

# Learning Factory: The Pathway and alliance to Industry 4.0

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**Industry's pain points**

**Manual → Automation**

**AI, Robotics, Immersive & IoT Tech.**

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[www.youtube.com/watch?v=bEfvb5\\_bEmw](https://www.youtube.com/watch?v=bEfvb5_bEmw)

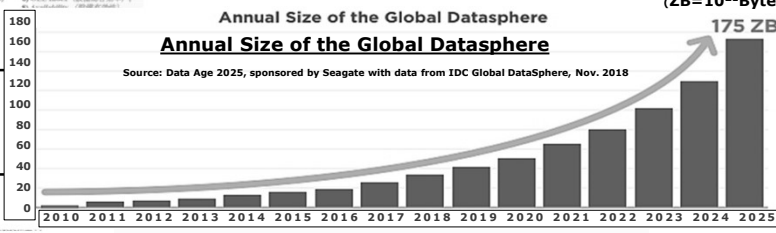
**ISO22400 Plant KPI**

- 1) Worker efficiency (労働生産性効率)
- 3) Throughput rate (生産量効率)
- 5) Utilization Efficiency (稼働効率)
- 7) NEE Index (正味設備稼働率)
- 9) Effectiveness (工率効率)
- 11) Setup ratio (設置率)
- 13) First pass yield (良率率)
- 15) Scrap ratio (廃棄率)
- 17) Rework ratio (再工程率)
- 19) Machine capability index
- 21) Critical machine capacity
- 23) Process capability index
- 25) Critical process capacity
- 27) Ratio of used material
- 29) Hazardous waste ratio
- 31) Comprehensive energy
- 33) Inventory turns (在庫回転)
- 35) Integrated goods ratio
- 37) Storage and transport
- 39) Other lost ratio (その他)
- 41) Equipment load rate (負荷率)
- 43) Mean time between fails
- 45) Corrective maintenance

**Annual Size of the Global Datasphere**


**Annual Size of the Global Datasphere**

Source: Data Age 2025, sponsored by Seagate with data from IDC Global DataSphere, Nov. 2018



**Zeta Byte (ZB=10<sup>21</sup>Byte)**  
**175 ZB**

**How to utilize Big Data for competitiveness?**



**SIMTEC INSTITUTE**

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Industry's  
pain points

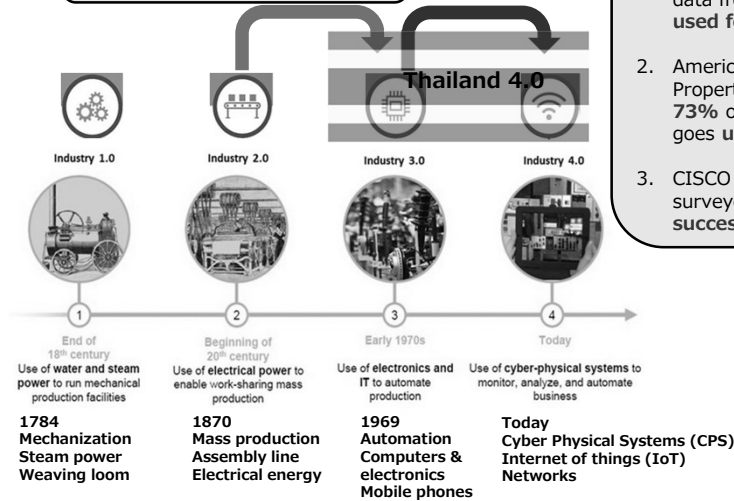
## As a result, problems during industry transformation

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Lean Automation deployment:  
cannot achieve  
Excellent Manufacturing

Lean IoT deployment:

1. McKinsey June 2015: <1% data from 30,000 sensors is used for decision making
2. American Business Media Property, Feb 2021: Up to 73% of company data goes unused for analytics
3. CISCO May 2017: 26% surveyed companies are successful



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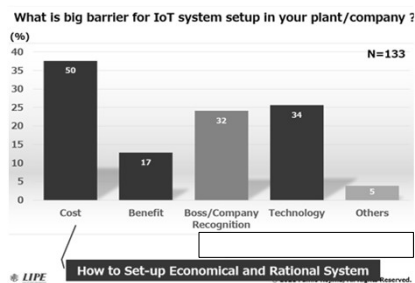
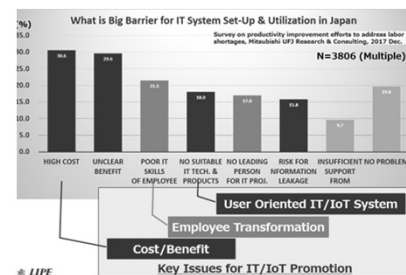
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Industry's  
pain points

## Lean IoT adaption by industry

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→ Problems in Japan & Thailand are common.



Japanese Issues:

1. Cost vs. Benefit:  
High cost but not much benefit
2. User-oriented vs. IoT system oriented  
Too difficult to use
3. Employee transformation  
Culture shock, feel isolated from company's changes

- In Thailand, same problems
- Plus "Boss vs. Company Recognition"  
– Different message & Difficult to communicate



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## SIMTec's Technology Showcases

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Machining

Measuring

Factory  
AutomationFactory  
Management

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## SIMTec's Showcases: Programs for Factory

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Lean IoT System

Factory IoT Data Management

Lean Manufacturing, TPS and Karakuri

Low-Cost Automation Design

Modularity Design and Motion &amp; Task Design

Lean Manufacturing with Measurement Process

Digital Measurement Technology

Vision Measurement Technology



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## SIMTec's Technology Showcases

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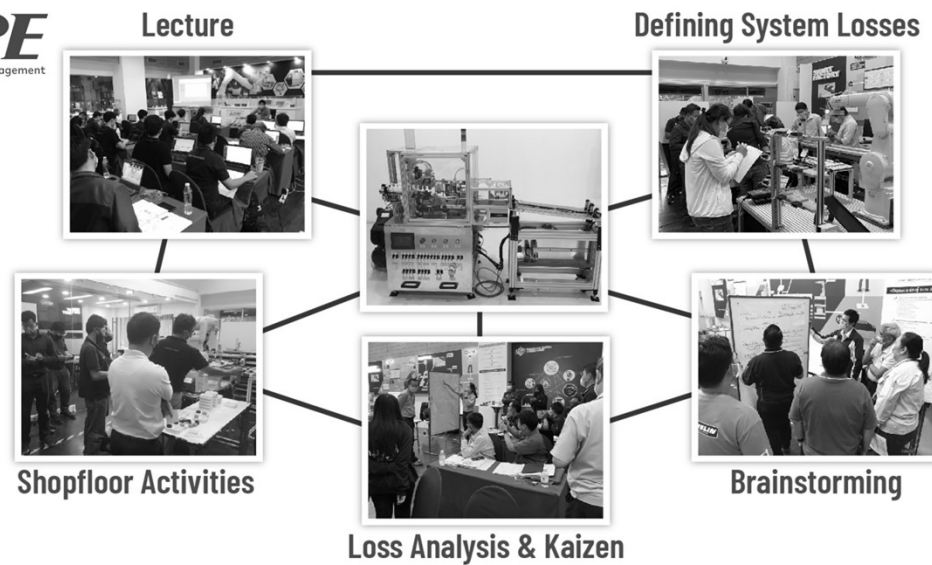
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## Plant Management Human-Centered Learning Factory for HRD

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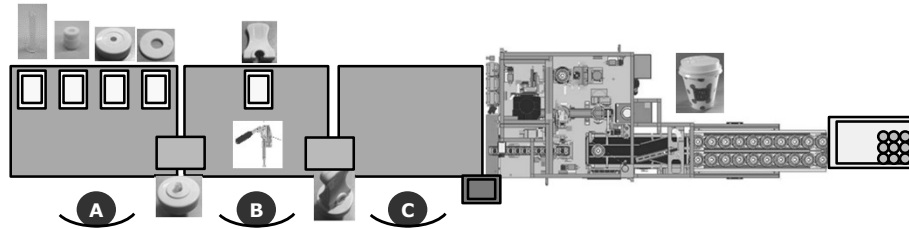
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**LIPE Exercise for Manpower and Machine Losses.**  
**How do you recognize losses from manpower?**  
**Attach sensors to human? → Motion AI**

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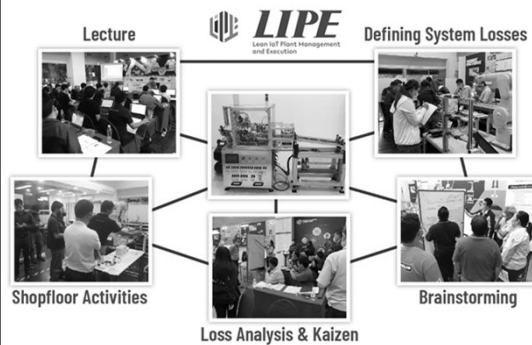
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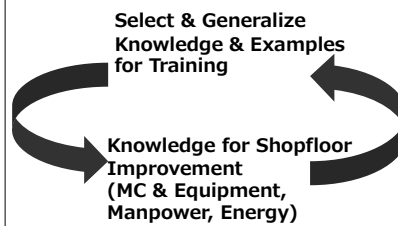
**The pathway to Industry 4.0:**  
**Building personnel who will drive manufacturing to be sustainably competitive**

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**Human-Centered Learning Factory for HRD**



- Lecture (1/3)
- Workshop & exercise with testbed & system designed for training purpose (2/3)



- **Fast-paced technological changes**
- **Needs of Thai Industry**

**OJT Industry Practice**



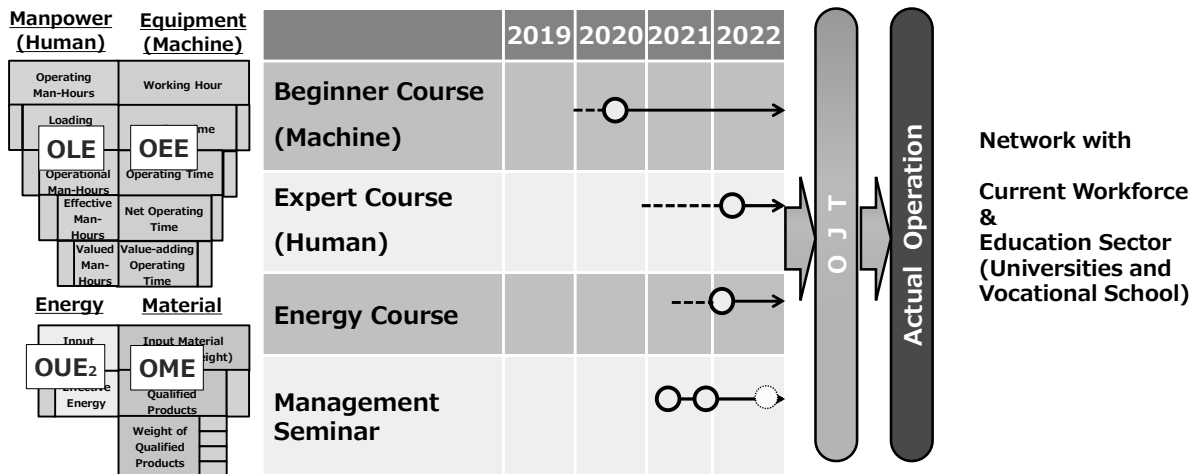
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# HRD System for Lean Automation & IoT

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