

## Engineer Your Smart Factory Blueprint

3-Day Workshop, 7-Day Overseas Trip, 12-Month Mentorship



### Top Learning Outcomes:

- Identify company's maturity level, readiness, and focus areas
- Employ design thinking business canvas in industrial transformation
- Evaluate and incorporate model or trial-solutions
- Experience & understand Industry 4.0 best-practices at companies in Germany
- Exchange knowledge and feedback through networking and discussion opportunities
- Incorporate transformation strategies into Smart Factory Blueprint
- Gain insight from sessions conducted by domain experts & knowledge partners
- Application of transformation initiatives through a 12-month mentorship programme

Course Provider:



Knowledge Partners:



In Partnership With:



Supported By:



**LEARN Programme Structure:  
THE 3-STAGE MODEL OF CHANGE**



**3-Day Workshop**



**7-Day Trip To Germany**



**12-Month Mentorship**



**LEARN, UNLEARN & RELEARN**



**EVALUATE**



**ACT**



**REVIEW**



**NAVIGATE**

<p>Learn to identify company's maturity level and readiness based on SIRI and PM using proven methodologies</p>	<p>Learn from domain experts and appreciate the success stories of German engineering</p>	<p>Learn to adopt a growth mindset in understanding workforce planning and training needs by mapping skills and competencies</p>
<p>Evaluate existing process, technology, and organisation</p>	<p>Evaluate the state of art manufacturing process and technology and identify white space gap</p>	<p>Evaluate the Smart Factory Blueprints and streamline it with the changing Industry 4.0 landscape</p>
<p>Act on refining problem statements using design thinking principles</p>	<p>Act on incorporating transformation initiatives into the Smart Factory Blueprints with expert guidance</p>	<p>Act on transformative activities in an agile and targeted manner</p>
<p>Review the current state of the company and frame problem statements with targeted Industry 4.0 focus areas</p>	<p>Review the blueprints from multi-disciplinary perspectives through facilitated peer-mentoring sessions</p>	<p>Review the transformation journey quarterly across 12 months</p>
<p>Navigate the uncertainty of digitalisation through awareness, appreciation and adoption</p>	<p>Navigate the Smart Factory Blueprints (with actionable outcomes) effectively and with confidence</p>	<p>Navigate the digitalisation of manufacturing under the guidance of a project mentor</p>

**REGISTRATION**

To register or to find out more, visit:  
[WWW.TUM-ASIA.EDU.SG/LEARN](http://WWW.TUM-ASIA.EDU.SG/LEARN)

For more information, please contact:  
TUM Asia, Office of Executive Development  
Email: [exd@tum-asia.edu.sg](mailto:exd@tum-asia.edu.sg) | Tel: +65 6777 7407

**STAGE 1: AWARENESS**  
13 - 15 APRIL 2020  
MAY/JUNE 2020

**SGD \$2,000/PAX\***  
**(BEFORE 7% GST)**  
UP TO 90% SKILLSFUTURE  
FUNDING AVAILABLE

**STAGE 2: APPRECIATION**  
CONTACT US FOR MORE INFO

**SGD \$8,200/PAX**  
**(BEFORE 7% GST)**  
FEES ARE SUBJECTED TO CHANGES.

**STAGE 3: ADOPTION**  
FOLLOW-UP  
MENTORSHIP PROJECT

**PROJECT BASED FEES**  
COMPANIES CAN APPLY FOR ENTERPRISE  
SINGAPORE FUNDING. T&CS APPLY.

## Engineer Your Smart Factory Blueprint

- ✓ Customisable 3-stage model to guide your company's digital transformation strategies and implement change
- ✓ Help companies create their Smart Factory Blueprint based on Singapore Smart Industry Readiness Index (SIRI) and Prioritisation Matrix (PM)
- ✓ Learn from domain experts and industry best practices at state-of-the-art manufacturing plants and research institutes in Germany



### PROGRAMME OVERVIEW

Developed by **Technical University of Munich (TUM) Asia**, the LEARN Programme adopts a 3-stage model of change to help companies engineer and implement their smart factory transformation blueprint based on the Singapore Smart Industry Readiness Index (SIRI) and the Prioritisation Matrix (PM). It aims to help companies progress from a state of **awareness**, to **appreciation** and eventual **adoption** of a holistic transformation strategy that addresses the core elements of Industry 4.0 (Process, Technology and Organisation).

### PROGRAMME BENEFITS

#### Tailored Approach For Organisational Needs

Companies will benefit from the facilitated knowledge exchange where valuable insights and strategies are shared, refined and redesigned to suit their organisations' needs.

#### Peer Mentoring By Industry Experts

The academic-industry peer mentoring eco-system consists of domain experts, knowledge partners and project team members from different industries offering multi-disciplinary perspectives.

#### Follow-up Project Mentorship

This programme includes a follow-up consultancy and 12-month project mentorship to help companies implement their smart factory blueprint.

## PROGRAMME FEES & FUNDING SUPPORT

Stage 1: Awareness	Stage 2: Appreciation	Stage 3: Adoption
<b>SGD \$2,000 per pax*</b> <i>(before 7% GST)</i>	<b>SGD \$8,200/pax</b> <i>(before 7% GST)</i> Fees	<b>Project-based fees</b> <i>Companies can apply for Enterprise Singapore funding. T&amp;Cs apply.</i>

## REGISTRATION

To register or to find out more, visit: [www.tum-asia.edu.sg/learn](http://www.tum-asia.edu.sg/learn)



### STAGE 1: AWARENESS

#### “Engineer Your Smart Factory Blueprint” Workshop

This 3-Day workshop is in partnership with TUV SUD Asia Pacific – COE Digital Service, Fraunhofer Singapore and Siemens Singapore. The workshop aims to help participating companies create a solution blueprint with an end goal of transforming their existing factory into a smart factory. Participants will generate actionable problem statements through design thinking methodology. This workshop is conducted by one of the first Smart Industry Readiness Index (SIRI) assessors and is the first of its kind that employs the widely accepted assessment logic behind SIRI and the Prioritisation Matrix (PM).

#### Workshop Objectives

- Understand and apply SIRI and the PM
- Understand core principles, frameworks and methodologies of Industry 4.0
- Determine the aspirational state of the company guided by its business objectives
- Generate actionable problem statements in Industry 4.0 focus areas
- Introduction to TUV SUD solution taxonomy, Fraunhofer digital media technology and Siemens Digital Enterprise solutions.

#### Learning Outcomes

- Identify company’s maturity level, readiness, and focus areas using data-driven approach
- Reference Architecture Model for Industry 4.0 (RAMI) and respective standards
- Design thinking business canvas – specific application to industrial transformation
- Frame problem statements into the Smart Factory Blueprint
- Identify the right technology use cases based on business priorities, size of impact, and organizational readiness
- Evaluate and incorporate model / trial-solutions as identified by TÜV SÜD, Fraunhofer Singapore and Siemens Singapore



## STAGE 2: APPRECIATION

### LEARNing Trip To Munich - Programme Highlights

The 7-Day trip to Munich aims to help companies refine their Smart Factory Blueprint based on their targeted Industry 4.0 focus areas. This will be done through a showcase of success stories at state-of-art manufacturing plants and research institutes, facilitated learning sessions that adopt the SIRI framework, as well as networking opportunities with senior leaders and domain experts. Company representatives will work in a multi-disciplinary team to determine the transformative activities in an agile, targeted manner during the trip..

#### LEARNing Trip Objectives

- Experience Industry 4.0 best-practices at every guided factory tour
- Learn from industrial practice and domain expertise to implement Industry 4.0 technologies
- Understand the digitalisation strategy of each company from shop floor to management level
- Exchange knowledge and feedback through networking and discussion opportunities
- Incorporate appropriate transformation strategies into Smart Factory Blueprint through facilitated learning sessions conducted by domain experts and knowledge partners

Site Visits	Format	Programme Highlights
<ul style="list-style-type: none"> <li>• <b>Festo Technology Plant (Scharnhausen)</b></li> <li>• <b>SEW Eurodrive Factory (Bruchsal)</b></li> <li>• <b>Fraunhofer Institute for Manufacturing Engineering and Automation (Stuttgart)</b></li> <li>• <b>Siemens Smart Factory (Amberg)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Guided Factory Tours</li> <li>• Workshops</li> <li>• Facilitated Learning Sessions</li> <li>• Networking</li> </ul>	<p>Participating companies will devise a digitalisation strategy for their companies after examining available use cases. Through the facilitated learning sessions, participating companies will evaluate the state of art manufacturing process and technology and identify white space gap with respect to their problem statements. They will then act on incorporating transformation initiatives into their Smart Factory Blueprints with expert guidance. The aim of the focus group discussion is to help participating companies engineer Smart Factory Blueprints and develop operations strategy. Their blueprints will be reviewed from a multi-disciplinary and inter-company perspective. The highlights of the trip include, but is not limited to:</p> <ul style="list-style-type: none"> <li>• Automation solutions</li> <li>• Manufacturing logistics</li> <li>• Lean production &amp; management</li> <li>• Cloud computing</li> <li>• Cyber physical system</li> <li>• Predictive maintenance</li> <li>• Control technology</li> <li>• Additive manufacturing</li> <li>• Order management and value networks</li> <li>• Factory planning and production management</li> </ul>

#### DID YOU KNOW?

The LEARN programme runs all year round and can be customized to suit your company's learning needs. Talk to us to find out how you can do so.

For more information, please contact:

TUM Asia, Office of Executive Development

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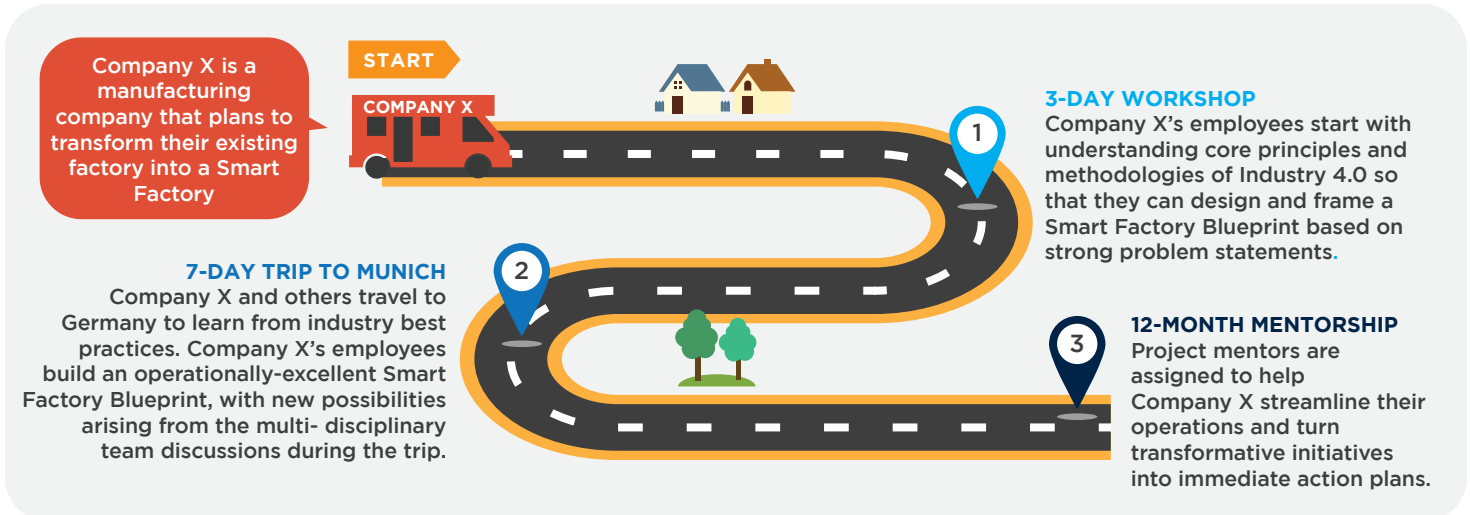


## STAGE 3: ADOPTION

### Consultation and Project Mentorship

Companies are strongly encouraged to take up the 12-month mentorship programme to help them embark on their transformation initiatives. The mentorship programme will include the mapping of competencies, skills and standards, coupled with workforce planning and customised training. The project mentors will also help companies to streamline their operations strategy with respect to the evolving Industry 4.0 landscape and ensure sustainability in the initiatives.

#### LEARN Roadmap



#### LEARN Programme Leaders



**Frank Reppel**  
Managing Partner and  
Founder of Reppel &  
Partners Pte Ltd

Frank Reppel obtained his M.Sc. in Physics from the Karlsruhe Institute of Technology (KIT). He is currently the Chairman of the Innovation and Digitalisation Committee of the Singaporean German Chamber of Industry and Commerce (SGC) and the President of the Singaporean Alumni Club of KIT. Frank is the managing partner of Reppel & Partners Pte Ltd, a management consulting company focused on Industrial Transformation and Digitalisation. He has worked in various leading roles in the ICT industry in Europe and Asia over the past 25 years after having started in a shop floor control systems company in the late 80s. Before the founding of Reppel & Partners, Frank has worked for large MNCs such as Siemens, and was also Chief Operating Officer for an Asian operation of a European MNC. Living in Singapore since 1997, Frank is leading digitalisation efforts, including business intelligence and Industry 4.0 projects, and has helped TÜV SÜD's Center of Excellence here in Singapore incubate its Industry 4.0 consulting practice. In that role, Frank was one of the very first accredited SSIRI workshop assessors and is a Singapore Certified Management Consultant.



**Prof. Dr.-Ing. Dipl.-Kfm.  
André Krischke**  
Logistics and Supply Chain  
Management  
Munich University of  
Applied Sciences

Professor Andre Krischke did his Doctorate in Mechanical Engineering at the Technical University Munich (TUM) and moved on to study Business Administration at the University of Hagen, with majoring in Operations Research and Strategic Planning. He was a business consultant and project manager at McKinsey & Company, Inc. and became a global supply chain manager at OSRAM GmbH Munich. He is a professor for supply chain management at the University of Applied Science Munich (MUAS). His research focus is on quantitative approaches and simulation in supply chain management, manufacturing planning and control, sales and operations planning as well as business strategy dynamics / complexity management and strategic foresight. He also participated in industry projects involving the application of advanced manufacturing processes and systems and smart supply chains. Professor Krischke is also teaching in the Specialist Diploma in Advanced Digital Manufacturing offered by TUM Asia.

## WHO SHOULD ATTEND

- Targeted at, but not limited to **manufacturing** (i.e. automation, electrical/ electronic and mechatronics, food, medical technology), **fast-moving consumer goods** (FMCG), **machinery and systems, precision engineering and logistics sectors**.
- **Recommended team size and composition** (up to 5 per company):
  - 1 x Senior Management
  - 1 x Operations
  - 1 x Supply Chain
  - 1 x Engineering
  - 1 x Human Resource

## COURSE ENROLMENT

- Interested companies must be a **locally registered** or **incorporated entity in Singapore**
- Suitable for both **small and medium-sized enterprise** or **large local enterprise**
- Companies must submit details of their organisation, main customer base and overview of current business activities
- Successfully enrolled individuals and companies must complete and provide all the necessary enrollment documents, accepting all terms and conditions of the programme.

## COURSE REGISTRATION

To register for the LEARN programme or to find out more, please visit [www.tum-asia.edu.sg/learn](http://www.tum-asia.edu.sg/learn). The LEARN programme is available all year round and certain stages can be customized to suit your company's learning needs.

For more information, please contact:

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German Institute of Science & Technology - TUM Asia Pte Ltd

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