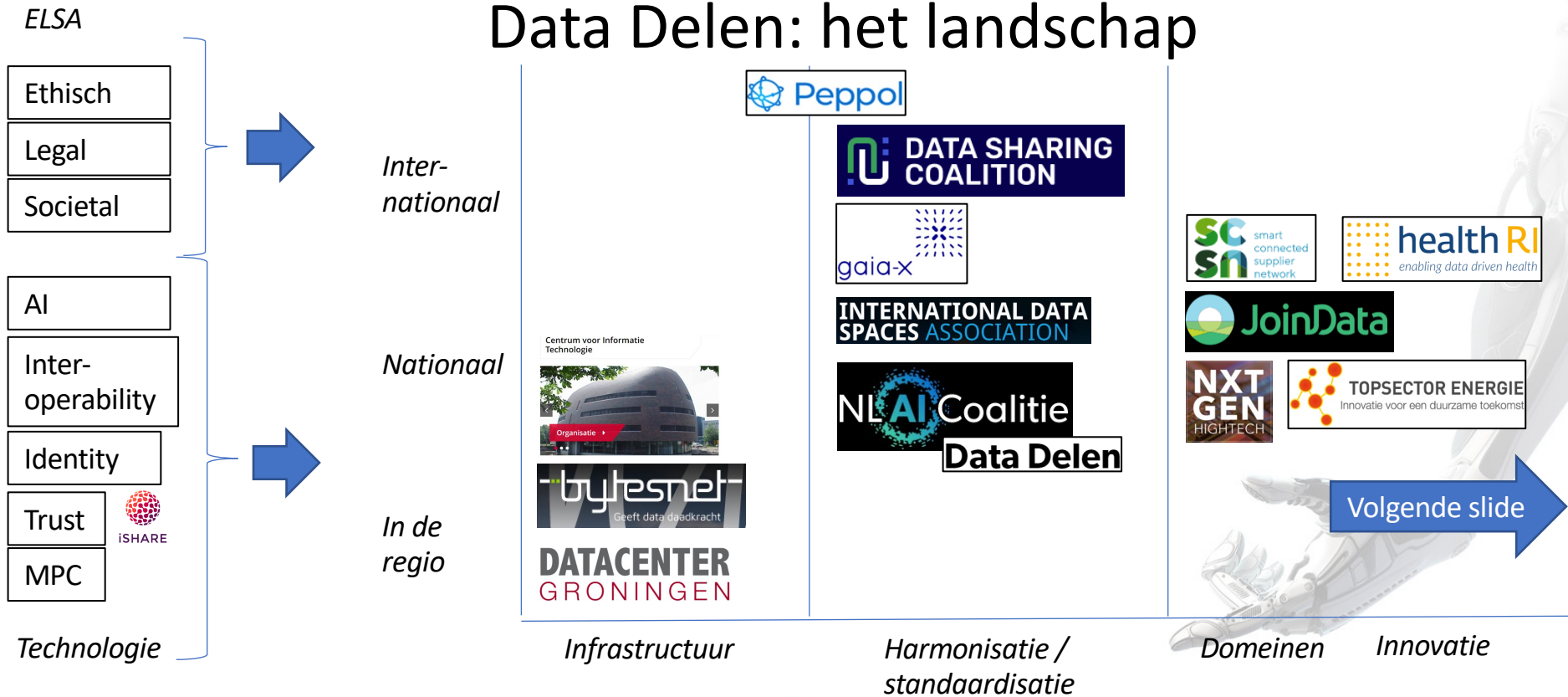




Data delen

Gert Kruithof

Data Delen: het landschap

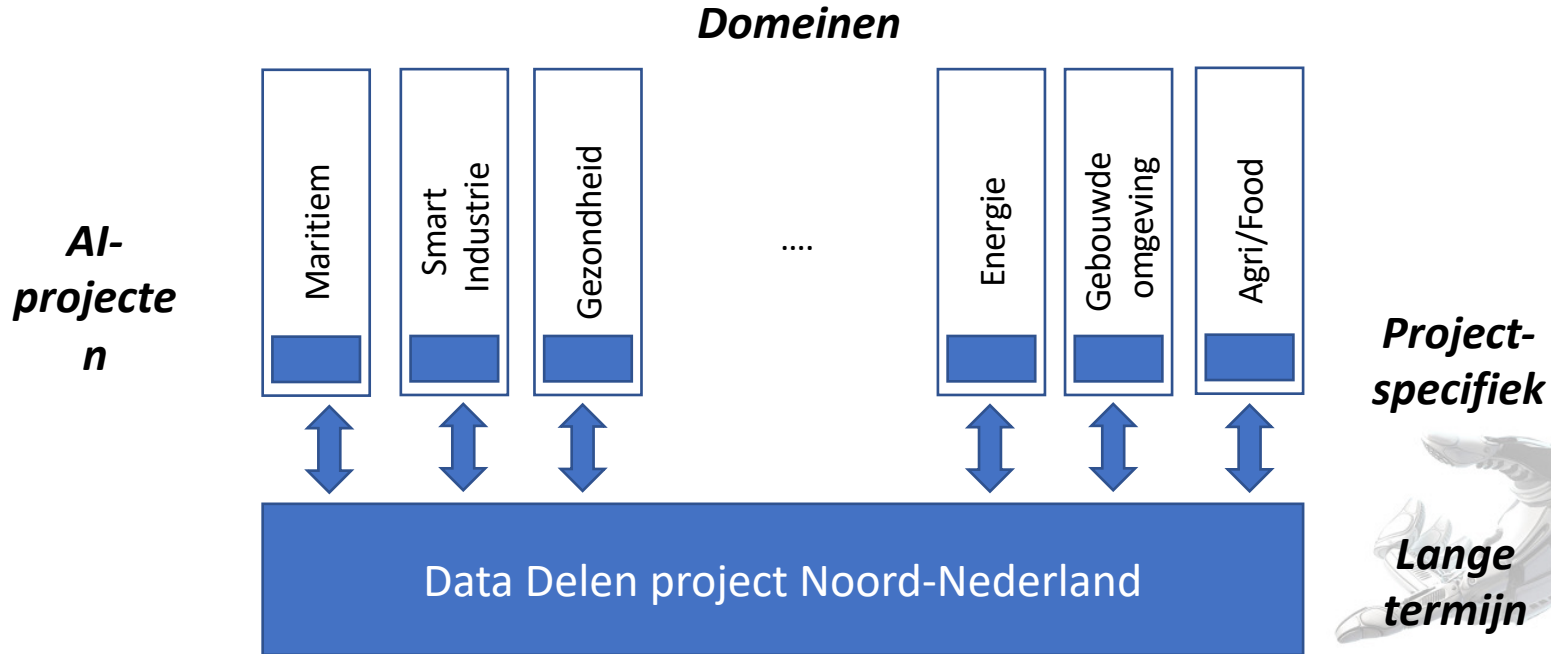


Data Delen: wat is er in de regio?



Partner van de NL AIC

Data delen Noord-Nederland next steps



A photograph of an industrial factory floor. In the center, there's a large piece of machinery with a glowing orange-red molten metal stream flowing through it. To the right, another part of the machinery is also glowing with molten metal. The background shows various pipes, cables, and industrial equipment. The overall scene is dark, with the primary light source being the intense heat of the molten metal.

Met Predictive Maintenance op weg naar 0-ongeplande stilstand

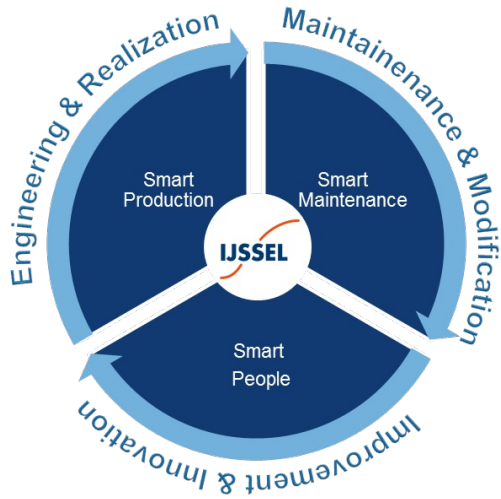
Break out sessie 3: Data Delen met AI
AI Congress Groningen, 28-10-2022
Mark Peters & John Deken

The logo for IJssel, featuring the word "IJssel" in a bold, white, sans-serif font. Above the letters "I" and "J" are two curved orange lines that sweep upwards and to the right, resembling a stylized wave or a bridge structure.

IJSSEL

Your partner in sustainable production improvement

IJssel Technologie



Mission:

Give Industry Players a Competitive Edge

Organization:

450 employees, 6 locations in Netherlands and 1 in UK

Markets:

Manufacturing-, Food- & Process Industry

Services:

Realize, Maintain & Improve Production

Unique combination:

New Technologies/Craftsmanship/Business Improvement



From casting iron at 1.600°C until coil winding at 70 km/hour



IJssel in Broek op Langedijk

Contract reviseren rollen Tata Steel

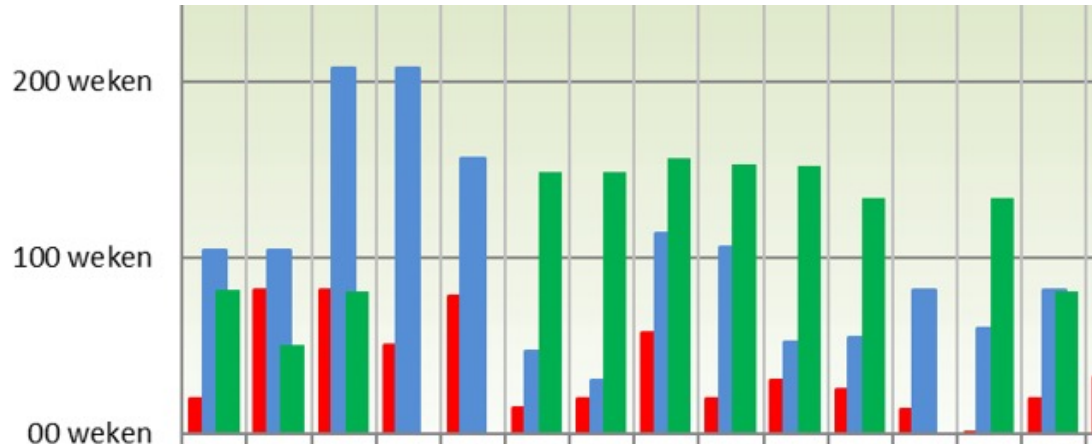


- Sinds 2011: Singel point of contact / One stop shop.
- Ca. 1000 rol varianten.
- Gemid. 3000 rol revisies/ jr.
- 7 Werkeenheden (WE).
- Ca. 75 contactpersonen bij Tata Steel
- **2011-2013 Het basisproces:** een betrouwbaar rolrevisieproces, betekent op tijd leveren volgens specificaties.
- **2015 Continu verbeteren:** verlengen van de rolstandtijd in samenwerking met de OH-specialisten van Tata.
- **2018 Innoveren:** met Industrie 4.0, ontwikkelen naar voorspelbare rolstandtijden. (o.a. Techport)

Standardization Roller Maintenance



Tool life extension, Improvement projects

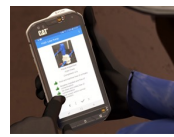
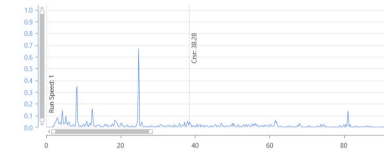


Tool life for different roller types

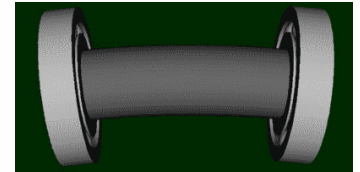
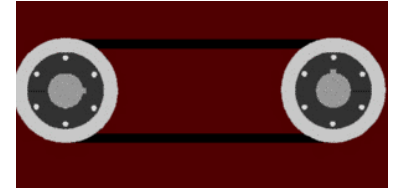
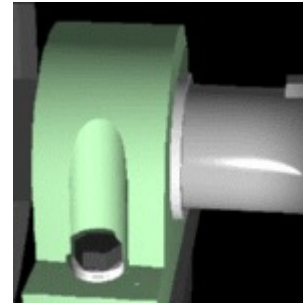
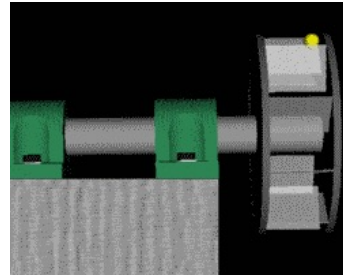
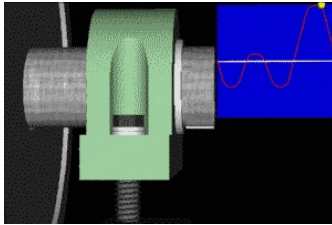
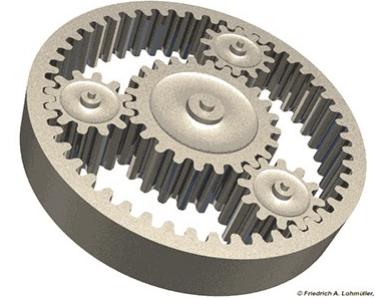
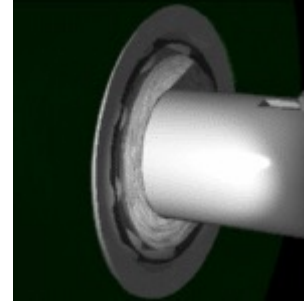
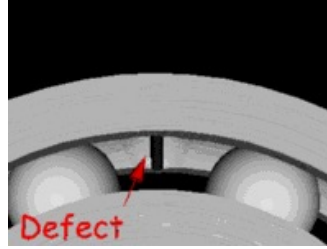
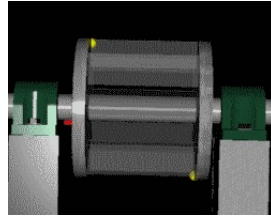
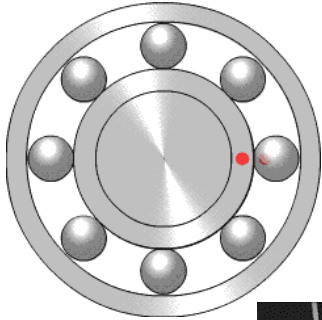
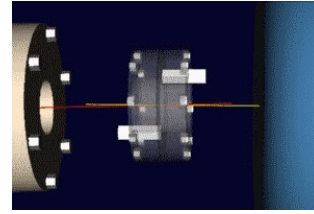
- Average Tool life
- Target tool life (best performer)
- Achieved tool life
- Green above red = improved tool life

On-line monitoring

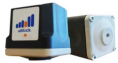
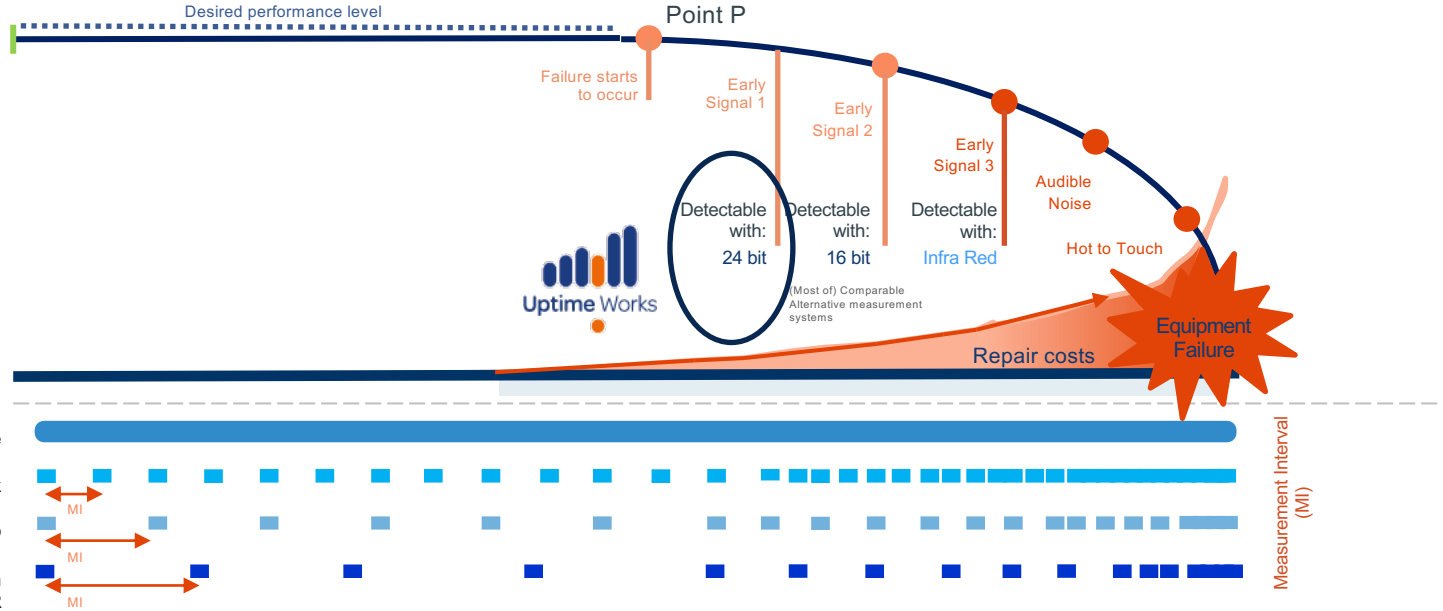
Condition Based Predictive Maintenance





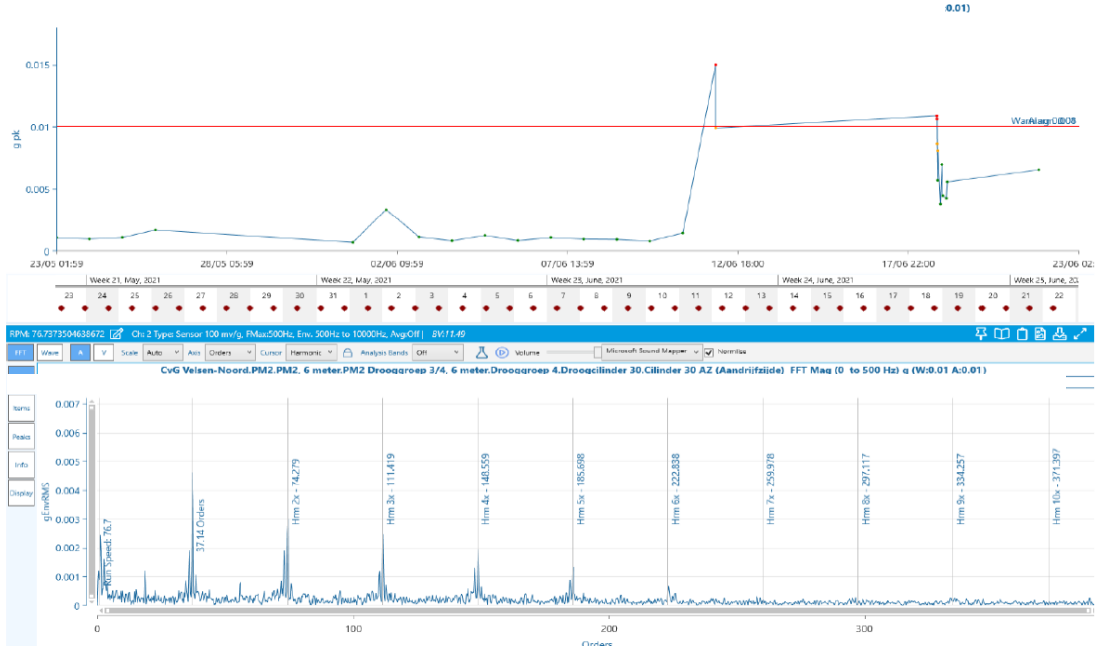


P-F Curve



Vibration Data

Spectrum/Trend



Prepare for AI

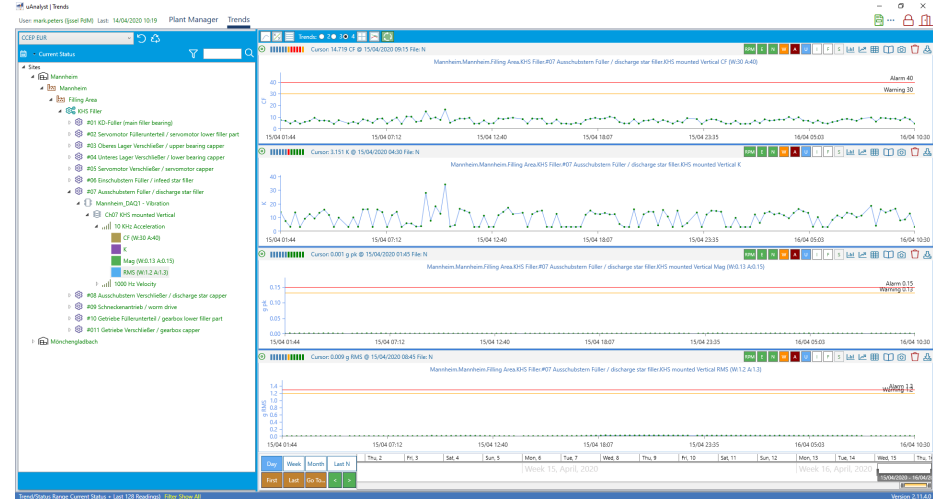
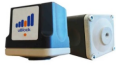
Standardized measurements

- Standardized vibration measurements:

1. Acceleration (RMS g)
2. Velocity (ISO)
3. Magnitude
4. Crest factor
5. Kurtosis

- Standard addable measurements:

1. RPM
2. Temperature
3. Current
4. Oil quality
5. Integration with other process data

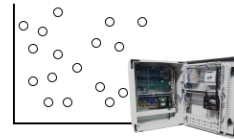


Understanding the Condition Monitoring process

Using our workflow to research & develop AI

1. **Collecting Measurements**
2. Detecting Anomalies/Alarms
3. Analyzing the Selection
4. Reporting findings
5. Improvement process

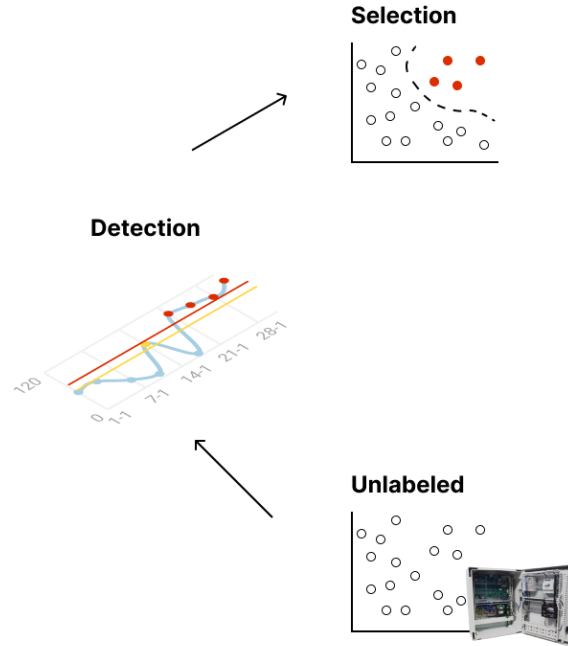
Unlabeled



Understanding the Condition Monitoring process

Using our workflow to research & develop AI

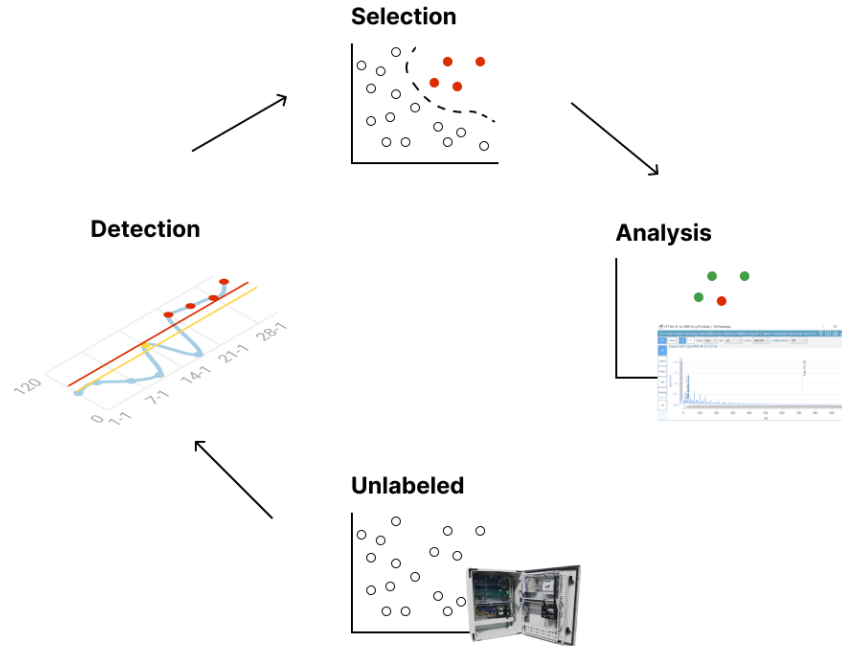
1. Collecting Measurements
2. Detecting Anomalies/Alarms
3. Analyzing the Selection
4. Reporting findings
5. Improvement process



Understanding the Condition Monitoring process

Using our workflow to research & develop AI

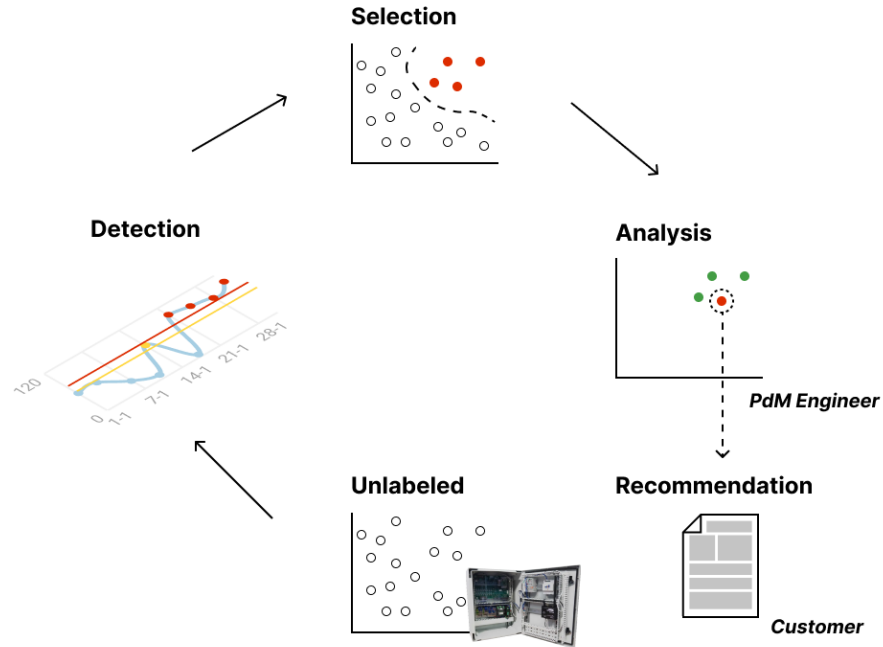
1. Collecting Measurements
2. Detecting Anomalies/Alarms
3. Analyzing the Selection
4. Reporting findings
5. Improvement process



Understanding the Condition Monitoring process

Using our workflow to research & develop AI

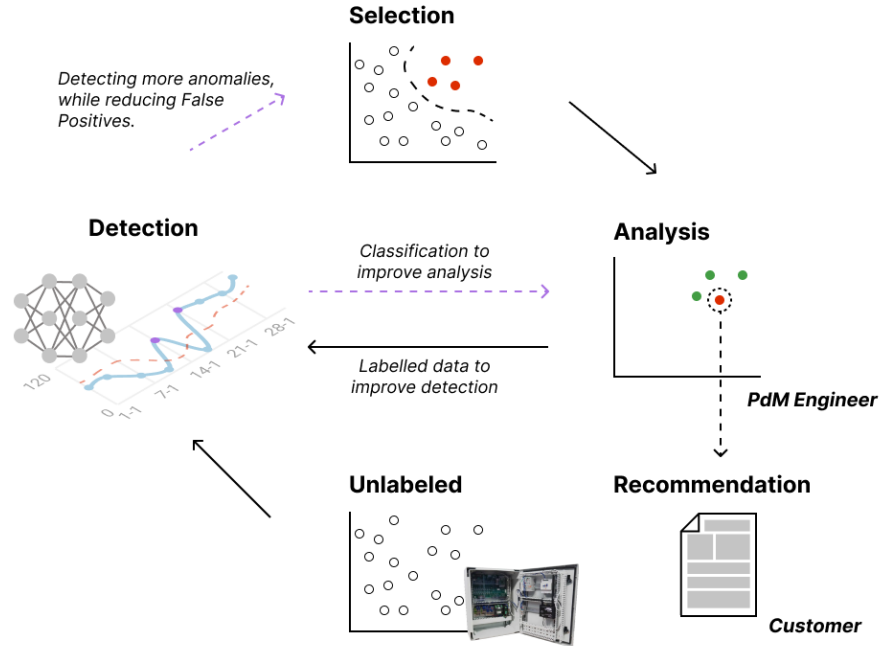
1. Collecting Measurements
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3. Analyzing the Selection
4. Reporting findings
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Understanding the Condition Monitoring process

Using our workflow to research & develop AI

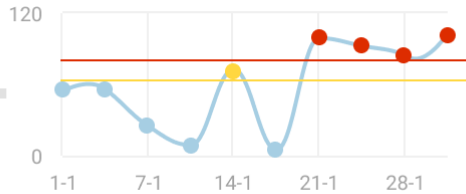
1. Collecting Measurements
2. Detecting Anomalies/Alarms
3. Analyzing the Selection
4. Reporting findings
5. Improvement process



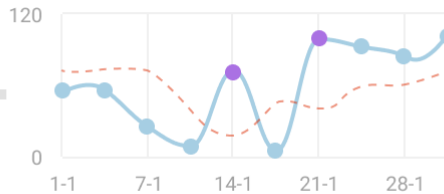
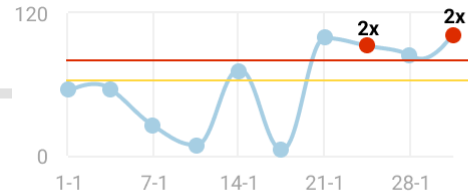
Roadmap for Anomaly Detection

From improving efficiency towards seeing more.. earlier.

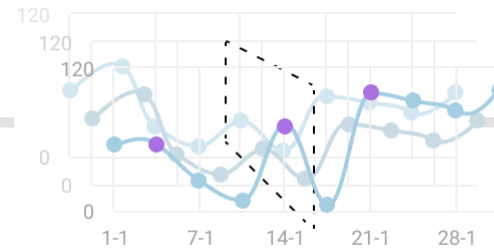
Manual Alarm Limits



Smart Features



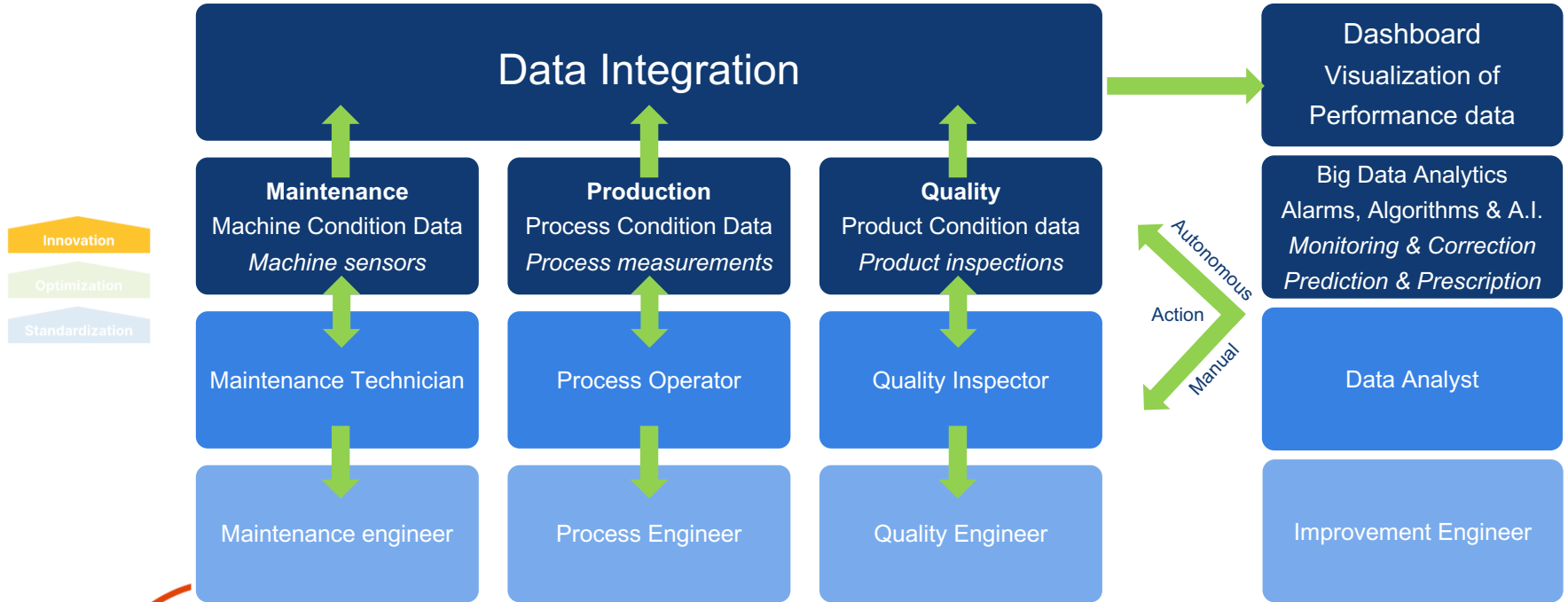
Trend-based Anomaly Detection



Complex Anomaly Detection

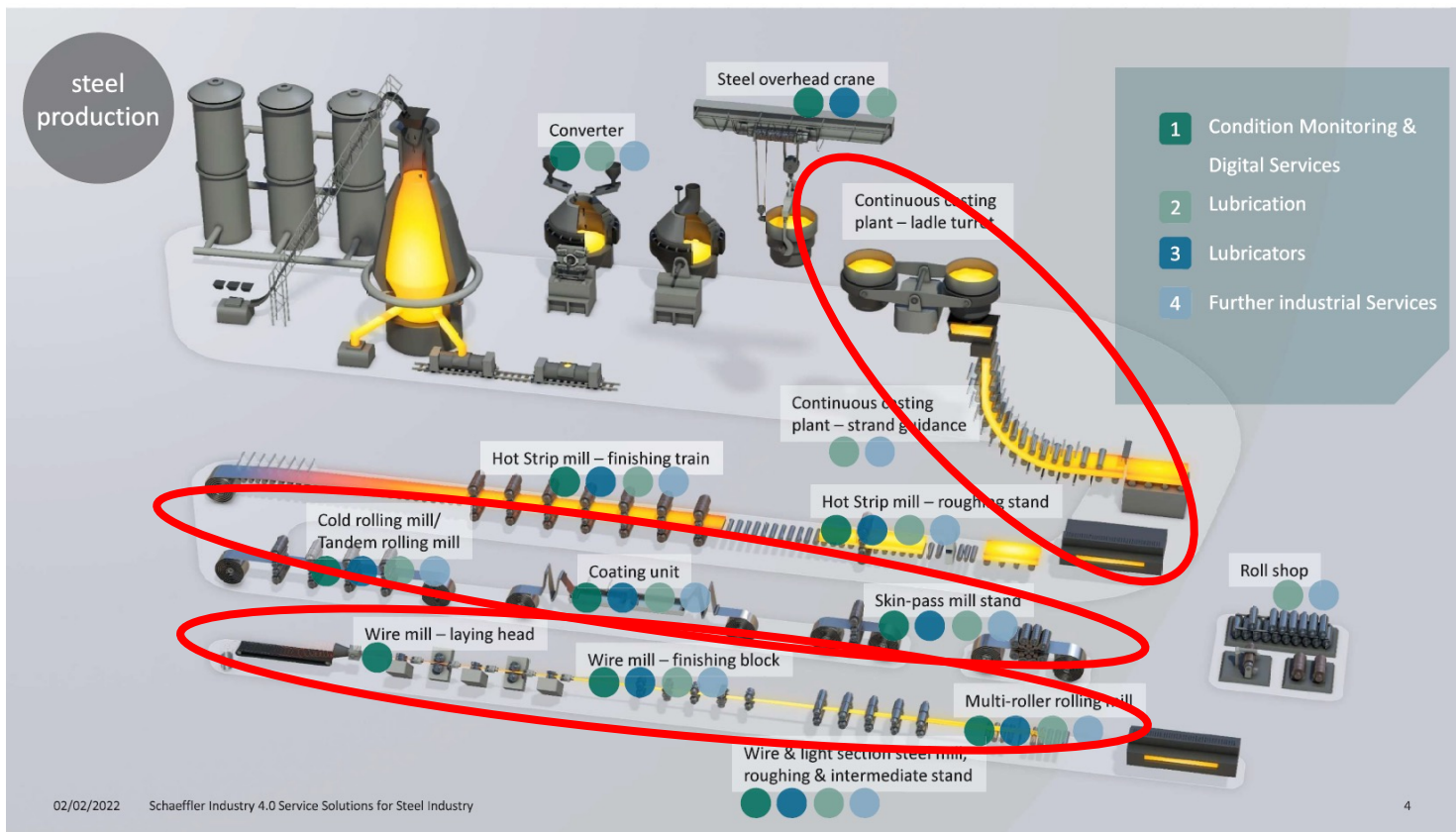
Big Data optimizes OEE

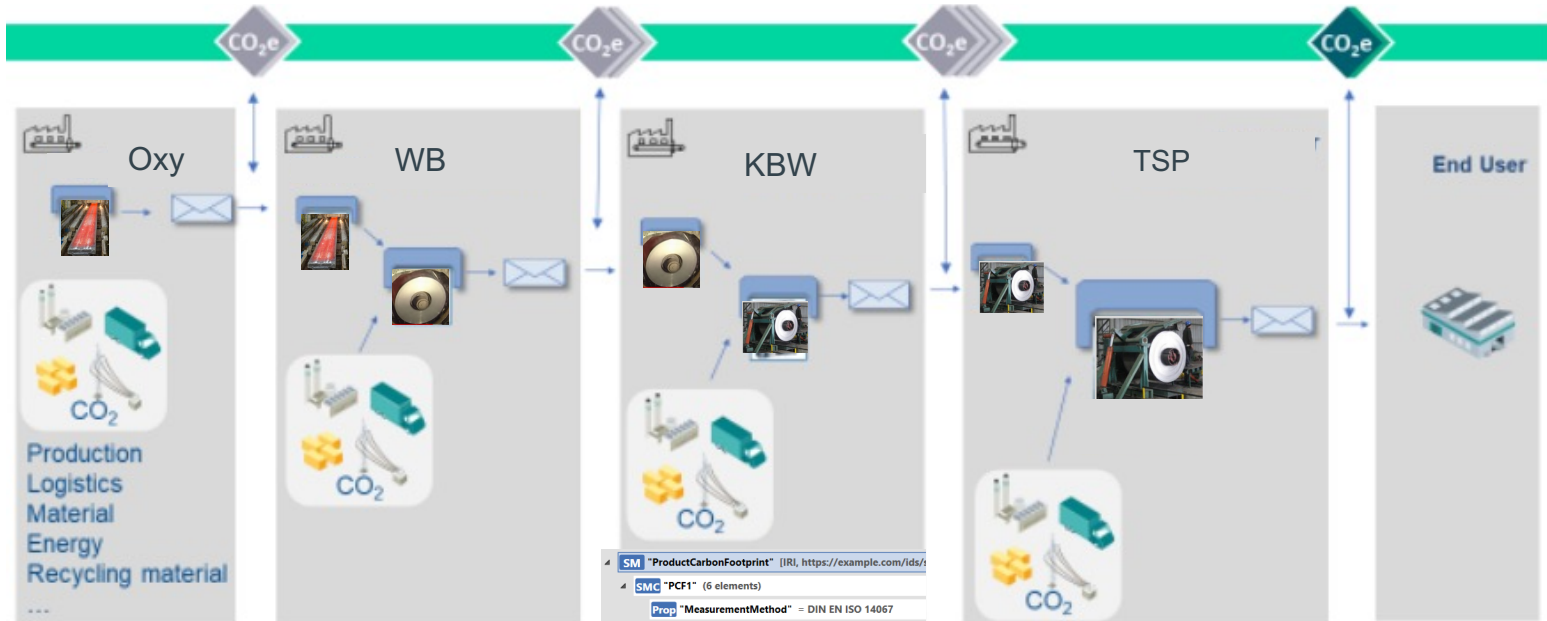
Overall Equipment Effectiveness



4

Position of the rollers in the steel production proces (BB22)





```

4 SM "ProductCarbonFootprint" [IRI, https://example.com/ids/
4 SMC "PCF1" (6 elements)
  Prop "MeasurementMethod" = DIN EN ISO 14067
  Prop "CO2eq" = 0.018
  Prop "LifeCyclePhase" = Production BB22
  Prop "Reference" = Piece
  Prop "GoodsTransferPlace" = IJmuiden
  Prop "Unit" = 1
4 SMC "PCF2" (6 elements)
  Prop "MeasurementMethod" = PEP
  Prop "CO2eq" = 0.019
  Prop "LifeCyclePhase" = Logistics BB22
  Prop "Reference" = Piece
  Prop "GoodsTransferPlace" = IJmuiden
  Prop "Unit" = 1
  
```



Fabriek

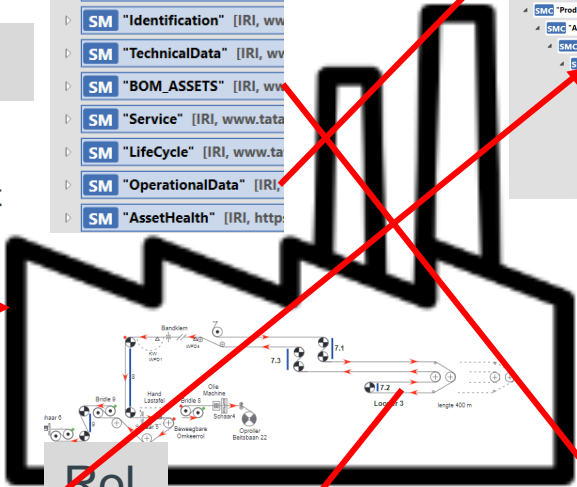
Status
Aandachtspunt



Coils

Eigenschappen
Co2

AAS "CoilShell" [Custom, 123456]
SM "Identification" V1.0 [Custom, ...]
SM "ProcessRefs" V1.0 [Custom, ...]
SM "MaterialData" V1.0 [Custom, ...]
SM "ProductConditions" [IRI, ...]
SM "ProductCarbonFootprint" [IRI, ...]



AAS "BB22" [Custom, www.tata]
SM "Nameplate" [IRI, www.tata]
SM "Identification" [IRI, www.tata]
SM "TechnicalData" [IRI, www.tata]
SM "BOM_ASSETS" [IRI, www.tata]
SM "Service" [IRI, www.tata]
SM "LifeCycle" [IRI, www.tata]
SM "OperationalData" [IRI, www.tata]
SM "AssetHealth" [IRI, http://www.tata]

SM "OperationalData" [IRI, www.tata.com/ids/sm/8412_7012_0102_6934]
PLOT "Plotting of data ready"
PROP "CurrentStatus" = Start [weeke]
PROP "OperationHoursTotal" = 22
SMC "ProductionPerformance" (1 elements)
SMC "AmountOfSteelProduced_2022_01" (134 elements)
SMC "Coil_012189" (7 elements)
PROP "Coil" = www.tataeurope.com.012589
PROP "ProductionStartDateTime" = 2022-01-02T08:05:07
PROP "ProductionEndDateTime" = 2022-01-02T08:15:07
PROP "CoilWidth" = 850
PROP "CoilThickness" = 2
PROP "CoilDescription" = Is er een omschrijving van de Coil?
PROP "CoilCode" = Heeft een coil een code?

Rol



Slijtage/prestatie

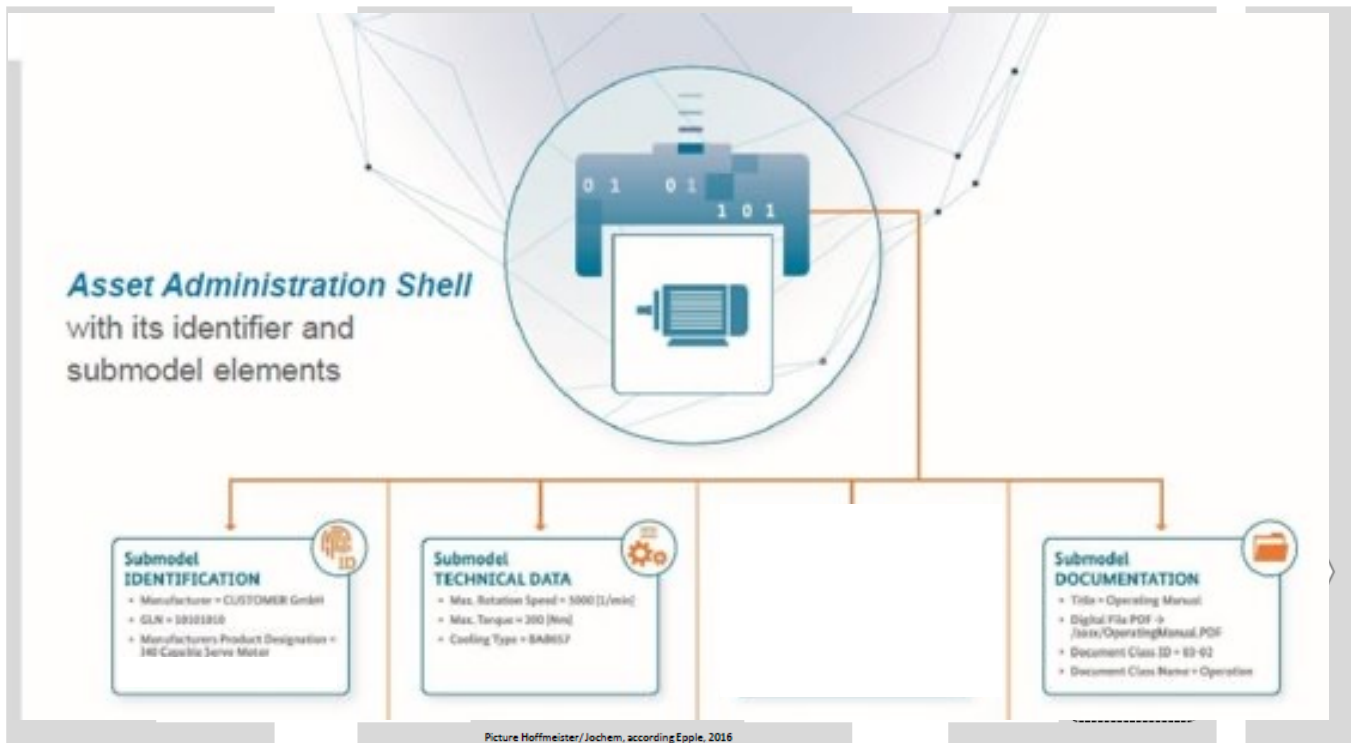
Verwachting

stdT

Product mix

AAS "Bridlerol_b22_2027716_1" [Custom, ...]
SM "Nameplate" [IRI, https://www.tata]
SM "Identification" [IRI, https://www.tata]
SM "TechnicalData" [IRI, https://www.tata]
SM "BOM_ASSETS" [IRI, https://www.tata]
SM "Service" [IRI, https://www.tata]
SM "LifeCycle" [IRI, https://www.tata]
SM "AssetHealth" [IRI, www.tata]

1 Voorbeeld AAS (Engineerings Informatie van product types)

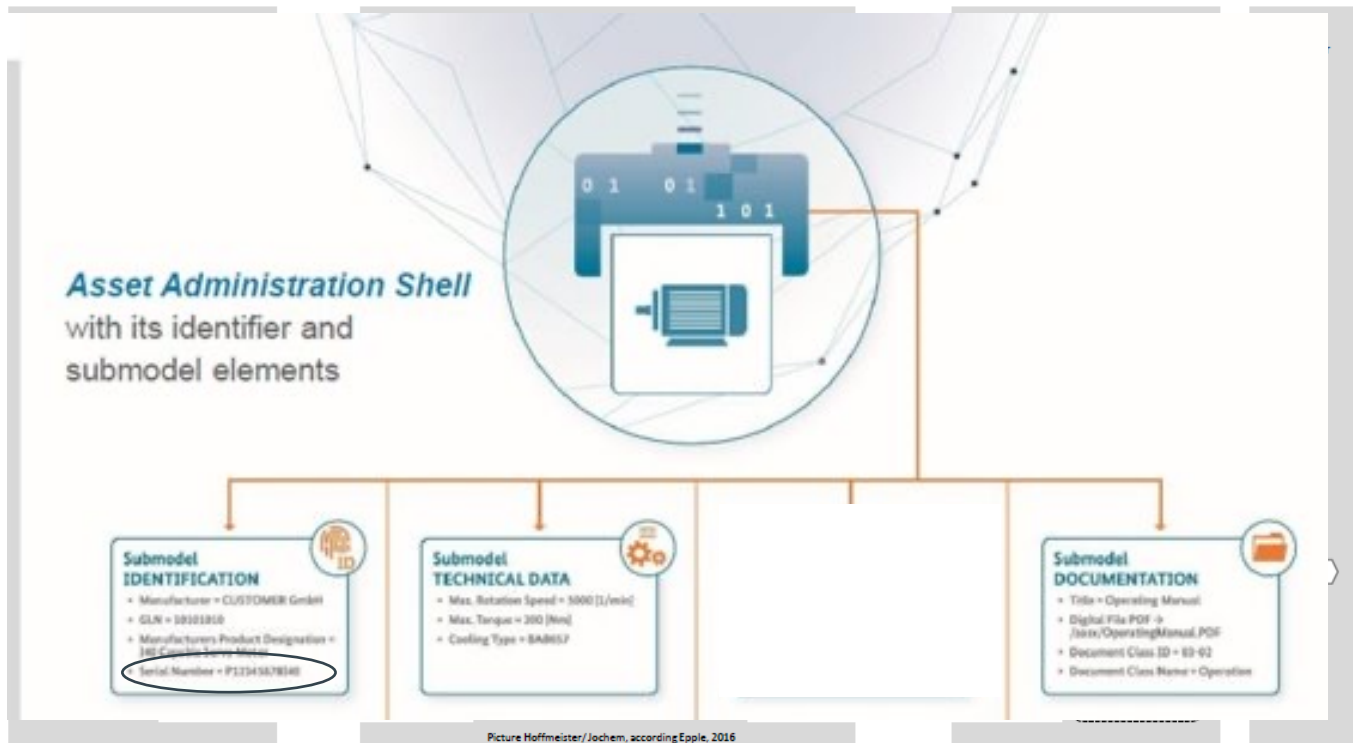


- 1
- Een leverancier heeft 2 producten: een aandrijving en een motor.
 - Ontwerpinformatie van deze twee producten is opgeslagen in de administration shells op zijn systeem

- 2
- De leverancier wil belangrijke informatie delen met de OEM'r, b.v.. Catalogus informatie van deze twee product types.
 - De leverancier maakt deze informatie beschikbaar voor de OEM'r d.m.v. een API in combinatie met IDS

- 3
- De OEM'r importeert deze informatie in zijn admin shells, en ontwerpt daarmee een composite product.
 - He kan zijn composite produkt engineeren met deze “virtual twins”.

1 Voorbeeld AAS (van ontwerp naar fysiek product. Een type wordt een instance)



4

- De OEM'r bestelt de producten bij de leverancier.
- De leverancier maakt van elke geproduceerde motor en aandrijving een instance van elk geproduceerde product.

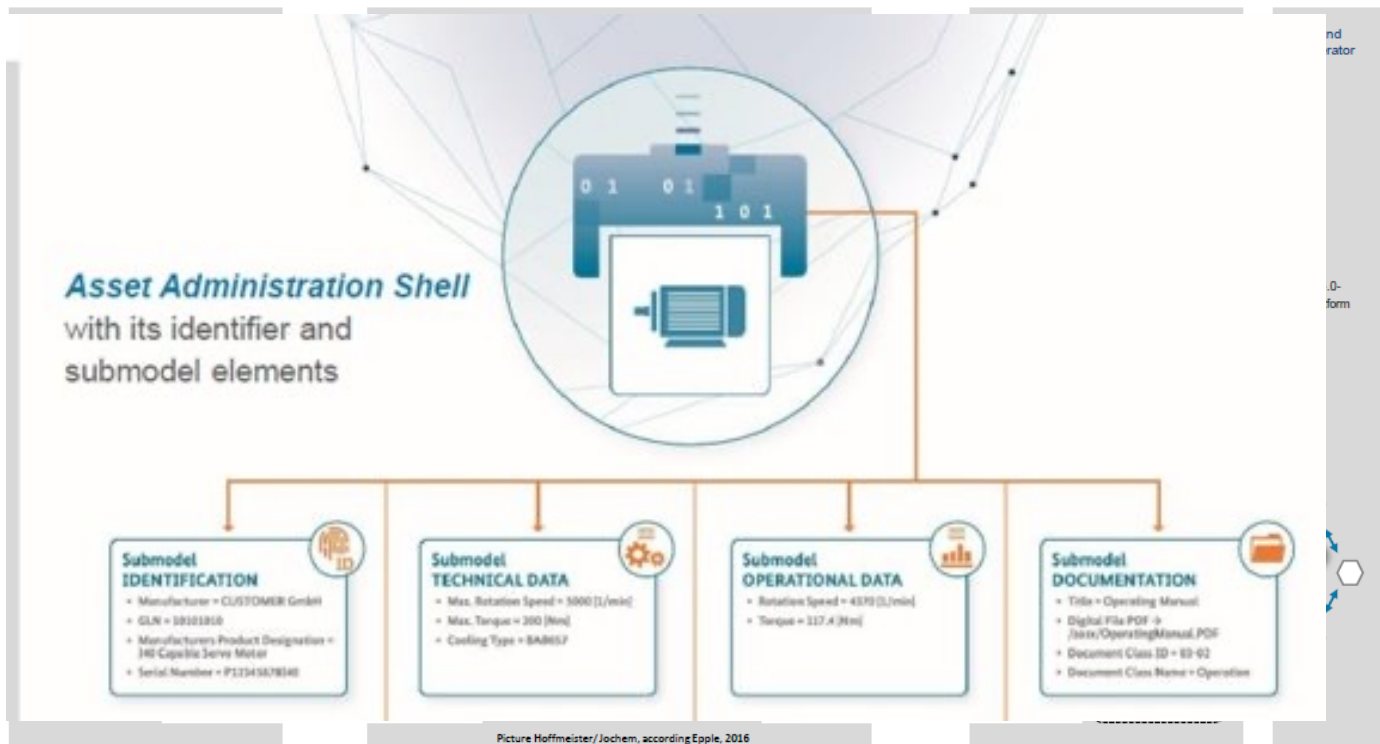
5

- Supplier stuurt informatie van elk gecreerde product naar de OEM'r , b.v.. individuele serie nummers, kwaliteits data, test gegevens, etc.

6

- De OEM'r stuurt op dezelfde manier informatie naar de eindgebruiker.

1 Use Case: Remote Monitoring & Asset Health (Relatie gebruiker OEM'r)



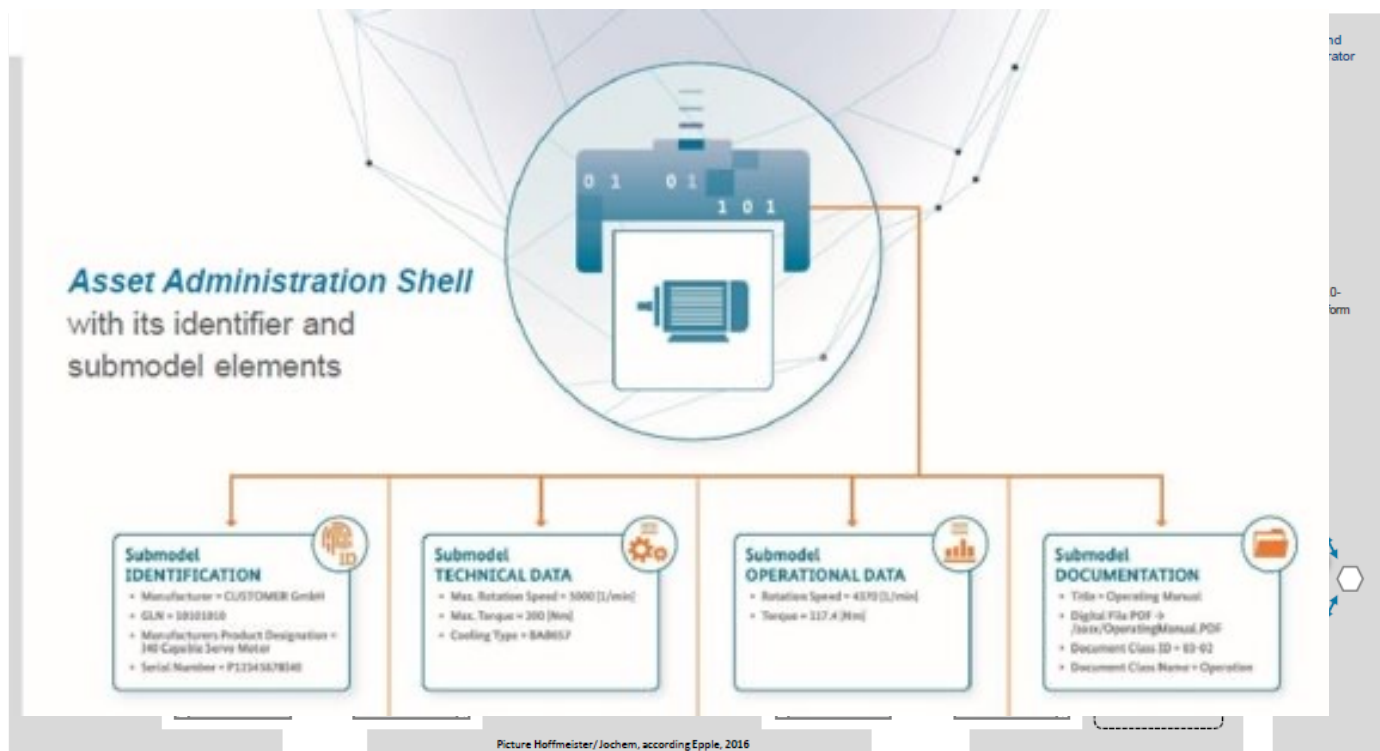
7

- De gebruiker heeft een onderhoudscontract met de OEM'r en kan informatie opvragen van zijn machine, Denk hierbij aan
 - Onderhoudsgegevens
 - Onderhouds historie
 - Inspectie

8

- De OEM'r heeft een servicecontract afgesloten met de gebruiker en heeft toegang tot informatie van de machine die bij de bruiker is geinstaleerd. Denk hiebij aan:
 - Gebruiksgegevens
 - Conditiegegevens
 -

1 Use Case: Remote Monitoring & Asset Health (Relatie gebruiker leverancier)



9

De gebruiker heeft een onderhoudscontract met de leverancier en kan informatie opvragen van de door de leverancier aan de OEM'r geleverde motoren, Denk hierbij aan

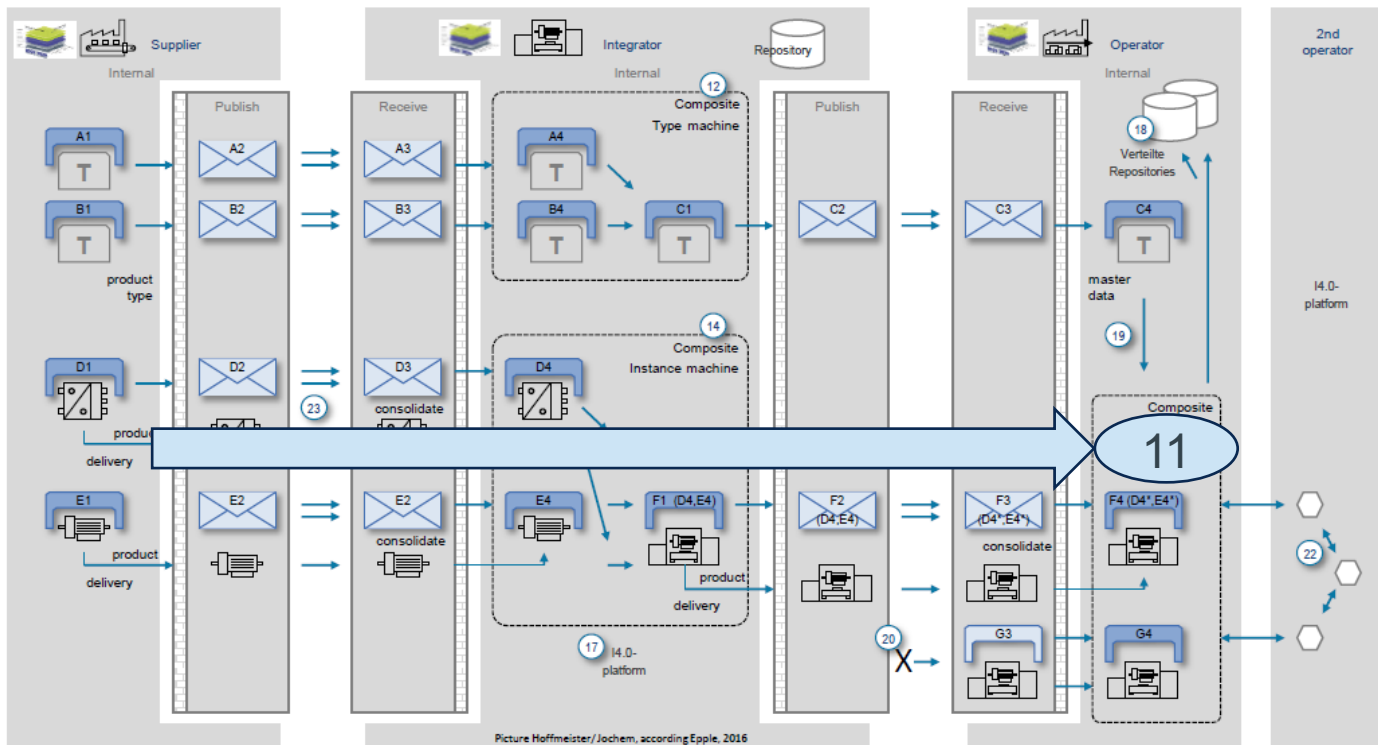
- Onderhoudsgegevens
- Onderhouds historie
- Inspectie

10

De leverancier heeft een servicecontract afgesloten met de gebruiker en heeft toegang tot informatie van de motoren die door de OEM'r bij de gebruiker zijn geïnstalleerd. Denk hierbij aan:

- Gebruiksgegevens
- Conditiegegevens

1 Use Case: Service Contract



11

De leverancier verbeterd de functionaliteit van de motor en past deze gegevens aan in de AAS van de gebruiker omdat de gebruiker een service contract heeft. Denk hierbij aan:

- Onderhoudsgegevens
- Gebruiksgegevens
- Etc.

Questions?

