

# SCIC-Advanced Manufacturing (SAM) Committee

## Standard Development Organisation (SDO@SCIC)

- SDO Steering Committee
- Chemical Standards Committee
- Technical Committees
- Working Groups
- Virtual Working Groups

## SCIC Committees

- + Industry Resource Development
- + Responsible Care
- + Regulatory Affairs
- + Process & Engineering
- + Logistics & Distribution
- + Jurong Island Infrastructure
- + Major Hazards Installation
- + Trade Facilitation
- + Communications
- + Small & Medium Enterprises
- + Industry Sustainability
- + National Chemical Management & GHS Taskforce
- + Advanced Manufacturing

## Process Construction & Maintenance Productivity Council

- Productivity Council
- Certification Workgroup
- Management of Pilot Projects Workgroup
- Mechanization Workgroup
- Productivity Best Practices Workgroup

## SAM Committee Members

### Sponsor

Mr Goh Koon Eng

### Chairman

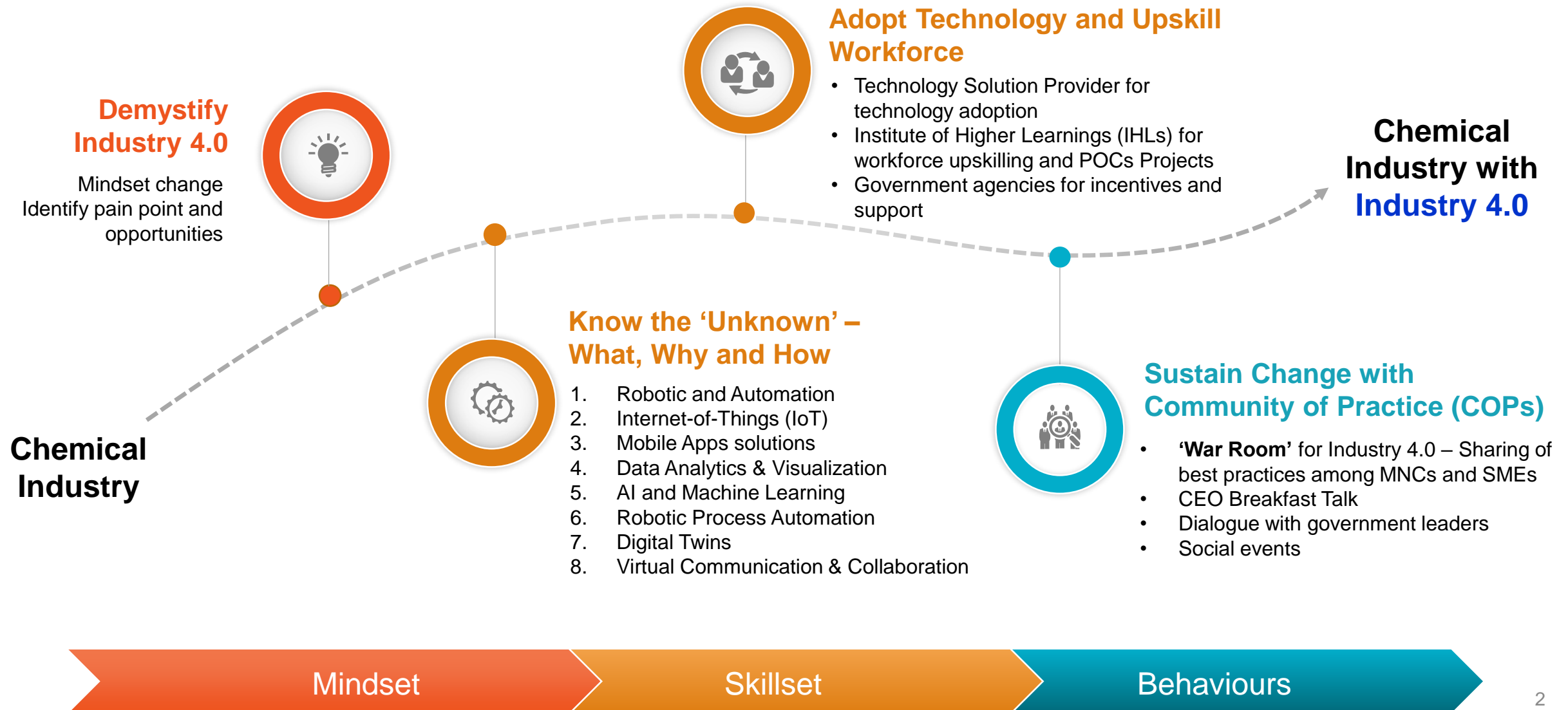
Mr Tom Madilao, Chevron Singapore Pte Ltd

### Members

Representatives from:

1. Borouge Pte Ltd
2. Chevron Oronite Pte Ltd
3. Croda Singapore Pte Ltd
4. KMG Singapore Pte Ltd
5. Lucite International Singapore Pte Ltd
6. Singapore Polytechnic
7. Association of Process Industry (ASPRI)

# SAM's Holistic Approach to Journey with Companies Towards Industry 4.0



# Ecosystem of Chemical Industry for Industry 4.0

## Demystify

### Breakfast/ Lunch/ High-Tea Talk

- Intro to Industry 4.0
- Intro to SSIRI
- Intro to Data Analytics
- Intro to AR/VR

### Learning Journey

- SP's Energy & Chemicals Training Centre (ECTC)
- SP's Advanced Manufacturing Centre (AMC)
- Emerson's Solutions Centre
- Accenture's IoT Centre of Excellence
- ... ..

## Know the 'Unknown'

**Design Thinking** for Users to Identify Need Statements and Solutions in i4.0

### Digital Awareness

- Digital 101 Awareness Course

### Technical Talk/ Courses on Advanced Manufacturing and Data Analytics

- Internet-of-Things (IoT); Robotic and Automation; Mobile Solutions and Digital Twins
- Data Analytics & Visualization; AI and Machine Learning

### Technical Talk/ Courses on Digital Solutions

- Robotic Process Automation (RPA); Augmented Reality (AR)/ Virtual Reality (VR); Digital HR and Digital Marketing

## Upskill Workforce

## Experiment Solutions

### Technology Solution Providers, Agencies and IHL

- Mentoring Clinic Session for emerging skills applications
- Proof-of Concepts (POC) Projects
- Solutioning Internship

## Sustain the Change

### 'War Room' as COP for i4.0

- Sharing of best practices among MNCs and SMEs

### Sharing of Success Stories

- Vertical Implementation
- Horizontal Implementation

### Dialogue with Senior Government Leaders

### Communication and Publicity

- Website
- ChemDigest

# Learning Journey to Singapore Polytechnic's Energy & Chemicals Training Centre (ECTC)



- A Sharing Session-Gearing up for Industry 4.0 was organised on 30 August 2019. 20 participants attended the event.
- Two sharing topics followed by a walk-through to the Singapore Polytechnic's newly launched Energy Chemical Training Centre (ECTC) - Singapore's only one-stop training and solution centre for the Energy and Chemicals sector where elements of IOTs have been incorporated. <https://www.sp.edu.sg/sp/news/sp/singapore-polytechnic-and-emerson-partner>

# Examples: Industry Projects to Experiment Solutions

01

## Automated Guided Vehicle (AGV) for A Plant Owner on Jurong Island

SP, ST Engineering and A Plant Owner

To have a **Proof-of-Concept (POC)** for use of AGV to

- Retrieve items/ machinery from process line
- Load items/ machinery to an AGV
- Transfer items/ machinery to maintenance workshop



Sept 2018 : POC started with total distance of 500m using AGV  
Jan 2019 : POC completed.

02

## Vertical Integration for Data Visualisation and Analytics

SP, MicroStrategy and A Manufacturing Company

To develop vertical integration platform with multiple sources of data from manufacturing units

The platform will serve as **One Source of Truth**, for application layer for data visualisation and analytics could be added onto the platform.



## Where do I start? Who can help me?

- Understand the opportunities in your business – what is in it for the organization?
  - Use design thinking methodology to determine pain points
  - Perform value stream mapping, use lean sigma tools
  - Don't focus on technology, focus on business outcomes / value creation
- Start small, think big
  - Explore solutions in small scale – highest impact if possible
  - Understand foundational requirements before starting
  - Tap into Singapore digital eco-systems; learn and collaborate.
  - Celebrate and share successes, create excitement, communicate.
- Develop road map and prioritize
  - Foundational requirements must be done right
  - Work cross-functionally and avoid thinking in silos
  - Understand change management needed
  - Evaluate resources, funding and organization capability
- Execute
  - Be patient. It is a journey. Leverage Digital Eco-System!
  - Share with others, collaborate, be agile

**Thank You**

