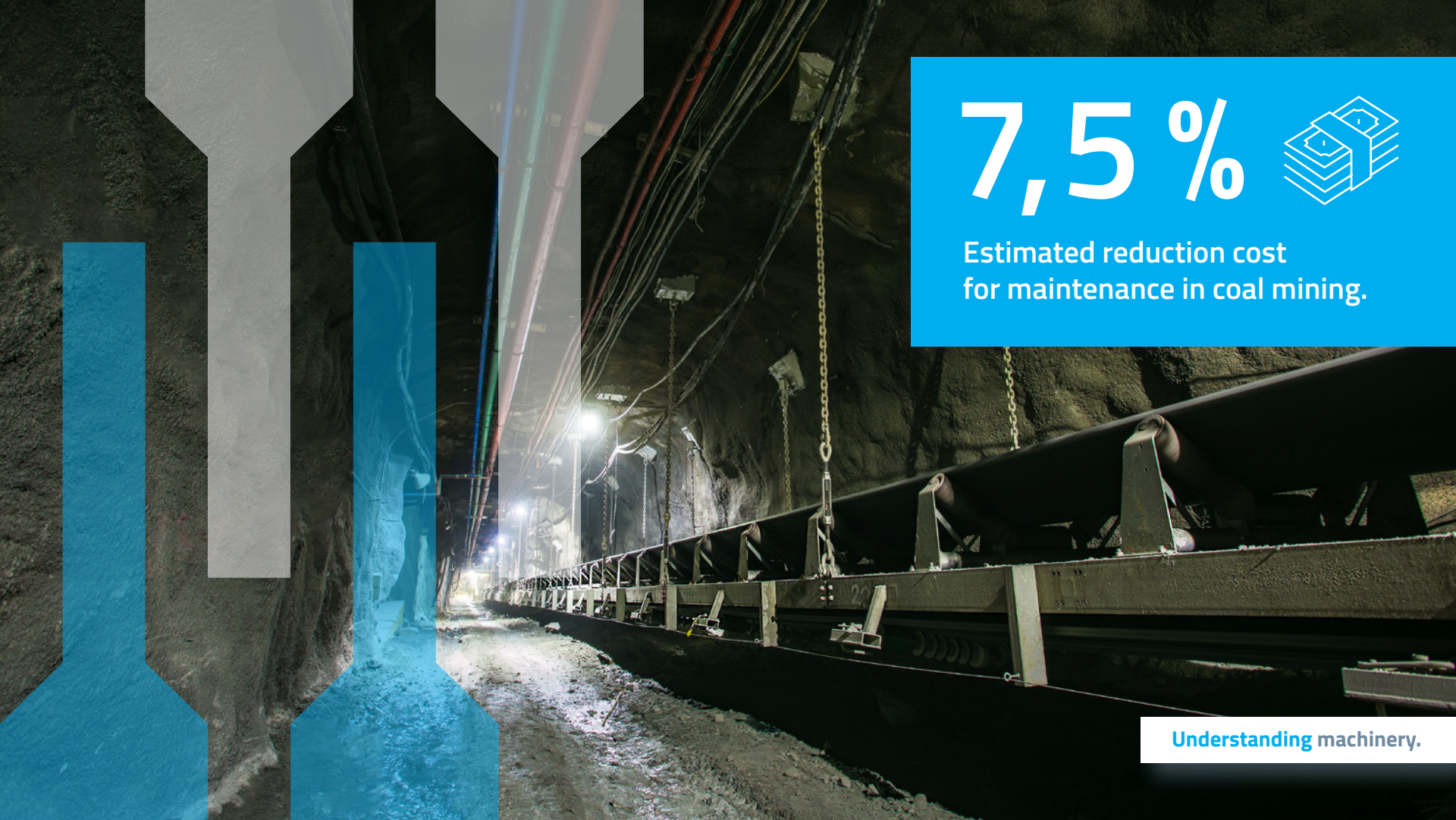
Find out more about the ability of understanding machinery.


Customizing an application-system for monitoring, maintenance and assessment of the underground mining ecosystem.
Understanding machinery.



7,5 %

Estimated reduction cost for maintenance in coal mining.

Understanding machinery.

7,5 %

Estimated reduction cost for maintenance in coal mining.

- Longer operating time of machines
- Reduced downtime and repair cost
- Reduced wear

Understanding machinery.


That´s MAMMA.
Understanding machinery.

That´s MAMMA.

MAMMA
Maintained Mine and Machine

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Understanding machinery.


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Ernst & Young (2018):
„The integration gap in the mining sector can create productivity loss of 10% to 20%.“
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Achieve your individual goals in multiple use cases

Achieve your individual goals in multiple use cases

MAMMA
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The project deals with a software system designed to improve maintenance throughout the whole mine by collecting machine and infrastructure data and presenting clear analyses of conditions.
MaMMa aims to improve mine operations through:

- Perfect timing of maintenance
- Detecting unfavorable operating conditions
- Optimizing maintenance intervals
- Improving overall reliability and availability of machines

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Achieve your individual goals in multiple use cases

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The project deals with a software system designed to improve maintenance throughout the whole mine by collecting machine and infrastructure data and presenting clear analyses of conditions.
MaMMa aims to improve mine operations through:

- Perfect timing of maintenance
- Detecting unfavorable operating conditions
- Optimizing maintenance intervals
- Improving overall reliability and availability of machines

MaMMa is developed for users/operators of mining infrastructures and/or mining machines including mining companies, mining contractors and mining machine manufacturers.

Understanding machinery.


Hourly operating costs: Total costs 119,24 $
Hourly maint. costs: Total costs 68,78 $

Hourly operating costs: Total costs 119,24 $

Hourly maint. costs: Total costs 68,78 $

Estimated cost savings:

5 $ per hour

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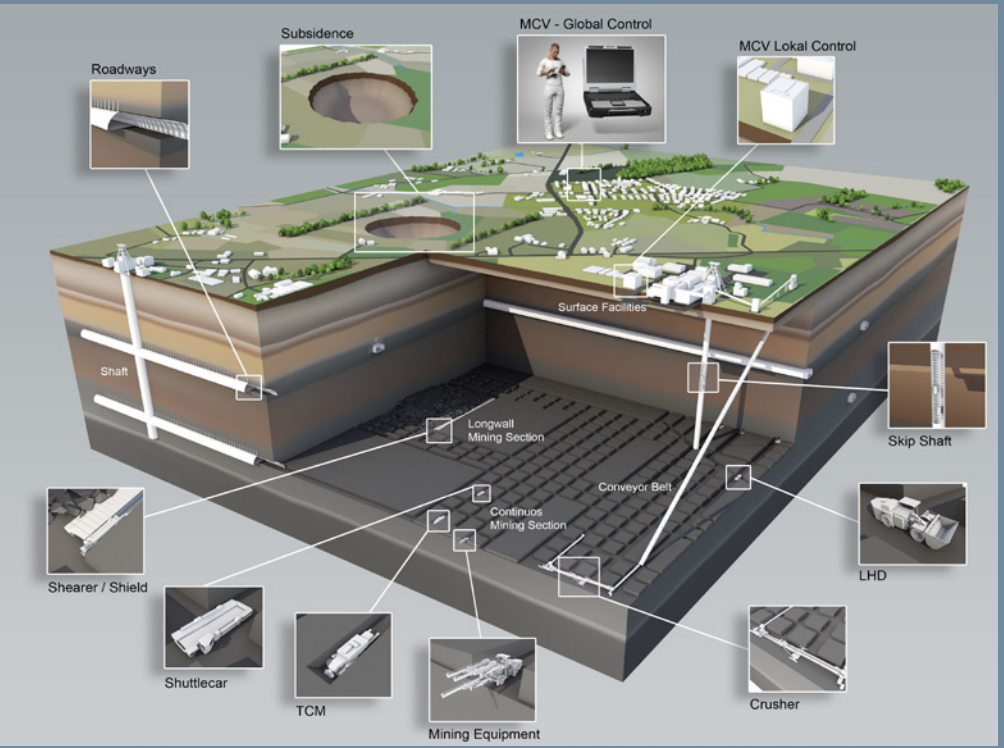

- Software system for the maintenance of the whole mine ecosystem
- Data is collected from existing systems on machines and in the mine
- Outcome: extended maintenance intervals and increased availability

Understanding machinery.


Hourly operating costs: Total costs 107,00 $
Hourly maint. costs: Total costs 47,50 $

Hourly operating costs: Total costs 107,00 $

Hourly maint. costs: Total costs 47,50 $

Estimated cost savings:

3,50 $ per hour

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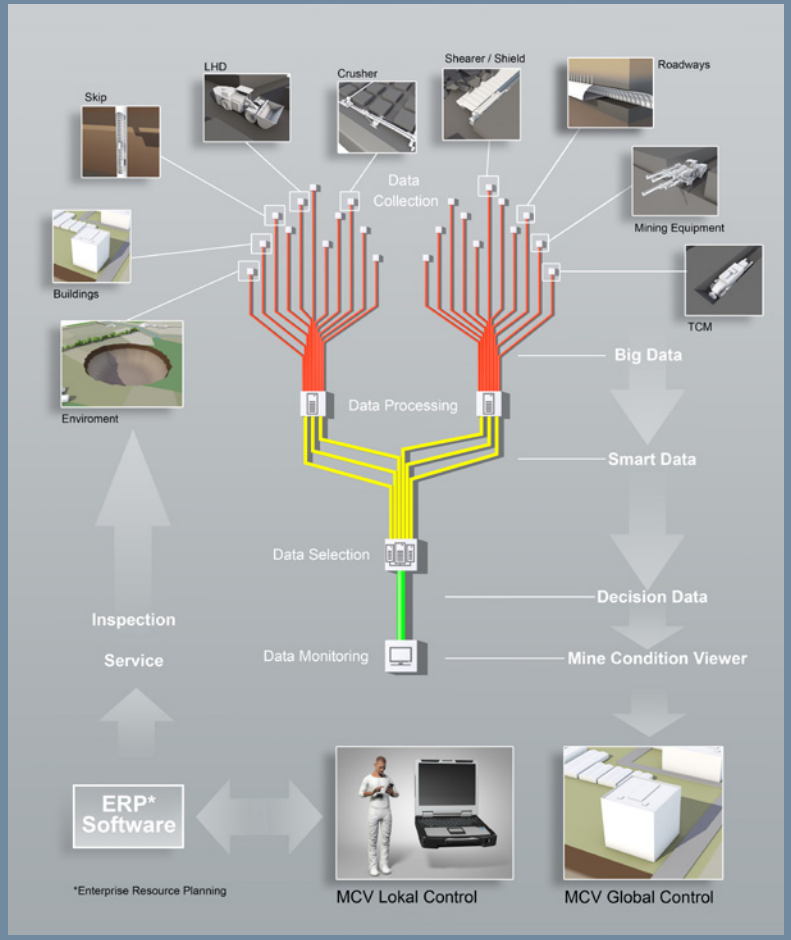
Data flow



Data flow

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- Existing infrastructure can be used
- Flexible and scalable
- Big data to smart data
  - Unveil cross-dependencies
  - Support informed decision
- To operator user or ERP system

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Do you want to reduce cost in your mining business easiliy by using MAMMA triple based maintanance system?
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Do you want to reduce cost in your mining business easiliy by using MAMMA triple based maintanance system?
save up to 7,5 %
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Event based maintenance

- Event classification and analysis
  - Inappropriate operating conditions
- Event recognition algorithms
- Relevant also for failure-cause analysis and process optimization

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Load based maintenance

- Information acquired from existing control units
- Cost effective
- Algorithms to estimate the load on single components
- Extended operational time

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Condition based maintenance

- More accurate status indication
- Need additional sensors
- Sophisticated detection algorithms
- Maintenance only if and when required

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Hourly maint. costs: Total costs 68,78 $


Hourly operating costs: Total costs 119,24 $
Hourly maint. costs: Total costs 68,78 $
Estimated cost savings:
5 $ per hour
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Data processing algorithms (examples)

Data processing algorithms (examples)

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- Stockwell transform
- Informative band selection, KGHM & WUST
- Non-negative matrix factorisation (NNMF)
- Principal component analysis (PCA)
- Independent component analysis (ICA)
- Cyclostationarity
- Progressive genetic algorithm (PGA), KGHM & WUST

...

Understanding machinery.


Hourly operating costs: Total costs 89,95 $
Hourly maint. costs: Total costs 34,63 $


Hourly operating costs: Total costs 89,95 $
Hourly maint. costs: Total costs 34,63 $
Estimated cost savings:
2,50 $
per hour
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Funded by the EIT RawMaterials – the largest consortium in the raw materials sector worldwide.
Project duration: 01.01.2018-31.03.2021 – Lead Partner: DMT GmbH & Co. KG.

KGHM Cuprum Research & Development Centre
DMT
KGHM POLSKA MIEDŹ
LTU BUSINESS AB
MONTAN UNIVERSITÄT
Wroclaw University of Science and Technology
RI.SE
AMT Advanced Mining Technologies
RWTH AACHEN UNIVERSITY
TU Clausthal Clausthal University of Technology

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Contact

Norbert Gomolla, Project Manager

DMT GmbH & Co. KG, Am TÜV 1
45307 Essen, Germany
Tel +49 201 172-1150
Fax +49 201 172-1515
Mail norbert.gomolla@dmt-group.com
info@mamma-project.eu

Ingo Tröger, Project Manager

DMT GmbH & Co. KG, Am TÜV 1
45307 Essen, Germany
Tel +49 201 172-1724

Mail ingo.troeger@dmt-group.com
info@mamma-project.eu

Dr. Rubens Rossi, Industrial Analytics

DMT GmbH & Co. KG, Am TÜV 1
45307 Essen, Germany
Tel +49 201 172-1318

Mail rubens.rossi@dmt-group.com
info@mamma-project.eu

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Hourly operating costs: Total costs 109,01 $
Hourly maint. costs: Total costs 53,71 $

Hourly operating costs: Total costs 109,01 $

Hourly maint. costs: Total costs 53,71 $

Estimated cost savings:

4 $ per hour

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