Trade and Industrial Organisation Support Fund (TSF)

Final Report on Approved Project

Grantee	:	Hong Kong Mould and Product Technology Association Limited
Implementation Agent(s) (if any)	:	Hong Kong Productivity Council
Project reference no.	:	T18 004 006
Project title	:	To excel Hong Kong SMEs' competitive advantages by Digital Lean for building up the foundation of Industry 4.0 enterprises
Period covered in this report (whole project duration)	:	From 10/07/2019 (dd/mm/yyyy) to 09/07/2022 (dd/mm/yyyy)

1. Project Details

Project summary (in about 150 words)

This project aims to assist Hong Kong manufacturing SMEs in building up the foundation of Industry 4.0 by implementation of Digital LEAN. Follow by the establishment of Digital LEAN guidance, toolkit and roadmap for individual SMEs moving towards the Foundation of Industry 4.0. Also, this project would like to enhance productivity and efficiency of Hong Kong industry, and as a key enabler towards the foundation of Industry 4.0 (0i-1i) and prepare for the detail implementation roadmap for 1i implementation, which could help enterprises to speed up OBM/ODM transformation in researching and developing products or prototypes through digital LEAN in the optimization of New Product Development Process. Finally yet importantly, it could address the market demand of Digital LEAN solution and problems that Hong Kong SMEs are facing.

Project objectives (in about 50 words)

To assist Hong Kong manufacturing SMEs build up the foundation of Industry 4.0 by implementation of Digital LEAN. Follow by the establishment of Digital LEAN guidance, toolkit and roadmap for individual SMEs moving towards the Foundation of Industry 4.0.

Collaborating Organisations (if any)

1. Hong Kong Greater China SME Alliance Association
2. Hong Kong Electrical Appliance Industries Association
3. IOT HK Association
4. Hong Kong (SME) Economic and Trade Promotional Association
5. Hong Kong Foundry Association
6. The Hong Kong Metals Manufacturers Association
7. Hong Kong Auto Parts Industry Association
8. Hong Kong Opto-Mechatronics Industries Association
9. Hong Kong Critical Components Manufacturers Association
10. Hong Kong Metal Merchants Association

Key personnel

		Name	Post title and name of organisation
Project Coordinator	:	Dr. Liu Woon Fai Tommy	President, Hong Kong Mould and Product Technology Association Limited
Deputy Project Coordinator	:	Mr. Chan Ying Kit, Chris	Vice President, Hong Kong Mould and Product Technology Association Limited

Project duration

	Commencement date (dd/mm/yyyy)	Completion date (dd/mm/yyyy)	Project duration (no. of months)
As stated in the project agreement	10/07/2019	09/04/2021	21
Revised (if applicable)	10/07/2019	09/07/2022	36

2. Summary of Project Results

Governance

Please state the composition of the steering committee (or other committees) formed under the project.

Professor Yam Yeung from the Chinese University of Hong Kong (CUHK)

Mr. Raymond Shan from Hong Kong Productivity Council (HKPC)

Mr. Charles Chan from Hong Kong Mould and Product Technology Association Limited (HKMPTA)

Project deliverables

Please list out the project deliverables carried out during the project duration in accordance with the approved project proposal and provide details on the actual result achieved for each deliverable.

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
1. Digital design and technology specification establishment			
Publishing date: 09/10/2019 Topics covered: - Digital LEAN description - Tool kit requirements - Verification - Digital LEAN methodology model No. of pages: 25 Distribution channel: HKMPTA website (http://www.hkmpta.org/index.php/2014-11-13-17-04-41/363-2020-08-06-08-43-12)	1 completed specification report (e-version)	1 completed specification report (e-version)	
2. Pilot study			
Company visits Period of company on-site study: Feb 2022 – May 2022, 6 days for each company Selection / vetting parties: - Prof Yam Yeung (CUHK) - Mr Raymond Shan (HKPC) - Dr Charles Chan (HKMPTA) - Mr Chris Chan (HKMPTA) - Mr Calvin Leung (HKMPTA) Selection / vetting criteria: - SME - Hong Kong registered company - Problem area: High wastes, high Work-In-Progress, quality reject, bottleneck, unbalanced line etc. - Labour-intensive production line or with quality checking - Companies that have already applied LEAN - Pilot line production quantity more than 50 per day	20 pilot company visits 1 methodology verification report (e-version)	20 pilot company visits 1 methodology verification report (e-version)	

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
Methodology verification report Publishing date: 27/05/2022 Topics covered: - Evaluation and demonstration of performance of Digital LEAN solution No. of pages: 56 Distribution channel: HKMPTA website (http://www.hkmpta.org/index.php/2014-11-13-17-04-41/363-2020-08-06-08-43-12)			
3. Digital LEAN framework			
Publishing date: 27/05/2022 Topics covered: - Framework that demonstrates Digital LEAN model and standard practices of Digital LEAN - "Digital LEAN Guidance" with case studies - Digital LEAN solutions - Expectation of improvement for manufacturing industry - Detail implementation roadmap from 1i to 2i No. of pages: 150 Distribution channel: HKMPTA website (http://www.hkmpta.org/index.php/2014-11-13-17-04-41/14-2014-11-14-11-36-01/405-4-0)	1 Digital LEAN model (e-version) 1 Digital LEAN guidance and roadmap (e-version)	1 guidebook (e-version) with Digital LEAN model, guidance and roadmap included	
4. Three 1-day workshops			
First workshop Date: 22/06/2022 Time: 10:00-17:00 (with lunch/break time around 2 hours) Venue: HKPC Classroom 121 and online (Zoom) Topics covered: - Concept of industry 4.0 - Digital LEAN Model and Digital LEAN guidance and roadmap - Case sharing from 20 factories - Participant self-case facilitation and identify Digital LEAN solution for solving problem - Sharing the discussion result and comment by HKPC Consultant Speakers: 1. Mr Lyan Law, Head of Industry 4.0 and Industrial Drone Solution Division, HKPC 2. Mr Louis Ho, Senior	1-day workshop Number of participants per workshop: 25	1-day workshop Online 61 participants On-site: 25 participants	

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
Consultant of HKPC 3. Mr Alfred Wong, representative of WITTI Technology Company Limited 4. Mr Peter Lau, representative of Sealtech Company Limited 5. Mr Nickman Suen, representative of Novelte Robotics Limited 6. Ms Shirley Liu, representative of Winnington Metal & Plastic Manufacturing Company Limited			
<u>Second workshop</u> Date: 23/06/2022 Time: 10:00-17:00 (with lunch/break time around 2 hours) Venue: HKPC Classroom 126 and online (Zoom) Topics covered: Same as first workshop Speakers: 1. Mr Louis Ho, Senior Consultant of HKPC 2. Mr Calvin Wu, representative of Shing Hing Plastic Manufacturing Limited 3. Mr John Mo, representative of D&S Products Manufactory Limited 4. Mr Paul Lee, representative of AVATech Innovation Limited	1-day workshop Number of participants per workshop: 25	1-day workshop Online: 65 participants On-site:10 participants	
<u>Third workshop</u> Date: 24/06/2022 Time: 10:00-17:00 (with lunch/break time around 2 hours) Venue: HKPC Classroom 121 and online (Zoom) Topics covered: Same as first workshop Speakers: 1. Mr Louis Ho, Senior Consultant of HKPC 2. Ms Carlotta Wong, representative of Lexington Limited 3. Mr Daniel Wong, representative of Polyflow Hot Runner Technology Limited 4. Mr Ivan Fung, representative of JIE Technology Company Limited	1-day workshop Number of participants per workshop: 25	1-day workshop Online:59 participants On-site: 21 participants	
5. Promotional activities			
- HKMPTA eDM - HKPC eDM - Advertisements on HKMPTA	Manufacturing company invitation:	Manufacturing company invitation:	For the online advertisement on

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
website - Social media advertisements (e.g. HKMPTA website and WeChat)	- HKMPTA eDM - Advertisement on social media (e.g. WeChat, Facebook and HKMPTA website) - Online advertisement on dmpshow.com Workshop promotion: - HKMPTA eDM - Advertisement on social media (e.g. WeChat, Facebook and HKMPTA website)	- HKMPTA eDM (Jan 2021) (1 round) - HKPC eDM (Dec 2019 – Jan 2020) for pilot company recruitment (3 rounds) - Advertisement on HKMPTA journal (2019 – 2021 issue) published on HKMPTA website (http://www.hkmpta.org/images/HK/2020/20010018-HKMPTA-2019-Journal_v28.pdf) Workshop promotion: - HKMPTA eDM (June 2022) (1 round) - HKPC eDM (May 2022 – June 2022) (2 rounds) - Advertisement on WeChat (1 round)	dmpshow.com, as the DMP exhibition and related events were cancelled amid the COVID pandemic, the website hit count dropped drastically and hence we consider the promotion on www.dmpshow.com not effective. To better promote the pilot study and recruit more participants, we changed to promoting through HKPC eDM. We will seek prior approval from DGTI for any amendments in future projects.

Key implementation stages

Please indicate in the status below if the deliverable is completed according to schedule (C), completed but delayed (D) or not achieved (N). If it is delayed or not achieved, please indicate the actual completion date (if applicable) and provide the reasons.

		Project deliverable (all deliverables as set out in the approved project proposal)	Original target completion date [1]	Actual completion date (if applicable)	Status (C/D/N)	Reasons for not meeting the original target completion date
(a)	1.	To study a novel design specification of "Digital LEAN solution" with high efficient LEAN parameters detection for manufacturing industry.	09/10/2019	09/10/2019	C	
	2.	To study a design specification of Digital LEAN solution with the synchronized connectivity to real time production data for the LEAN performance visibility.				
	3.	To draft an in-depth specification report to evaluate and demonstrate the claimed performance of Digital LEAN solution in terms of connectivity, accuracy, traceability, user interface, safety, user friendly.				
(b)	1.	To conduct on-site study on 20 HKSMEs pilot industrial companies for the methodology verification. Each HKSME on-site study takes 6 days.	09/10/2020	27/05/2022	D	Note (i)
	2.	To draft an in-depth methodology verification report to evaluate and demonstrate the claimed performance of Digital LEAN solution in terms of connectivity, accuracy, traceability, user interface, safety, user friendly.				

[1] As stated in the approved project proposal.

(c)	1. Based on 20 Pilot study cases, to formulate a Digital LEAN Model for Hong Kong Industry towards "Industry 4.0 Foundation".	09/01/2021	27/05/2022	D	Note (i)
	2. Consolidate the Digital LEAN solutions and prepare a technical paper for conference presentation for promoting the project significance and impact to the industry.				
	3. Compile a "Digital LEAN Guidance" with case study for illustrating Data Driven LEAN and relevant technical information. The content of the Web-based guidebook will include the methodology, technology, and technique for Hong Kong industry upon project completion. The guidebook will be uploaded to HKMPTA for easy access.				
	4. Prepare detail implementation roadmap for 1i implementation, end to end real time data generation which is a foundation for next stage 2i Real-time Data Processing & Integration.				
(d)	1. Organise 1-day workshops on the application knowledge and knowhow transfer for the implementation methodology and Digital LEAN solution for 3 times	09/04/2021	24/06/2022	C	Note (i)

Note:

(i) Approval was granted in 16 October 2020 and 31 March 2021 to extend the project duration for 15 months in total amid the COVID-19 pandemic. Target completion dates for (b), (c) and (d) were changed to 9 January 2022, 9 April 2022 and 9 July 2022 respectively. Actual completion dates for (b) and (c) were delayed since HKPC's daily operation was disrupted due to the COVID-19 pandemic. More time was needed to prepare deliverables (b) and (c).