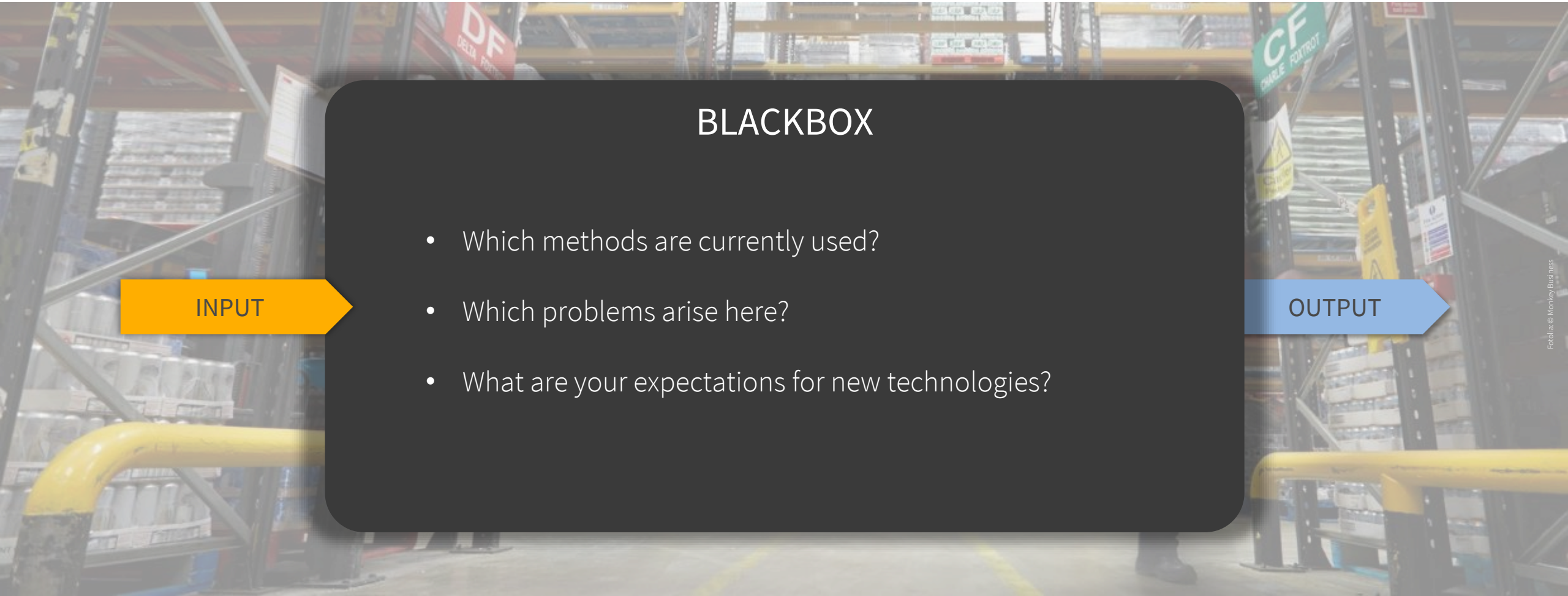
MOTIONMINERS

Process Analytics as it should be

Real Data, Zero Effort – with Motion-Mining®

How do you Penetrate the Black Box?

Status quo and expectations



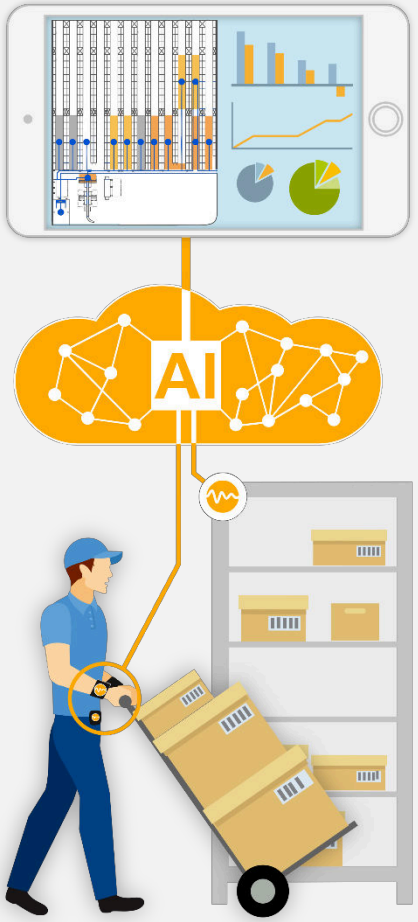
What Does a Common Process Analysis Look Like?

Significant effort caused by many manual activities

- process documentation
- measure and observe (REFA)
- evaluation of databases
- target time determination (MTM)
- create analysis
- process optimization
- reporting
- ergonomics improvements

Our Solution: Motion-Mining®

Automated measurement and analysis of manual activities



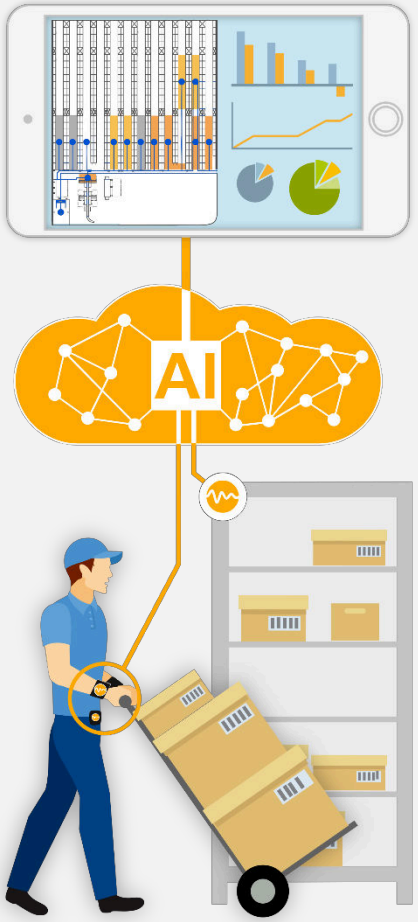
Motion-Mining® enables an automatic analysis of your work processes, e.g., in logistics or production.

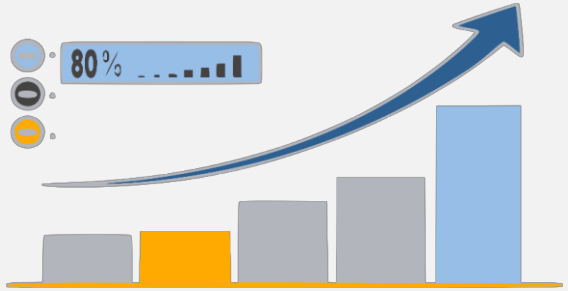
- Your employees wear three wearables on their wrists and belt to record the various activities.
- The localization takes place via micro-radio transmitters, so-called beacons.
- The obtained data is automatically analyzed. Individual activities and process steps are recognized using a self-developed, state-of-the-art deep learning pattern recognition solution.
- This delivers very precise process indicators

Efficiency and ergonomic optimization measures – tailored to your needs.

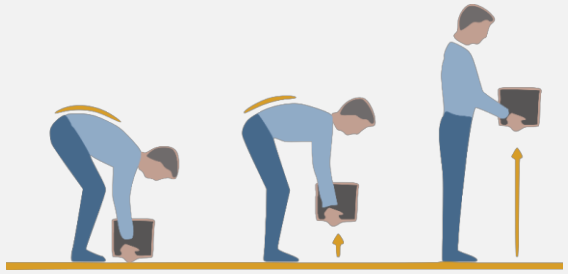
Our Solution: Motion-Mining®

Automated measurement and analysis of manual activities





Extensive Efficiency Analyzes



Identify Ergonomic Risks

Unique Selling Propositions (USPs)

Advantages of Motion-Mining®

No integration into the operational IT necessary

Complete anonymization of employee data

Holistic analysis of efficiency and ergonomics

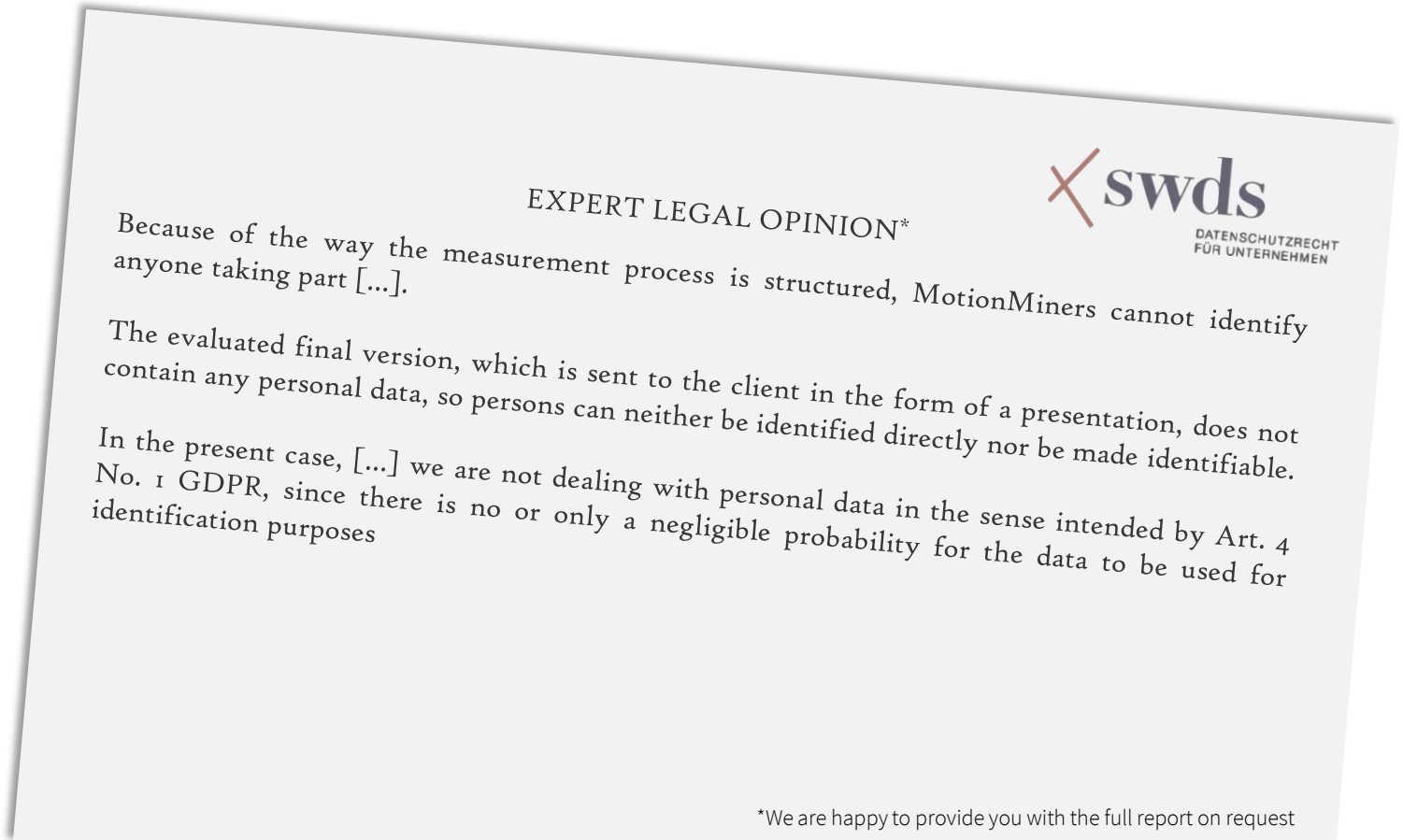
Time savings through automatic measuring and analysis

Motion-Mining and the GDPR

Legal assessment of the measurement process and the technology

Legal opinion confirms:

- No collection of personal data
- Personal data is therefore not processed
- The GDPR do not apply to Motion-Mining-Analysis



EXPERT LEGAL OPINION*

swds
DATENSCHUTZRECHT FÜR UNTERNEHMEN

Because of the way the measurement process is structured, MotionMiners cannot identify anyone taking part [...].

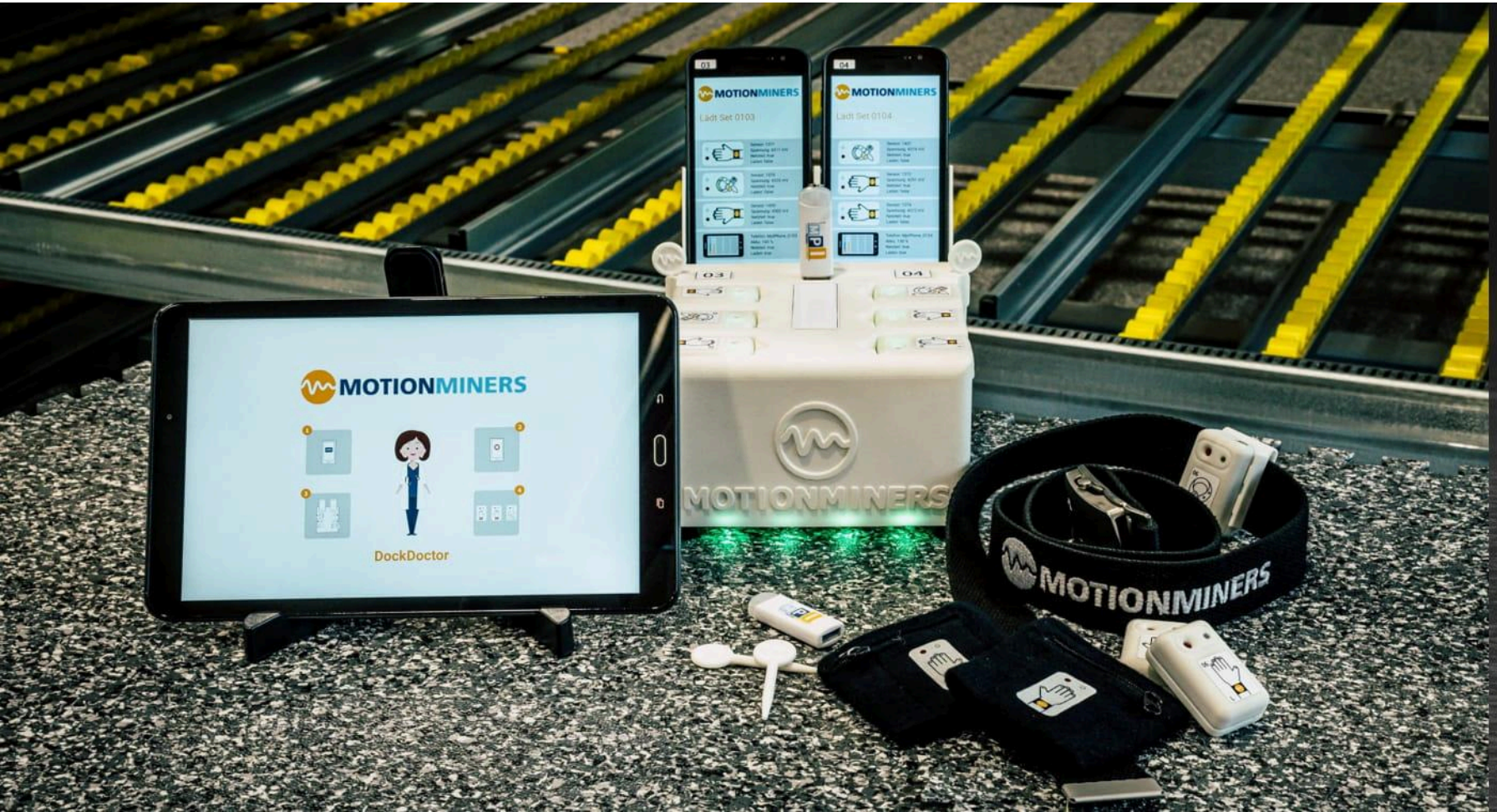
The evaluated final version, which is sent to the client in the form of a presentation, does not contain any personal data, so persons can neither be identified directly nor be made identifiable.

In the present case, [...] we are not dealing with personal data in the sense intended by Art. 4 No. 1 GDPR, since there is no or only a negligible probability for the data to be used for identification purposes

*We are happy to provide you with the full report on request

The Motion-Mining-Technology

User-friendly measuring equipment



We offer Motion-Mining® as a **service** and as a **product**

- Your employees can independently collect the measured data
- Our measuring equipment allows your employees full freedom of movement
- Our first-aid app "DockDoctor" will help you with any questions you may have.

Consulting Services

The Motion-Mining® approach

1 Preliminary Discussion
Selection of use case and setting of goals
Definition of requirements and constraints

- **Process Profile**
- **Effort Estimation**

2 Offer
Definition of project scope, deadlines, project price and additional costs

- **Opt. Test Measurement (1 Day) for AI-Teaching**
- **Opt. Interim Status & Further Actions**

3 Measurement & Analysis
Measurement over a use case specific time period
Analysis and identification of potential optimization

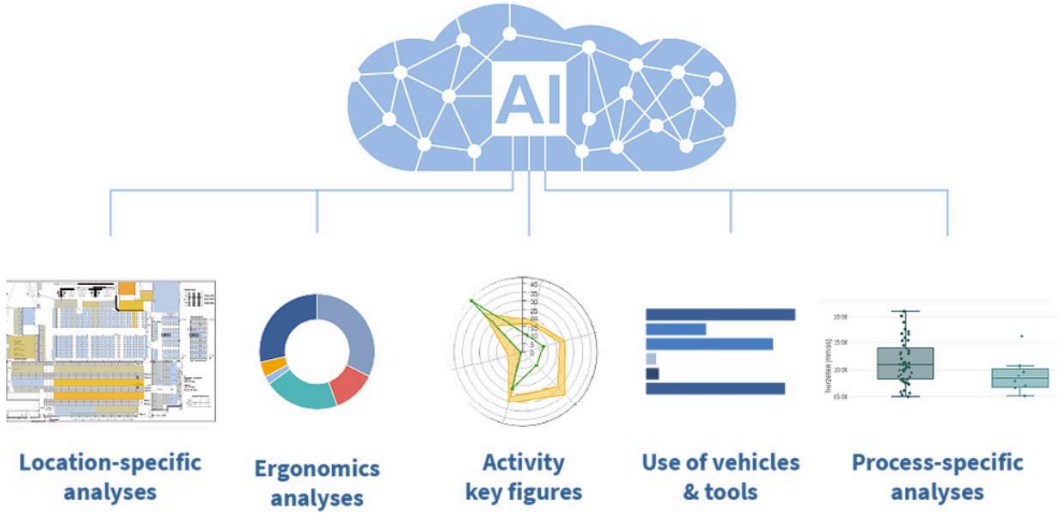
4 Presentation of Results
Presentation of KPIs, figures and diagrams
Findings and recommendation of Action

The Product – Manual Process Intelligence (MPI)

Process information retrieved quickly & easily thanks to the measuring case & MPI platform

User-Friendly Analysis Dashboard

AI assisted data evaluation

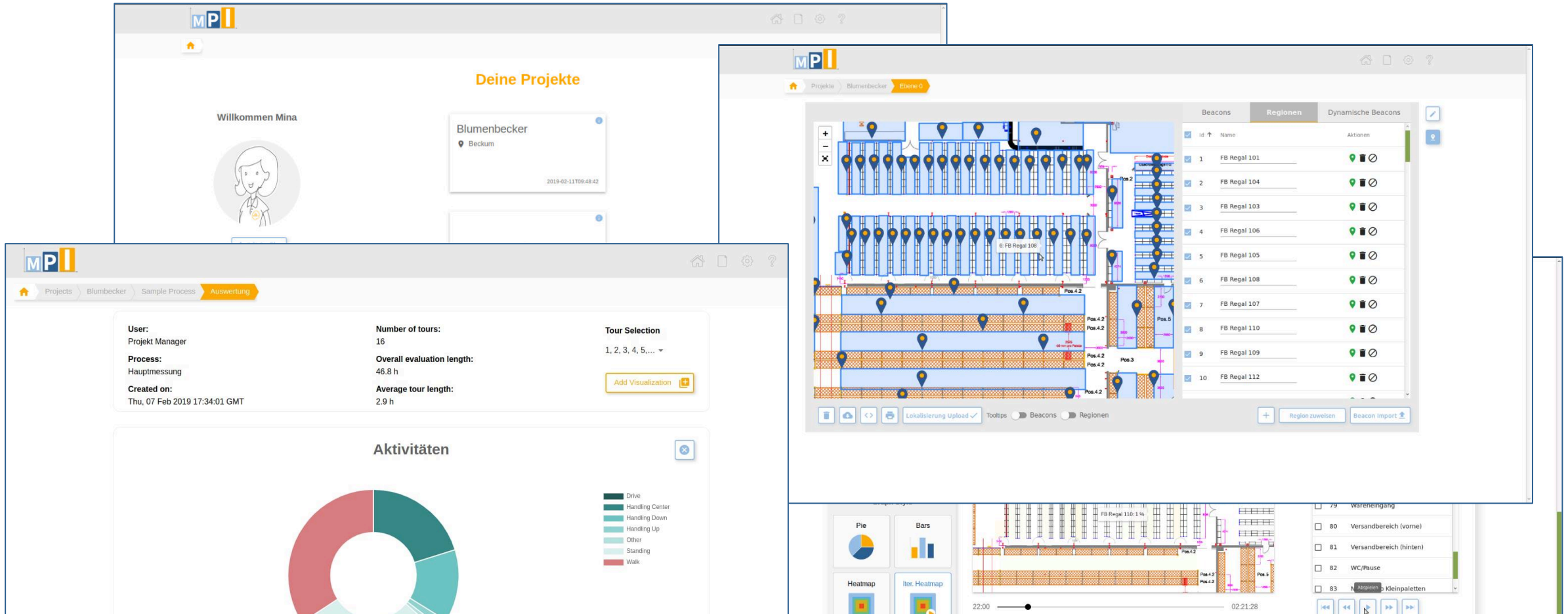


The analysis dashboard of the MPI platform allows you to create and evaluate the processes:

- Evaluation of uploaded measurement data by AI models
- Generation of specific key figures
- Choice of graphical depictions
- Reporting and export functions

Die MPI-Plattform

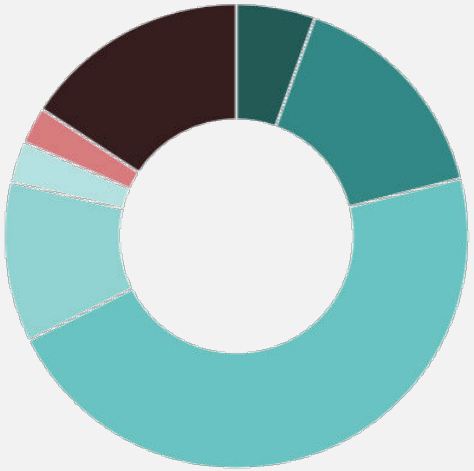
Available under mpi.motionminers.com



General evaluations

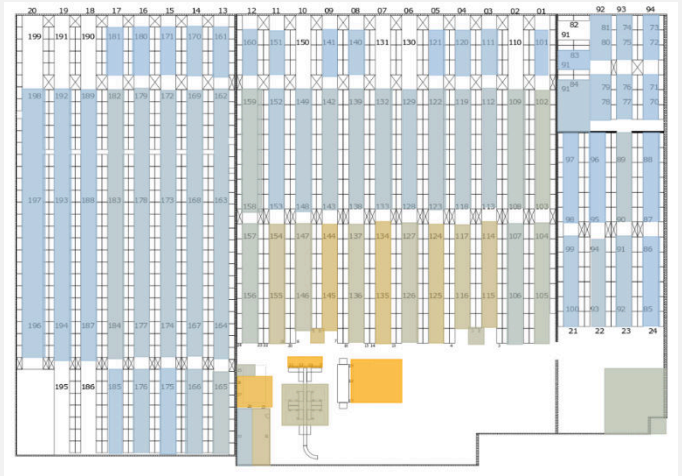
Three basic dimensions of analysis

activities



drive
walk
handling bended
handling neutral
handling overhead
sit
other
stand

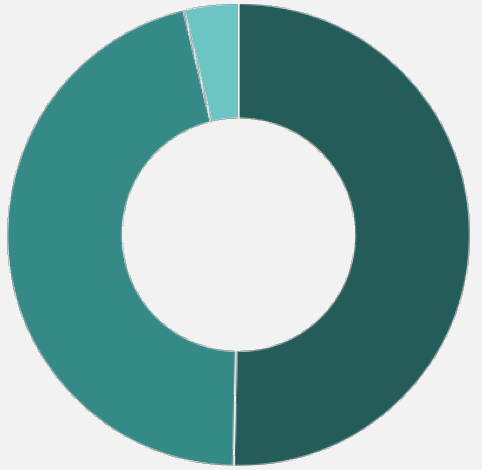
localization



Anteil der Verortung:

low high

ergonomics



Average key figures per shift:

Bridging movements: 1.266

Overhead movements: 164

steps: 6.339

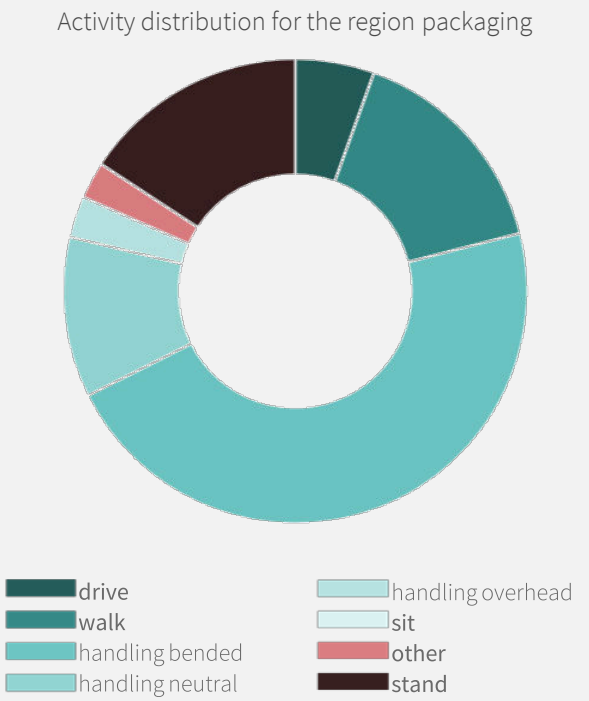
distance: 4.437 m

Handling bended
Handling neutral
Handling overhead

Data analysis

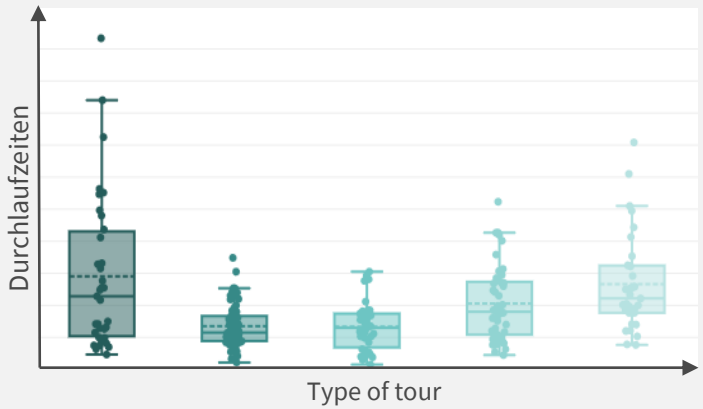
Various possibilities to filter and analyze the data

Activities per region



Iterative Heatmap

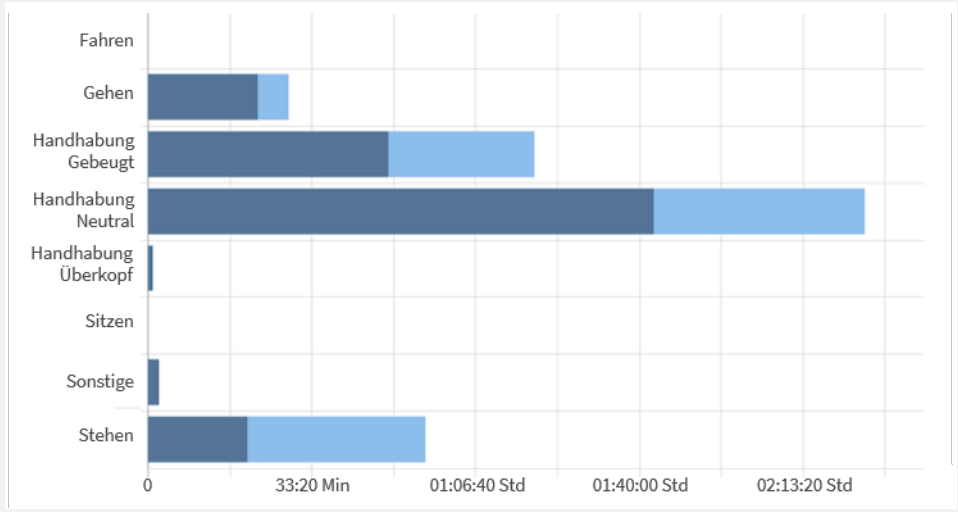
Statistical evaluations



Key figures

Detailed activities automatically determined for tools, trolleys and vehicles

tools/ trolleys

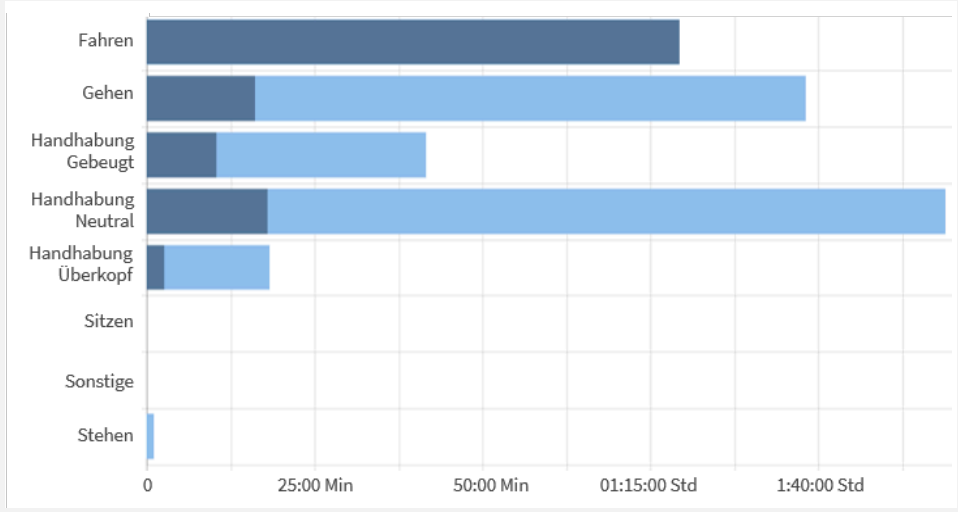


Average key figures per shift:

In use Nearby

Share in overall process: **69,7%**
Number nearby: **600**
Number of in use: **381**

vehicles



Average key figures per shift:

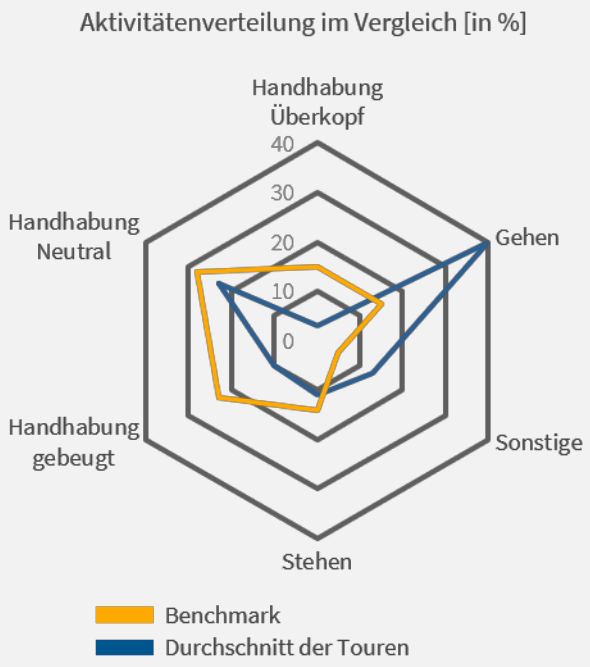
In use nearby

Share in overall process: **38,2%**
Number nearby: **356**
Number of in use: **223**

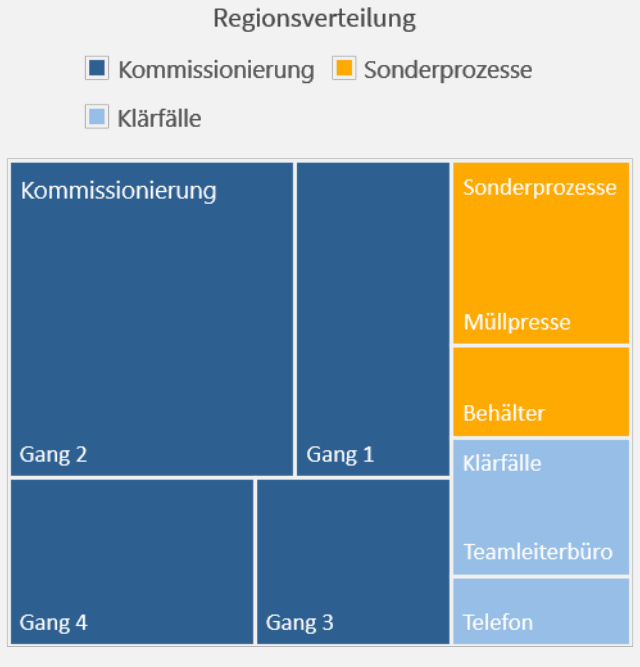
In Depth Analyses

Future functions of the platform

Network charts



Treemaps



Further analyses

- Leitmerkmal Methode

Kategorie	Wert	Begründung
Lastwichtung	1	Geringe Last <10 kg einer einzelnen Handhabung
Körperhaltung	4	Schlechte Körperhaltung, tiefes Beugen,
Ausführungs-bedingungen	1	Gute Ausführbedingungen, keine Hindernisse, ebener rutschfester Boden, ausreichend beleuchtet
Summe	6	
x Zeitwichtung	6	Frequenz von 368 Bewegungen gemessen
Belastungsbeurteilung	36	Wesentlich erhöhte Belastung

10 25 50

- Matching mit Auftragsdaten

Recognize and Improve Ergonomics and Workflows

Examples of our identifying capabilities

Posture

neutral standing

good and bad lifting posture

overhead handling posture

(...)

Movements

walking

carrying

driving

cleaning

(...)

Exposure Periods

second evaluations

regularities

Repetitions and Vibrations

repeated movements

vibrations

Exemplary Use Cases

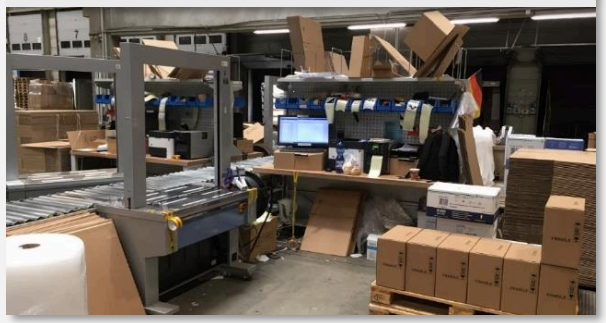
Previous Motion-Mining projects (1/2)

Inbound

Storage

Order Picking

Packing



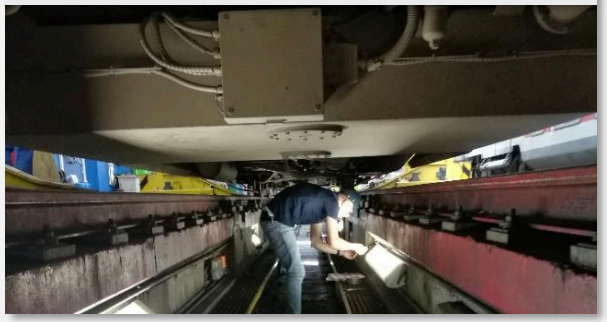
Outbound

A/B-Tests

Exemplary Use Cases

Previous Motion-Mining projects (2/2)

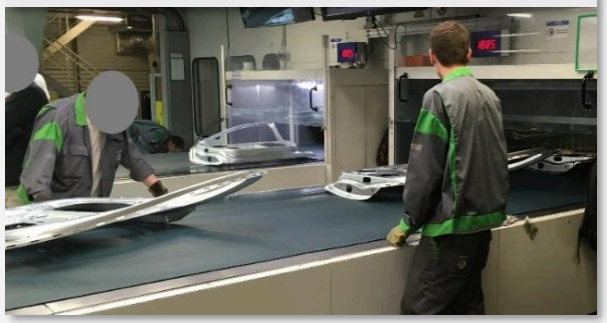
Maintenance



Production

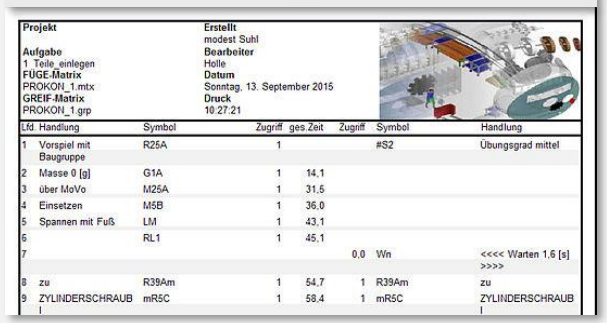
Setup

Quality Control



Control Processes

MTM-Supplement



Projekt		Erstellt				
Aufgabe		modest Suhl				
1 Teile_einlegen		Bearbeiter				
FÜGE-Matrix		Holle				
PROKON_1.mtx		Datum				
GREIF-Matrix		Sonntag, 13. September 2015				
PROKON_1.grp		Druck				
		10:27:21				

Lfd.	Handlung	Symbol	Zugriff	ges.Zeit	Zugriff	Symbol	Handlung
1	Vorspiel mit Baugruppe	R25A	1			#S2	Übungsgrad mittel
2	Masse 0 [g]	G1A	1	14,1			
3	über MoVo	M25A	1	31,5			
4	Einsetzen	M5B	1	36,0			
5	Spannen mit Fuß	LM	1	43,1			
6		RL1	1	45,1			
7					0,0	Wn	<<<< Warten 1,5 [s] >>>>
8	zu	R39Am	1	54,7	1	R39Am	zu
9	ZYLINDERSCHRAUB I	mR5C	1	58,4	1	mR5C	ZYLINDERSCHRAUB I

Use Case: BUNZL

Hidden efficiency potential of 40% were revealed

Achievements

Testimonials

"As a result of the MotionMiners project in our ECOM logistics centre, it was possible to identify weak points in the area of warehousing and significantly increase efficiency. In the course of this project, different order picking trolleys were compared in terms of ergonomics and the most effective order picking trolley was determined."

~ Rainer Schmid
Head of Logistics DC E-Commerce
Hugo Boss AG

HUGO BOSS

Achievements

Testimonials

"We do not leave anything up to chance. This not only applies to our products and system solutions, but also to our internal workflows and logistics processes. With MotionMiners, we had a trusted partner at our side when it came to process analysis and optimization in Europe's most modern logistics center for industrial supplies. From the uncomplicated planning and as-is analysis to the smooth progress of the project and the identification and implementation of optimization potentials: a goal-oriented and partner-like cooperation".

~Helmut Eisenkolb
Head of Logistics Department
Würth Industrie Service GmbH & Co KG

WÜRTH

Achievements

Testimonials

"The Motion-Mining® technology enables us, as process consultants, to offer new analysis possibilities for process optimization.

fischer Consulting was convinced not only by the richness and quality of the data, but also by the possibility of conducting ergonomic evaluations of workstations and process systems.

A perfect symbiosis for optimising processes and ergonomics. And at the same time with a modest utilization of resources, something which in the past could not be determined nearly as well by means of close process observation.

With the MotionMiners team, we have an innovative partner who reacts quickly to our needs, provides excellent support and, with the MPI platform, offers us a well-founded analysis option for our customers".

~ Jan Greschner
Head of Sales & Marketing
fischer Consulting GmbH

fischer CONSULTING

MotionMiners GmbH

At a Glance

Sensors

Hardware development (sensors),
Software and firmwares for sensors,
Production and Maintenance,
Mobile applications

Dr.-Ing. Sascha Feldhorst

Analysis

Plattform development (MPI)
Data analysis: platform and custom evaluations for projects

Dr.-Ing. René Grzeszick

Sales & Projects

Project and product sales,
Consulting projects,
Support for product customers

Sascha Kaczmarek

Achievements

We are proud of our accomplishments

Business References – Consulting Service

DB, BUNZL, DACHSER Intelligent Logistics, B. BRAUN ACCELERATOR, NAGEL-GROUP, BLUMENBECKER, ISABELLENHÜTTE Innovation aus Tradition, ASM Logistics, DEUTZ, BOSS HUGO BOSS, JOH. CLOUTH

Business References – Product Solution (MPI)

META Das Lagersystem, SFS, WÜRTH, Linde Material Handling, REWE digital, BESTES PRODUKT 2020 LogiMAT, DB SCHENKER, lbn Think. Plan. Inspire., RHENUS LOGISTICS, fischer CONSULTING, agiplan

Awards

eXIST Existenzgründungen aus der Wissenschaft

1. PLATZ Digital Logistics Award 2017

cet Centrum für Entrepreneurship & Transfer. 1. Platz Award für Startups 2018

Winner VDI-Innovationspreis 2019

TOP 50 START-UP 2018

Top-Innovator

start2grow 1. Platz und Sonderpreis Technologie

KARL KOLLE STIFTUNG Startup Award 2018

RUHRSUMMIT BOCHUM, 11+12 OCTOBER, 2018 Gewinner Startup-Pitch

Winner Innolution Valley Award

GRÜNDER WETTBEWERB DIGITALE INNOVATIONEN

breakthrough 2019 award

Investorensicht

TOP 10% of startups rated by Early Metrics

2nd year in a row: MotionMiners is among the top 6% of the 3000+ startups evaluated by Early Metrics

We look forward to working together!

Stay in Motion