



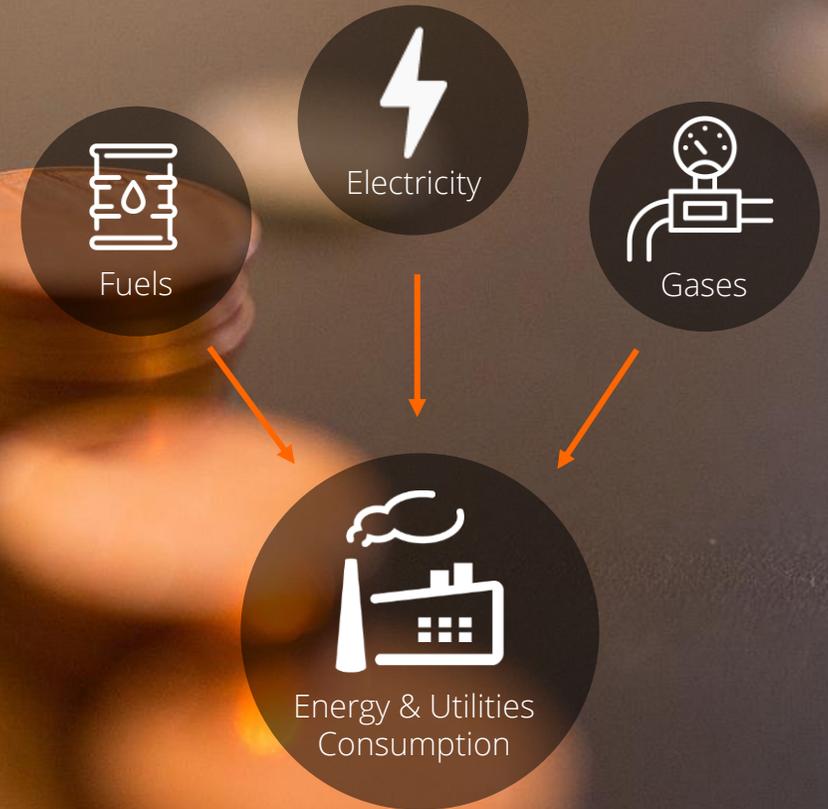
viridis

DIGITALIZING ENERGY &
UTILITIES MANAGEMENT

THE CONTEXT

Energy-intensive **manufacturing companies** spend **20% to 50%** of **overall costs** on energy and utilities

- hundreds of millions of USD per year
- dozens of energy inputs
- new energy alternatives
- growing management complexity
- pressure for lower costs
- pressure for environmental sustainability



WHERE IS IT APPLICABLE

MANUFACTURING

steel, mining, chemical, food & beverage, paper, cement, automotive, etc.

DISTRIBUTED OPERATIONS

water & sanitation, telecommunications, retail, banks, etc.

applicable to businesses where energy & utilities management can create a competitive advantage

WHO TRUSTS IT

352 PJ of energy
managed
per year

352 peta joules (10^{15} joules) = 98 TWh (10^{12} watt-hour)

Equivalent to all electricity consumed in
Argentina or the **Netherlands** for a full year



THE VALUE PROPOSITION

**VIRIDIS
DIGITALIZES
ENERGY & UTILITIES
MANAGEMENT**

We enable
**reductions of
5% a 15%**
on average
over costs with the
whole Energy &
Utilities matrix



A silhouette of a construction worker wearing a hard hat and safety vest, standing on a ladder. The background is a sunset sky with orange and yellow tones and scattered clouds. The worker is positioned on the left side of the frame, looking towards the right.

THE BENEFITS

- Direct cost reductions
- Improved planning and management
- Improved team efficiency
- Risk mitigation

THE PROBLEM

Energy & utilities costs are **severely under-managed**:

- **Wasteful processes**
- **Leakages**
- **Little or no accountability for energy spending**
- **Poor costing**
- **Difficulty to promote efficiency initiatives**
- **Inaccurate forecasting & planning**
- **Ineffective management workflow**

Management is scattered and teams lack dedicated tools to do their job more efficiently

There are many opportunities for improvement

THE STATUS QUO



Corporate Management

Corporate management, often disconnected to the shop-floor
Focus on: costs, planning, budget, supply chain

GAP

INTEGRATING REAL-TIME
CONTROL AND CORPORATE
MANAGEMENT MAY UNLOCK
HIDDEN SOURCES OF VALUE

**For ENERGY management
the gap is still HUGE**

(in part due to the large quantities of data required
to measure and manage it)

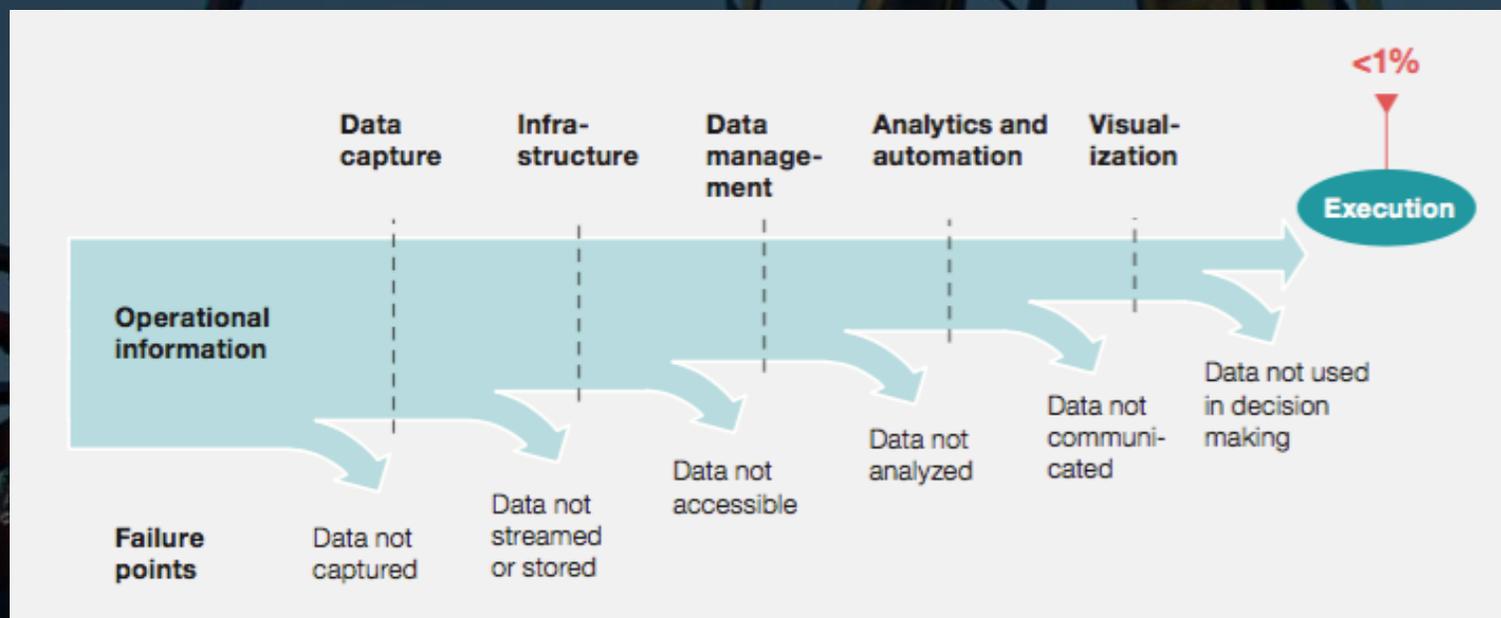


Shop-Floor

Real-time control, focus on processes, production, quality

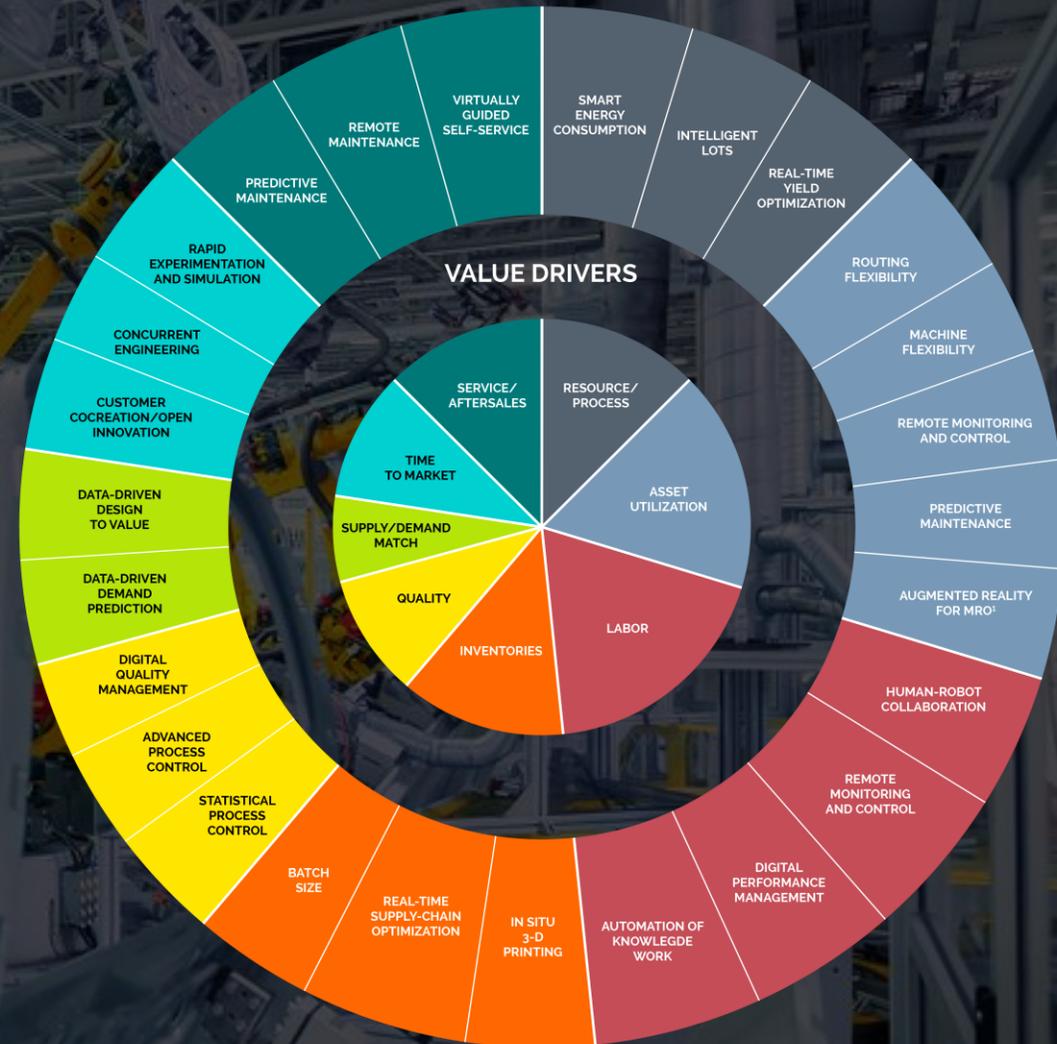
- There are no end-to-end tools
- Teams employ an abundance of spreadsheets for manual integration and management
- No one captures the value of combining shop-floor energy control (real-time, big data, process monitoring) with corporate energy management (targets, accountability, costing, budgets, contracts, supply chain, efficiency)

INDUSTRIAL BIG-DATA IS COMING TO LIGHT...



Source: How digital innovation can improve mining productivity. The McKinsey Quarterly. November 2015.

... AND WE ARE WITNESSING THE START OF THE FORTH INDUSTRIAL REVOLUTION



PRODUCTS

MODULES



INTELLIGENCE



Statistical Modeling



Simulation



Optimization



EFFICIENCY



Advanced Consumption



Advanced Generation & Conversion



Emissions



Balances



Benchmarking



Continuous Improvement



Savings & Cost Avoidance



PLANNING



Forecasting



Planning & Simulation



Contracts



Budgeting



Accounting



TRACKING



Energy & Utilities



Meter Grids



Equipment



Consumption



Generation & Conversion



Stock



PLATFORM



System



Configuration



Gateway



Data Ingestion



Data Quality



Historian



Infoboards

DIGITAL TRANSFORMATION & INDUSTRY 4.0



Mobile



IoT



Big Data



Analytics



Computational Intelligence



DevOps



Cloud



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SMART ENERGY MANAGEMENT