

# Model Warehouse



Experiential  
learning  
at the  
Capability  
Center in  
Karlsruhe



## MODEL WAREHOUSE

### Capability Center in Karlsruhe

Warehousing is a vital, yet often overlooked part of global supply chains. Not only do warehouses fulfill an essential buffer function and ensure cost-efficient distribution, their role as competitive advantage driven by digital innovations increases continuously as they are also the last decisive step in serving the customer.

The Capability Center in Karlsruhe (Germany) was opened in May 2014 as a partnership between McKinsey & Company and the Institute for Material Handling and Logistics (IFL) of the German university Karlsruhe Institute of Technology (KIT).

The Capability Center in Karlsruhe extends McKinsey's global network of capability centers to provide cutting-edge insights about warehousing. Here, successful approaches that have been used in lean manufacturing for decades are innovatively applied to warehousing. The center offers companies the opportunity to optimize their storage, pick and pack, and dispatch processes and, even more importantly, to build the capabilities for a holistic sustainable transformation in an experiential learning environment – all this combined with newest warehousing technology.

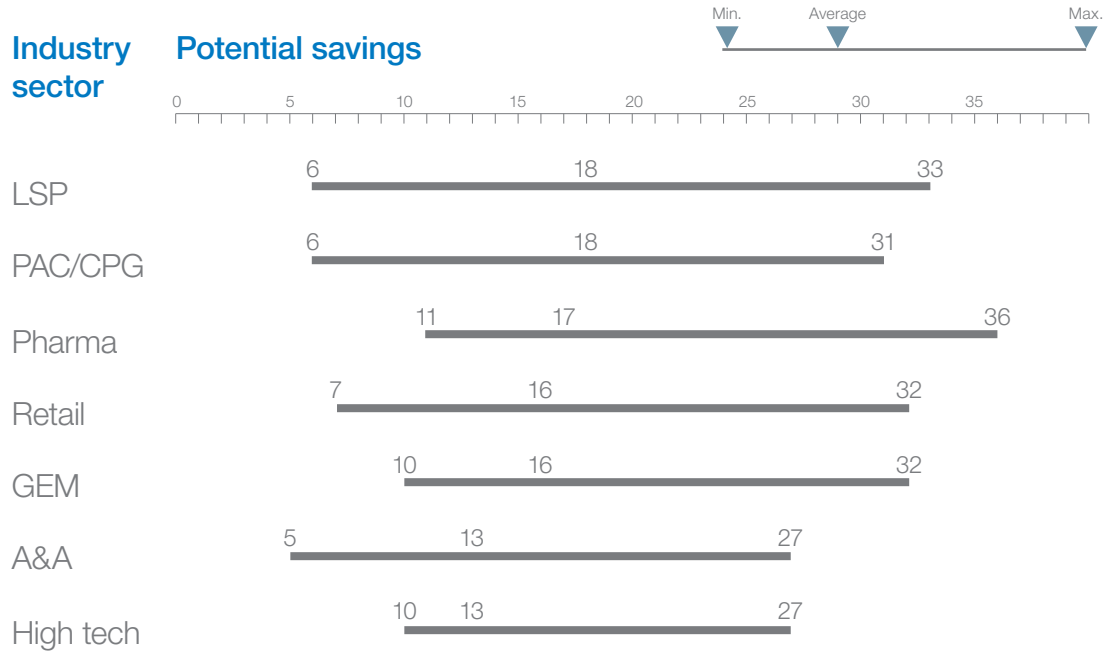
# Warehouse operations often present an untapped improvement opportunity

McKinsey's observations regarding warehousing:

- **Absence of a strong technology focus** for efficiency and quality improvement
- **Lack of methodologies** to identify the root causes of bad performance in a structured approach
- **Lack of continuous improvement** to drive for excellence in warehouse operations
- **No end-to-end perspective** in processes, costs, or external supply chain interfaces

## Typical improvement potential in warehouse operations

Percent of total warehouse costs



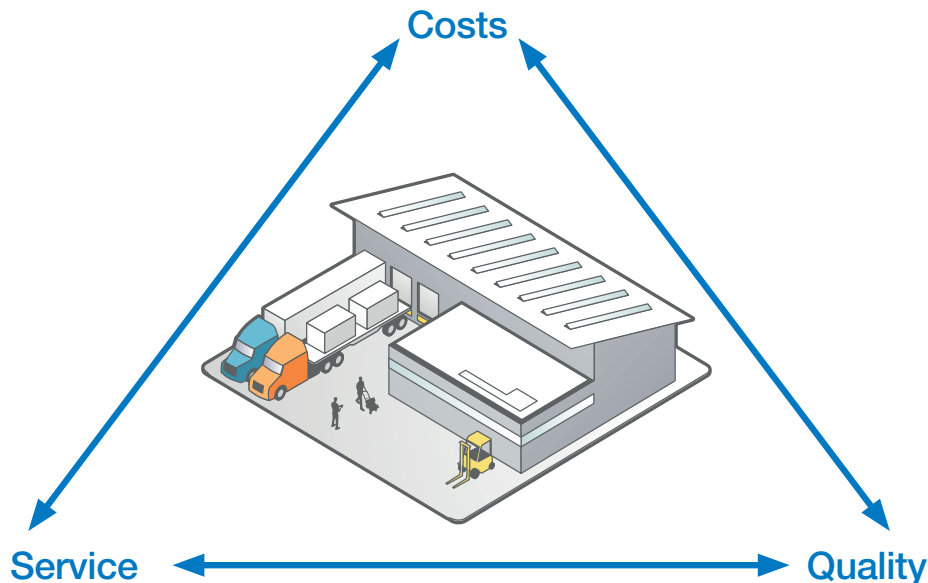
Source: McKinsey

# Lean warehousing is a holistic concept aimed at tackling improvement opportunities

Lean warehousing simultaneously targets:

- **Reducing warehousing operating costs** by increasing productivity, i.e., via:
  - Reducing unnecessary walking and searching
  - Avoiding unnecessary replenishment
  - Avoiding waiting times, double handling, and rework
  - Improving capacity planning and manpower allocation
- **Improving perceived customer quality** by avoiding order deviations, picking errors, and damaged goods
- **Strengthening service levels** by shortening lead times and improving on-shelf availability

The approach of lean warehousing originates in the Toyota Way and Toyota Production System, focusing on continuous elimination of waste, variability, and inflexibility



# A successful lean warehousing transformation approach requires capabilities in 3 areas

## Operating system

“The way physical assets and resources are configured and optimized to create value and minimize losses”

### Target areas

- Waste and variability elimination
- Right level of flexibility
- End-to-end design

## Management infrastructure

“The formal structures, processes, and systems through which the operating system is managed to deliver the business objectives”

### Target areas

- Performance management
- Organizational design
- Capability building
- Functional support process

## Mindset and behaviors

“The way people think, feel, and conduct themselves in the workplace, both individually and collectively”

### Target areas

- Focus – compelling purpose and direction
- Execution – people work well together
- Skills – people work effectively
- Improvement – relentless drive to improve
- Leadership – committed leaders



# These essential capabilities are best developed in an experiential learning environment

	Books and presentations	Simulations and games	<b>MODEL WAREHOUSE</b> Real environment/ shop-floor training
Learning by	Reading	Seeing and hearing	Doing
Knowledge retained after 3 weeks	70%	<b>72%</b>	<b>85%</b>
Knowledge retained after 3 months	10%	<b>32%</b>	<b>65%</b>

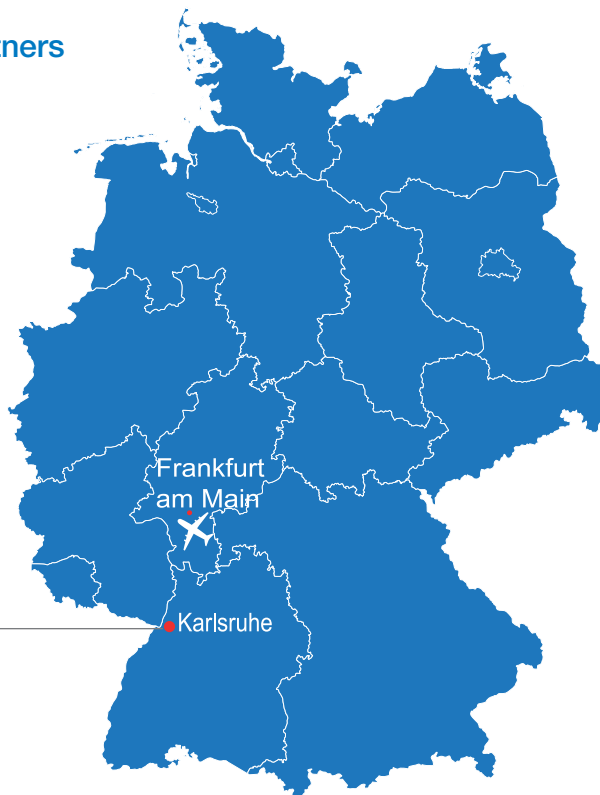


# The Model Warehouse is a real-life environment for building capabilities and enabling sustainable impact

## Key facts

- Opened in **May 2014**
- Partnership between McKinsey and the Karlsruhe Institute of Technology (KIT) with **its leading Institute for Material Handling and Logistics (IFL)**
- The Model Warehouse is **based in Karlsruhe, Germany**, which is located 1 hour from the Frankfurt Airport
- Off-site trainings are possible, as equipment **can be conveniently shipped to other global McKinsey locations or a location of your choice**

## Location and partners



## Exemplary application cases

- Setup and training of Model Warehouse at client in Japan
- Trainings all around the globe (from California, via UK, to Japan)

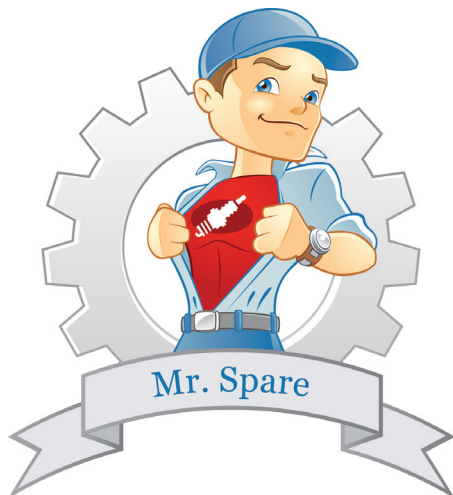


Mobile Model Warehouse – equipment can be shipped to support training sessions

# The Model Warehouse offers a full-scale experiential learning environment

The Model Warehouse [experiential learning](#) environment comprises:

- **A fictional corporate identity** of an automotive spare parts company, with background information and simulated data
- **Real warehouse equipment** to be used by participants to pick and pack automotive spare parts
- **Detailed training materials** linking hands-on experience to the theory of lean warehousing
- **Customized templates** to track performance in the [experiential learning](#) session and support root cause analysis
- **Newest warehouse technology** to experience picking in [Supply Chain 4.0](#)





# McKinsey's Model Warehouse provides different types of sessions to support capability building

Session	Purpose	Duration (days)
Awareness	<ul style="list-style-type: none"> <li>Share lean warehousing experience with a group of senior executives and selected change agents</li> </ul>	0.5 - 1
Transformation support	<ul style="list-style-type: none"> <li>Train a central team of change leaders/change agents on lean warehousing and the transformation approach</li> </ul>	2
	<ul style="list-style-type: none"> <li>Introduce/kick off lean warehousing before starting a more extensive transformation for a broader audience beyond change agents</li> </ul>	1
	<ul style="list-style-type: none"> <li>Workshop to specify the need and make a preliminary business plan for your dedicated warehouse</li> </ul>	2
Lean warehousing for logistics services buyers	<ul style="list-style-type: none"> <li>Train strategic logistics buyers on lean warehousing and procurement of logistics services, which helps in preparing negotiations</li> </ul>	2

Recommended group size: 5 - 15 participants

Setup of participants and time frame can be adjusted according to your specific needs

# The Model Warehouse in Karlsruhe allows participants to experience newest technologies



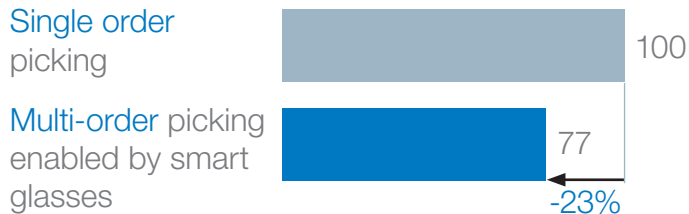
## The Smart Glasses

The glasses are used to show participants hands-on the impact of Industry 4.0 technology on traditional processes in a warehousing context

Pickers in the warehouse are enabled to move from traditional single order picking to simultaneously picking 9 customer orders

## Performance improvement in the Model Warehouse

Percent



## The HoloLenses

The HoloLenses are used to show the impact of Industry 4.0 technology on warehousing processes

Enhances functionalities by projecting Holograms and thereby enabling 3D guiding

# Impressions from an experiential learning session at the Model Warehouse in Karlsruhe



Performance management



Actual picking



Hands-on packing



Discussing observations

# Example of a 1-day “awareness training” agenda

## Objectives

- Excite people about the power of lean warehousing methods
- Identify where and how to reduce costs and increase service
- Learn how to make sustainable continuous improvement

## Participants

- C-level executives
- Managers
- Change agents



Time	Topic		Objective
08:00 - 08:30	Welcome and introduction		Get to know the agenda and the faculty
08:30 - 09:45	Introduction to lean and waste observation exercise		Develop basic knowledge about lean
09:45 - 10:15	Introduction to the warehouse		Get familiar with the Model Warehouse shop floor
10:15 - 10:45	Game round 1 – “Plug and play”	✂	Apply lean theory, observe and identify waste
10:45 - 11:00	Introduction to problem solving methodology		Learn about structured problem solving
11:00 - 12:00	Reducing waste – identify and implement improvement ideas	✂	Generate and implement improvement ideas for reducing waste
12:00 - 13:00	<i>Lunch</i>		
13:00 - 13:30	Game round 2 – “Improved operations”	✂	Operate the improved warehouse and continue observations
13:30 - 14:00	Introduction to standard work		Understand standardized work
14:00 - 14:45	Standard work – develop and implement standards	✂	Further improve warehouse operations through layout changes and standards
14:45 - 15:45	Game round 3 – “The sky is the limit”	✂	Experience what is possible
15:45 - 16:30	Introduction to performance management		Learn how performance should be measured and managed
16:30 - 17:00	Mindset and lean leadership		Learn how to influence the mindset and create momentum for change
17:00 - 17:30	Lean transformation approach		Learn how to set up a transformational program
17:30 - 18:00	Wrap-up and feedback		Discuss application in the transformation and what to do differently starting tomorrow

## Some firsthand views on the Model Warehouse

“ Warehousing is a very important part of a modern global supply chain, as it is a customer interface and to that end, a critical cost factor. ”

*Philipp Radtke, Head of McKinsey's EMEA Operations Practice*

“ Today, I concluded the lean warehousing training. It is a good, eye-opening tool. You learn how to observe and assess the performance of a site and can take this knowledge to any warehouse you visit. ”

*Participant quote*

“ The Model Warehouse is a unique approach to capability building in lean warehousing. Its state-of-the-art concept of experiential learning is a very solid basis for a successful lean warehouse transformation. ”

*Prof. Dr. Kai Furmans, Director of the IFL*

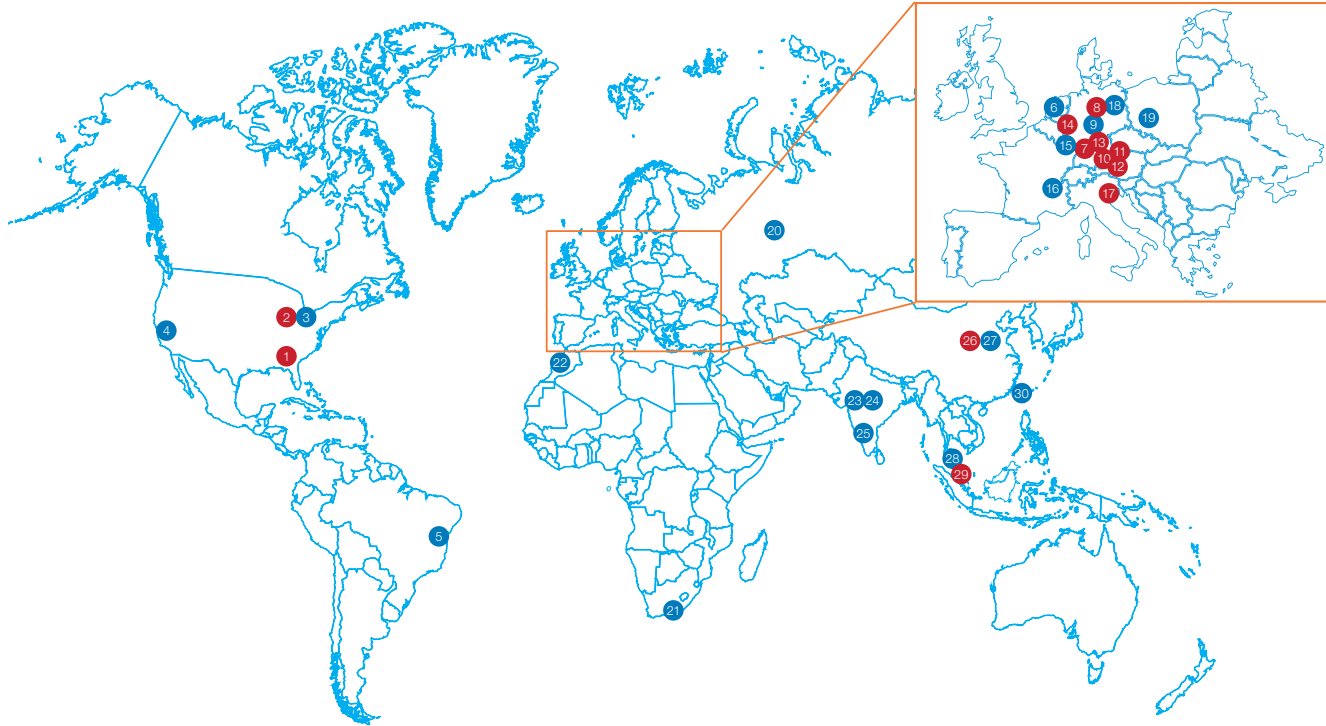
“ We had fun and learned a lot! The Model Warehouse is also a great team building exercise. I am looking forward to implementing what I learned in our own warehouse next week. ”

*Participant quote*

# The Model Warehouse is part of McKinsey's global Capability Center Network

The Capability Centers cover a variety of topics in manufacturing and service operations

● MCCs with digital focus



## America

- 1 MCC Atlanta
- 2 DCC Chicago
- 3 DtV Chicago
- 4 DtV San Francisco
- 5 BMF Salvador

## EMEA

- 6 NLI Amsterdam
- 7 CCK Karlsruhe
- 8 CiP Darmstadt
- 9 LEP Darmstadt
- 10 MCC Munich
- 11 LEP Munich
- 12 DtV Munich
- 13 AMMF Erlangen
- 14 DCC Aachen
- 15 LF Luxembourg
- 16 CC Lyon
- 17 DCC Venice

## Asia

- 18 ES Berlin
- 19 DtV Wrocław
- 20 MF Yekaterinburg
- 21 CEL South Africa
- 22 INMAA Morocco
- 23 MCC Gurgaon
- 24 DtV Gurgaon
- 25 DtV Chennai
- 26 DCC Beijing
- 27 MCLl Beijing
- 28 MF Singapore
- 29 DCC Singapore
- 30 DtV Taipei



Mobile Model Warehouse – equipment can be shipped from Karlsruhe to any of the other McKinsey Capability Centers (MCCs) or to any of your sites to support trainings

# Our expert faculty



## **Knut Aliche**

Partner  
Supply Chain Practice  
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Specialized in SCM and  
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and warehouse automation

The Model Warehouse is a partnership between McKinsey & Company and the Karlsruhe Institute of Technology (KIT) with its leading Institute for Material Handling and Logistics (IFL).

**McKinsey & Company**



# Model Warehouse

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