



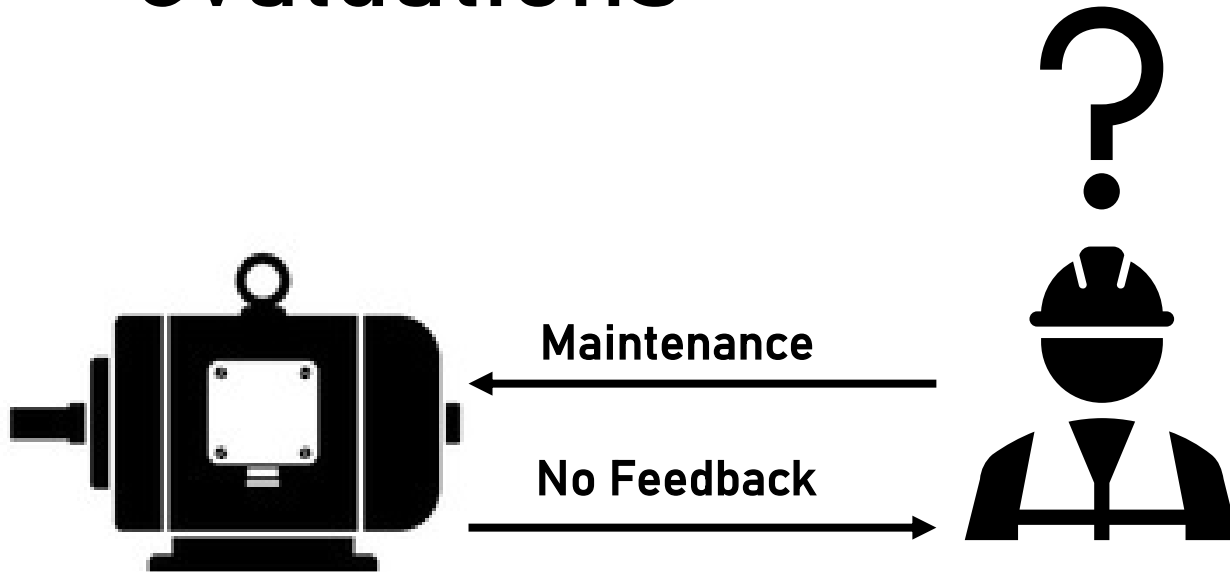
# Condition Monitoring & Maintenance 4.0

Gears • Turbines • Engines • Hydraulic systems • Rolling and plain bearings •  
Special applications

Cooperation & Joint ventures

We offer a strong partner the opportunity to grow with us and jointly conquer the market for maintenance software & Industry 4.0

# The problem: missing data & evaluations



- Lack of knowledge about the actual condition of machines and systems
- No process monitoring options
- Reactive maintenance
- No use of maintenance strategies → Fire department strategy!
- Lack of asset management
- Inadequate documentation
- No maintenance controlling due to missing process data & key figures
- Inadequate spare parts inventory
- The unpredictable human factor on the machine, incorrect operation and manipulation

# The Solution:

## Condition Monitoring software





















- ✓ Condition Monitoring
- ✓ CPS
- ✓ Strategie
- ✓ Asset Management

- ✓ Key figures
- ✓ Wear reserve
- ✓ Fault messages
- ✓ AI



- Cooperative Maintenance management
- Modernization of machines and systems  
➔ RETROFIT
- Condition Monitoring und Prozesstechnology
- Artificial Intelligence und IOT
- CPS-Toolbox
- Maintenance controlling
- Asset Management
- Advice and implementation in the field of machine and operational safety
- ROI Return on Invest
- Elimination of faults

# The result:

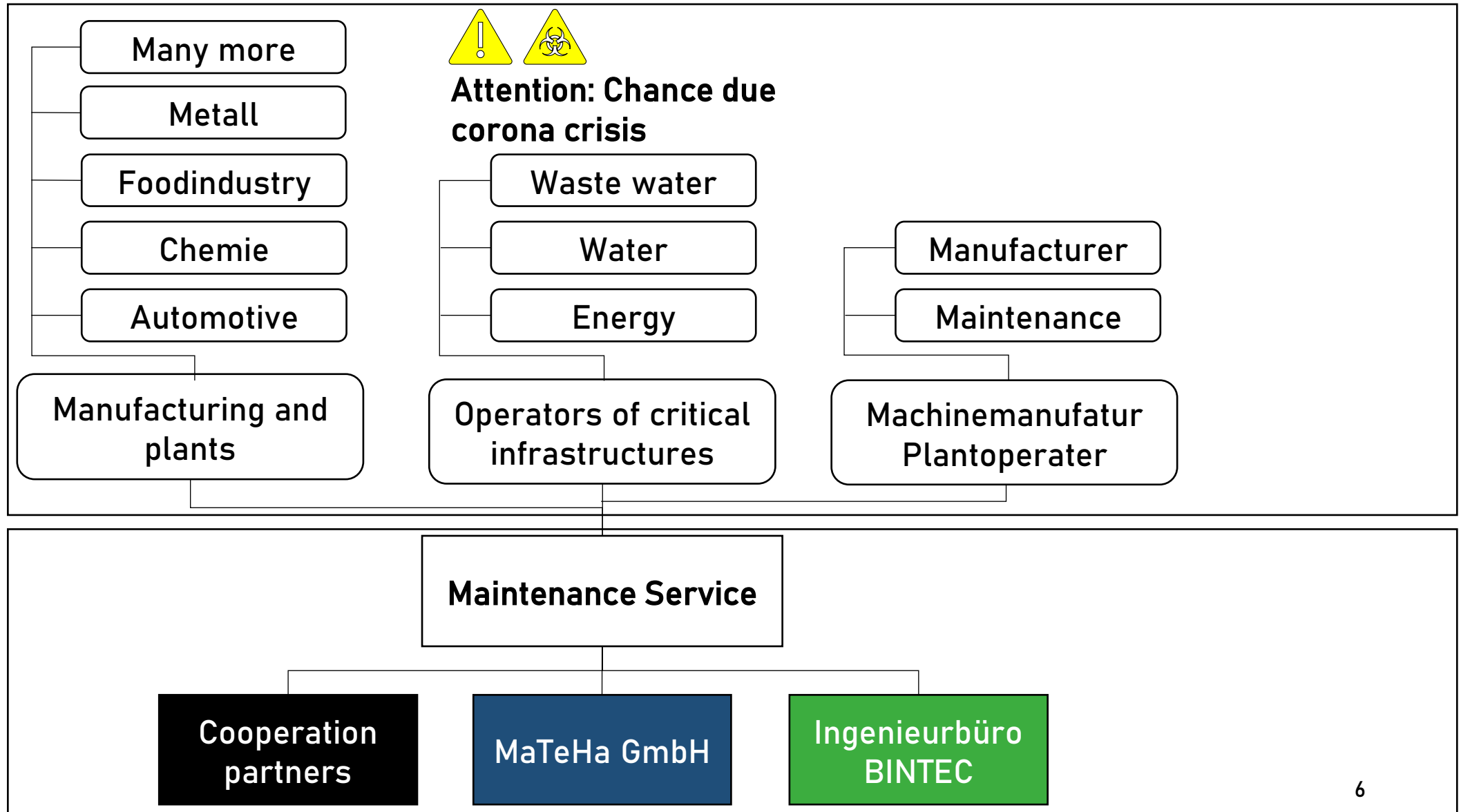
- Perfect process understanding  
- Optimal availability  
- Minimization of unplanned downtimes  
- Increase of productivity  
- Lower maintenance costs  
- Recovery of solution competence  
- Legally compliant machines and systems  
- Quality improvement  
- Safe machines for safe work  

# The human factor and the consequences for machines / production

- Incorrect operation
- Manipulation
- Sabotage
- Ignorance of the processes
- Reluctance to work
- Missing leadership and guidelines
- Easy process monitoring
- Saving changes to the parameters and interventions in the existing structures
- Records of differentiated handling
- Detect changes by human

# Structural proposal

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# Social and management challenges

- Maintenance 4.0 requires a change in all areas of a company
- Critical data must be transported safely and protected against unauthorized access
- IT departments must be ready to introduce new mobile systems and software solutions, allow cross-plant data queries, and implement new authorization models
- People and their competencies play the most important role for "maintenance of the future"
- Humans have to evaluate the data and derive the right conclusions, only then Industry 4.0 can become a success

# It depends on the strategy

- The selection of the maintenance strategy is characterized by a trend towards condition-oriented and forward-looking maintenance strategies
- The integration of different sensor technologies in SCADA systems leads to a variety of data, which provides a basis for condition-based maintenance
- Deriving the right strategic decisions from this amount of data requires more than ever competent and trained maintenance personnel
- Because at the end of the day, the experienced maintenance engineer still knows his equipment best



# Predictive Maintenance

- The main advantages of Predictive Maintenance are a targeted production planning, a stable utilization of the machines and the avoidance of unscheduled machine failures
- The manufacturers of machines and plants are constantly developing new approaches to set up their machines in terms of preventive maintenance
- The VDI therefore expects a dynamic market environment in the area of maintenance 4.0 within the framework of industry 4.0