In 2015, global McKinsey Capability Centers

- Served 270+ organizations
- Delivered 1,200+ training days
- Trained 14,000+ managers
Uncompromising operational excellence is critical in today’s business environment.

Markets are more and more dynamic, customers more and more demanding. Organizations need to strike a balance between price, quality, and delivery. Digital Industry 4.0 demands even greater speed and agility. Hence, today’s companies require a reliable – but also fast-improving – operating system. This applies not only to production, but also to indirect functions, such as quality assurance, maintenance, and service.

But what do companies need to secure operational excellence and sustainable performance? More than ever, the success of their efforts depends upon building capabilities in technical execution and management as well as instilling the right mindset and behavior within the organization.

That’s precisely what the training programs in the realistic production and office environments of McKinsey’s model factories and offices provide: the ideal opportunity for companies to gain hands-on experience with initiatives designed to take their operations to the next level of excellence.
Only one-third of transformations achieve full impact – capability building is a key success factor

Every corporate transformation begins ambitiously, with leaders setting aggressive goals and envisaging big improvements in productivity. But the results often fall far short of expectations. Surveys show that only about one-third of all transformations are successful and unfold their full impact. Almost 6 percent of programs fail. But where do they go wrong? Perhaps you have seen it in your own organization – gaping gaps in the specific skills employees need to tackle transformative tasks or simply a lack of will to make change happen.

We have identified four key determinants of success for large transformations. Successful programs …

- Identify the skill gap to deliver against the transformation’s aspirations and build the required capabilities in the organization early on
- Engage employees through proactive change communication and continual involvement in the transformation
- Assign an active role to leadership in designing the desired change and visibly living up to the challenging transformation aspirations
- Define pivotal roles and responsibilities and deploy sufficient resources to ensure quick progress.

1 Based upon McKinsey Quarterly Transformational Change Survey 2010; other surveys over past two decades show similar results

SOURCE: McKinsey Quarterly Transformational Change Survey 2010; interviews
Industry 4.0 is more than just a flashy catchphrase. A confluence of trends and technologies promises to reshape the way things are made. To get the most out of Industry 4.0 technologies, companies will have to invest heavily in building capabilities.

**Data, computational power, and connectivity**
- Big data/open data
- Internet of things/M2M
- Cloud technology

**Analytics and intelligence**
- Digitization and automation of knowledge work
- Advanced analytics

**Human-machine interaction**
- Touch interfaces and next-level GUIs
- Virtual and augmented reality

**Conversion to physical world**
- Additive manufacturing (i.e., 3D printing)
- Advanced robotics (e.g., human-robot collaboration)
- Energy storage and harvesting
Capabilities are best developed in an experiential environment

Adults learn best in an environment that offers them a rich, interactive experience and the freedom to experiment and make mistakes without risk. Dedicated experiential learning facilities provide the ideal combination of exposure to real production issues and opportunities to try out new approaches without having to worry about things going wrong. Experience shows that not only do people learn faster in such environments, but they also remember more and are better prepared to apply what they learned when they return to their everyday roles.

How much can you recall from your last bout of learning from a book or classroom teaching program? Studies indicate that we retain only 10% of the knowledge conveyed with such traditional learning approaches. Simulations and games fare a little better, with about one-third of the knowledge retained. In contrast, with experiential learning and learning-by-doing approaches participants' recall rates soar to anywhere between 80% and even 100%. No knowledge wasted!

**Knowledge retained via different learning approaches**

<table>
<thead>
<tr>
<th>Learning through:</th>
<th>Knowledge retained:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books and lectures</td>
<td>10%</td>
</tr>
<tr>
<td>Simulations and games</td>
<td>32%</td>
</tr>
<tr>
<td>Experiential learning</td>
<td>65%</td>
</tr>
<tr>
<td>Learn and transform</td>
<td>80 - 100%</td>
</tr>
</tbody>
</table>
A model factory/office creates an experiential learning environment

If experiential learning is superior to other forms of learning, what can be better than learning in interaction with real machines, real operators, real products? McKinsey’s model factories and offices recreate realistic environments for manufacturing, processes, and office work. Moreover, trainers deploy the concept of “go-see-do” capability building. That means that participants not only learn about the impact of changes in technical management as well as in mindsets and behavior – they truly experience it first-hand. The physical setup of each model factory or office is designed for transitioning from a suboptimal setup to operational excellence in multiple steps. This journey of discovery provides a unique basis for experiential learning and enables participants to drive the improvements by themselves.

In effect, our model factories promote distinctive capability building that …

- Builds upon a broad set of best practices across multiple industries
- Is developed first-hand in the field
- Enables a tangible transformation experience
- Encompasses a broad set of training modules on top of lean manufacturing and lean service operations
- Builds upon a preengineered, controlled environment that enables fully repeating experiences.

Realistic production factory/office environment
McKinsey model factories and offices

CiP – pneumatic cylinders
LEF – compressors
LEF, CiP – Industry 4.0
LEP in ETA – gear box
McKinsey model factories and offices

LEF – quality lab

NLI – banking process

CCK – lean warehouse

CCL – chocolate mousse
McKinsey experiential learning program offers a variety of topics

- **Operations topics**
  - Sourcing
  - Lean IT
  - Lean manufacturing
  - Supply chain management
  - Service operations
  - Product development

- **Marketing and sales topics**
  - Transaction and value-based pricing
  - Marketing-enabled growth
  - Sales management

- **Digital topics**
  - Digital service operations
  - Digital marketing and online sales
  - Digital Industry 4.0

- **Cross-cutting topics**
  - Performance leadership
  - Implementation leadership

- **Digital topics**
  - Product development

- **Operations topics**
  - Sourcing
  - Lean IT
  - Lean manufacturing
  - Supply chain management
  - Service operations
  - Product development
Global McKinsey Capability Centers
Training at the model factories and offices is tailored to the participants’ needs and the stages of transformation

**Awareness workshop**
- Learn about key principles of operational improvement
- Derive implications for own company

**Functional deep-dive training**
- Learn about advanced tools and techniques
- Deep dives on maintenance, quality, lean management, etc. are available

**Boot camp training**
- Become acquainted with all parts of transformation, learn about selected tools, project management, and communication
- Become one of the driving people for the transformation

**10- to 15-day change agents training**
- Learn to become the expert for the transformation, inject energy and expertise, challenge and coach, “show the way”

**Board and top management**

**Manager (e.g., plant, quality, product development, purchasing)**

**Team supervisor and team leader**

**Quality engineer**

**Over 100 curriculum modules available to tailor trainings to the audience**

Training adapted to the various transformation stages: diagnostic, program design, learn and transform, continuous improvement
Experience and learn about the journey in a realistic environment

Energy productivity

- Learn about energy-saving principles in the actual production environment of our learning factory for energy productivity
- Learn how to diagnose energy waste by applying specially developed McKinsey tools while making a real product
- Gain a better understanding of transformations, including managing tasks, improving operating systems, and changing the mindsets and behavior of employees

Lean manufacturing

- Learn more about lean principles in our model factory’s production environment
- Experience significant change in the production of real products (pneumatic cylinders, clocks, compressors) by applying lean tools
- Build the necessary capabilities and create the right company culture for achieving sustainable results in lean manufacturing

Digital Industry 4.0

- Understand the principles of Industry 4.0 and how it relates to your business
- Learn how to diagnose your in-house operations
- Define and evaluate relevant improvement levers
- Learn about the impact on your management process
Experience and learn more about the journey in a realistic environment

**Services operations**
- Experience lean principles in customer-facing and back-office service operations in a realistic banking and insurance environment
- Gain a better understanding of how to improve service operations by eliminating waste, optimizing customer interaction, managing performance, and developing employees’ skills
- Learn how to use lean diagnostic tools, such as value stream mapping, workplace observation, focus groups, and lean design principles

**Lean warehousing**
- Program modules cover lean fundamentals, lean improvement (e.g., picking, handling), structural setup (e.g., slotting), and technology use in a real-life environment with hands-on tasks
- Training is built along warehouse processes (receiving, storage, picking, packing, shipping), technology, and management infrastructure
- Learn about the impact of Industry 4.0 on your warehousing operation

**Lean management**
- Learn more about the lean management skills that drive the improvement process and foster sustainability
- Experience lean management tools, such as effective performance management, Gemba problem solving, and Kamishibai process confirmation
- Improve and test your skills in an interactive real production environment with operators
- Learn about the impact of Industry 4.0 on your lean management process
Experience and learn more about the journey in a realistic environment

Process
- Experience significant change by applying lean tools in a food-processing industry environment
- Perform end-to-end production of chocolate yogurt on a real food platform, including weighing, mixing, pasteurizing, filling, and operation of packing equipment – from raw materials to quality-tested products
- Experience step-by-step teaching and immediate application of performance improvement measures in the work flow

Quality
- Improve quality processes and implement zero-defect manufacturing
- Leverage the manufacturing line complemented with a quality laboratory, experience a lean quality journey – from a suboptimal setup with a lot of scrap to a full quality-integrated operation (quality control planning, Poka Yoke, and Andon systems are just some of the levers that participants will develop for improving compliance and reducing defects)

Pharma
- Integrate the quality setup described above into a pharma process, including some specificities (e.g., quality assurance, batch records, and deviation management)
- Undertake a full, accelerated lean transformation program in which you learn how to spot waste (including in QC and QA), map the process, solve problems, and design the future state (e.g., address duplication of quality controls by mapping the full value stream, including QA and QC processes)
At our McKinsey model factories and offices you will have access to our state-of-the-art training modules, a professional setup, a risk-free environment to experiment and test your skills, and trained operators – for a guaranteed insightful experience. But aside from that, you can count on our bespoke support in a multitude of additional areas.

**We can deliver training at your facilities with our portable solutions**

- **Virtual Model Factory.** Learn the main lean principles in a realistic manufacturing environment using a 3D setup. You can walk with a joypad freely through the production area, observe all kinds of waste, and even talk to the operators.

- **With the Soda Model Factory in a box,** we bring to your facilities a real physical soda factory that fits on a few benches. This setup is specially tailored to meet the requirements of the process industry. In intensive courses ranging between one or several days, you can learn the main lean principles and techniques.

**We can help you build your own capability center**

- One option is to design and establish your own model factory or office from turnkey solution to tailored development. Adapting the curriculum and physical setup of our model factories to your needs and support by a “train-the-trainer” program to ensure high quality from the outset.

**We can support transformations in many other ways**

- We can accompany and advise you during all phases of your individually designed transformation.

- You can use our Learn & Transform program as a very effective solution specially designed for small and medium-sized companies or larger companies with a wide network of small plants. This offer includes “learn” phases in the model factory and field support at your facilities delivered by our experts. You can either arrange to have a program dedicated to your company or join an open program with other companies.
Example of the curriculum for a lean model factory

**Performance modules**

**Introductory modules**
- Overview of lean production skill building in the model factory
- Overview of lean production
- “Learning to see waste” walk along three dimensions
- Value stream mapping: current state
- Value stream mapping: future state

**Core modules**
- JIT – basic principles
- JIT – Yamazumi line balancing
- JIT – Heijunka production leveling
- JIT – milk run design for materials supply to line
- Jidoka – basic principles
- Jidoka – workstation design: Poka Yoke
- Jidoka – Andon
- FMS – basic principles
- FMS – cell design
- FMS – workstation design

**Supporting modules**
- 5S
- OEE – process efficiency
- OPE – people efficiency
- SMED – fast changeover
- Standardized work
- Maintenance strategy
- Preventive maintenance
- Autonomous maintenance

**Health modules**

**Management and leadership**
- Transformation design
- Performance matrix and KPIs
- Performance tracking
- Performance dialog
- Process confirmation – management Kamishibai
- Gemba problem solving
- Problem escalation
- Team building
- Presenting with impact

**Mindset and behaviors**
- Mindset changes for sustaining results
- Mindset and capabilities assessment
- Influencing techniques
- Coaching and feedback

**Project management**
- Project essentials (daily check-in, team boards)
- Role of change agents
- Tactical implementation planning (TIP)

**Digital manufacturing**
- Overview digital manufacturing elements
- Digital waste walk
- Digital diagnosis

---

1 Not exhaustive

Experiential learning included
Typical one-day awareness workshop on lean manufacturing

Objectives
- Excite people about the power of lean manufacturing
- Become familiar with basic lean tools
- Generate an understanding of the transformation approach

Participants
- CXOs
- Managers
- Change leaders

Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30–09:00</td>
<td>Welcome/introduction to factory</td>
<td>Get to know agenda and factory</td>
</tr>
<tr>
<td>09:00–09:45</td>
<td>Introduction to lean</td>
<td>Develop basic lean knowledge</td>
</tr>
<tr>
<td>09:45–10:45</td>
<td>“Leading to see” shop floor visit</td>
<td>Identify waste/variability/inflexibility in production</td>
</tr>
<tr>
<td>10:45–11:00</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>11:00–12:00</td>
<td>Current-state value stream mapping</td>
<td>Understand how to draw the current-state value stream of a process in production</td>
</tr>
<tr>
<td>12:00–12:45</td>
<td>Standardized work</td>
<td>Learn about the power of standards and how to set them up</td>
</tr>
<tr>
<td>12:45–13:30</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>13:30–14:30</td>
<td>Future-state shop floor visit</td>
<td>Observe improved operation</td>
</tr>
<tr>
<td>14:30–15:30</td>
<td>Performance management</td>
<td>Learn how to establish sustainability and continuous improvement</td>
</tr>
<tr>
<td>15:30–16:30</td>
<td>Building a lean culture</td>
<td>Learn about the influence model to generate the necessary culture</td>
</tr>
<tr>
<td>17:00</td>
<td>Conclusion and wrap-up</td>
<td></td>
</tr>
</tbody>
</table>

Hands-on exercises included
Our expert faculty team

Erhard Feige
Practice Manager
EMEA Learning Factories
Hamburg
Specialized in lean manufacturing, green, quality, and digital manufacturing

Bertrand Humeau
Senior Expert
Lyon
Specialized in lean operations

Cinzia Lacopeta
Program Manager
Milan
Specialized in lean manufacturing, services, and pharma

Jörg Bromberger
Senior Practice Manager
Berlin
Specialized in additive manufacturing

Stefan de Raedemaeker
Senior Expert
Antwerp
Specialized in services and lean manufacturing

Ken Somers
Master Expert
Antwerp
Specialized in green manufacturing and Industry 4.0 process

Markus Hammer
Senior Expert
Vienna
Specialized in green and lean manufacturing, and digital manufacturing

Rainer Ulrich
Senior Expert
Stuttgart
Specialized in pharma, lean manufacturing, quality, and digital manufacturing