

Motion Mining in industrial practice

WAREHOUSE [][®]
LOGISTICS

induvation
industrial innovations

What companies know about their manual processes

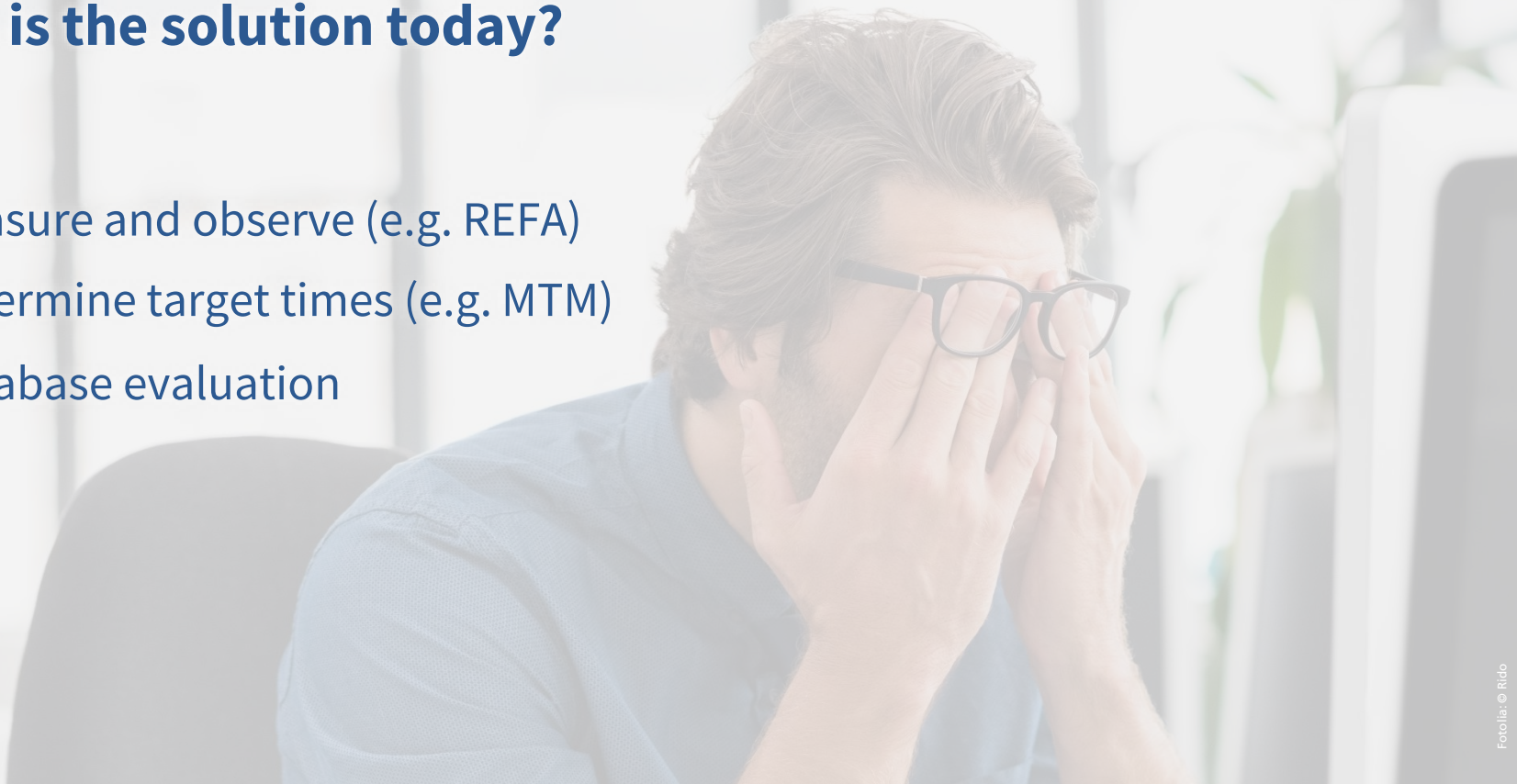
INPUT

BLACKBOX

OUTPUT

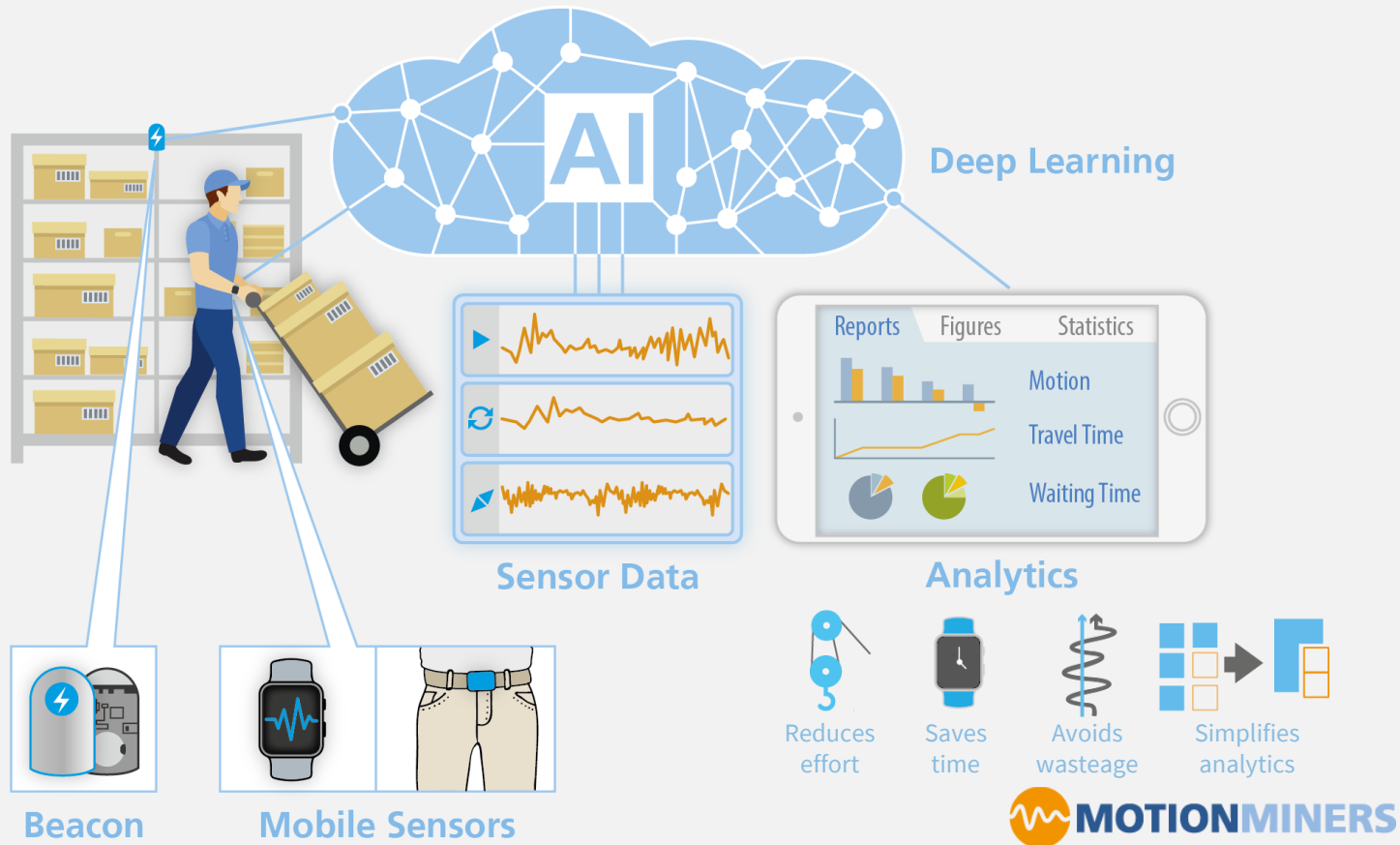
What is the solution today?

- Measure and observe (e.g. REFA)
- Determine target times (e.g. MTM)
- Database evaluation



Fotolia: © Rido

Our Solution: Motion Mining[®]



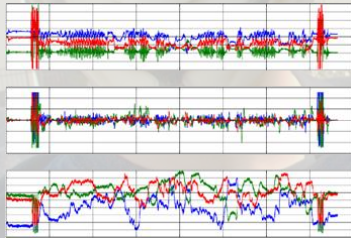
Unique Selling Points

ADVANTAGES OF MOTION MINING®

- ✓ No integration in corporate IT required
- ✓ Holistic analysis of KPIs and ergonomics
- ✓ Time reduction due to automated data acquisition & analysis
- ✓ Thorough Anonymization of all employee data that is collected

Anonymization

Data does not contain
personal reference



Recording-sets are not
linked to worker



Organization
(changing staff)



Average
values

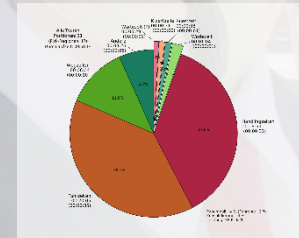
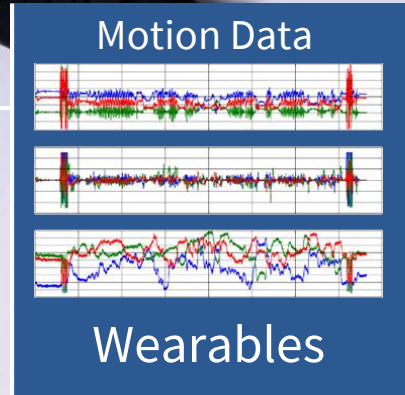
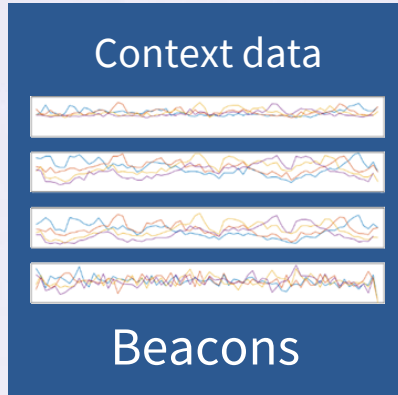


Bild: Vincent Diamante - Anonymous at Scientology in Los Angeles

Technology – Measurement Equipment

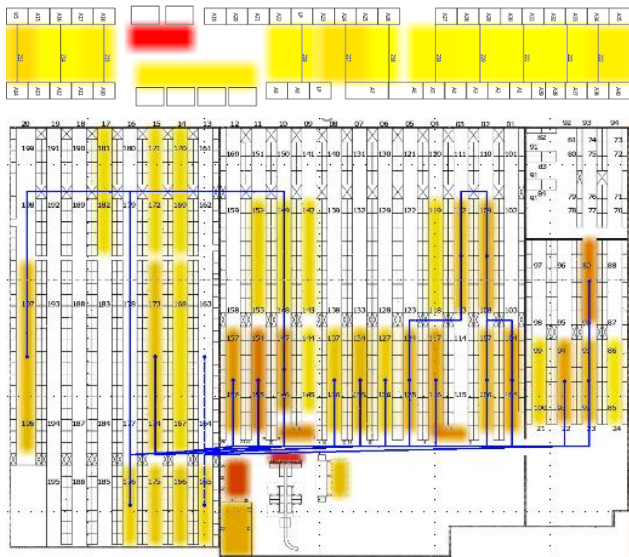


Technology – Docking Station

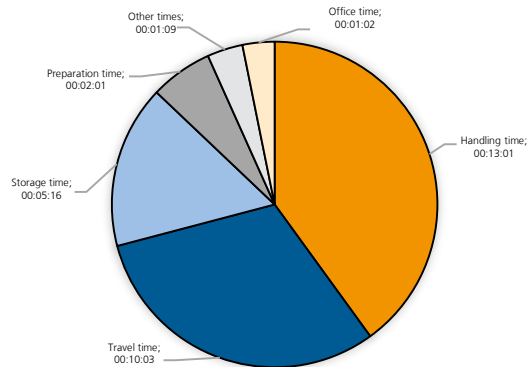


Exemplary Results

I Heatmaps and Spaghetti-Diagrams

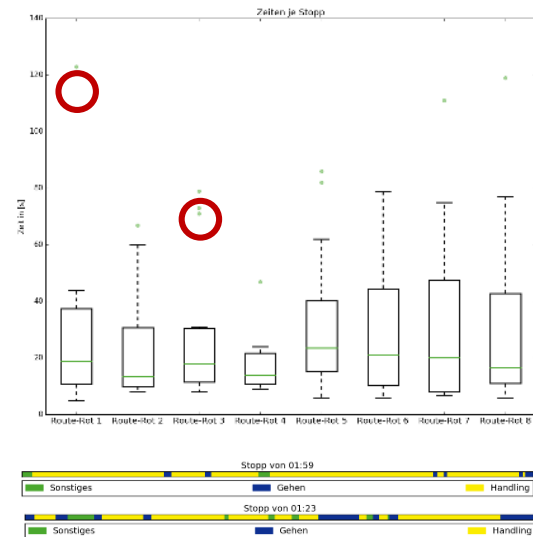


II KPIs concerning Efficiency + Ergonomics



Leitmerkalmethode		Kommentare und Annahmen	
Lastwichtung	1	Seitenteile sind recht leicht d.h. weniger als 5kg	
Haltungswichtung	3	Etwa ein Drittel der Handhabungen gebeugt oder erhöht	
Ausführungsbedingung	0	Die Ausführungsbedingungen sind gut	
Summe:	4		
Zeitwichtung:	6	Es werden durchschnittlich 5 km mit Last zurückgelegt	
Punktwert	24		

III Outlier Analysis



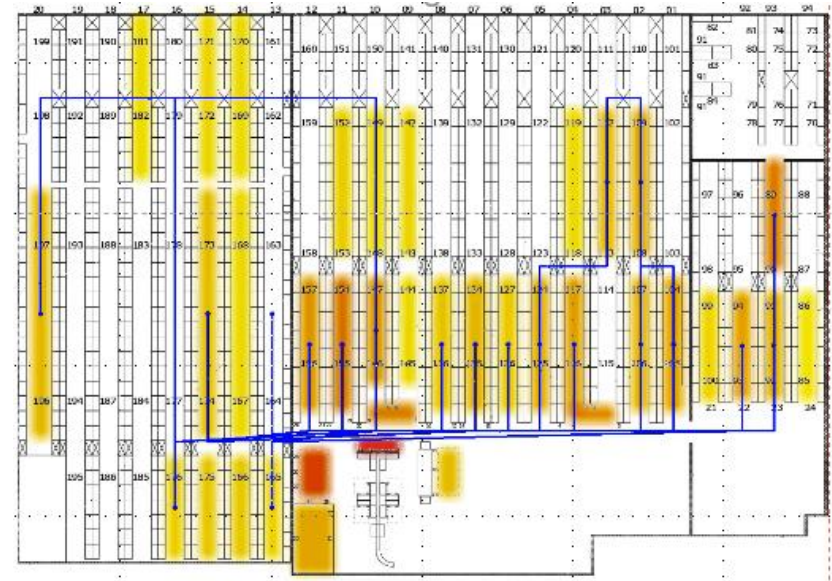
Use-Case: Process analysis BUNZL



target



actual



Picking: An example for deviation

Last pick at the opposing side of the warehouse

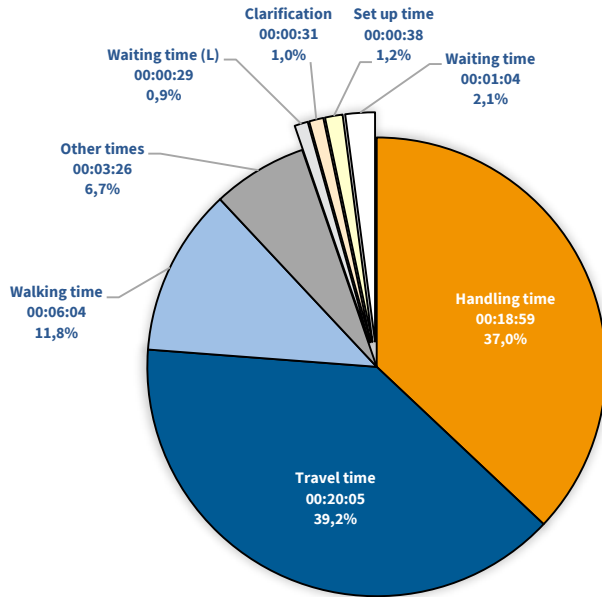
chemical storage unit is approached twice

5 unnecessary directional shifts



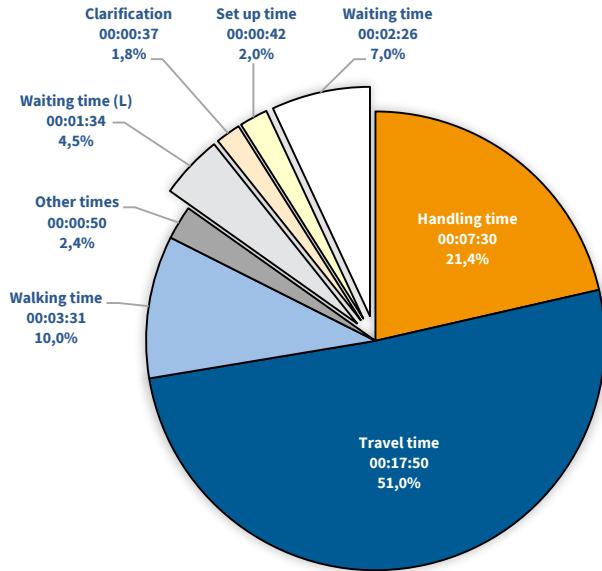
Savings potential:
Approx. 40 %
of the driving time
(20 % in total)

Picking: Average time share (Ko-Speed)



- 7 workers in process
- Throughput time: 51:14 min:sec
 - 33 stops per order
- Performance: 38 stops / h
- Accumulation: 4,0 % wastage:
 - 1,0 % clarification
 - 0,9 % waiting for lift truck
 - 2,1 % other waiting times

Picking: Average time share (Ko-Pak)



- 3 workers in process
- Throughput time: 34:20 min:sec
 - 21 stops per order
- Performance: 36 stops / h
- Accumulation: 13,3 % wastage:
 - 1,8 % clarification
 - 4,5 % waiting for lift truck
 - 7,0 % other waiting times

Exemplary suggestions:

Clarification – WiFi Calling

- Costs without WiFi Calling approx. **55.800 €** per year
- Investment costs approx. 7.200 €
- Total savings approx. 15.800 € per year (1/3 less clarification-times)
- **Rol: 5,5 Month**

Unnesesary distance travelled – Routing method

- Additional costs approx. **200.000 €** per year
- Alternative 1: work instructions
 - Start with the highest shelf number
- Alternative 2: optimized picking list
 - Follow the sequence of instructions

- Founded in October 2017
- A Fraunhofer IML Spin-off
- Digital.Hub Logistics Dortmund
- 15 Employees
- Leading provider for automated process analysis of manual processes



1. PLATZ
Digital Logistics Award
2017

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

mindbox
Winner StartupXpress 2018

start2grow
1. Platz und Sonderpreis Technologie

**GRÜNDER
WETTBEWERB**
DIGITALE INNOVATIONEN

References

ASM



Italian manufacturers of hand chocolate
and confectionery products

TOP SECRET

Who are the MotionMiners?

Management-Team



Sascha Feldhorst
Dipl.-Inform.

Activity Recognition and
Measurement Equipment



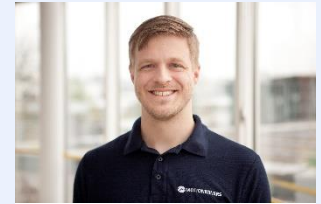
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and Finance



Das Vorhaben MotionMiners wird im Rahmen des EXIST-Programms durch das Bundesministerium für Wirtschaft und Energie und den Europäischen Sozialfonds gefördert.



Live-Demonstration