AMT Advanced Mining Technologies | RWTH AACHEN UNIVERSITY

Holistic Learning by the Integration of a Test Rig into Engineering Teaching

MATLAB EXPO 2021

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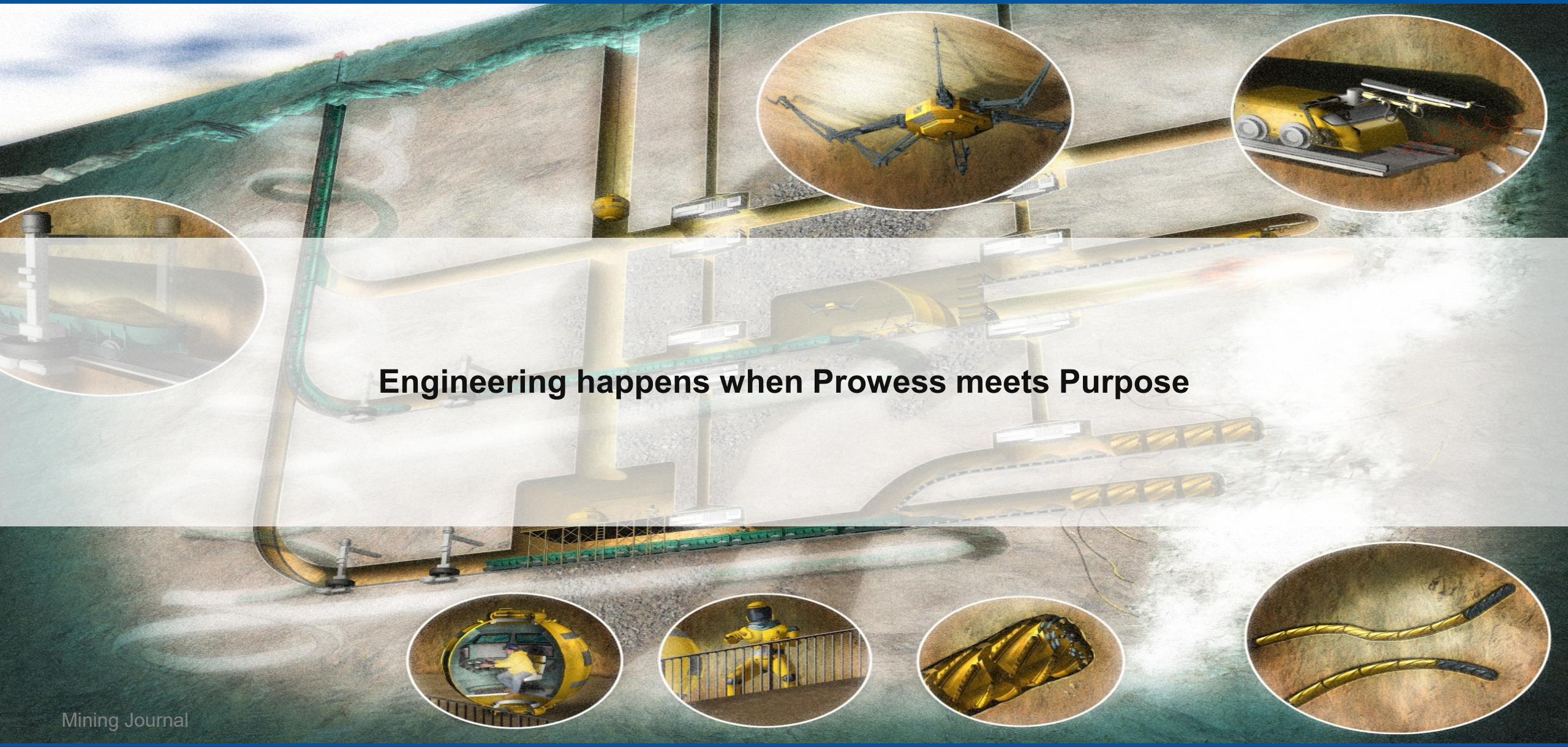
Achieving More Together



Achieving More Together

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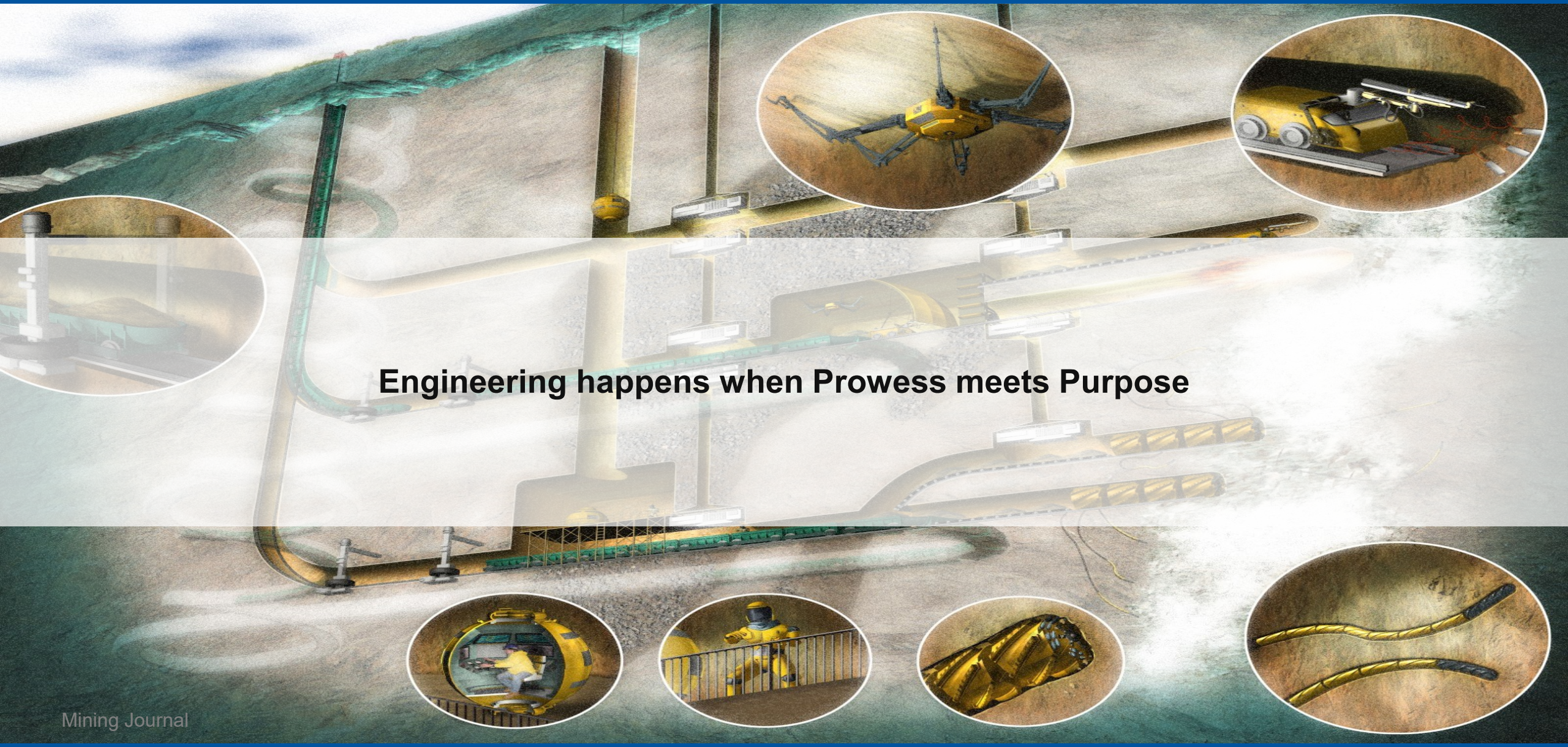
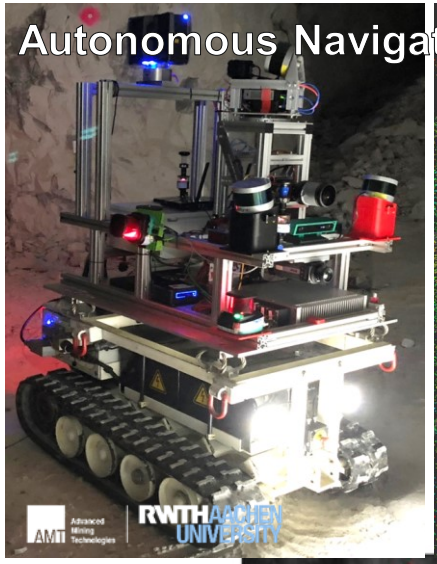
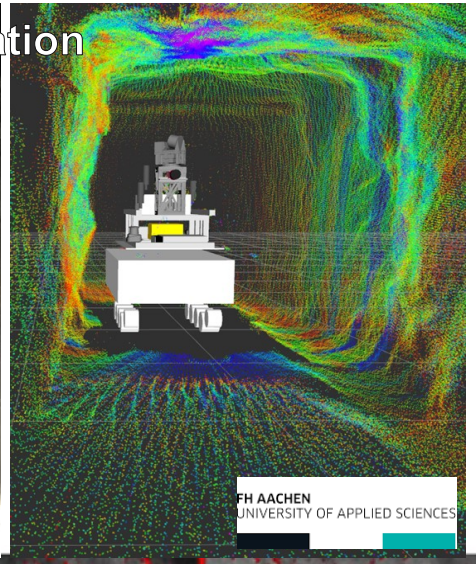
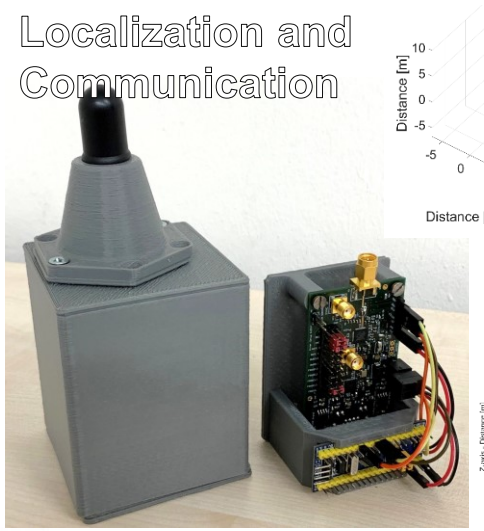
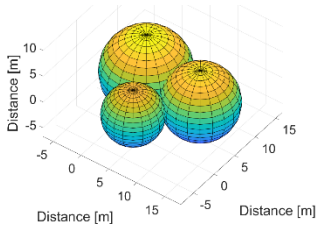


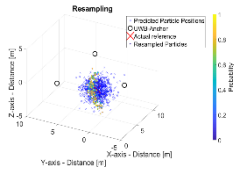
Research at the AMT

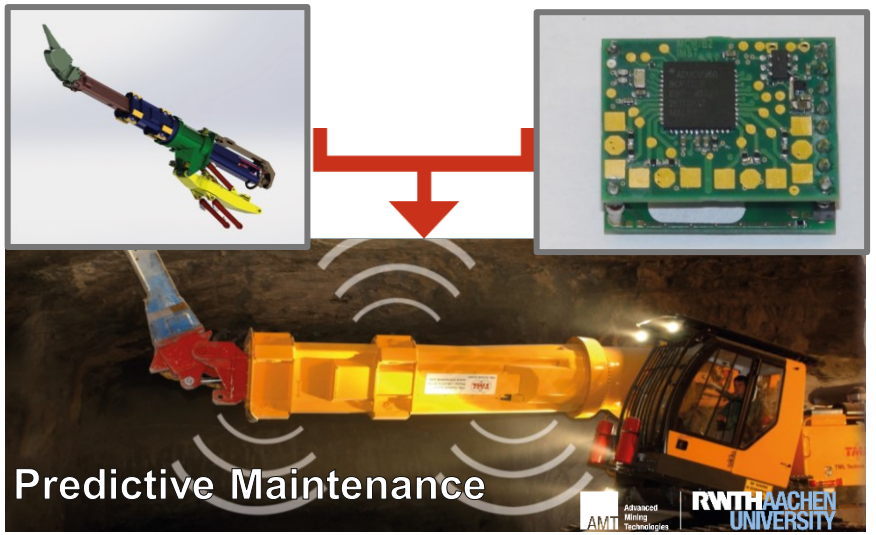


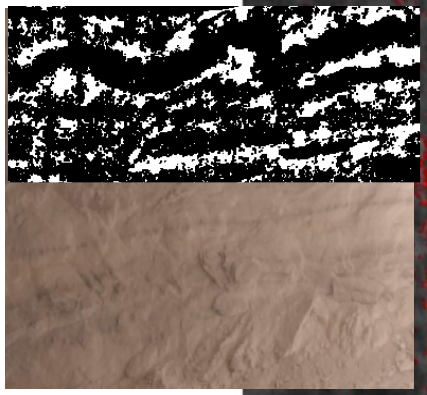


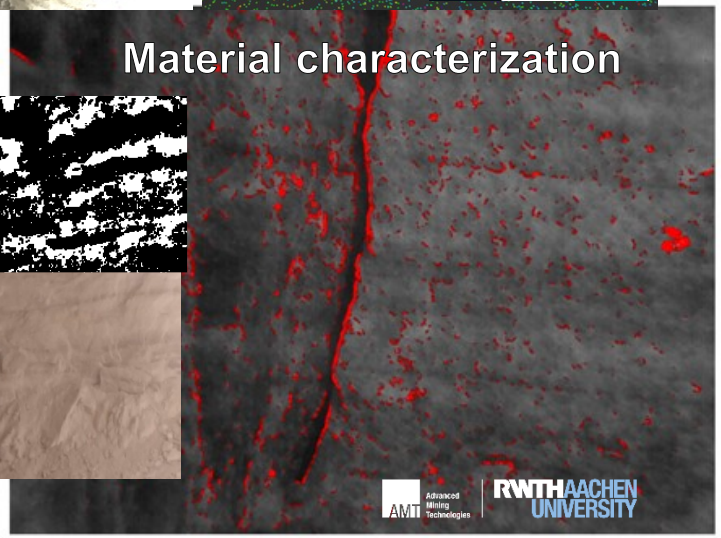


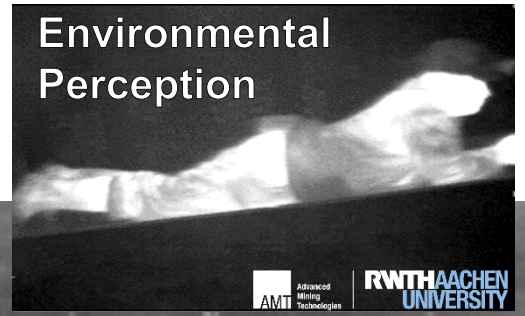


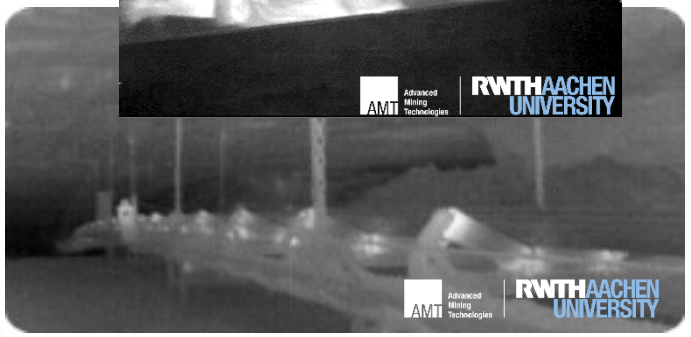


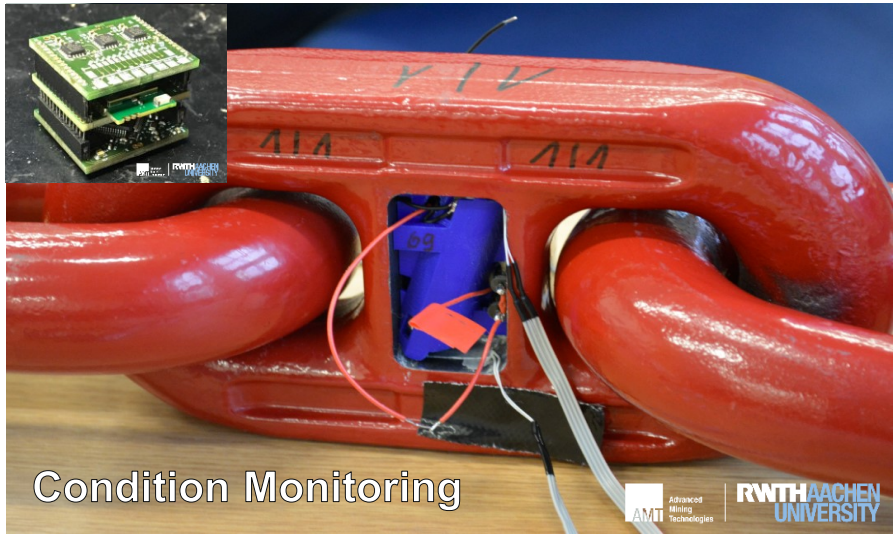






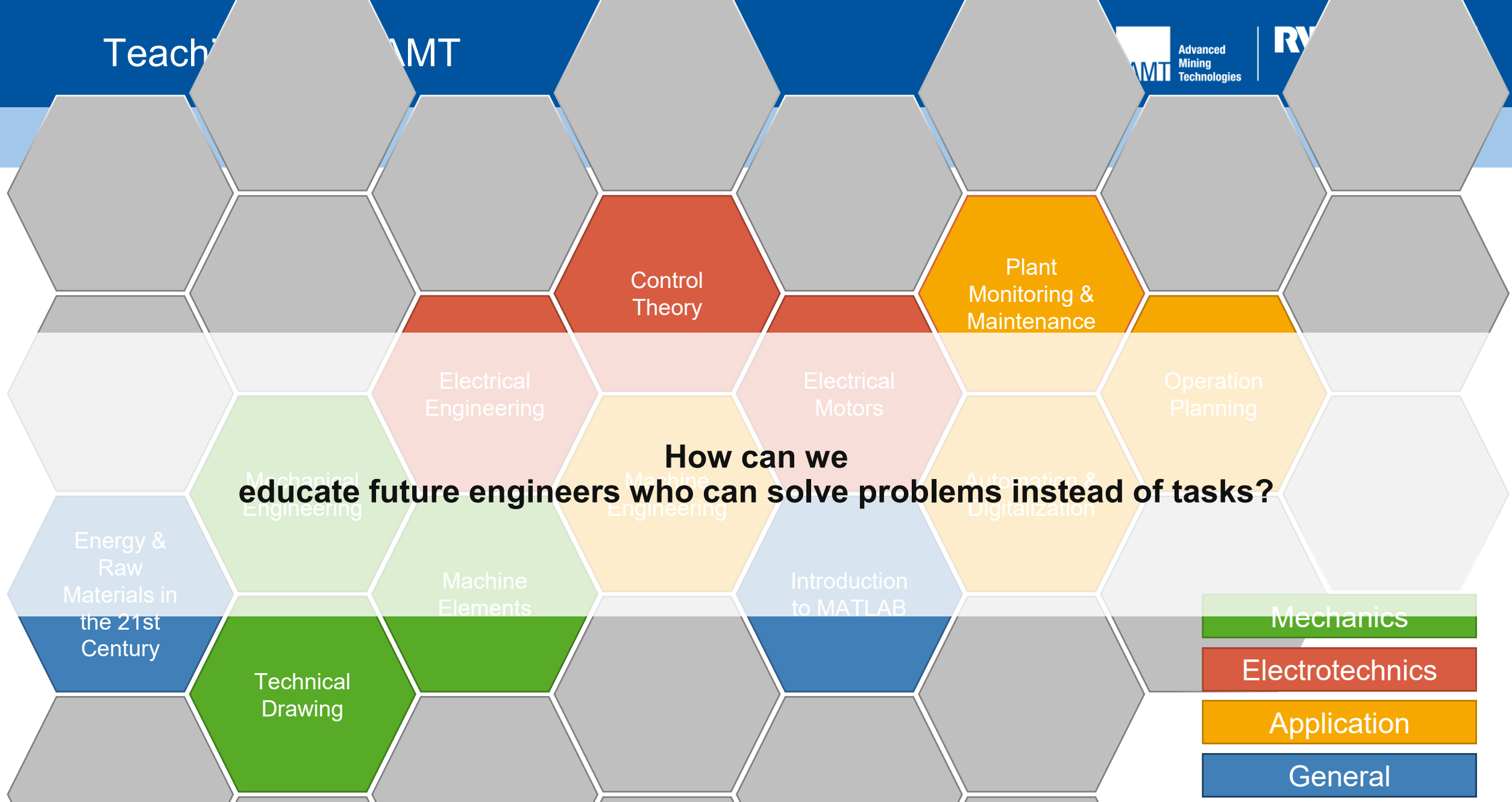






Teach AMT

Advanced Mining Technologies



How can we educate future engineers who can solve problems instead of tasks?

Teaching at the AMT

Theoretical Knowledge

Application

Tools

Complex Problemsolving[1]

How can we
train future engineers who can handle ever-changing requirements?

Data Literacy

Critical Thinking[1]

Creativity[1]

People Management[1]

Coordination with Others[1]

[1]: Future of Jobs Report, World Economic Forum

Teach AMT

Advanced Mining Technologies

Study progression

Theory

Monitoring & Maintenance

Electrical Engineering

Electrical Motors

Operation Planning

How can we motivate future engineers for the craft of engineering?

Mechanical Engineering

Machine Engineering

Automation & Digitalization

Energy & Raw Materials in the 21st Century

Machine Elements

Introduction to MATLAB

Intrinsic motivation

Mechanics

Electrotechnics

Application

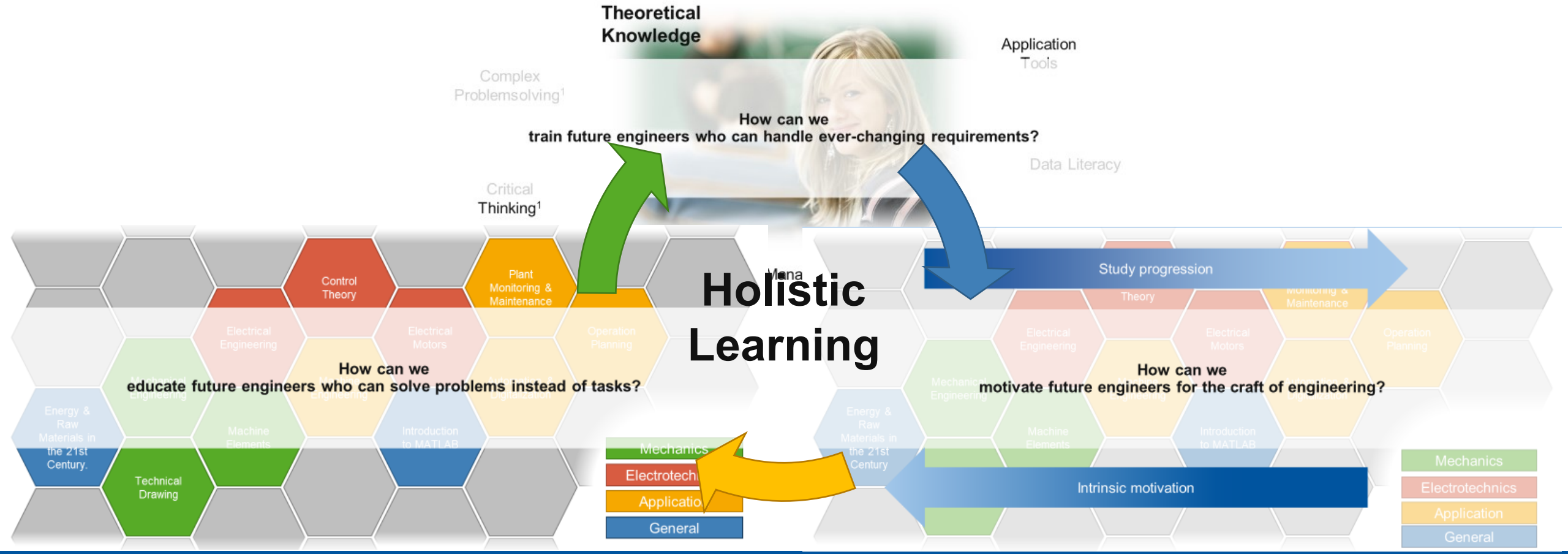
General

Holistic Teaching Approach

Knowledge

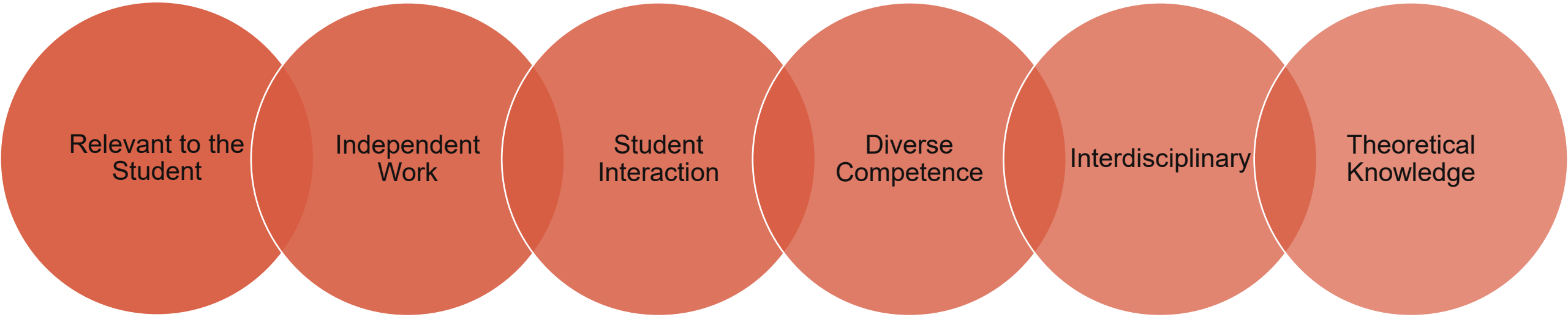
Skill

Motivation



Holistic Teaching Approach

Requirements



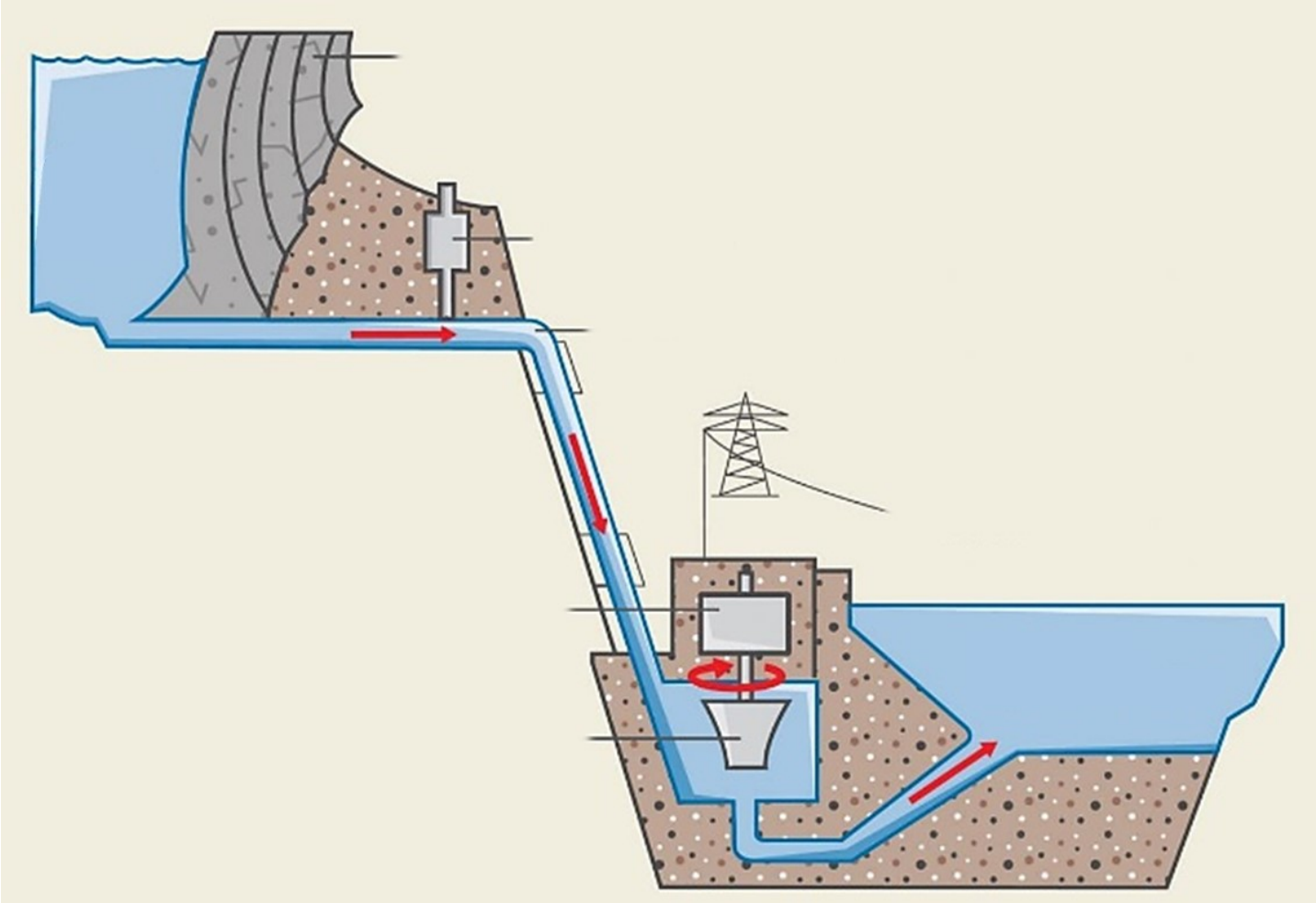
Motivation

Skill

Knowledge

Case Study – Pumped Storage Plant

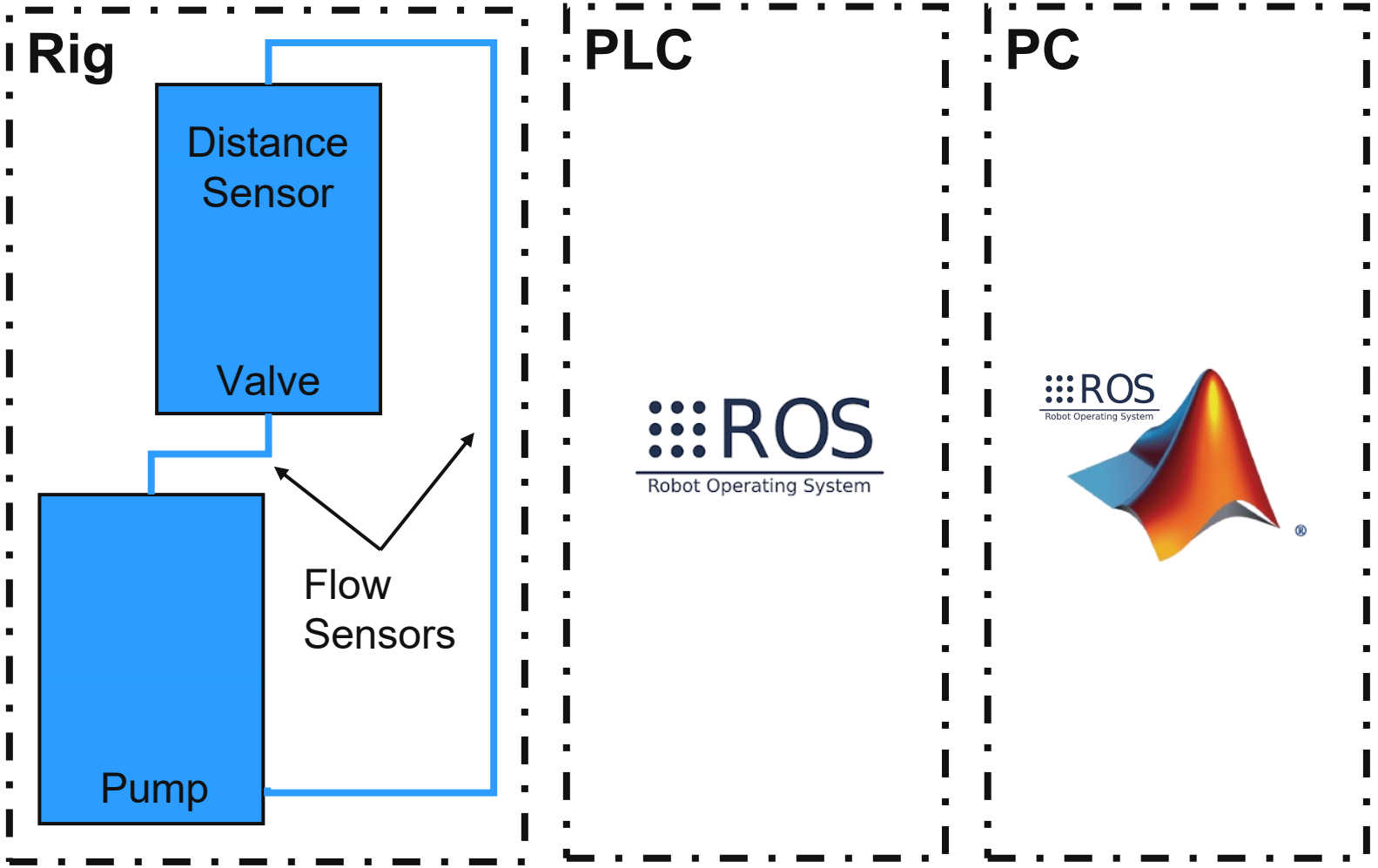
Idea



- Relevant to the Student
- Independent Work
- Student Interaction
- Diverse Competences
- Interdisciplinary
- Theoretical Knowledge

Case Study – Pumped Storage Plant

Concept



- Relevant to the Student
- Independent Work
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Case Study – Pumped Storage Plant

Realization

PLC

Test Rig

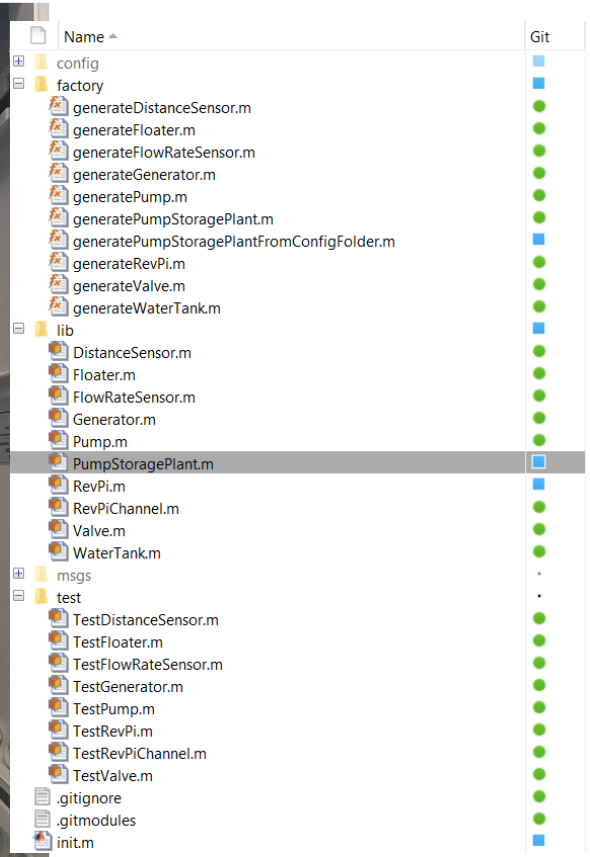
Basins

Case Study – Pumped Storage Plant

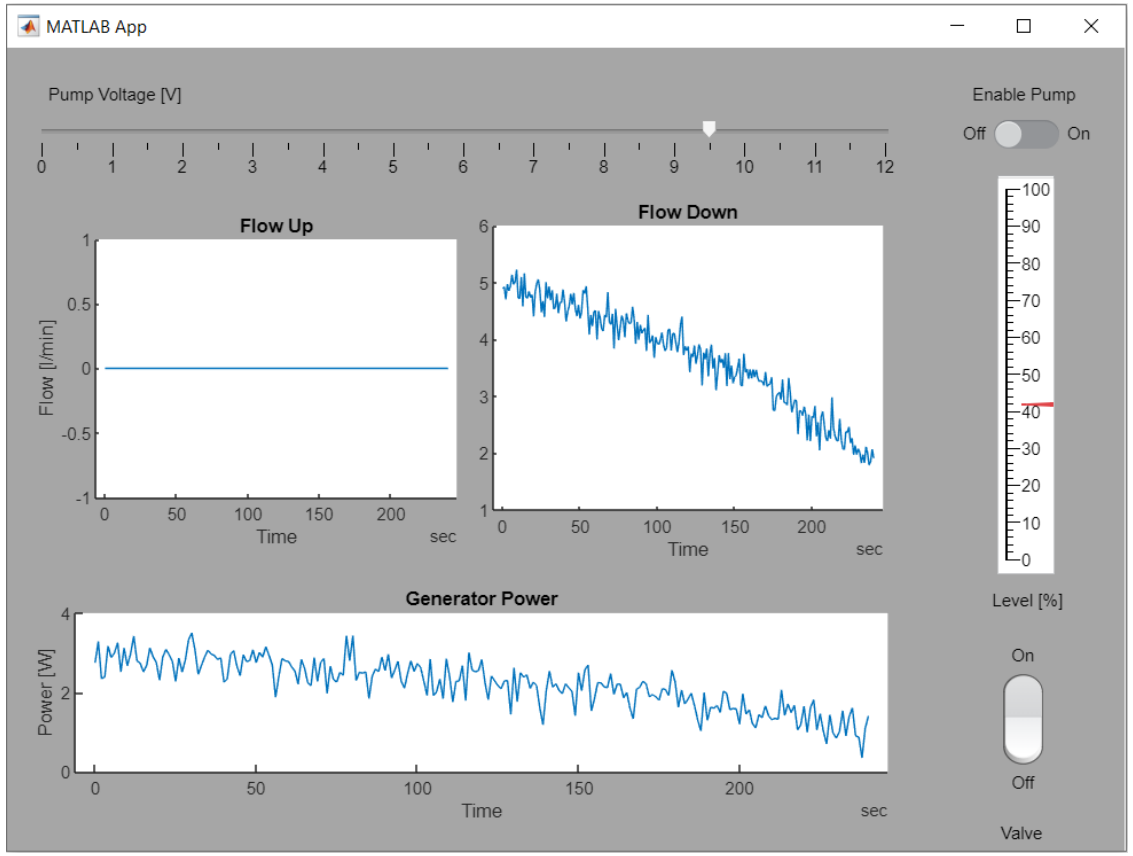
Modes of Interaction

By Wire

By Code

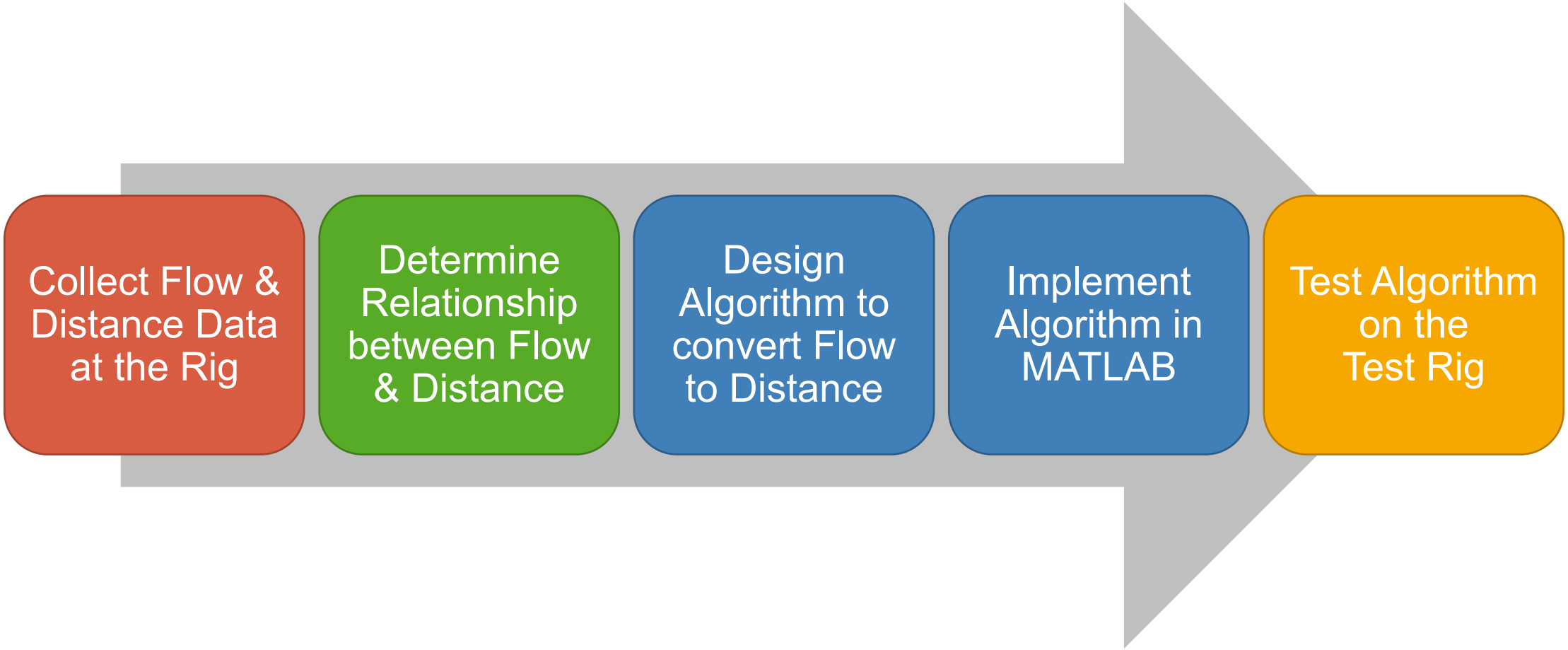


By Interface



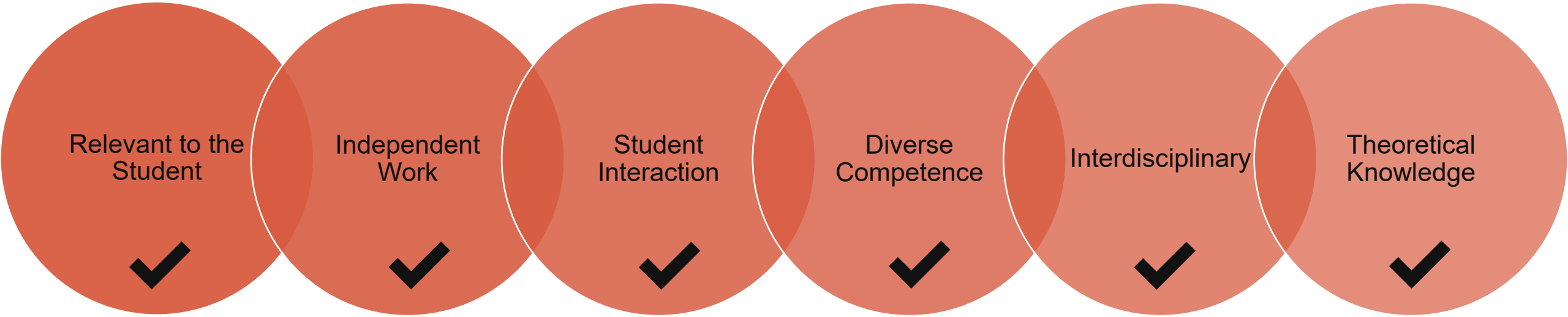
Case Study – Pumped Storage Plant

Example Exercise in “Data Analytics for Heavy Duty Machinery”



Reality check

Did we meet our requirements?



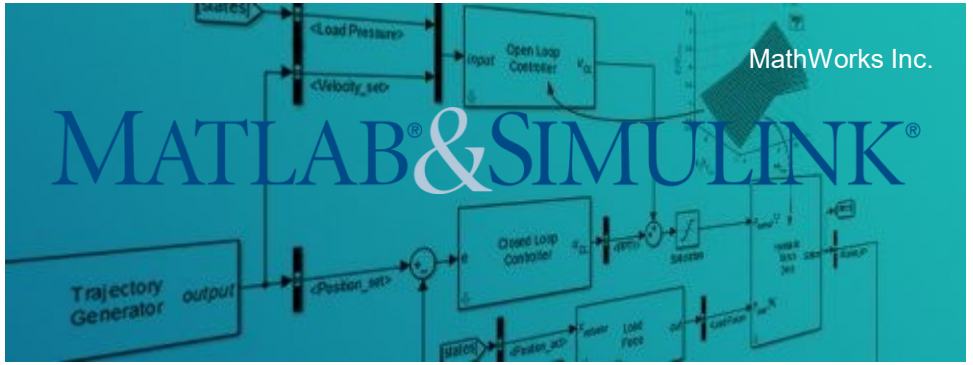
Motivation

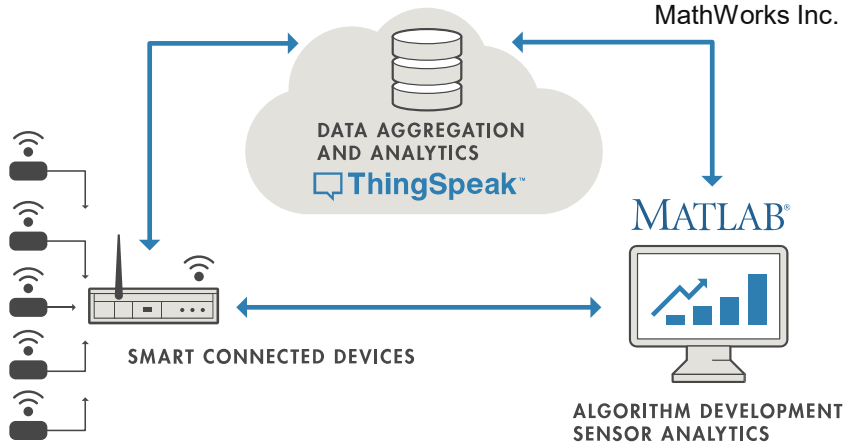
Skill

Knowledge

Next Steps

Going Virtual Lab





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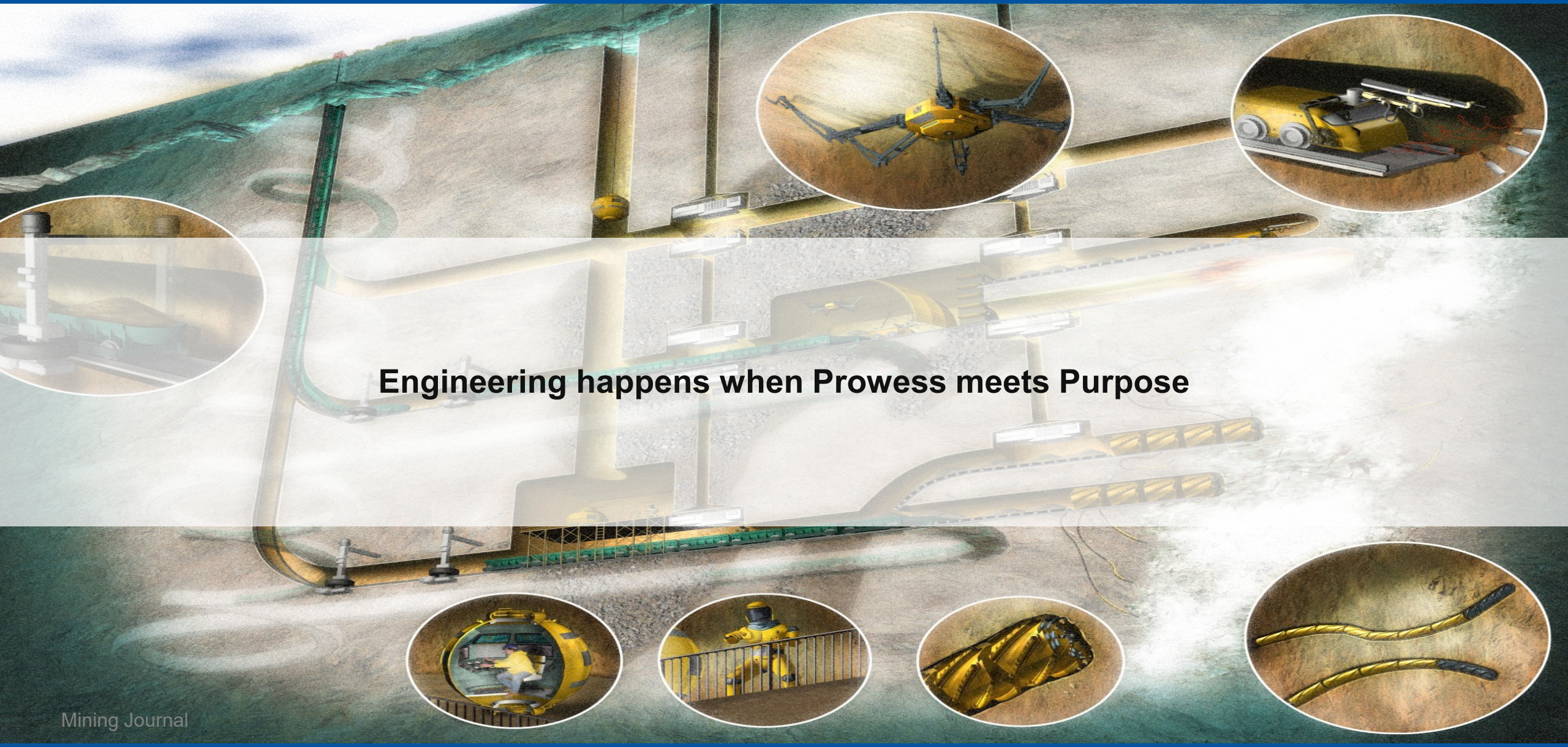

Thank you for your attention

Feel free to keep in touch!

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Institute for Advanced Mining Technologies

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