Virtual Model Factory

Experiential learning in a 3D immersive environment
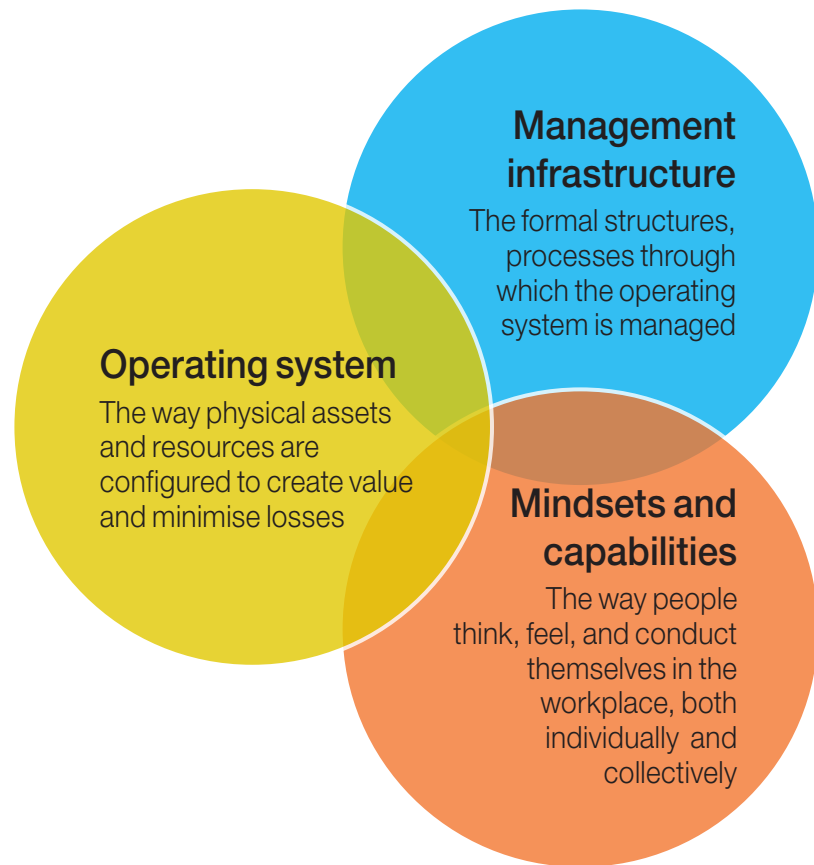
Operational excellence in all areas is very critical in today's business environment

Dynamic markets and demanding customers require businesses to achieve excellence and sustainability across all functions.

This means improving technical and management capabilities, and changing mindsets and behaviors in the organisation.

Management infrastructure
The formal structures, processes through which the operating system is managed

Operating system
The way physical assets and resources are configured to create value and minimise losses

Mindsets and capabilities
The way people think, feel, and conduct themselves in the workplace, both individually and collectively

Does your organisation have the capabilities to deliver and sustain excellence in all areas of operations?

Only one third of companies achieve truly sustainable transformations

Most of the companies embarking on excellence journeys find it difficult to sustain their initial performance improvements over the long-term. Among the organisations that succeed, **the biggest differentiator** is the way they **develop the skills and capabilities of their people.**

Factors contributing to failures

1. Not enough leadership capacity
2. Lack of capabilities and knowledge
3. Poor accountability and performance dialogues
4. Misalignment of aspirations across organisation

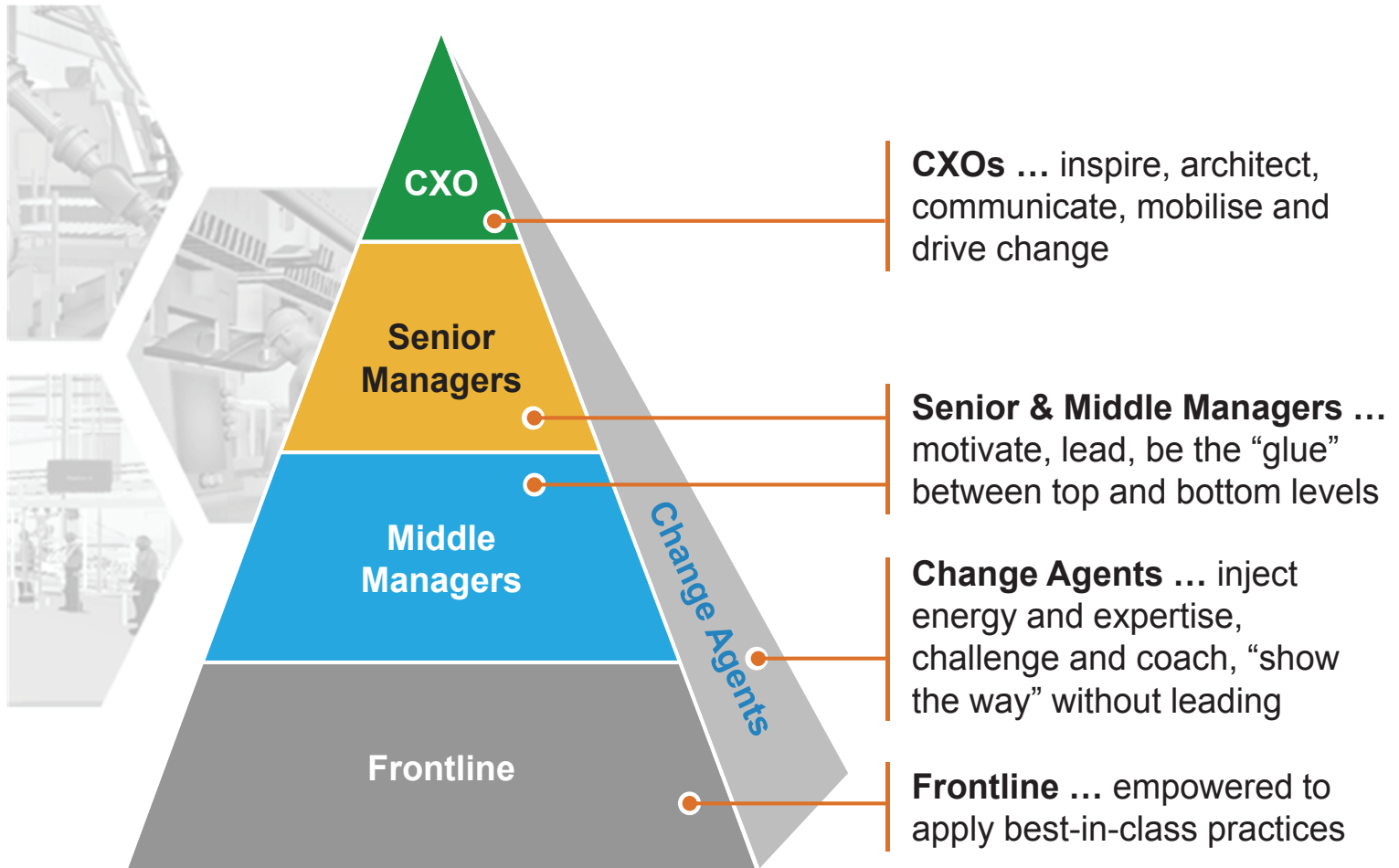**65% failed transformations**

35% successful transformations

Factors key to success

1. Skill gap identified and addressed in order to **build the required capabilities**
2. **Proactive change communication** and continual involvement
3. **Leaders play an active role** in designing and visibly living up the desired change
4. Sufficient resources deployed

Success requires new capabilities at every level of the organisation

The best companies make holistic capability building a priority, tailoring their **training and coaching efforts** to the **specific needs** of the business.
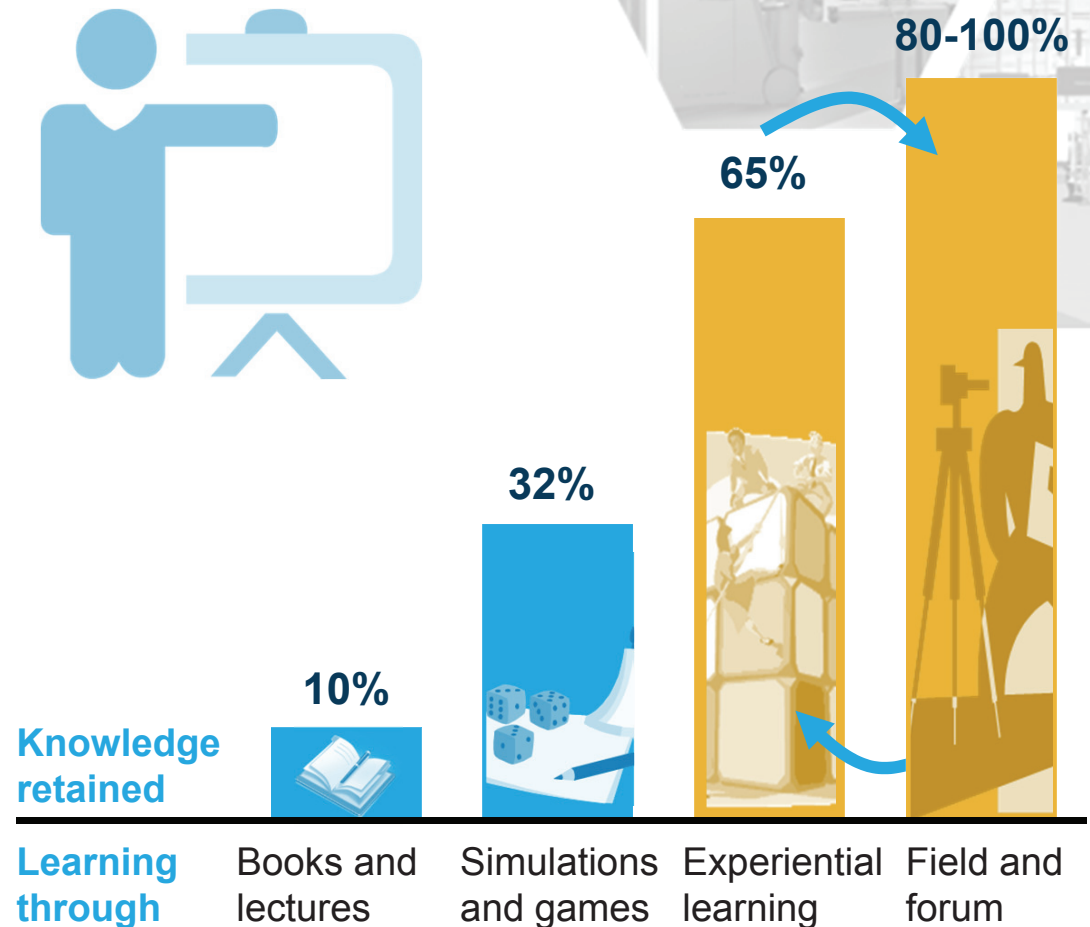

CXO

Senior Managers

Middle Managers

Change Agents

Frontline

CXOs … inspire, architect, communicate, mobilise and drive change

Senior & Middle Managers … motivate, lead, be the "glue" between top and bottom levels

Change Agents … inject energy and expertise, challenge and coach, "show the way" without leading

Frontline … empowered to apply best-in-class practices

Capabilities are best developed in an experiential environment

Research and experience have established that **adults learn best in an environment that offers them a rich, interactive experience and the freedom to experiment** and make mistakes without risk.

By undergoing learning in such environment, they are better prepared to apply what they learned when they return to their everyday roles.

Knowledge retained via different learning approaches

80-100%

65%

32%

10%

Knowledge retained

Learning through

| Books and lectures | Simulations and games | Experiential learning | Field and forum |

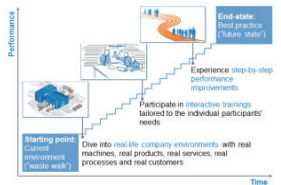# Virtual Model Factory creates an immersive experiential learning environment in a 3D world

A "realistic production environment"
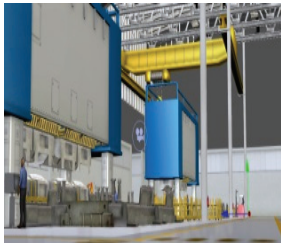
- A realistic manufacturing process in a virtual environment; closely simulates real world
- Builds skills on performance and health aspects

- Enables concept of "go-see-do" for capability building

- Experiential learning from a non-optimised to a very good setup
- Participants experience the improvements themselves

- Training modules are experiential & are tailored to a specific need

- Enhanced user interactivity through X-box controller and iPad apps

Promotes distinctive capability building which …

- … enables continuous creation/ideation of manufacturing process

- … has the potential to make the process sector specific to enhance learning

- … enables a tangible transformation experience, moving from a typical current state to the improved state and establishing cause-and-effect relationships

- … builds upon a pre-engineered, controlled environment that enables fully repeating experiences

- … enhances delivery flexibility (we can now bring Model Factory to the Client site)

The 3D Virtual Model Factory provides real insights into Lean ...

The production line at the Virtual Model Factory **physically transforms,** changing the equipment layout and production process used from an initial, sub-optimal state to best practice.

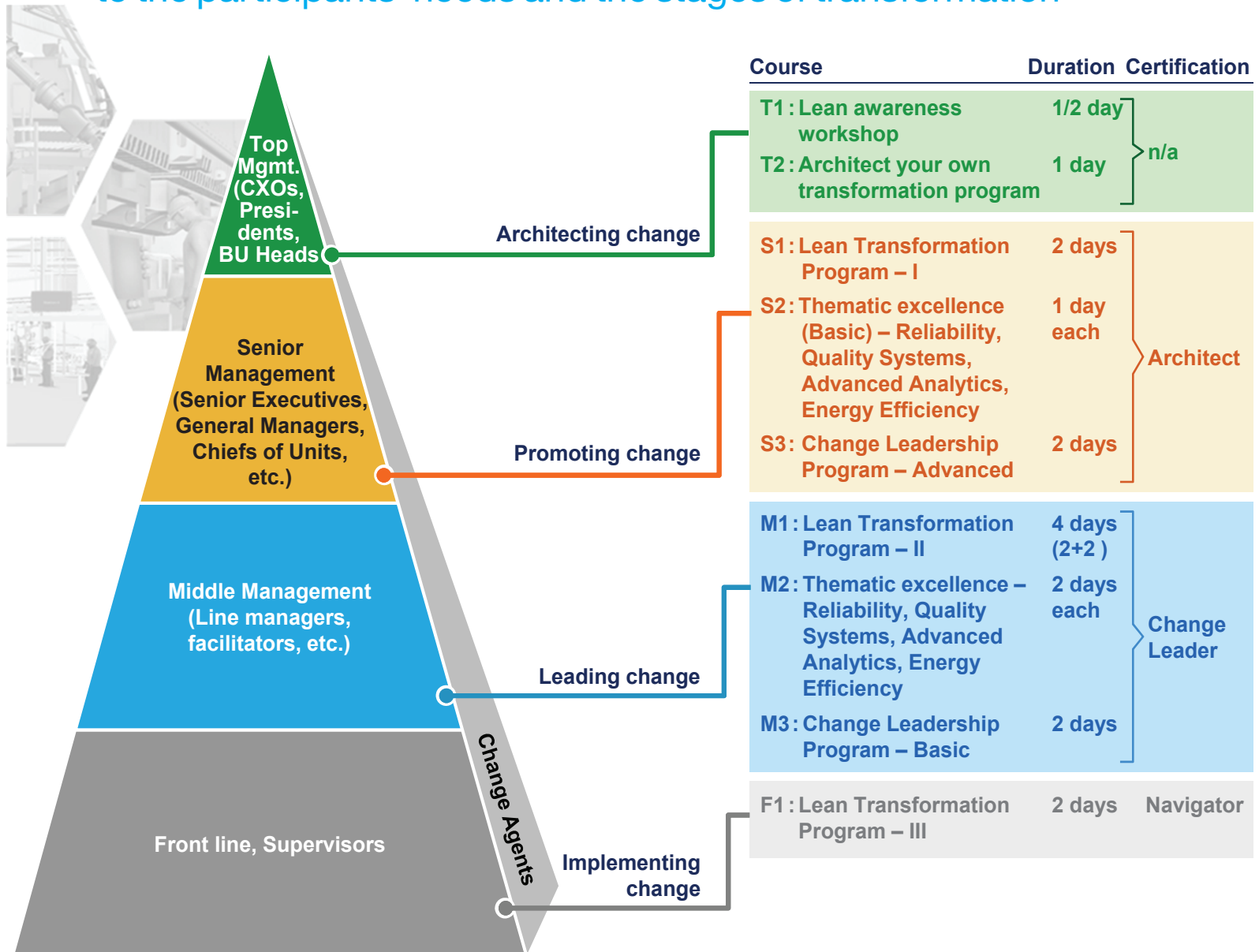|				
A	War Room		**E**	Gluing Station
B	Stamping Press – Outer Panel		**F**	Hemming Station
C	Stamping Press – Inner Panel		**G**	CNC Machining
D	Welding Station		**H**	Assembly Stations
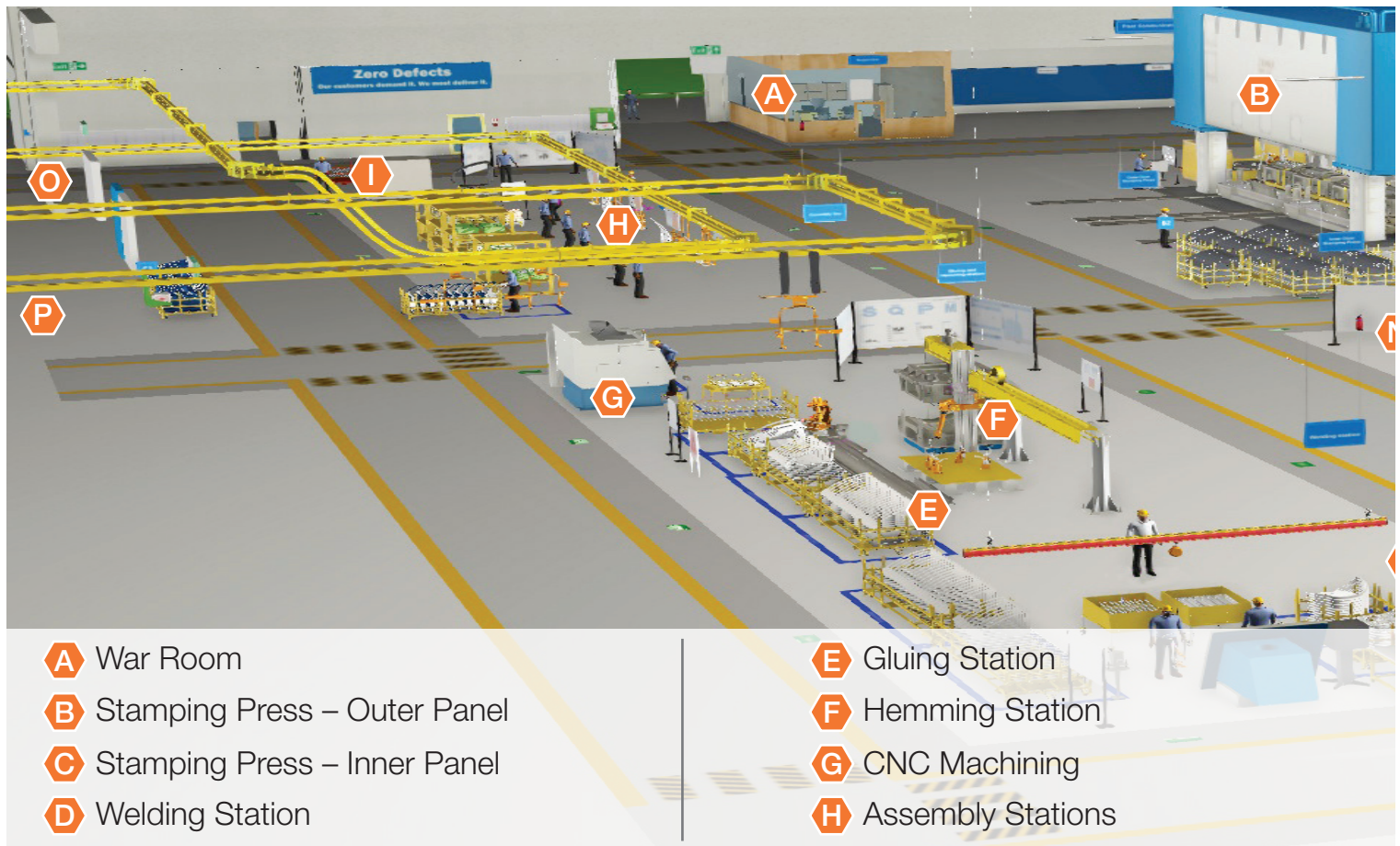
... improvement opportunities in an immersive environment

A phased transformation process, in a **3D environment,** demonstrates real, significant, and **tangible improvements of key performance metrics** and encourages participants to **push the boundaries of their thinking.**

I	Final Inspection	**M**	Overhead Crane
J	iPAD enabled user interface	**N**	Performance dialogue area
K	Forklift for material movement	**O**	Finished Goods Store
L	Raw Materials Store	**P**	Paint Shop
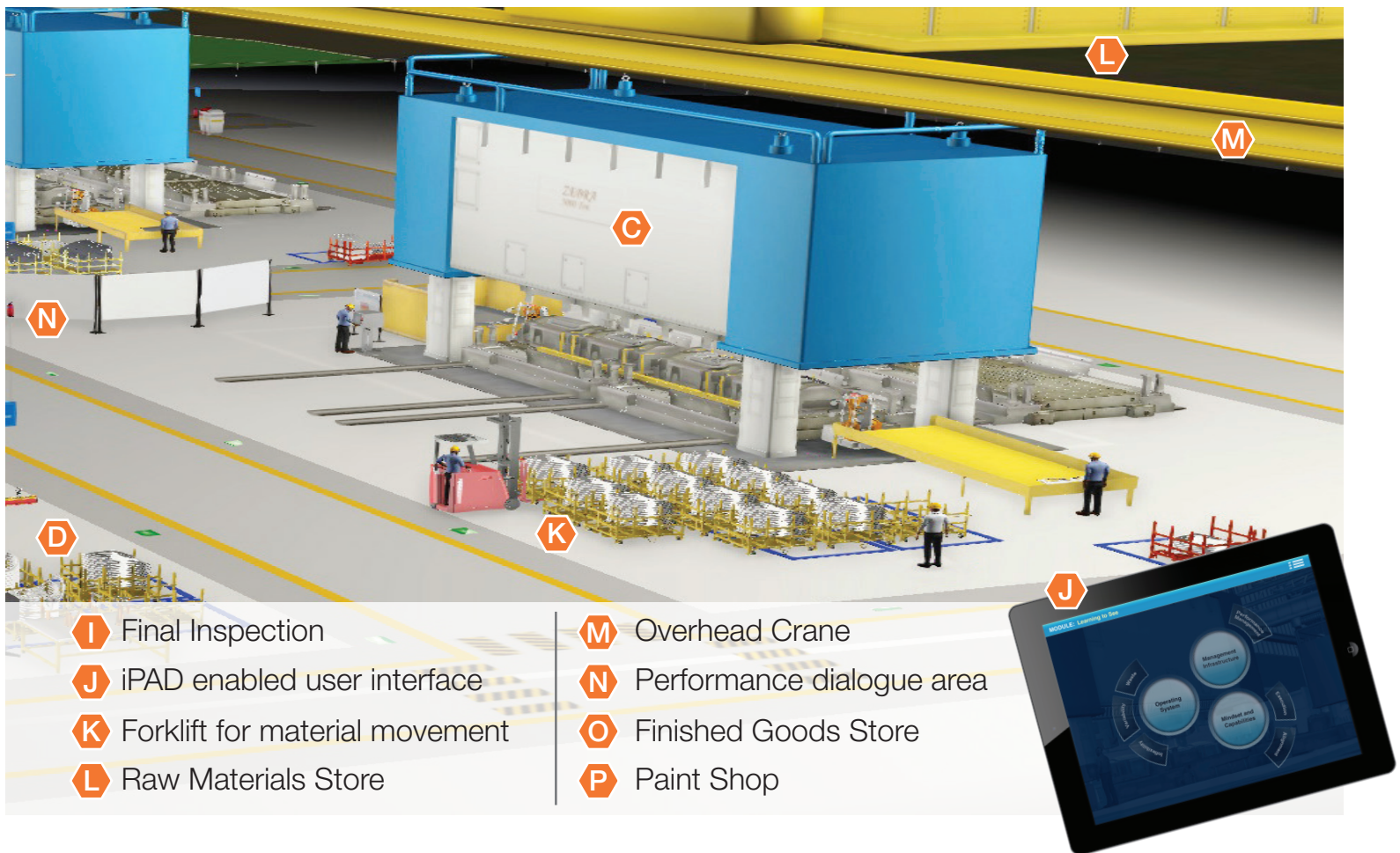
The training curriculum at the Virtual Model Factory is tailored to the participants' needs and the stages of transformation

Top Mgmt. (CXOs, Presidents, BU Heads) — Architecting change

Senior Management (Senior Executives, General Managers, Chiefs of Units, etc.) — Promoting change

Middle Management (Line managers, facilitators, etc.) — Leading change

Front line, Supervisors — Implementing change

Change Agents

Course	Duration	Certification
T1 : Lean awareness workshop	1/2 day	n/a
T2 : Architect your own transformation program	1 day	
S1 : Lean Transformation Program – I	2 days	Architect
S2 : Thematic excellence (Basic) – Reliability, Quality Systems, Advanced Analytics, Energy Efficiency	1 day each	
S3 : Change Leadership Program – Advanced	2 days	
M1 : Lean Transformation Program – II	4 days (2+2)	Change Leader
M2 : Thematic excellence – Reliability, Quality Systems, Advanced Analytics, Energy Efficiency	2 days each	
M3 : Change Leadership Program – Basic	2 days	
F1 : Lean Transformation Program – III	2 days	Navigator

Accreditation and certification will be offered to the successful participants

Example of proprietary McKinsey training modules across performance and health dimensions

🔧 Experiential learning included

Performance modules

Core Lean modules

- Overview of virtual factory 🔧
- Overview of Lean production
- Leaning to see 🔧
- MIFA (Current and future state) 🔧
- Capacity analysis and bottleneck identification 🔧
- OEE / OPE
- Visual Management (including 5S)
- Standardised work 🔧
- SMED – Quick changeover 🔧
- VA / NVA analysis 🔧
- Line balancing 🔧
- Pull based production system 🔧
- Layout optimisation 🔧
- Inventory management
- Production leveling and Scheduling 🔧

Thematic modules

- Maintenance efficiency & effectiveness
  - Work order management 🔧
  - Spare management
  - PM optimisation 🔧
  - Critically assessment 🔧
  - C-3 and FMEA 🔧
  - Equipment strategy 🔧
  - RCFA
- Quality excellence
  - QC tools 🔧
  - PFMEA 🔧
  - Poka YoKe 🔧
  - COPQ
- Advanced analytics
  - VIU
  - Monte Carlo (asset sweating)
  - DOE 🔧
- Energy efficiency
  - Load curves 🔧
  - Energy loss framework 🔧
  - Process parameter analysis 🔧

Health modules

Management Infrastructure modules

- Transformation design
- Performance dialogues
- Root cause problem solving
- Skill matrix
- Role of change agents
- Tactical implementation plan (including 2B2)
- Organisation design
- Span of control
- Visual management

Mindset and Behavior modules

- Influence model
- Coaching and feedback
- Conflict management
- Team building
- Active listening
- Lead self
- Lead others
- Lead change
- Mindset and capability assessment

Agenda for a 1 day "Architecting Transformation" course for top management

Objectives

Enable top management to understand and architect Lean transformation program

Provide initial guidance on what it takes to embark on a transformation journey

Target audience

Top management team (CxOs, Presidents, BU Heads)

No. of participants

15 - 20

Delivery format

1 day workshop

Course design

09:00	Welcome, agenda and introduction to Virtual Model Factory
09:15	Lean key principles, approach to Lean transformation, and turn-around stories of Lean transformation
09:45	Learning to see (exercise and debrief)
11:00	*Break*
11:15	Overview of Lean diagnostic tool kit
11:30	Value of structured & rigorous performance management culture
12:45	*Lunch*
13:30	Designing future state – manufacturing excellence
13:45	Plant walk-through – future state
14:15	Share observations of plant walk-through
14:30	Develop transformation program for own organisation (exercise)
15:15	*Break*
15:30	Share transformation program plan and challenges (exercise)
16:00	Estimating benefits of transformation on performance and health
16:45	Leading from the front (exercise)
17:30	Giving feedback (exercise)
18:00	*Departure*

Agenda for a 1 day "Reliability Excellence" course for senior management

Objectives

Build capability of senior management team to facilitate and lead transformation program having reliability as the key driver for improvement

Target audience

Senior management team (Senior executives, GMs, Chief of units)

No. of participants

15 – 20

Delivery format

1 day workshop

Course design

Time	Activity
09:00	Welcome, agenda and introduction to Virtual Model Factory
09:15	Overview of reliability excellence and transformation approach
10:00	Understanding effects of sub-optimal reliability (Experiential learning Round 1)
11:00	Debrief from round 1
11:15	*Break*
11:30	Overview of core reliability tools (criticality assessment, C-3, FMEA, equipment strategy, RCFA)
13:00	*Lunch*
13:45	Understanding benefits of reliability excellence (Experiential learning Round 2)
14:45	Debrief from round 2
15:00	*Break*
15:15	Reliability performance management (KPIs, performance dialogue)
16:30	Developing reliability transformation program for own organisation (exercise)
17:15	Ways to shift mindsets – Influence model (exercise)
18:00	*Departure*

Agenda for a 2 day "Lean Transformation" course for senior management

Day 1

Objectives

Enable senior management team to facilitate and lead Lean transformation program

Provide good understanding on project management and developing change agents

Target audience

Senior management team (Senior executives, GMs, Chief of units)

No. of participants

15 – 20

No. of participants

2 day workshop

─── Course design ───

09:00	Welcome, agenda and expectations
09:15	Lean key principles and approach to Lean transformation
09:45	Learning to see
10:00	Learning to see (exercise)
11:00	*Break*
11:15	Learning to see (debrief)
11:30	Overview of Lean diagnostic tool kit
11:45	Mapping of current state MIFA
12:00	Mapping of current state MIFA (exercise)
12:45	*Lunch*
13:30	MIFA – current state (debrief and sharing observations)
14:00	OEE calculation (exercise and debrief) + OPE
15:00	*Break*
15:15	Inventory mapping
16:00	Value of structured and rigorous performance management culture
17:45	Wrap-up
18:00	*Departure*

Agenda for a 2 day "Lean Transformation" course for senior management

Objectives

Enable senior management team to facilitate and lead Lean transformation program

Provide good understanding on project management and developing change agents

Target audience

Senior management team (Senior executives, GMs, Chief of units)

No. of participants

15 – 20

No. of participants

2 day workshop

Course design

09:00	Recap of day 1
09:30	Designing future state MIFA
09:45	Designing future state (exercise and debrief)
11:00	*Break*
11:15	Plant walk-through – future state
11:45	Idea generation sessions (exercise and debrief)
12:45	*Lunch*
13:30	Design transformation design for own organisation (exercise)
14:00	Benefits and challenges of this transformation journey (exercise)
14:30	Estimating financial impact
15:15	*Break*
15:30	Lead others (exercise)
16:15	Role modeling (exercise and debrief)
17:00	Conflict management and giving feedback
17:45	Role of change agents
18:00	*Departure*

Our expert faculty team

Anil Sikka
Anil co-leads manufacturing practice in India. With 25+ years of experience, he has led multiple performance transformations across China, SE Asia and India in the automotive, pharma, basic materials and high-tech industries.

Ashish Tuteja
Ashish co-leads the manufacturing practice in India. Ashish with 10+ years' experience has been pivotal in bringing advanced analytic tools to manufacturing domain across multiple industries.

Erhard Feige
Erhard leads the EMEA Learning Factories. With 25+ years of experience, he has led multiple Lean, green and quality transformations across Europe in automotive and high-tech industries.

Ashok Kumar
Ashok has 20+ years of experience in Indian Air Force and Automotive industry. He has led multiple performance transformations in India across automotive, heavy engineering, cement and pharma industries.

Jonathan Tilley
Jonathan has 25+ years of operations experience. He has led transformations across Aerospace, Automotive, Pharmaceuticals, and Oil & Gas industries.

Dev K Ramchandani
Dev leads the Manufacturing Center of Competence, India. With 10+ years of experience, he has deep expertise in Reliability Excellence and has served multiple clients across basic materials, automotive, pharma and cement industries.

Kunwar Singh
Kunwar has 10+ years of experience in two diverse industries. He has led operations transformations with focus on Reliability Excellence and Advanced Analytics in basic materials and automotive industries.

Ken Somers
Ken has 10+ years of experience. He leads the Energy Efficiency service line. His main focus is on heavy industry with regular forays into other areas including pharmaceuticals and packaged goods.

David Roussel
David has 15+ years of experience in automotive industry. He has led multiple Lean manufacturing transformations across Europe in automotive and consumer goods industries.
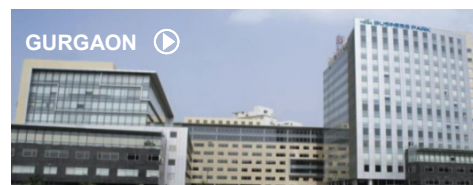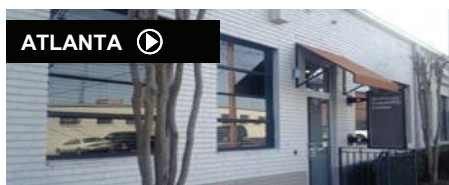
Alan Osan
Alan has 35+ years of experience in diverse industries. He leads the Asset Productivity service line and has led multiple performance transformations across industries with focus on Reliability Excellence.
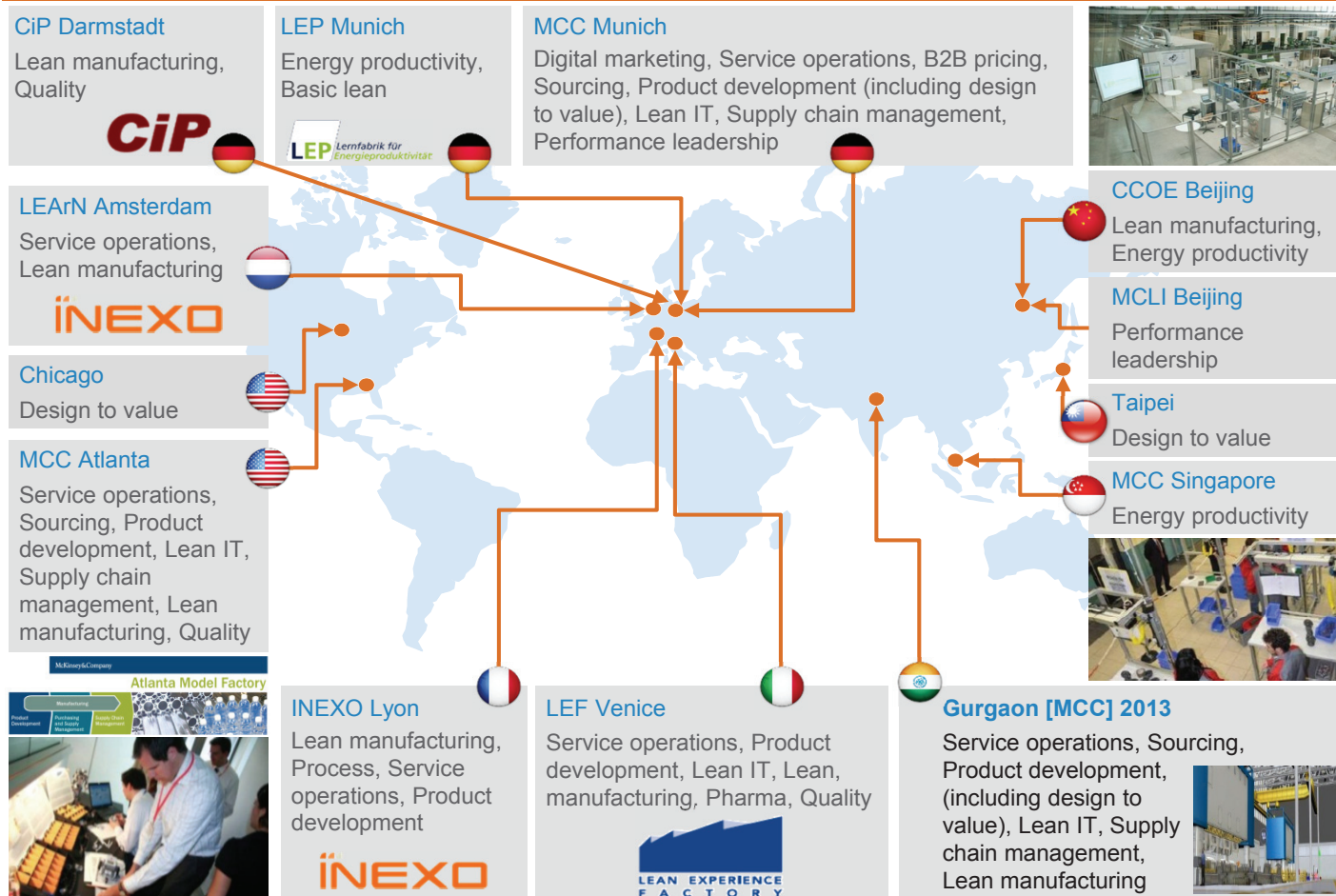
McKinsey has built a global network of experiential learning centers for operations excellence

McKinsey Capability Centers

Integrated facilities offering opportunities for diverse range of "learning-by-doing" modules

ATLANTA ▶

MUNICH ▶

GURGAON ▶

Model operations Reimbursement

CiP Darmstadt

Lean manufacturing, Quality

LEP Munich

Energy productivity, Basic lean

MCC Munich

Digital marketing, Service operations, B2B pricing, Sourcing, Product development (including design to value), Lean IT, Supply chain management, Performance leadership

LEArN Amsterdam

Service operations, Lean manufacturing

Chicago

Design to value

MCC Atlanta

Service operations, Sourcing, Product development, Lean IT, Supply chain management, Lean manufacturing, Quality

CCOE Beijing

Lean manufacturing, Energy productivity

MCLI Beijing

Performance leadership

Taipei

Design to value

MCC Singapore

Energy productivity

INEXO Lyon

Lean manufacturing, Process, Service operations, Product development

LEF Venice

Service operations, Product development, Lean IT, Lean, manufacturing, Pharma, Quality

Gurgaon [MCC] 2013

Service operations, Sourcing, Product development, (including design to value), Lean IT, Supply chain management, Lean manufacturing

How do you benefit?

At Virtual Model Factory, we focus on impact. Our immersive learning modules tackle the roots of skill related hurdles most transformations face. These enable you to apply your new capabilities directly, accelerate the roll-out of your transformation, and sustain your performance improvements.

1 Uniquely tailored immersive environment

2 Field-tested and well-researched content

3 Real life situations to build technical as well as soft skills
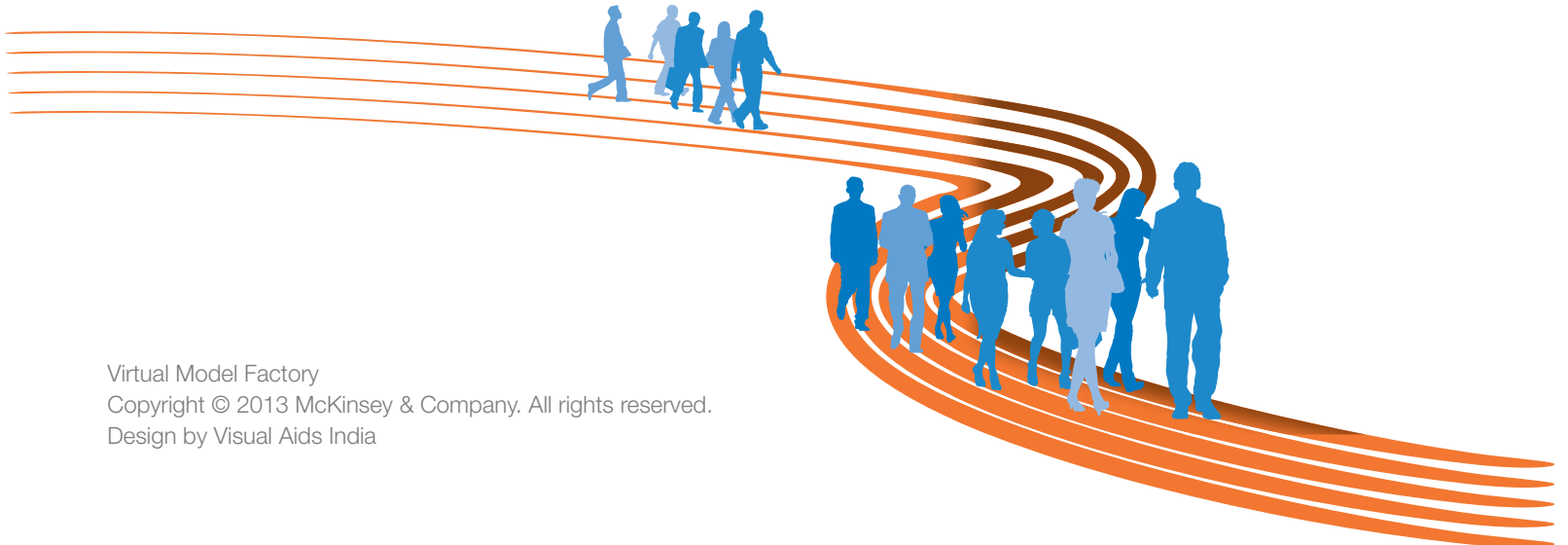
4 Easy access ✕ Configured set-up ✕ End-to-end support

Please feel free to reach us for more information:

MCC-Gurgaon@mckinsey.com