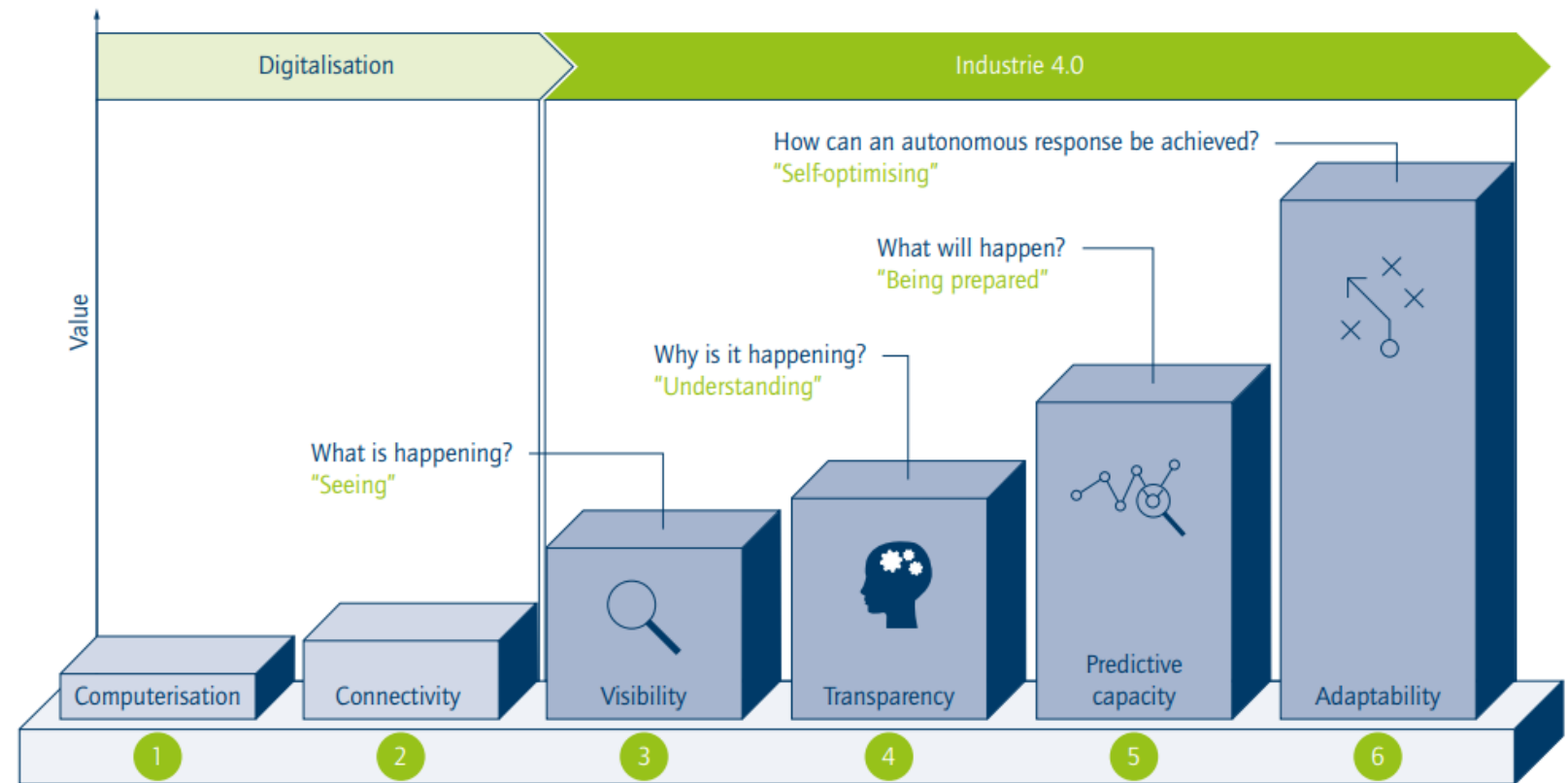
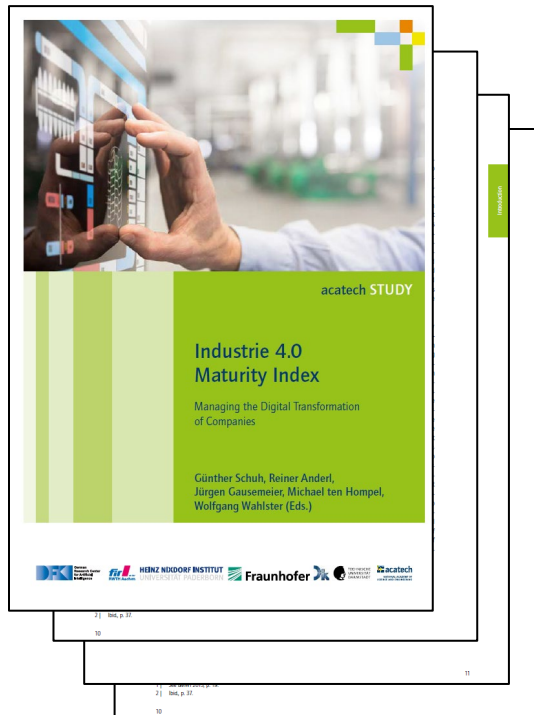
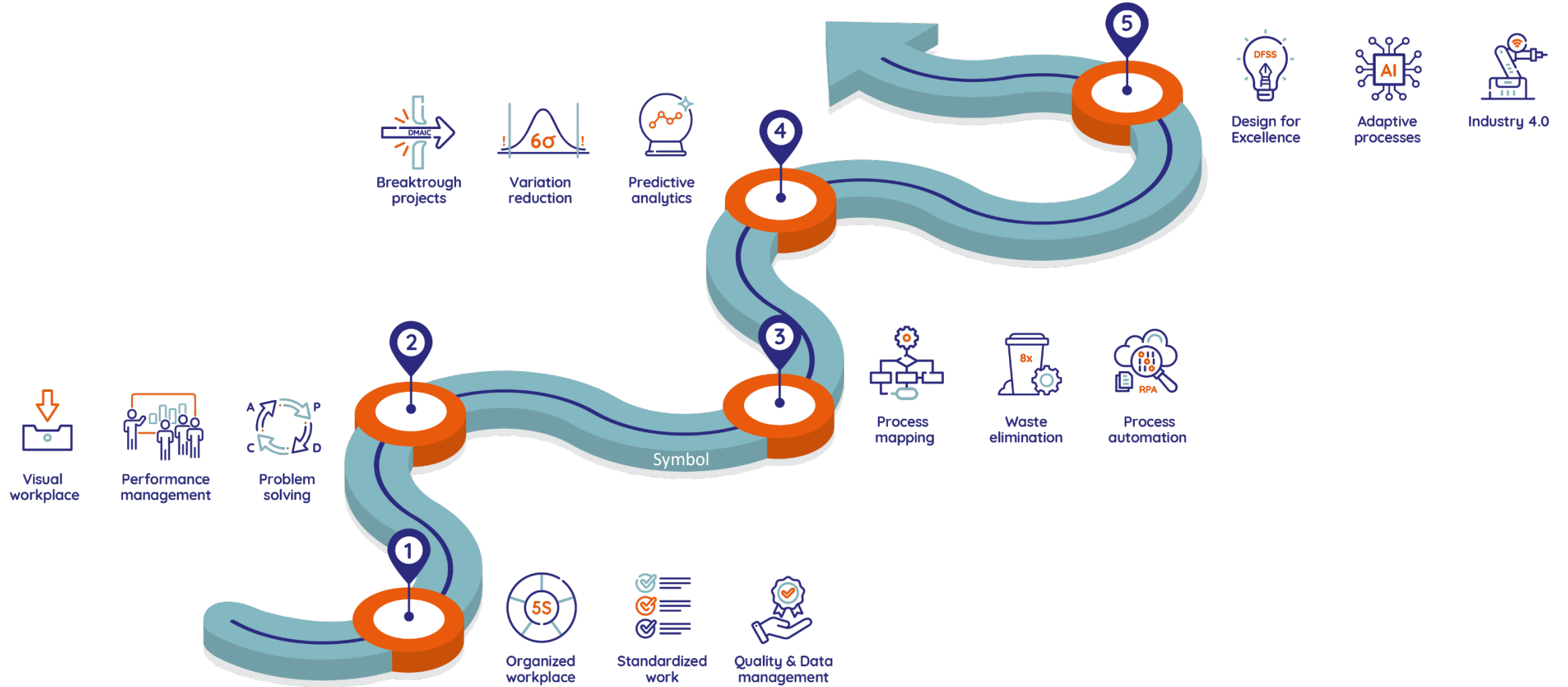
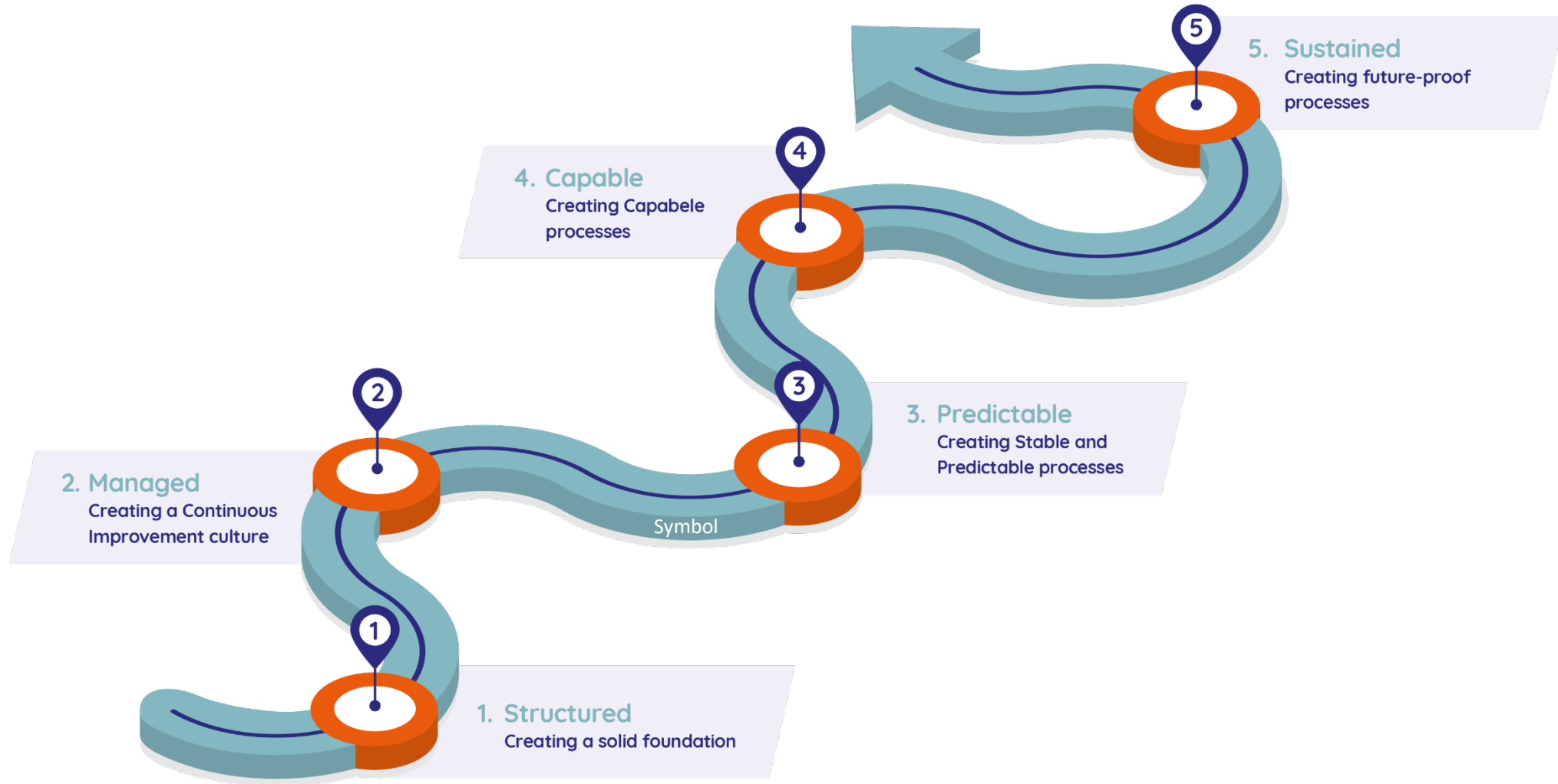


Figure 5: Stages in the Industrie 4.0 development path (source: FIR e. V. at RWTH Aachen University)

CONTINUOUS IMPROVEMENT MATURITY MODEL (CIMM) 4.0







Customer



Strategy



Leadership



Behavior

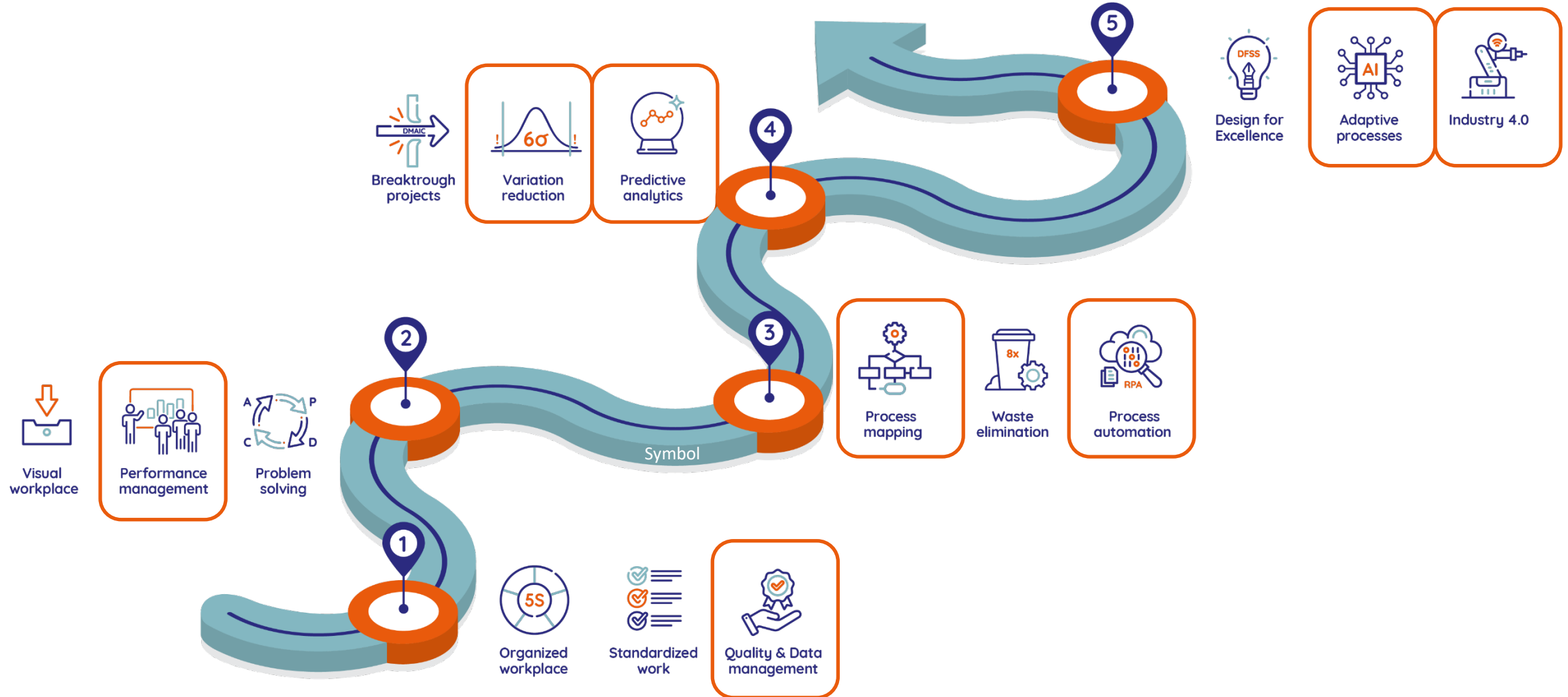


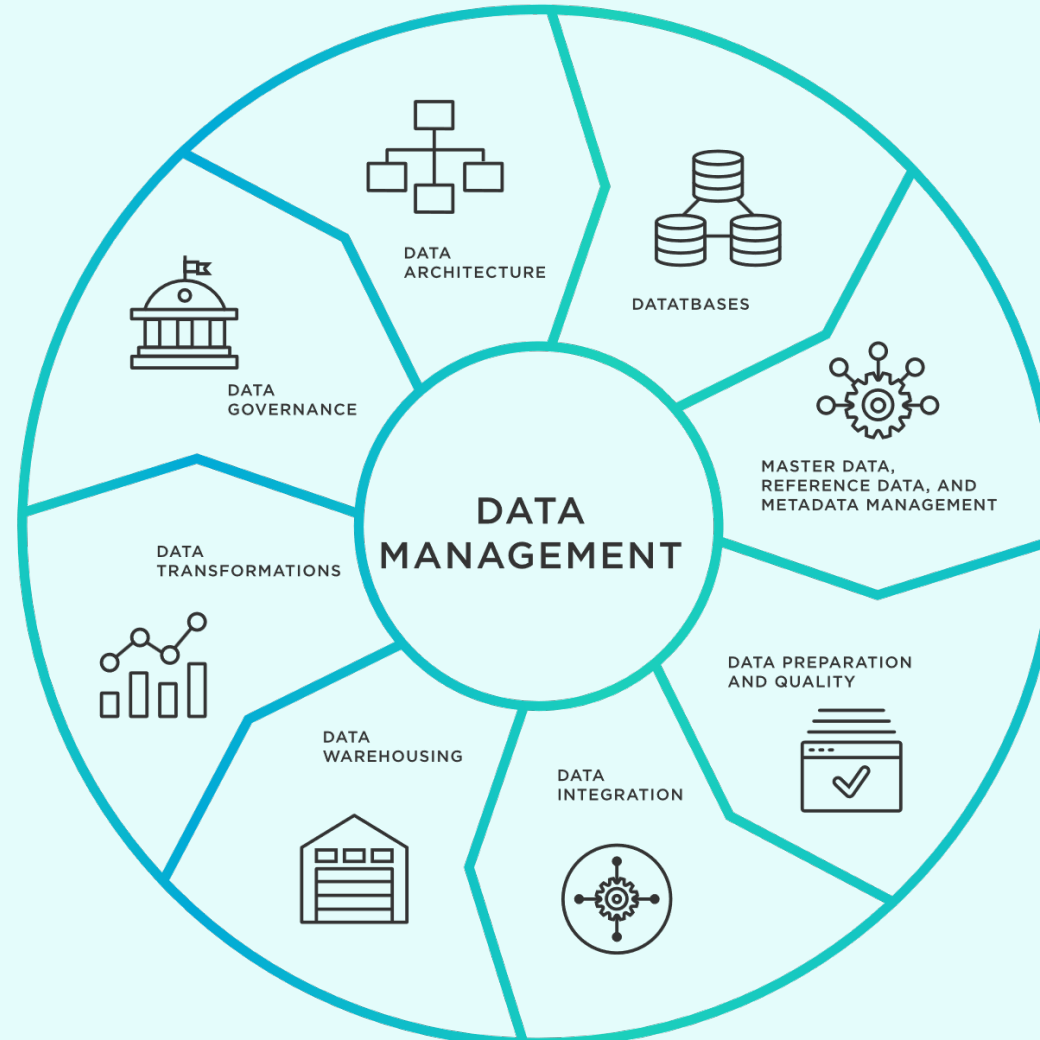
Competences



Performance

CONTINUOUS IMPROVEMENT MATURITY MODEL (CIMM) 4.0





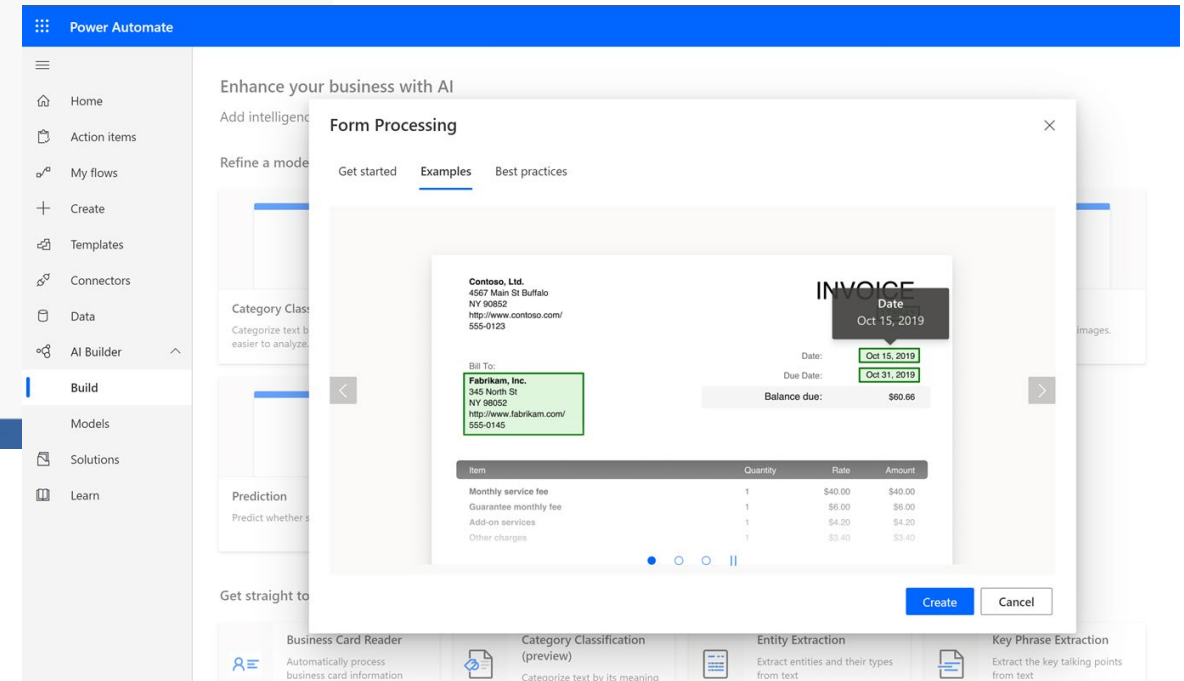
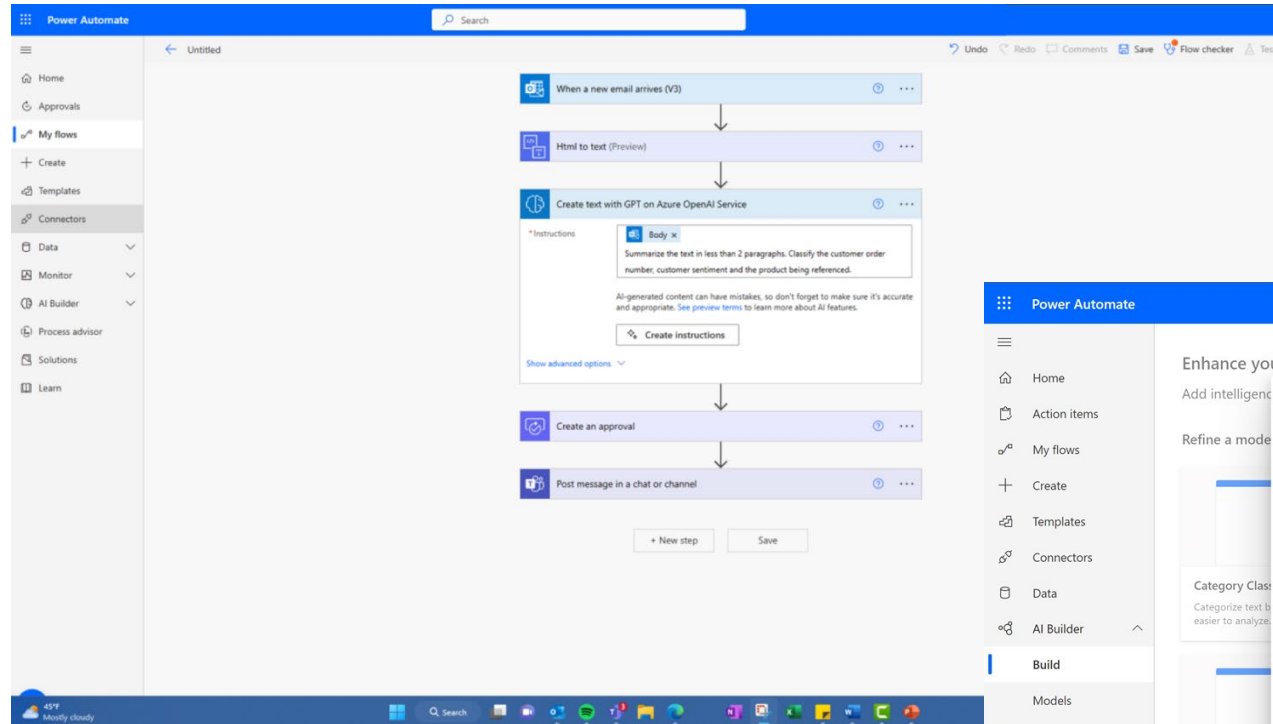


Vertaling van data naar informatie om processen in real-time (op afstand) te sturen

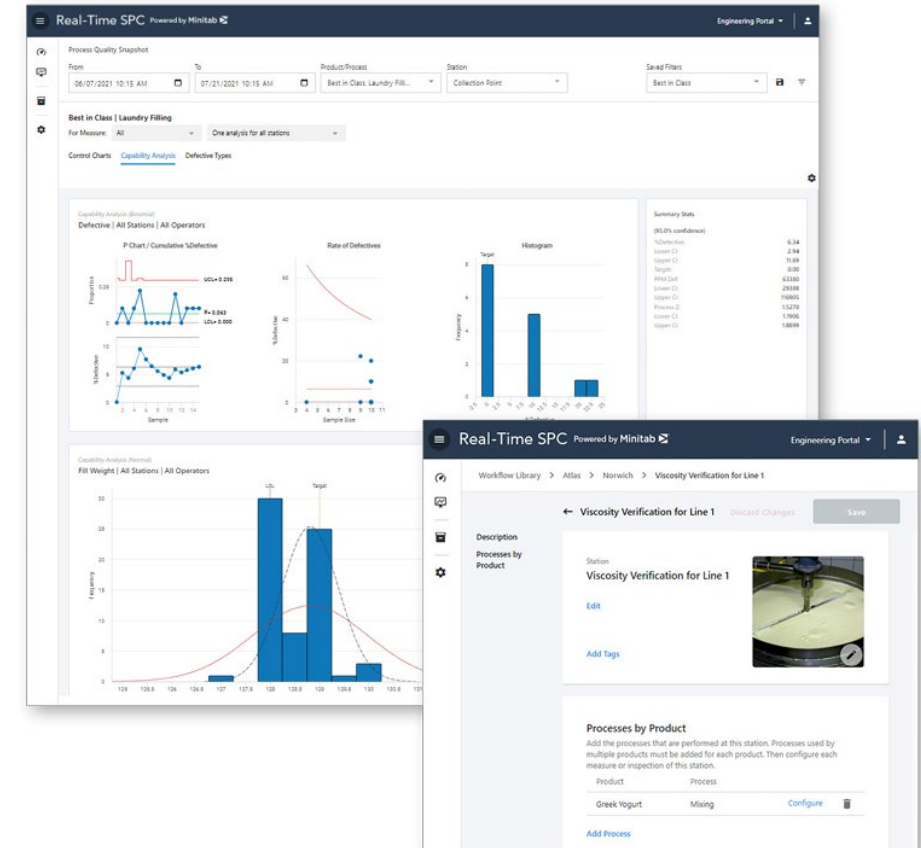
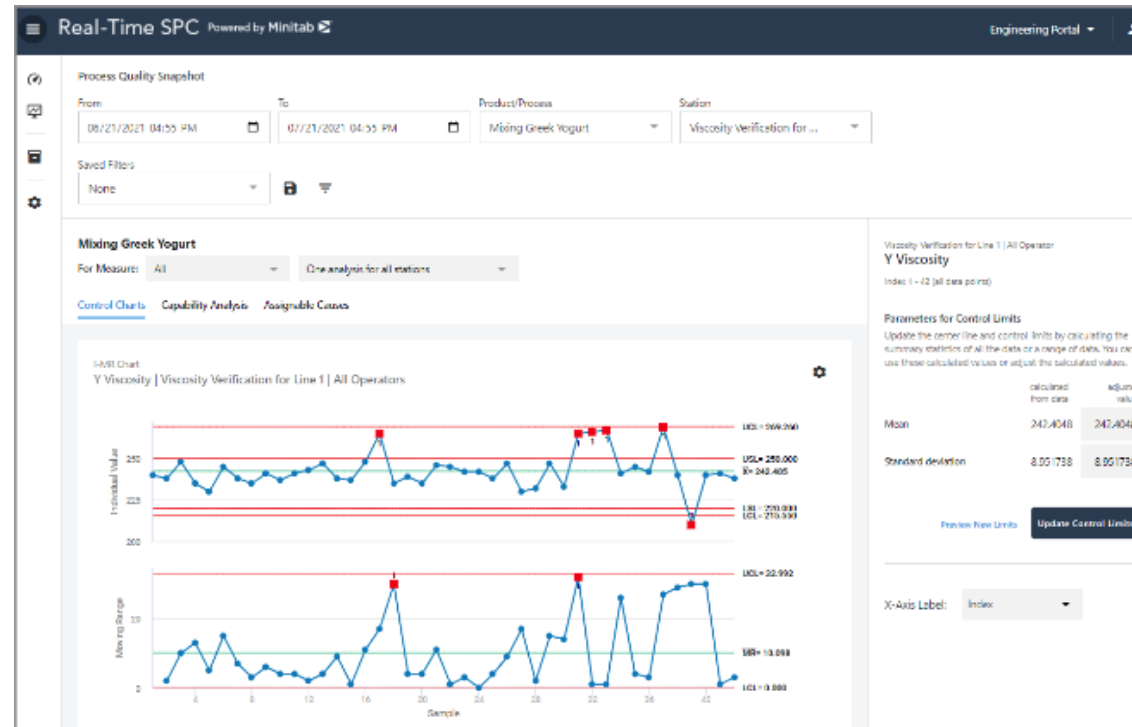
Process
mapping

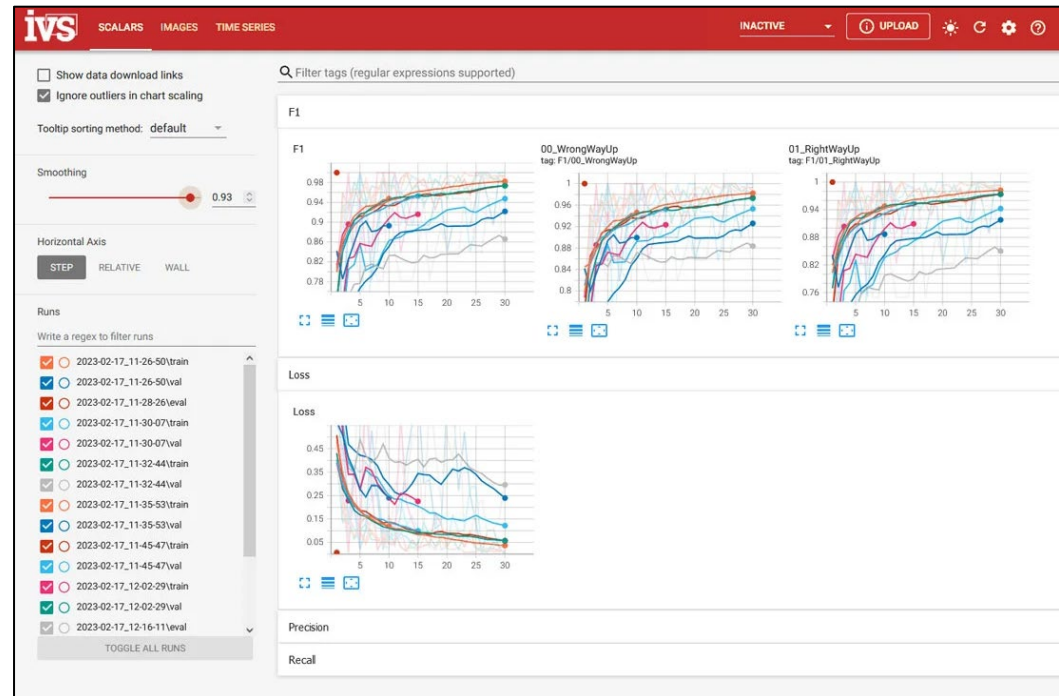
Process Mining maakt de werkelijkheid in één oogopslag inzichtelijk

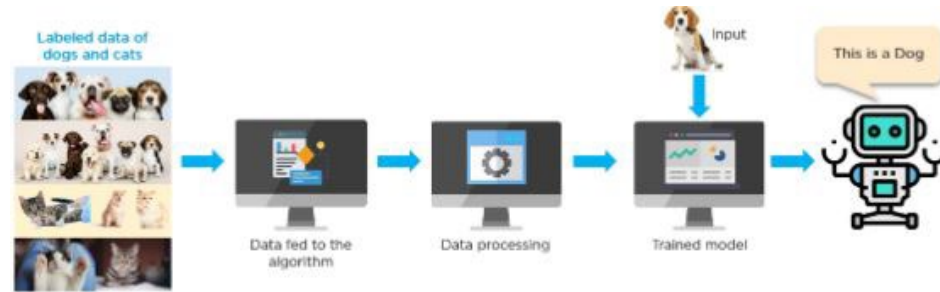
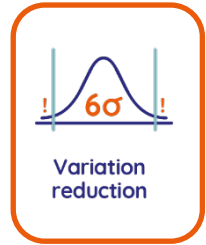
PROCESS AUTOMATION



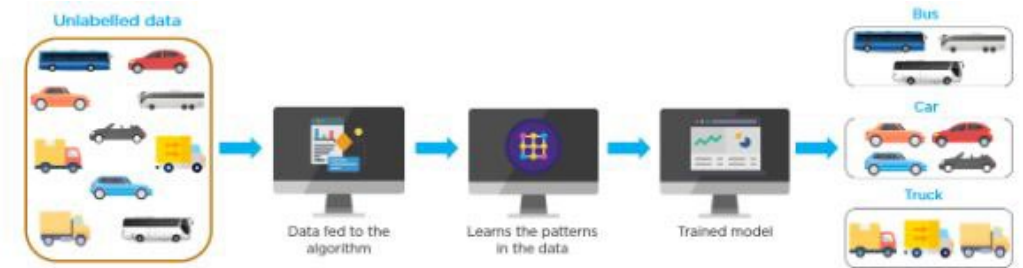
REAL TIME SPC



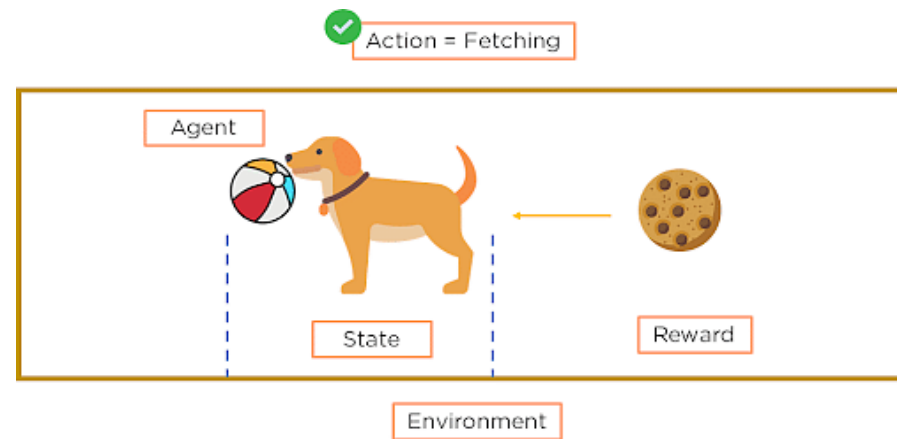




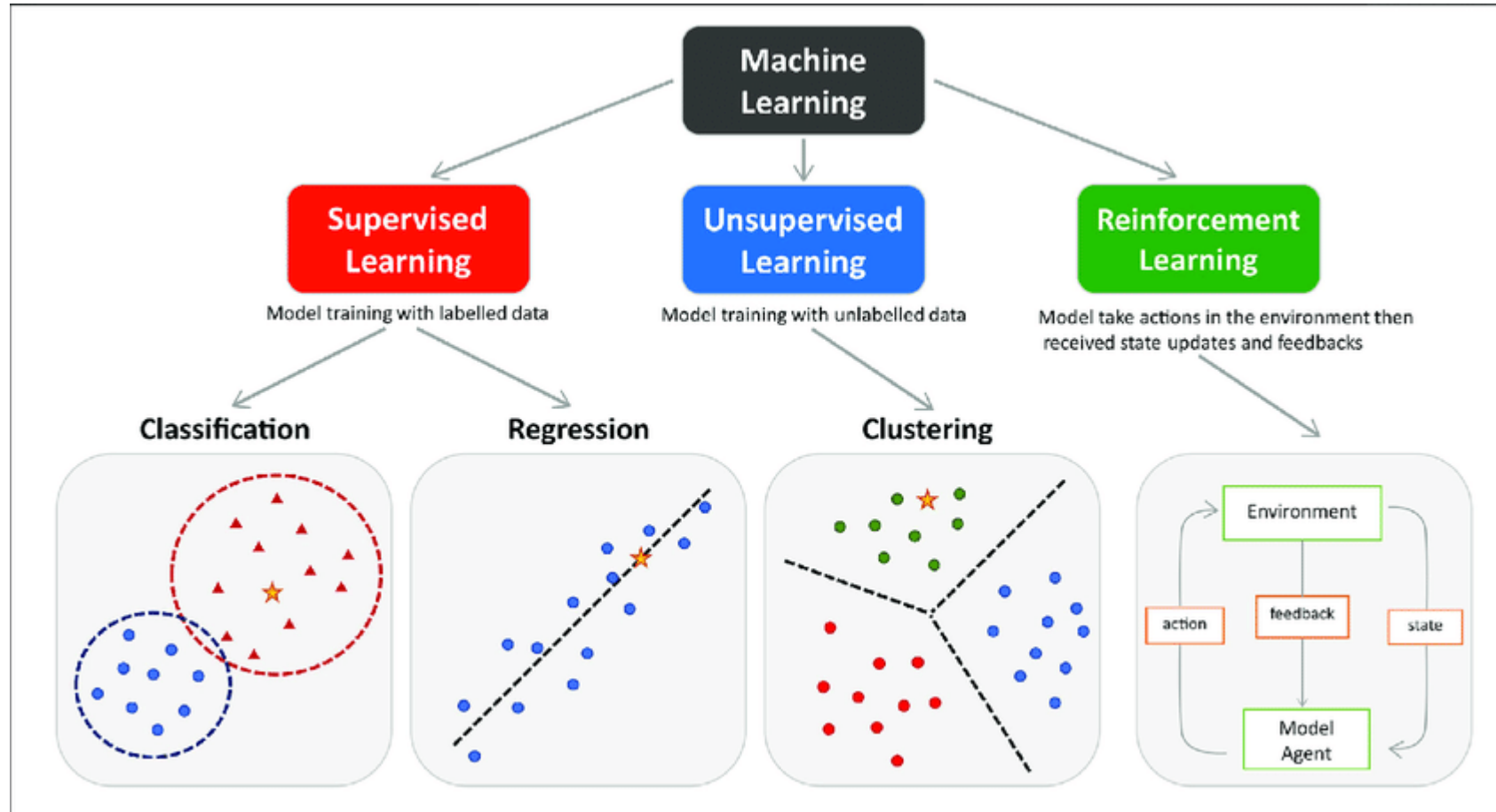
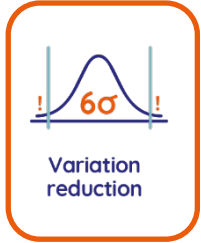
Supervised learning



Unsupervised learning



Reinforcement learning





Predictive
analytics

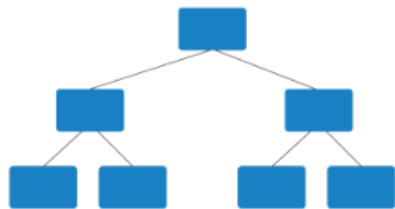
Predictive analytics

- Algoritmes (Machine Learning en Deep Learning modellen) om patronen in data te ontdekken en toekomstige uitkomsten te voorspellen

Minitab Predictive Analytics

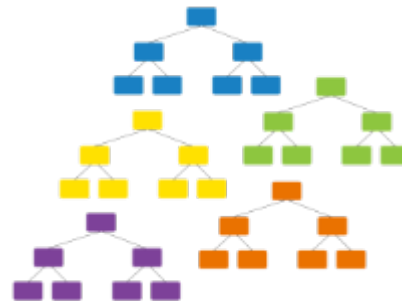
CART®

Classificatie boom:
labelt, registreert en wijst
variabelen toe in klassen



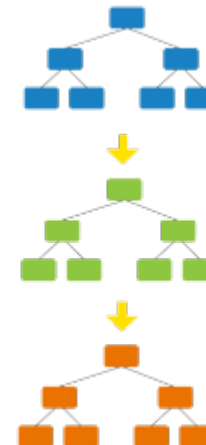
Random Forests®

Classificatie boom voor
grote datasets (veel
variabelen)



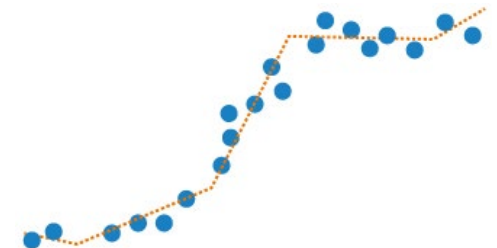
TreeNet®

Flexibele classificatie
boom met continu
aanpassingen in het model



MARS®

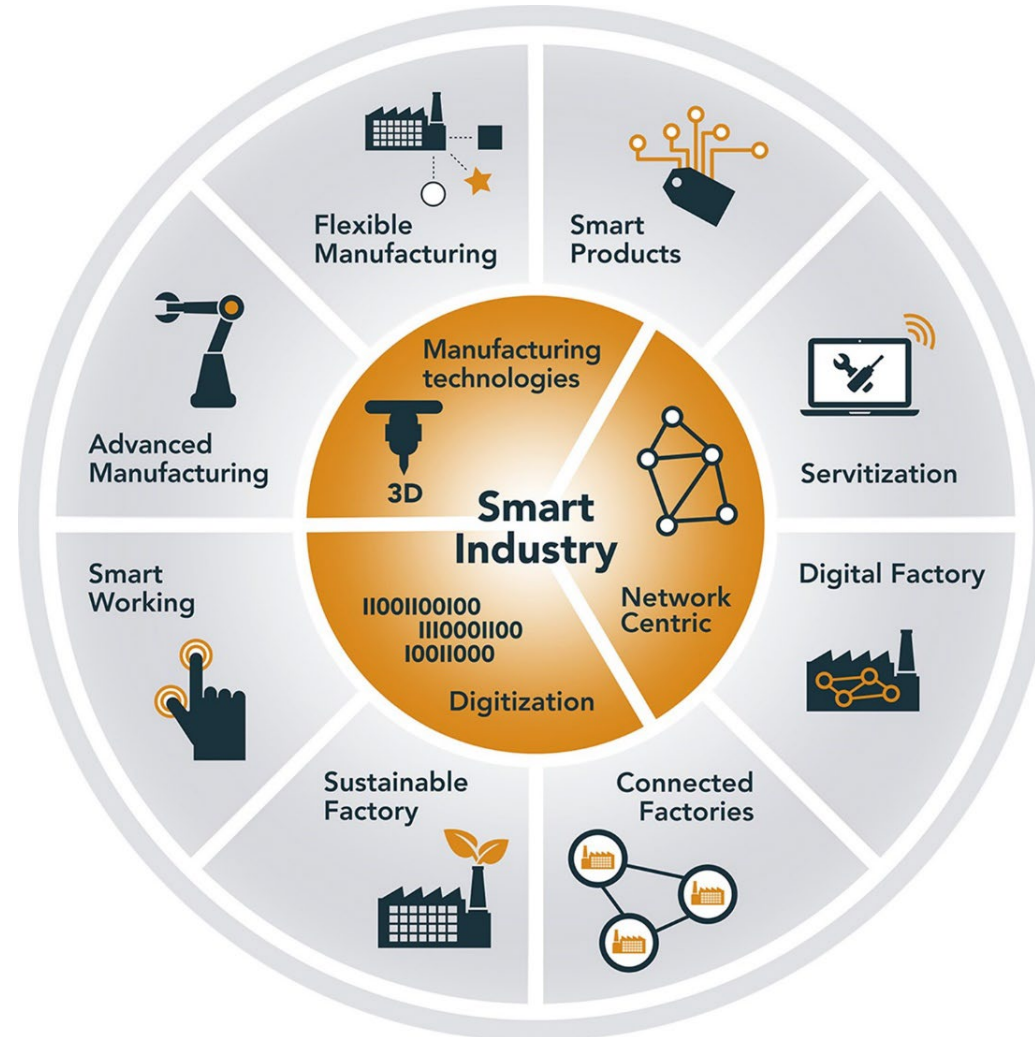
Meervoudig Regressie
model voor 'lastige'
datasets



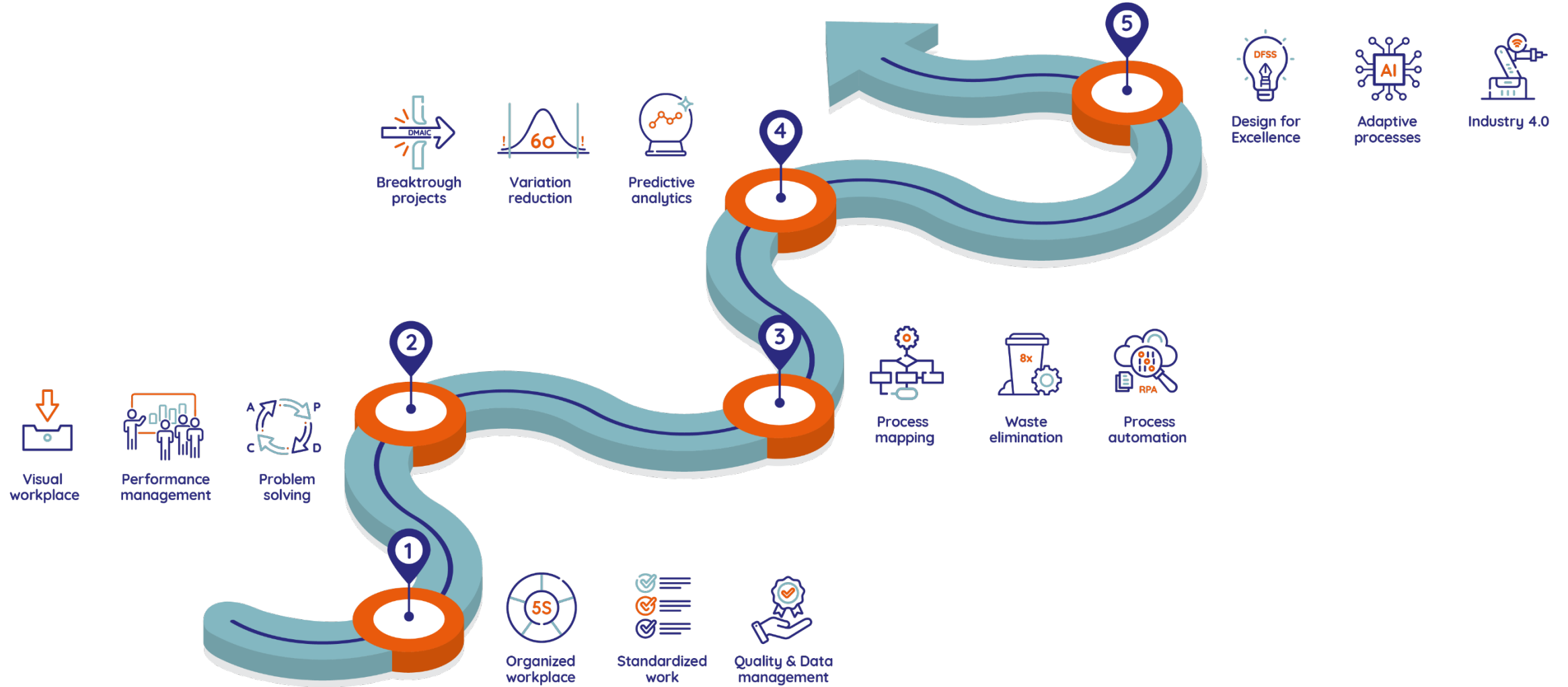
<https://www.minitab.com/en-us/solutions/analytics/statistical-analysis-predictive-analytics/>



<https://kr-asia.com/with-its-lights-off-factory-phone-manufacturer-announces-industry-4-0>



CONTINUOUS IMPROVEMENT MATURITY MODEL (CIMM) 4.0



Stand van Nederland t.a.v. Continu Verbeteren

Hartelijk dank voor deelname aan ons onderzoek.

Doel

We brengen de volwassenheid van continu verbeteren onder Nederlandse organisaties in kaart.

Aanleiding

Lean en Six Sigma worden al vele jaren toegepast in Nederland. Deze methoden hebben hun kracht bewezen. Met dit onderzoek brengen we in kaart in hoeverre continu verbeteren is geïntegreerd in Nederlandse organisaties.

Tijdsduur

Het invullen van de enquête duurt circa 9 minuten.
Je ontvangt de resultaten van dit onderzoek.

Maak kans op een teambuilding

Onder alle deelnemers aan dit onderzoek verloten wij twee keer een dag met je hele team in ons [Lean Experience Center](#), de grootste Lean-game van Nederland.

Privacy

We gebruiken jouw persoonsgegevens en antwoorden alleen voor dit onderzoek. We vragen niet naar identificeerbare bedrijfsgegevens. Als je geen informatie meer wilt, bewaren we de gegevens nog maximaal 2 maanden. Daarna verwijderen we ze uit onze systemen.



<https://nl.surveymonkey.com/r/FLBFJP8>

