WORLD CLASS MAINTENANCE

Data driven Maintenance

EIT Digital Innovation Day

Lex Besselink (MsC)
Chairman of the WCM Board

Our goal: make our partners maintenance world champions

- Maintenance
- Asset Management
- Life Cycle Management

- Competiveneness
- Safety
- Sustainability

World Class Assets

WORLD CLASS MAINTENANCE

WCM Partners

Rijkswaterstaat
Ministerie van Infrastructuur en Milieu

IBM

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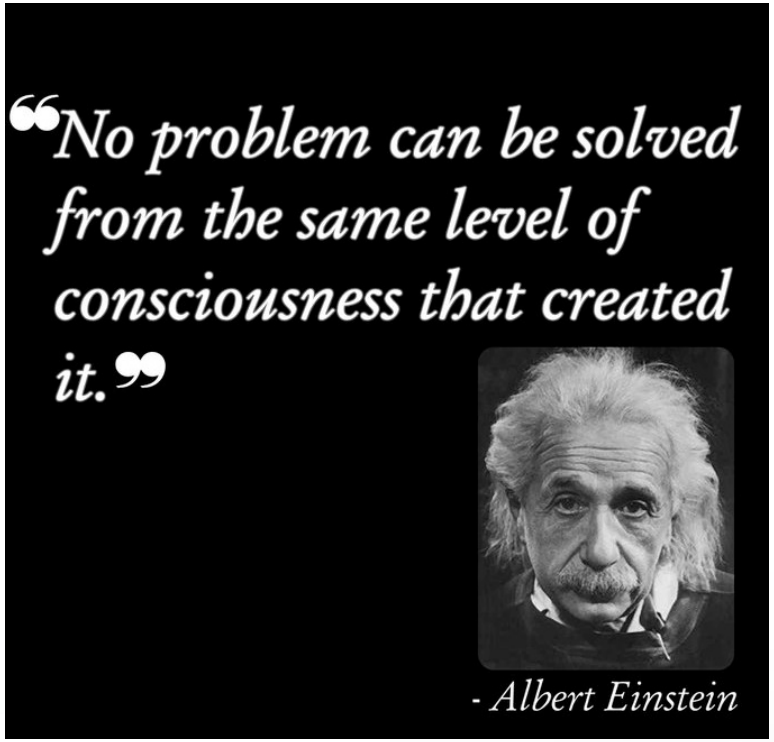
Young WCM



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We believe in

WORLD CLASS MAINTENANCE

Open Innovation

Cross-sectoral cooperation

Cooperation of companies, knowledge & education institutes and government

Fieldlabs & projects

Knowledgde and info

Lobby & politics

Network

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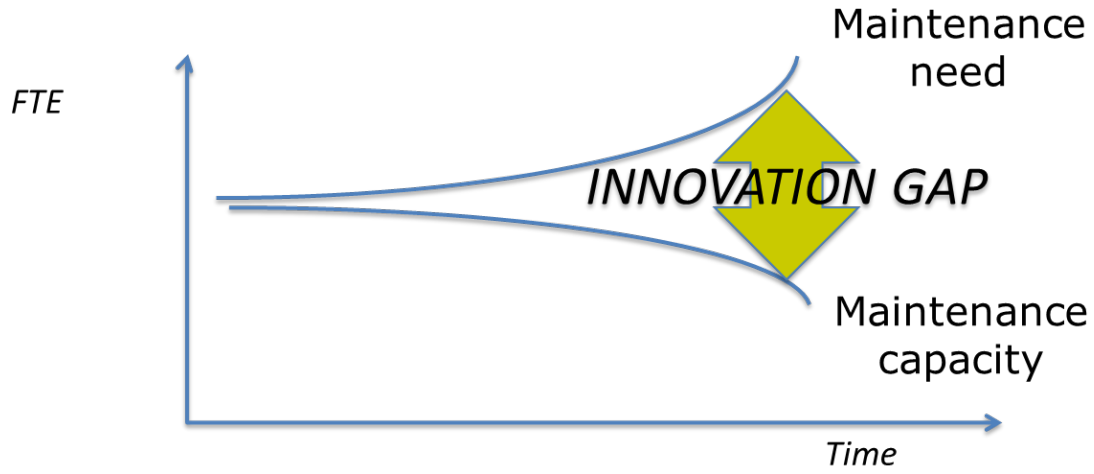
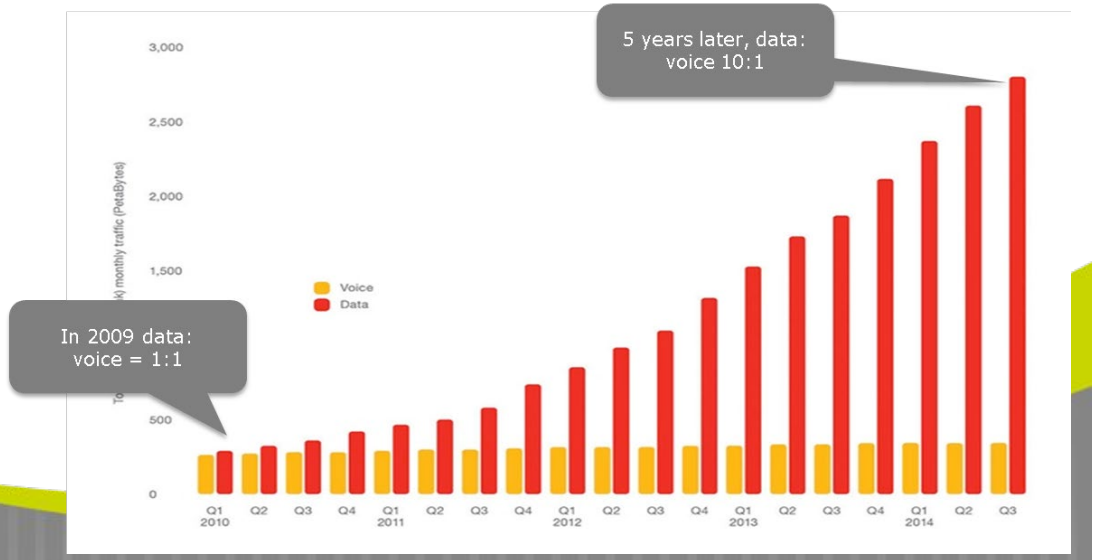
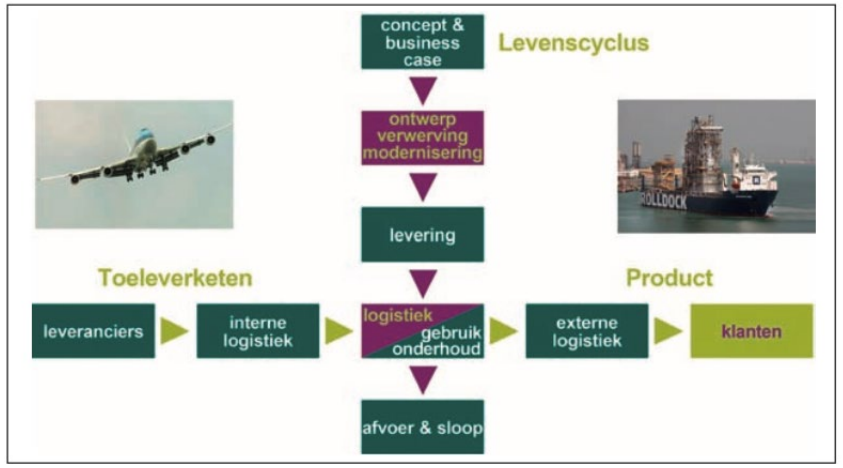
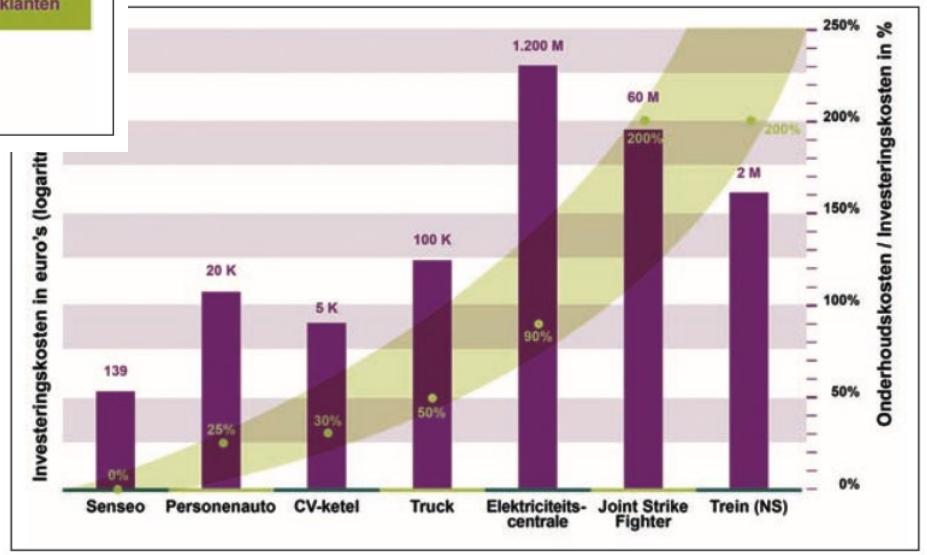
Aging assets meet digital manufacturing





Smart Moves: Asset management is of strategic importance, but underestimated





Source: van Dongen, L. (2011): *Maintenance engineering*. Inaugural lecture, Twente University

The rise of digital manufacturing in “smart maintenance”

An industrial revolution is happening as multiple new technologies converge

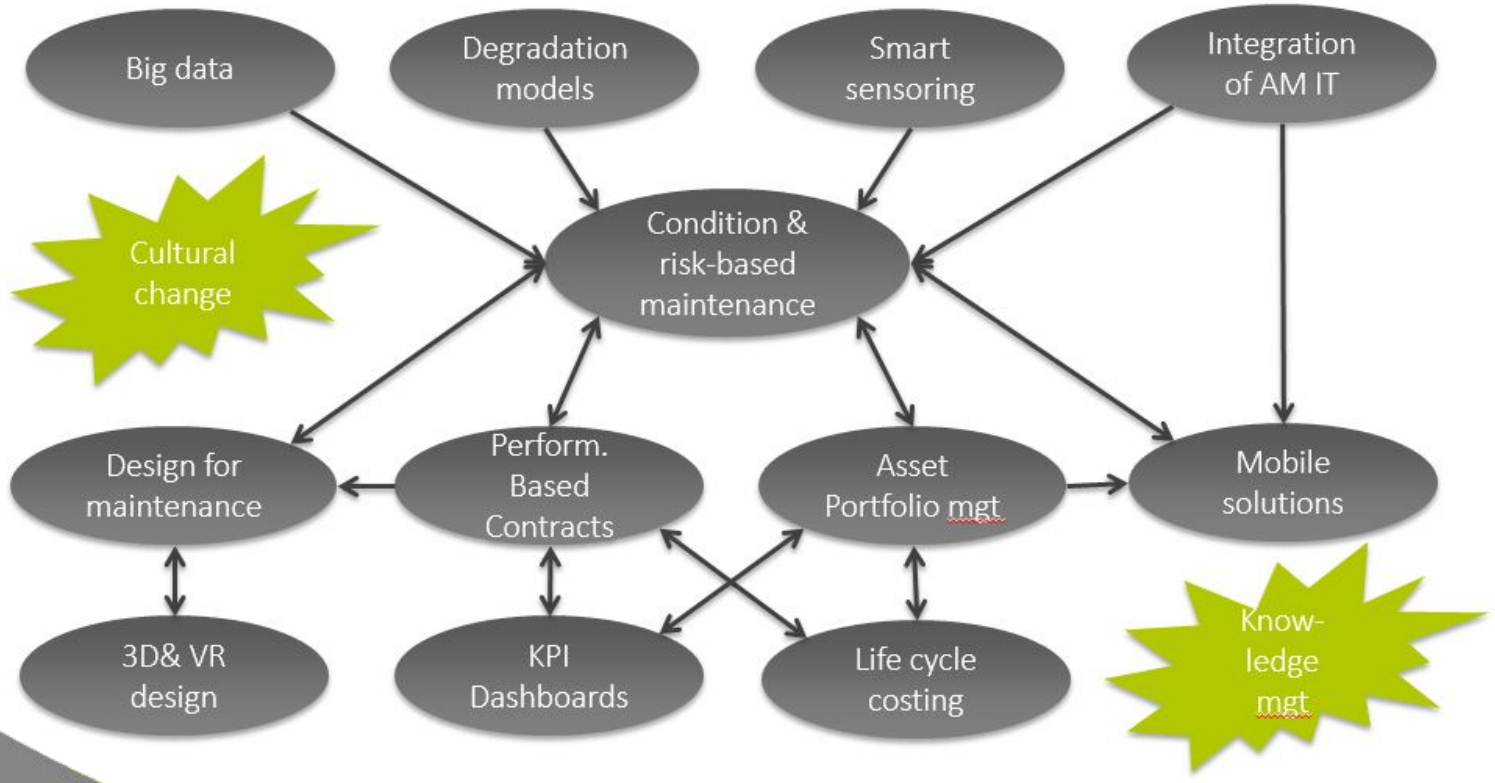
- Brilliant factories
- Extreme Machines
- Energy Everywhere
- Mapped minds
- Super materials
- Industrial internet

[Six technologies that will shape our future]

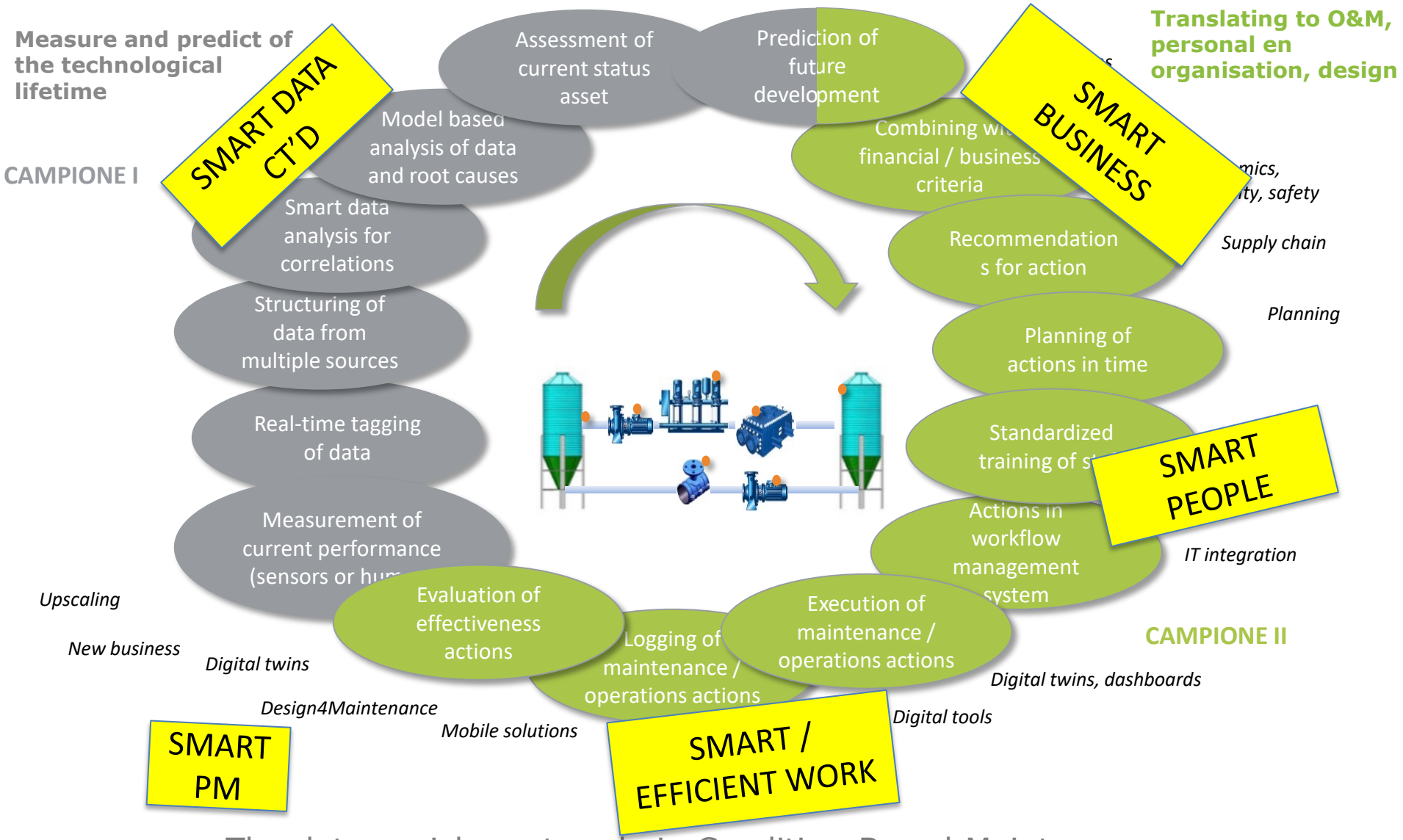
Non-technical process innovations, culture changes and data-driven in the Top-14

Rank	No.	Name	Importance	Impact
1	I24	Big-data analytics	21	5.6
2	I30	Smart sensors	21	5.0
3	I01	Cultural and behavioural change	20	6.1
4	I21	Condition and risk-based maintenance strategies	20	4.7
5	I25	Design for maintenance	20	5.7
6	I03	Knowledge management	16	5.5
7	I08	Interfacing AM IT systems	16	4.8
8	I19	Degradation Models	16	5.0
9	I18	Life cycle costing	15	4.8
10	I10/29	Performance dashboards	14	4.4
11	I14	Asset portfolio management	14	5.0
12	I07/06	Performance contracting	13	4.0
13	I27	Mobile solutions	12	4.8
14	I05	3D design and virtual reality	10	4.4

Deep interdependencies between the top-14 maintenance innovations



The focus areas are covering the whole CBM cycle



The data-enrichment cycle in Condition-Based Maintenance

Towards zero downtime

De Lerende Steen

POWERING smart industry Fieldlab ZEPHYROS

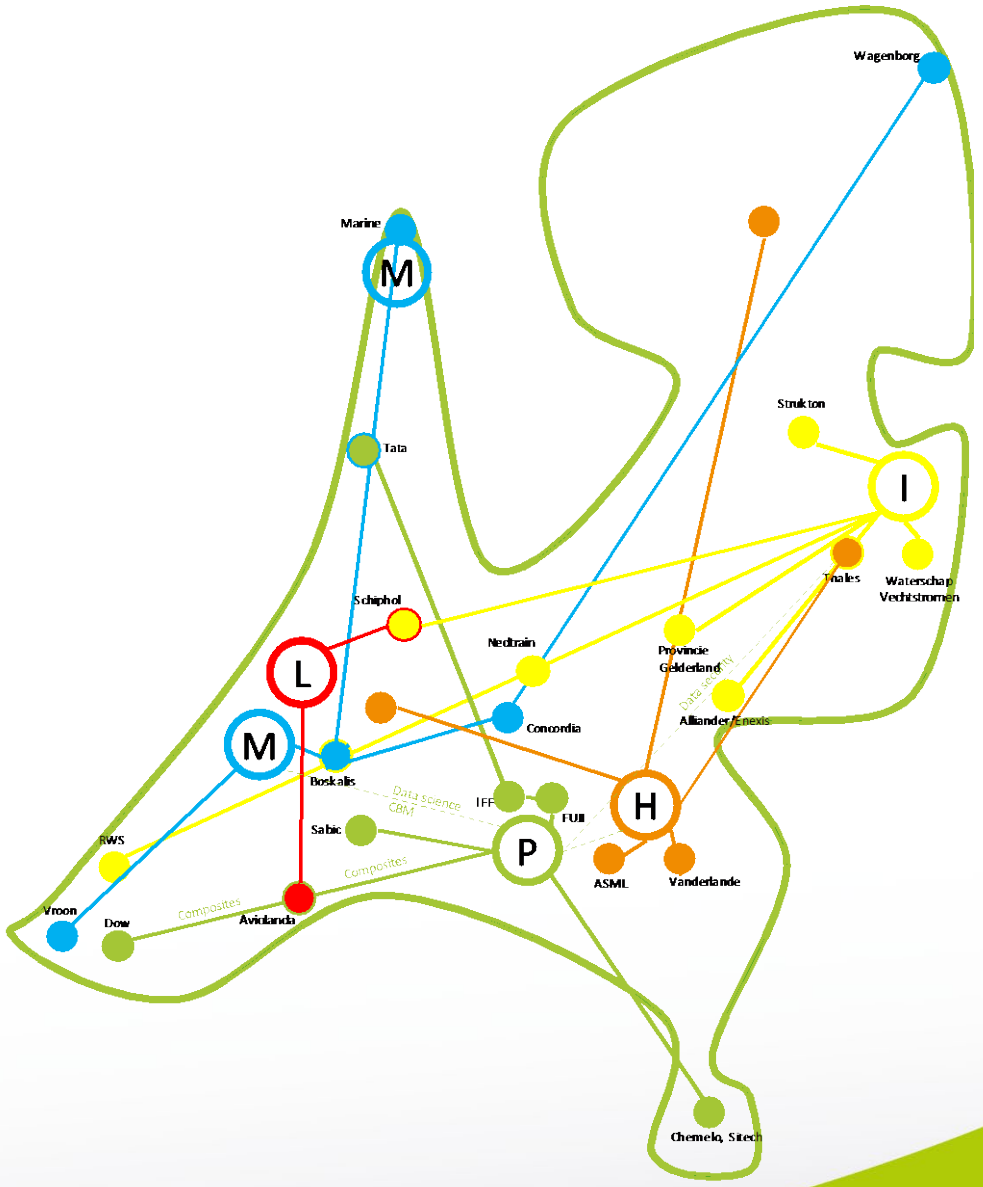
POWERING smart industry Fieldlab CAMPIONE

POWERING smart industry Fieldlab CAMINO

Fieldlab AMICI

POWERING smart industry Fieldlab SMASH

Fieldlab CAPELLA



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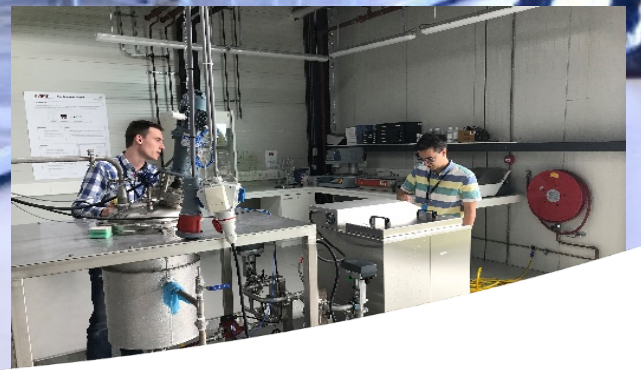
Fieldlab CAMPIONE

- First Smart Industry Fieldlab in The Netherlands
- 100% predictive maintenance for the process industry
- 36 partners
- 12 MEURO
- 4 years



Fieldlab CAMPIONE

smart industry
DUTCH INDUSTRY FIT FOR THE FUTURE

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Fieldlab Camino
Testfacility Lock at Eefde

Rijkswaterstaat
Ministry of Infrastructure and the Environment

mobilis
TBI infra

SPIE

ifm

KE-works

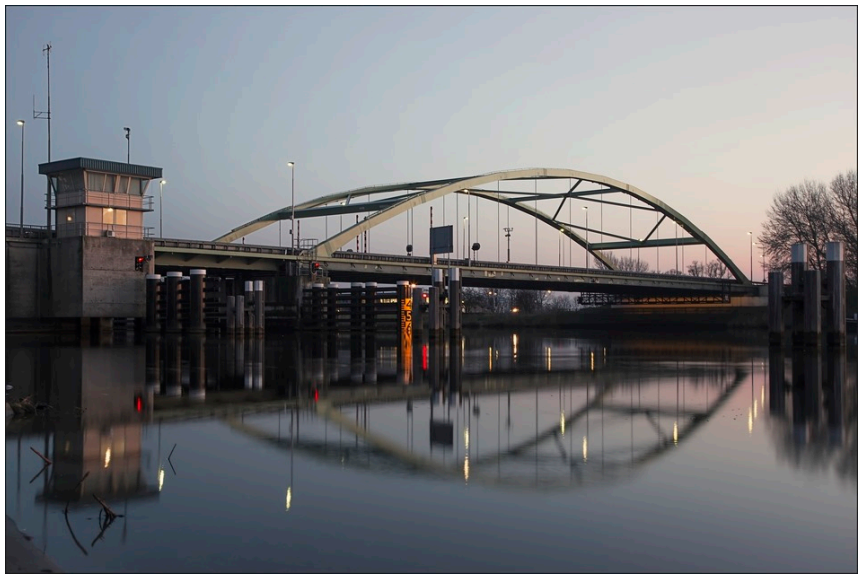
enerGQ™

C·Cube
international bv

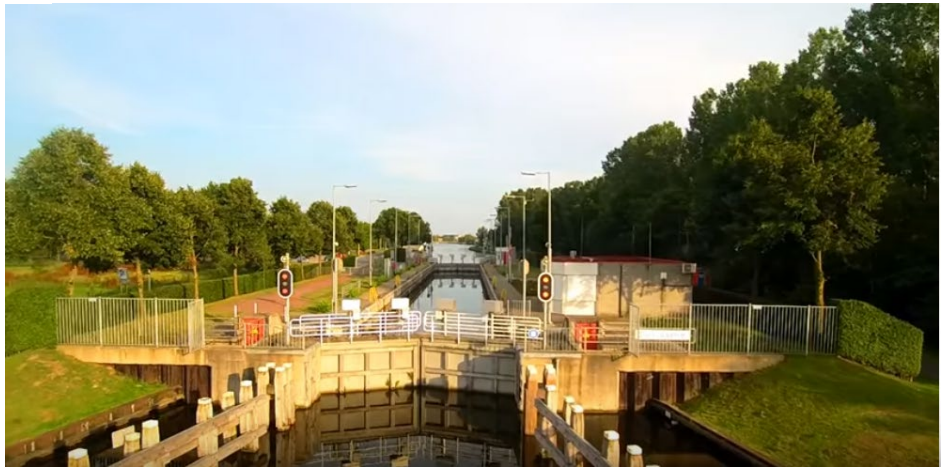
UNIVERSITEIT TWENTE.

In total
42 objects
in scope

provincie Overijssel



Focus 1: Zwartewaterbridhe - Hasselt



Focus 2: Bridge/lock Aadorp

UNIVERSITY OF TWENTE.

SPIE

ifm

enerGQ™
more awareness. better business.

Iv-Infra

StabiAlert

BIM ALL
Building value

Test oven for waste disposal at TNO/ECN in Petten

Fieldlab The Learning Stone

Smart Maintenance Skillslab

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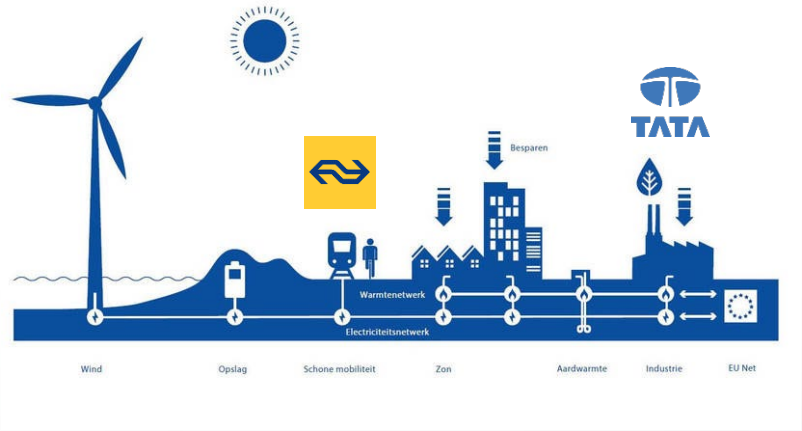
Case Challenge – Energy Transition



ONDERHOUD
WCM JAAREVENT
POSITIEVE IMPACT OP DE ENERGIETRANSITIE 08|10|2019

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Wrap-up

- Maintenance isn’t anymore a cost factor but evenmore added value
- There are now good sensors
- Internet of things and big data
- Predictive maintenance isn’t a wish; it is used now
- Fieldlabs are easily accesible
- Proffesional schools are teaching the employee of the future data analytics

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Thanks for your time
www.worldclassmaintenance.com