INDUSTRY 4.0

Mortoff is one of the most acknowledged IT consulting and service provider companies in Hungary and Central Europe

180 COLLEAGUES

15+ YEARS EXPERIENCE

3 OFFICES

70+ SATISFIED CUSTOMERS

550+ PROJECTS
**DATA COLLECTION**

**PLC CONNECTION**
Gather and transmit data obtained during the manufacturing process
- Different data from sensors
- Anomaly reports

**LOCATION TRACKING**
Visualize and analyze moving vehicles or people the area of factories and warehouses.

**WARNINGS BASED ON**
- Analytical data
  - Trend monitoring
  - Aggregated calculation
- Changes in manufacturing data
  - Real time monitoring of sensor limits

**REAL TIME REPORTING**
- OEE
- YIELD
- Waste time
Manufacture Planning

**SUPPLY CHAIN TRANSPARENCY**
- Logistics Optimization
- Environmental Data
- External inputs

**MAINTENANCE STRATEGY**
- Machine Condition Monitoring
- Anomaly Detection
- Predictive Diagnostics

**PRODUCT**
- Product Models
- Product Lifecycle
- Machine/Process Simulation

**FACTORY**
- Linking order and material flow
- Scheduling
PROCESS OPTIMIZATION

ARTIFICIAL INTELLIGENCE
- Evaluation of process and machine capability
- Optimize based on observed correlations
- Optimizing quality and process parameters
- Analyzing and improving the process flows using process mining.

DATA ANALYSIS
- Knowledge from data
- Automation of data analytics with machine learning

PREDICTIONS
- Predictive maintenance for preventing asset failure
- Prediction of possible quality issues

PROCESS ANALYSIS
- Optimize manufacturing process
QUALITY ASSURANCE

QUALITY INSPECTIONS

• AOI (Automated Optical Inspection)

• SPI (Solder Paste Inspection)

TRACEABILITY

• Component Traceability:
  Materials with unique part ID (serial numbers).

• Batch Traceability:
  Components/products are assigned
SALES FOLLOW UP

CRM
• Recording and reporting all customer intactions

REMOTE MONITORING
• Possible to monitor sold products to help customers immediately

CUSTOMER COMPLAINTS
• Record and report customer complaints to improve the product and the process

MANUFACTURING QUALITY SUPPORT
• Product analysis can help improve quality, customer satisfaction, and loyalty.
R&D and Product Development

**PROJECT MANAGEMENT**
- Tracks progress and coordinates all internal resources, and members of the team
- Deliver the product on time

**PRODUCT DESIGN**
- Defining technical specifications
- Making first prototypes
- Mockup design

**DEVELOPMENT TEAMS**
- Develops the product according to desired specification
- Implement requirements and change requests
- Fix defects

**TESTING**
- Set up and verify the test environment
- Develop the test specifications, conduct the test and record the results for the different items of the software
- Assist the users in UAT
SOLUTIONS FROM MORTOFF

- MOPASS (Mortoff Production Assistance System)
- REACH – Data Collection Platform
- MITRAS – Indoor Tracking System
- RPA – Robotic Process Automation
- CRM – Customer Relationship Management
- Team outsource in R&D
Modules of MOPASS

- Production KPIs
- Real Time Data Processing
- Traceability
- Analytical Reports
- Management Reports
- Change Management
- Warning of Related Personal
- Auditing Functions
REACH

Real-time Event-based Analytics and Collaboration Hub
REACH Industry 4.0 Smart Factory continuously collects and analyzes data on manufacturing equipment, leveraging the performance of distributed computing systems.

- Real Time data collection
- Big Data environment
- Complex event processing
- Machine learning
MITRAS – MORTOFF INDOOR TRACKING SYSTEM

Process optimization of indoor moving units

• **Real-time task management** - Receive alerts about unwanted operational movements
• **Just in time logistics** - Increase efficiency and minimize losses by eliminating bottlenecks, waiting times and delays
• **Transport unit monitoring** - Track, visualize and analyze movements of indoor moving units
ROBOTIC PROCESS AUTOMATION (RPA)

Robotization of processes
Induction of repetitive, manual and well-algorithmic processes by robots.

Work more efficiently, faster, error-free:
- Finance (eg invoice processing, tax administration)
- Backoffice (eg filling in, processing, synchronizing incomplete data),
- Customer service (eg collection of customer information)
CUSTOMER RELATIONSHIP MANAGEMENT

- High scale implementations
- Vendor independent knowledge
- Cross industry experience
TEAM OUTSOURCE FOR R&D

• Covering the whole development cycle
• Cooperation with Tier1 suppliers
• Quick team scale up
• Top quality professionals
References
Telecommunication

- Magyar Telekom
- T-Systems
- telenor
- telenor Serbia
- vodafone
- UPC

Finance

- Budapest Bank
- SIGNAL BIZTOSITÓ
- ERSTE Bank
- Fundomenta
- Generali
- Union
- OTP Bank

Industry

- DENSO
- BOSCH
- GE
- GM
- KNORR-BREMSE
- MOL
- TRUMPS
- ALSTOM

Others

- ringier
- cora
- ELMŰ
- PROFESSION
- IT SERVICES
- JMAC
- KPMG