

AI Suite for HYDRA X & FEDRA

Artificial Intelligence (AI) in the Smart Factory



Do you actually know
how **valuable your data** is
– in monetary terms and with regard to information?
Take advantage of **opportunities** in your Smart Factory
from the wealth of your data!



Artificial intelligence (AI) makes this possible!



Motivation



"We collect an **awful lot of data** with our manufacturing IT, but I have this uneasy feeling that we do not make the **most of it**. How can **AI** help us in this undertaking?"

"Everybody is talking about artificial intelligence but **how can we benefit in production?** We will certainly not invest because it sounds so cool."

"Artificial intelligence sounds **innovative**, but I bet it's also **extremely complicated**, right?"



Your Issue

The AI Suite for HYDRA X & FEDRA ...

- ... provides artificial intelligence in innovative standard applications.
- ... uses data that you already have or collect.
- ... can do without a data scientist.
- ... generates new insights in a flash.
- ... supports you in daily business routines to get even better.
- ... boosts your competitiveness.
- ... safeguards your future viability.



Our Solution

AI Planning

AI-based
Setup Rate
Analysis

Predictive
Quality

AI-based
Capacity
Utilization
Analysis

AI-based
Scrap
Analysis

AI Workforce
Planning

AI-based
Resource
Performance
Account
Analysis

AI-based
Setup Time
Prediction



AI Suite for HYDRA X & FEDRA

Perfect production results need perfect planning!



AI Planning

Reduce production costs and increase on-time delivery!

- Automatically schedule orders, tools and other resources efficiently according to targets.
- Consider all boundary conditions (e.g. dependencies, bottlenecks of machines, ...).
- Set target values for optimization yourself.
- Get holistic planning results.

Artificial intelligence at work

- Reinforcement Learning
- Optimization



AI Planning

Counteract shortage of skilled labor!



AI Workforce Planning

Make optimal use of your available workforce!

- Schedule employees according to their qualifications in the best possible way.
- Automatically create deployment plans as accurate as possible.
- React quickly to changed conditions.

Artificial intelligence at work

- Reinforcement Learning
- Optimization



AI Workforce Planning

Realistic planning is only possible with realistic default values!

AI-based setup time prediction

AI-based setup time prediction

Drag a column here to group by that column

Setup change matrix							Setup time prediction			
Group	Workplace	Type	From	To	Additional setup time	Ignore static setup time	Additional setup time	Ignore static setup time	Deviation (%)	
60610	Tool	B-4026-29-6	B-8927-29-1		0.2000	<input type="checkbox"/>	0.1745	<input type="checkbox"/>	-11.250	
60610	Tool	B-8927-29-3	B-8927-29-5		0.1200	<input type="checkbox"/>	0.1138	<input type="checkbox"/>	-5.000	
60010	Tool	B-9901-01-7	B-8927-29-6		0.3500	<input type="checkbox"/>	0.3758	<input type="checkbox"/>	8.480	
60610	Tool	B-8018-29-6	B-8927-29-2		0.3000	<input type="checkbox"/>	0.2043	<input type="checkbox"/>	-30.940	
60612	Tool	DGF-L-FFU021	DGF-R-OCC021		0.0800	<input type="checkbox"/>	0.0821	<input type="checkbox"/>	4.380	
60612	Tool	DGF-R-VGO021	DGF-L-VGO021		0.1100	<input type="checkbox"/>	0.1021	<input type="checkbox"/>	-5.910	
60612	Tool	DGF-L-CAS021	DGF-L-VPO021		0.1500	<input type="checkbox"/>	0.1244	<input type="checkbox"/>	-15.110	
60612	Tool	DGF-L-VPO021	DGF-L-FKA021		0.4000	<input type="checkbox"/>	0.4211	<input type="checkbox"/>	5.460	
60612	Tool	DGF-L-VPO021	DGF-L-FFI021		0.1000	<input type="checkbox"/>	0.0909	<input type="checkbox"/>	-8.50	
60614	Tool	B-9901-01-7	B-8927-29-6		0.3500	<input type="checkbox"/>	0.3758	<input type="checkbox"/>	0.00	
60614	Tool	SW-100X8	SW-20X6		0.0300	<input type="checkbox"/>	0.0323	<input type="checkbox"/>	12.780	
60614	Tool	SW-100X8	SW-20X7		0.3000	<input type="checkbox"/>	0.3711	<input type="checkbox"/>	23.850	
60614	Tool	SW-100X8	SW-30X8		0.1800	<input type="checkbox"/>	0.1712	<input type="checkbox"/>	-4.440	
60614	Tool	B-9901-01-7	B-8927-29-6		0.0600	<input type="checkbox"/>	0.0538	<input type="checkbox"/>	-6.110	
60614	Tool	SW-40X6	SW-4026-12		0.2700	<input type="checkbox"/>	0.2622	<input type="checkbox"/>	-2.350	
60623	Tool	SW-40X6	SW-4026-12		0.2700	<input type="checkbox"/>	0.2622	<input type="checkbox"/>	-13.420	
60623	Tool	SW-40X6	SW-4026-12		0.2700	<input type="checkbox"/>	0.2622	<input type="checkbox"/>	8.590	
60623	Tool	SW-40X6	SW-4026-12		0.2700	<input type="checkbox"/>	0.2622	<input type="checkbox"/>	29.720	
60623	Tool	SW-40X6	SW-4026-12		0.2700	<input type="checkbox"/>	0.2622	<input type="checkbox"/>	-6.570	
60623	Tool	SW-40X6	SW-4026-12		0.2700	<input type="checkbox"/>	0.2622	<input type="checkbox"/>	-9.430	

Page 1 of 1 (20 items)

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AI-based Setup Time Prediction

Avoid the "master data hell" and use realistic default values!

- Calculate production times (setup, cycle, ...) based on historical data.
- Analyze diverse influencing factors.
- Provide (automatic) planning with **realistic** default values.

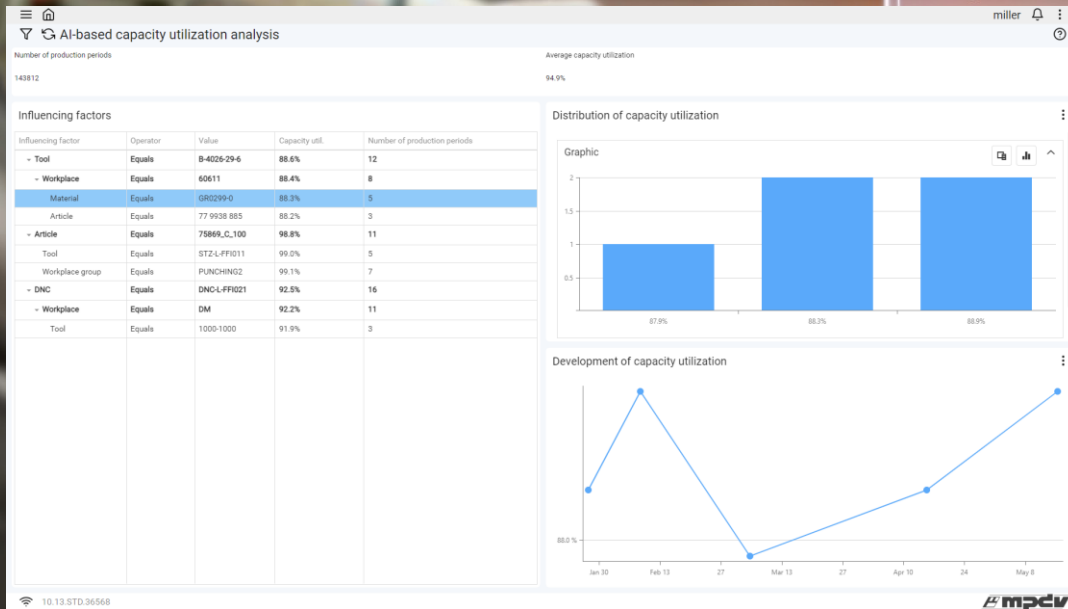
Artificial intelligence at work

- Unsupervised Machine Learning
- Pattern Recognition



AI-based Setup Time Prediction

Only if you know where it's stuck, you can fix it!



AI-based Capacity Utilization Analysis

Understand correlations for fluctuations in capacity utilization!

- Analyze and recognize diverse influencing factors.
- Show and analyze developments over time.
- Take and validate measures.

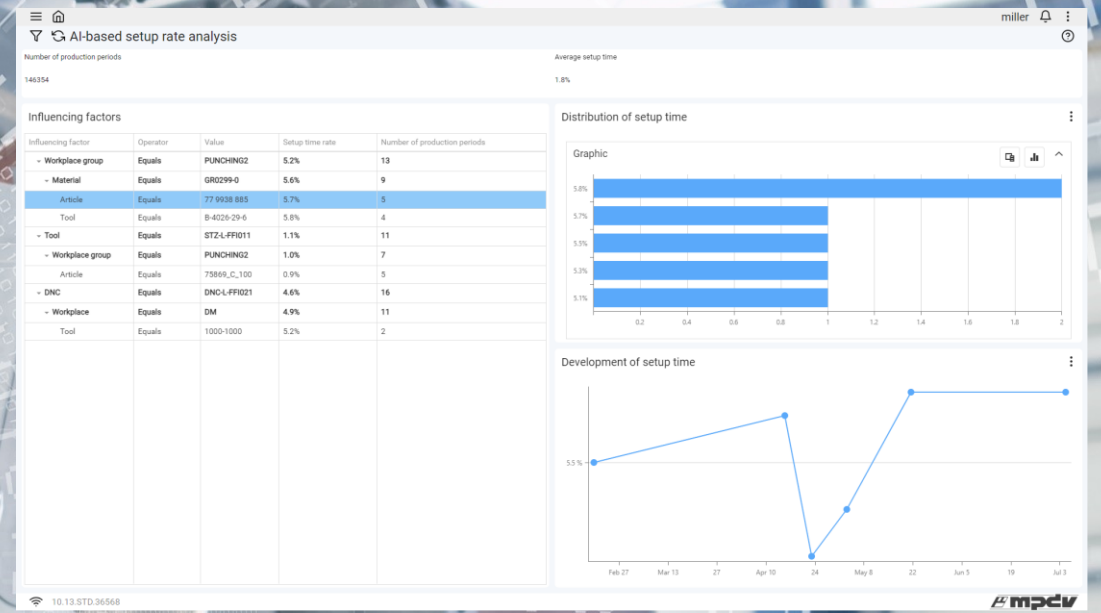
Artificial intelligence at work

- Unsupervised Machine Learning
- Pattern Recognition



AI-based Capacity Utilization Analysis

Yes, setup times are unproductive, but can't be avoided!



AI-based Setup Rate Analysis

Understand correlations for high setup rates!

- Analyze factors influencing the setup rate.
- Optimize setup processes.
- Save time and costs.

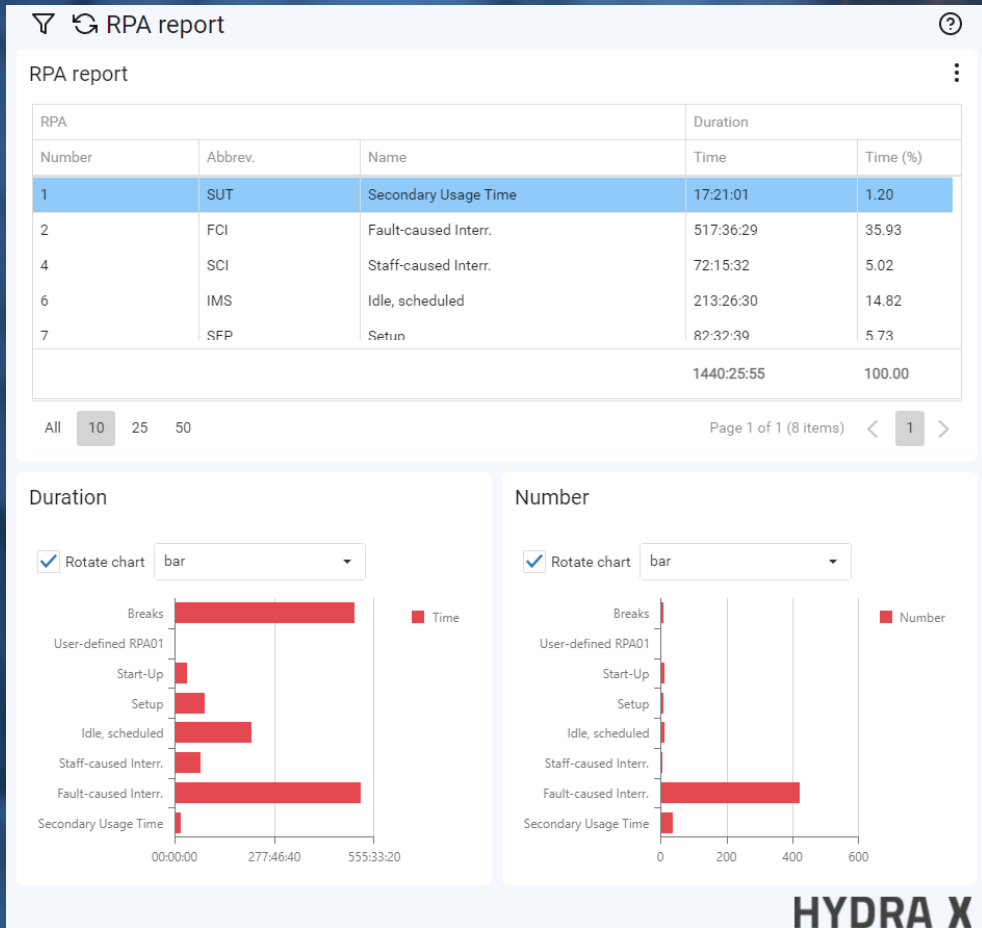
Artificial intelligence at work

- Unsupervised Machine Learning
- Pattern Recognition



AI-based Setup Rate Analysis

How, what, when and why – the more you know, the better it runs!



AI-based Resource Performance Account Analysis

Understand correlations why specific events occur!

- Uncover hidden dependencies.
- Recognize influencing factors and make them transparent.
- Reduce unproductive times.

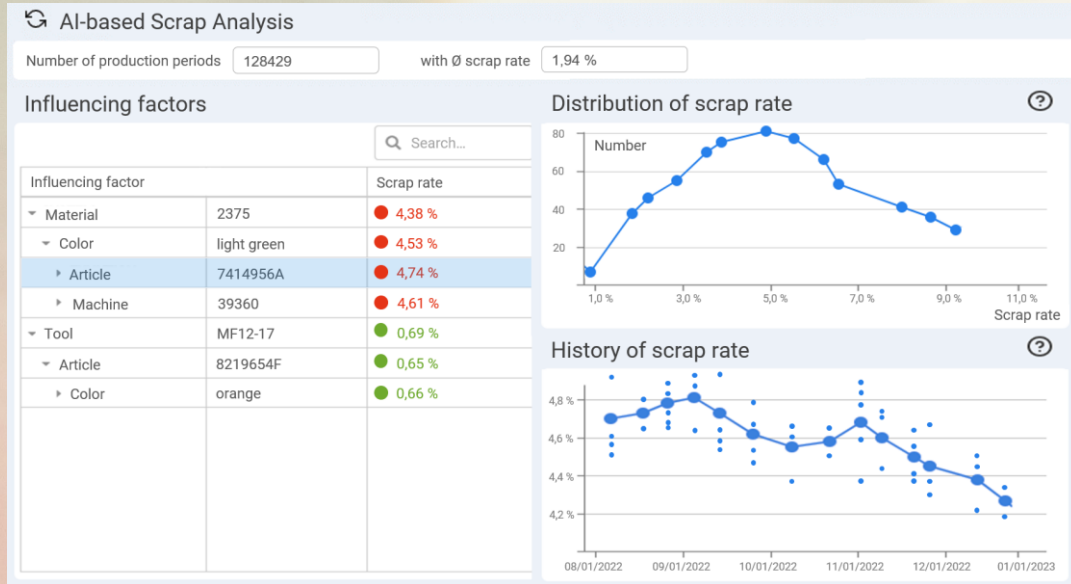
Artificial intelligence at work

- Unsupervised Machine Learning
- Pattern Recognition



AI-based Resource Performance Account Analysis

Learn from your mistakes and increase your quality!



AI-based Scrap Analysis

Understand the cause of scrap!

- Analyze diverse influencing factors.
- Recognize dependencies.
- Gain new insights and build knowledge.
- Gradually improve quality.

Artificial intelligence at work

- Unsupervised Machine Learning
- Pattern Recognition



AI-based Scrap Analysis

You can't predict the future? No worries – AI does it for you!

**PREDICTIVE
QUALITY**



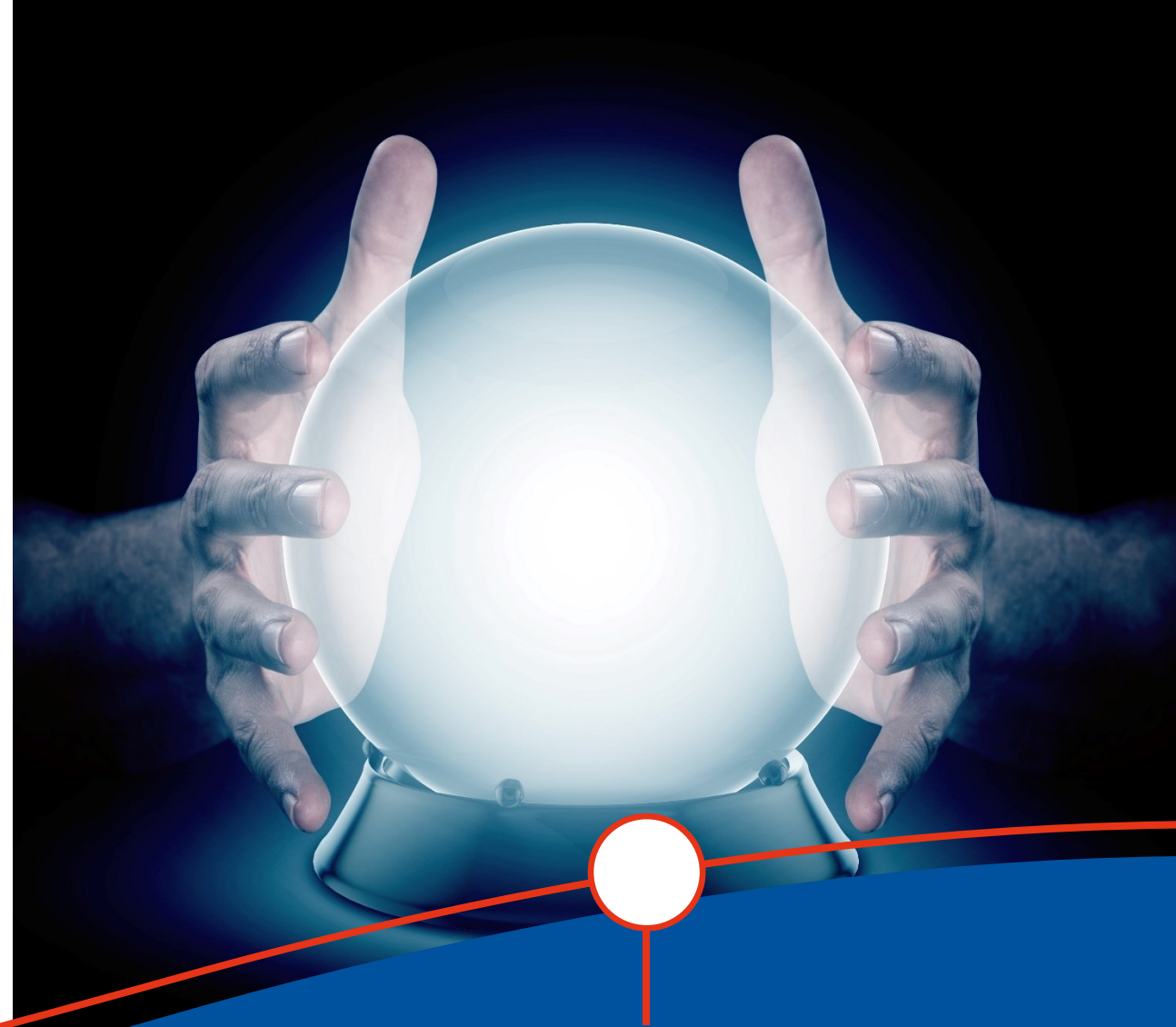
Predictive Quality

Predict quality and evaluate workpieces without inspection!

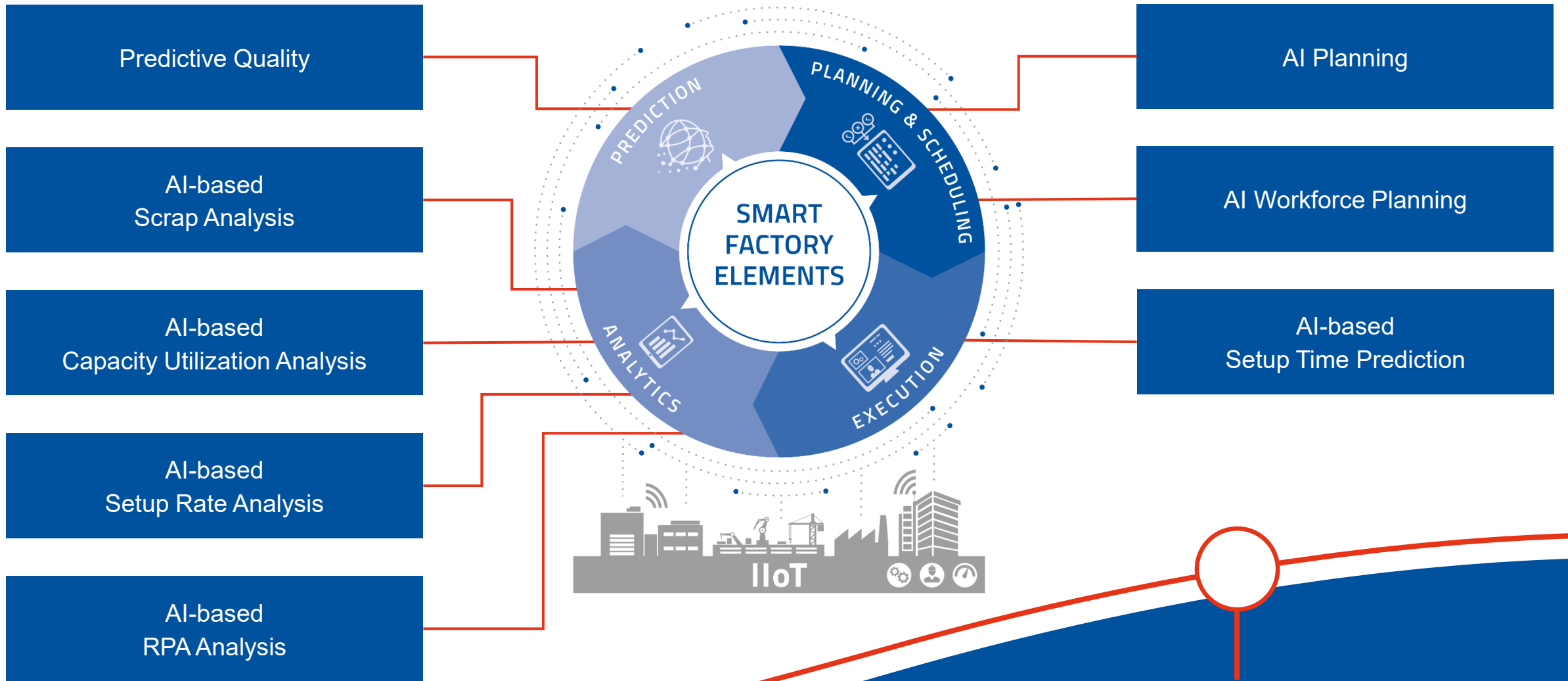
- Use historical process & quality data
- Evaluate quality of semi-finished products at an early stage.
- Evaluate products non-destructively.
- Reduce inspection efforts.

Artificial intelligence at work

- Unsupervised Machine Learning
- Real-time prediction model



Predictive Quality



AI Suite in the Control Loop of the Smart Factory

Profit from your **most valuable asset** – **your data!**

With the AI Suite for HYDRA X and FEDRA you
safeguard your **competitiveness!**



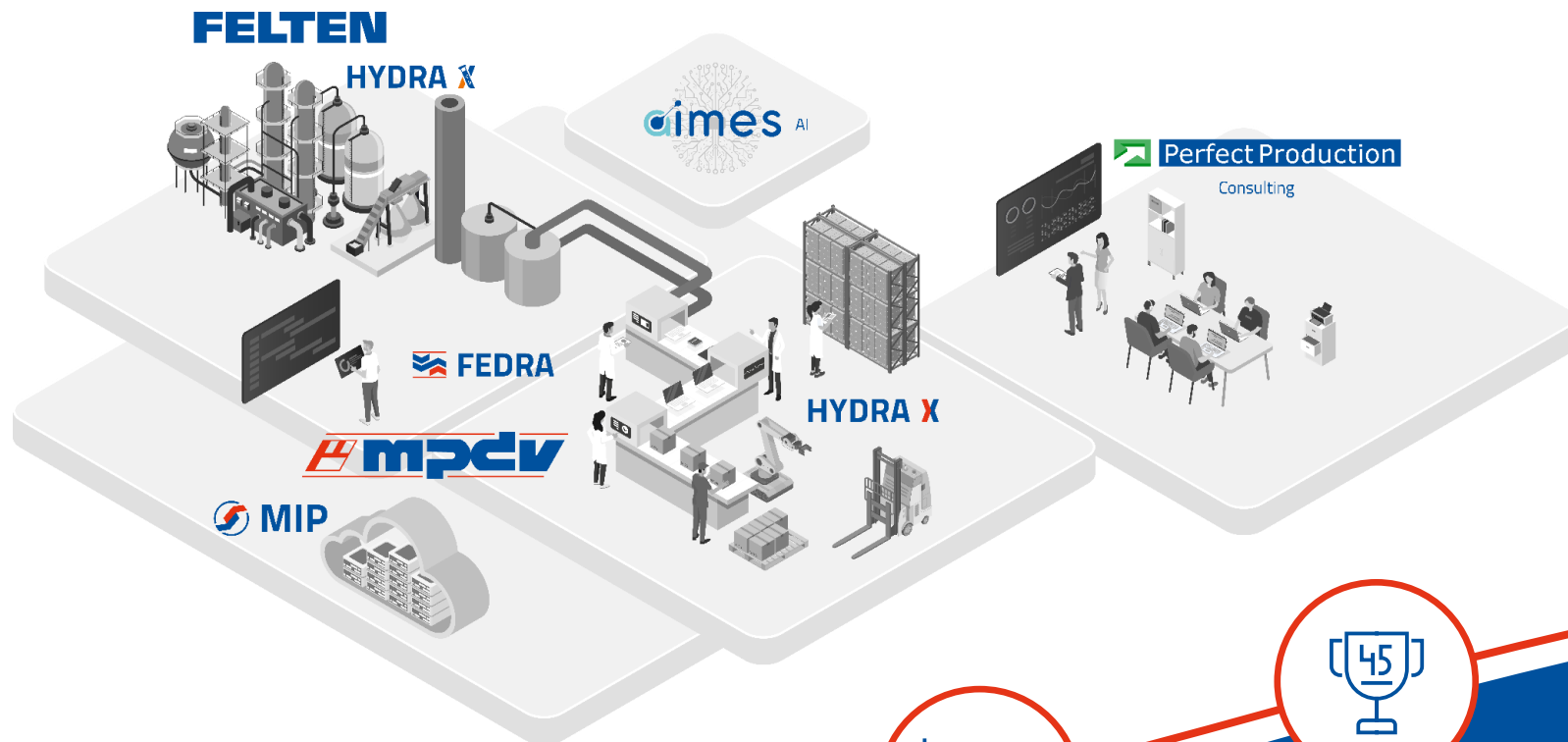
Profit Now!

A photograph of a modern industrial building complex. The main building is white with blue accents and a large glass entrance. A blue structure on the right has the MPDV logo on its roof. A blue wave graphic is at the bottom. A white box with a red border contains the text 'About MPDV'.

About MPDV

WE CREATE SMART FACTORIES





people work with our solutions every day

1.100.000

installations in all industries

1.750



13

locations worldwide



520

employees



73 Mio.

euros group turnover



45

years in the market & market leader for manufacturing IT

Would you like to find out more about
the AI Suite for HYDRA X and FEDRA?



WE CREATE SMART FACTORIES



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