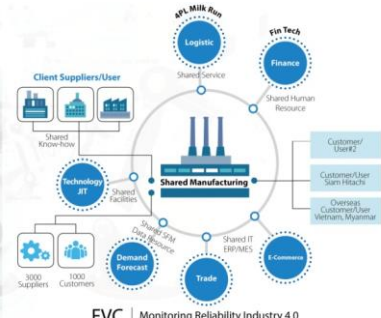


Shared Factory in Thailand

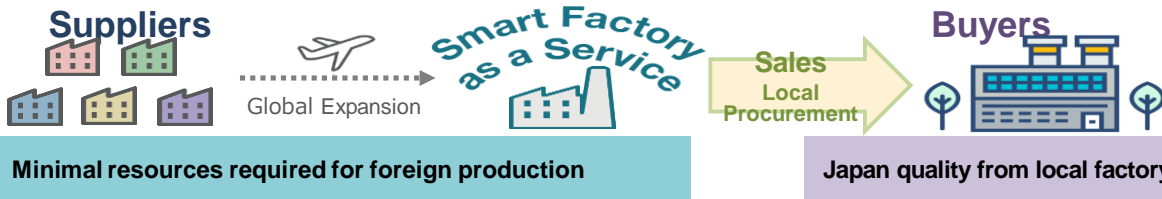


18th December, 2018
Hitachi High Technologies Corp.

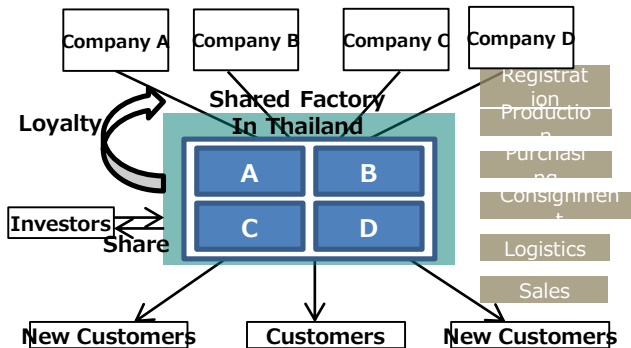
1. Smart Factory as a Service

■ SFaaS(Smart Factory as a Service)

Hitachi High-Technologies' Smart Factory as a Service (Hitachi SFaaS) supports overseas production, with Hitachi's leading IT/IoT technologies and rich foreign business experience.



■ Shared Factory SFaaS enables shared operation

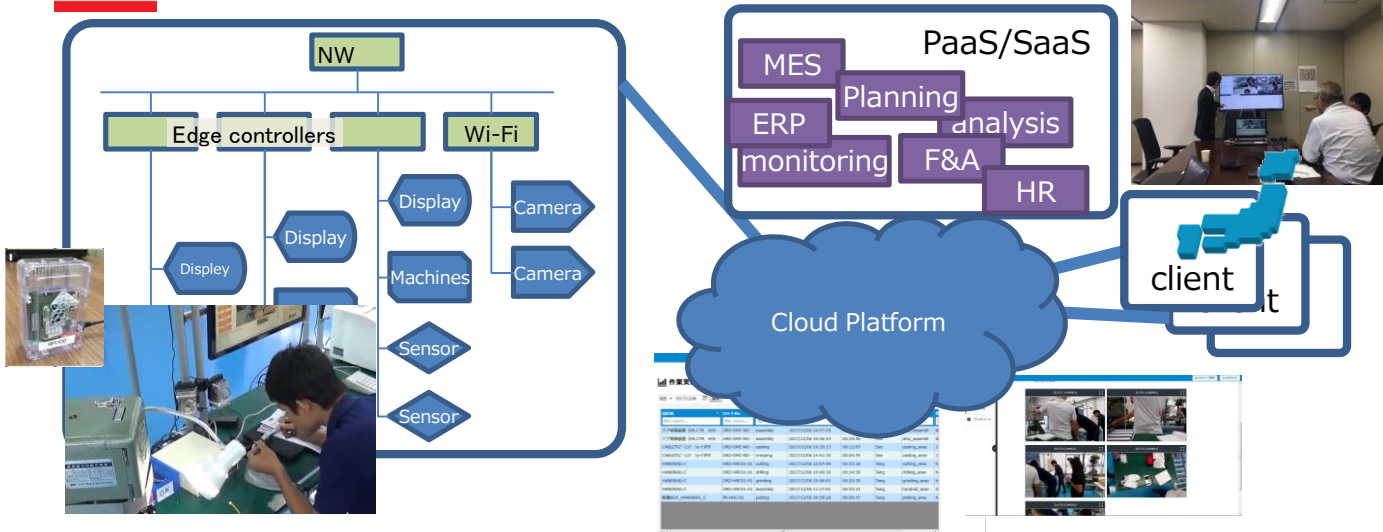


Service Menu	
Startup Support	
Technology Export	Registration, IP
Prototype Production	
Outsourcing Service	
Purchase	Accounting
Logistics	Human Resources
Operations Management	
Sales	
Reinforcement	
Marketing	Supply Chain Finance

2. Smart Manufacturing



Hitachi Hightech Amata Smart Services Co., Ltd



- Digital Data and Moving picture captured by IoT sensors and multi function cameras are stored in Cloud Platform.
- Client Manufacturing Partners can access the data to monitor and instruct operators from abroad.

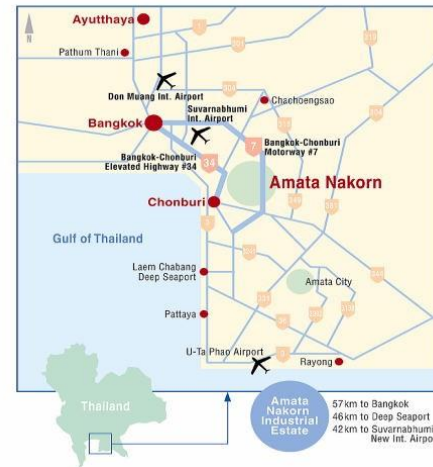
High Level Operations, Quality, & Facility Management
in minimum costs.

3. Outline of Field Traial

Period : October-December 2017 **2017年10~12月**

Place : **Amata Nakorn Industrial Estate**
Rental Factory (2600 sqm)

Sponcered : 「日ASEAN新産業創出実証事業」



JETRO
日本貿易振興機構(ジェトロ)

Partners		Roles
Srithai Engineering	Thailand	Process Technology
Trigo Quality Service	Thailand	Dispatch Operators
Amata Corporation	Thailand	Rental Factory & facilities
Shirokuma	Japan	Process Design and control
Toho Shokusan	Japan	
Hitachi High-Technologies	Japan	Project Management



4. Objectives of the study

Verify whether Shared Factory will minimize the resources necessary to enter overseas market

	Plan	Means	Target
<u>Vaildity In Production</u>	Prototype <ul style="list-style-type: none"> DMC Unit 20 pcs Handrail 50 pcs 	Prod. Line	Achieve prototype production plan
	Quality <ul style="list-style-type: none"> Meet requirements by Customers / Partners Inspected by partners 	Prod. Line	Minimum Failure Rate
	Operations <ul style="list-style-type: none"> Efficiency of local production Standard time by local operators 	Prod Line	Standard Time 120% or less compared with ST in Japan
	Infrastructure <ul style="list-style-type: none"> Temperatures, humidity, stability of power ... 	Machines	Within Spec
Environment	<ul style="list-style-type: none"> Temperatures, Humidity, air quality, oscillation, .. 	Prod Line	Comply with Thai regulation
<u>Validity of IoT Technologies</u>	Hardware <ul style="list-style-type: none"> IoT Device connection and successful transmission 		Devices 100 devices in Wi-Fi
	Real Time <ul style="list-style-type: none"> Real Time uploading (moving Picture)情報即時アップロード (15fpsHD動画含む) 	Collected data	Time lag Max 5 sec
	Reliability <ul style="list-style-type: none"> Backup system to enable autonomous operation 	Operation analysis	Max 24 hours
	Maintenance <ul style="list-style-type: none"> Availability of spare devices/ parts 	System Check	Yes/No
<u>Operational Support</u>	Registration <ul style="list-style-type: none"> Registration and set up operation 	Consultants	Find issues & Solutions

DMC Units for Elevators



Handrails for Elevators



Issues:

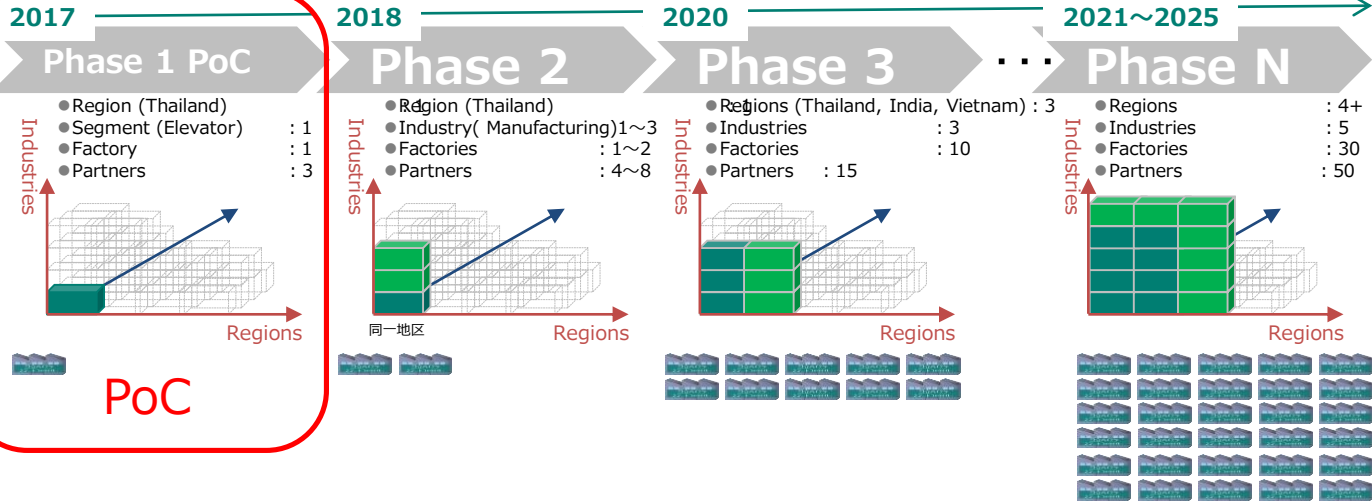
- ✓ Improvement of Digital Instruction
- ✓ Training Operators
- ✓ Complete Process Flow for Mass Production
- ✓ Develop crisis management

Regulations:

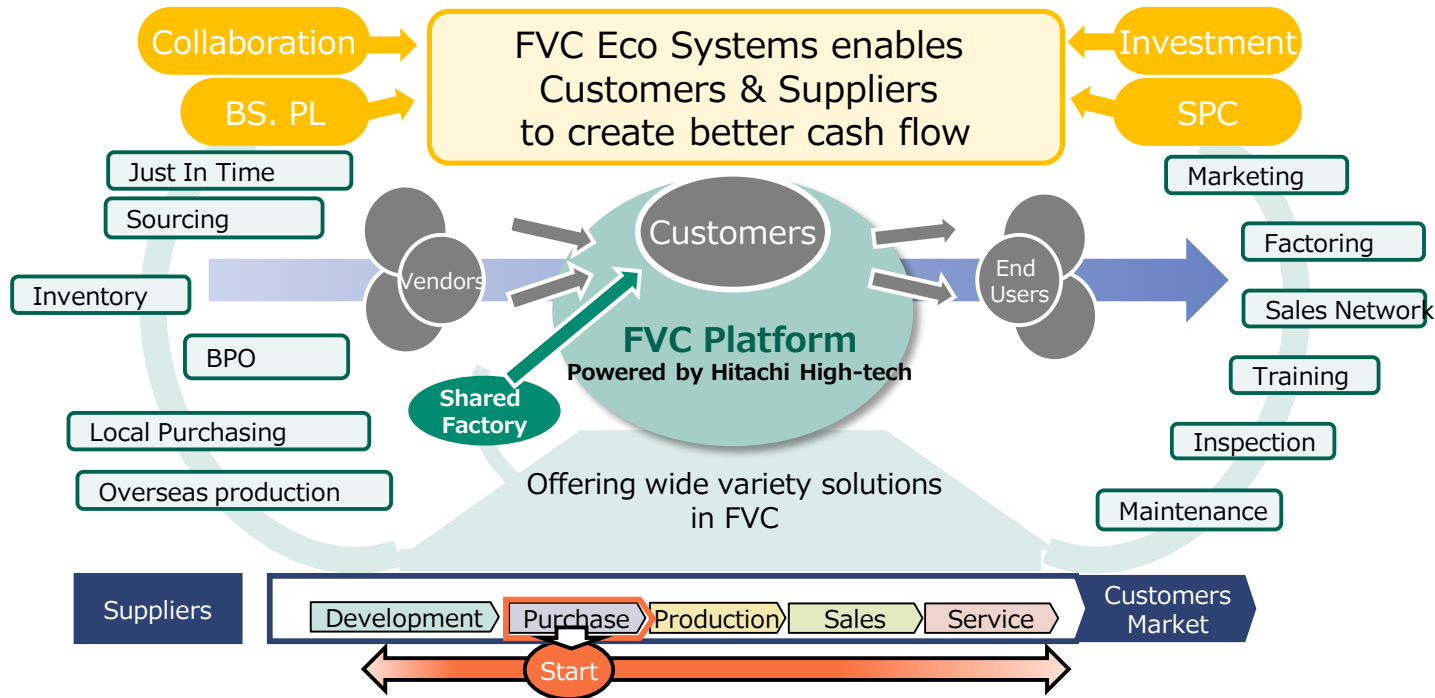
- ✓ Multiple Licences for sharing operations
- ✓ Incentives to introduce IoT systems

6. Roadmap

- ✓ After PoC, establish New JV Company (Phase 2)
- ✓ Further expansion in other segments, industries and regions (Phase N)



7. Future Value Chain Eco System



New Platform powered by IoT Systems and Data opens new era.

- Lumada, Hitachi's new IoT Platform combines systems and data among Logistics, Finance, Manufacturing, Procurement and Trade as high reliability and efficiency.