TOYOTA
INDONESIA
PT Toyota Motor Manufacturing Indonesia

# TPS Simulation Project to University

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TMMIN-OMDD
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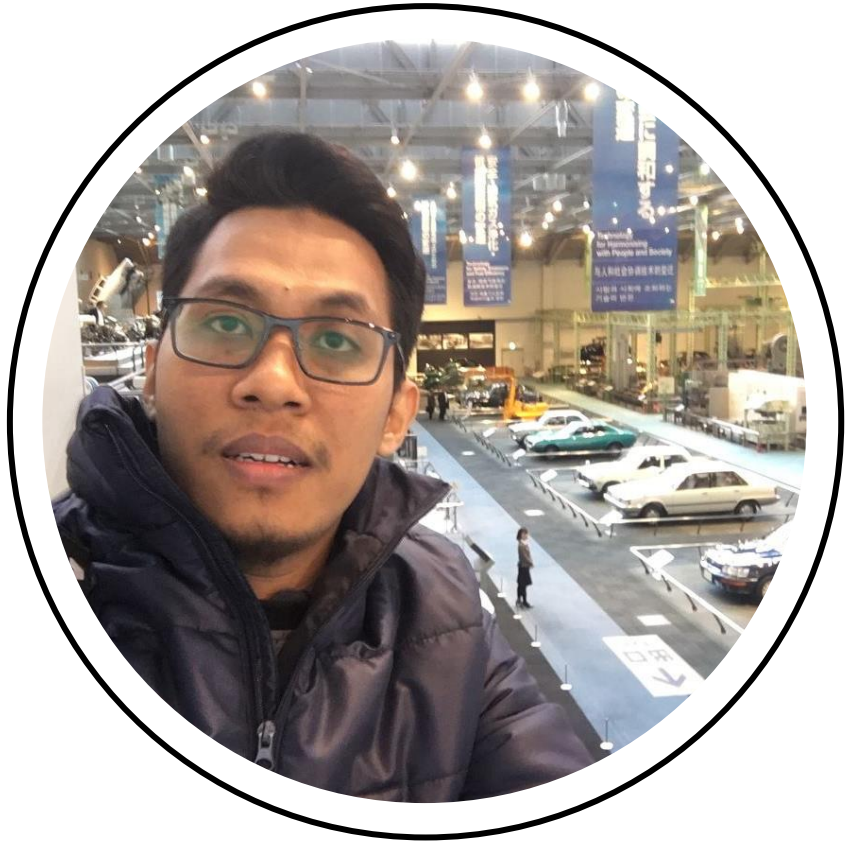
TOYOTA INDONESIA

# My Profile




**M. Fariz Firdaus**

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## Work Experience :

**PT. Toyota Motor Manufacturing Indonesia**

**Operations Management Development Division (OMDD) :**

- 2013 – 2016 : TPS Planning & Development Dept.
- 2016 – 2017 : InHouse PEFF Support Dept.
- 2018 – 2022 : Supplier Improvement Support Dept.
- 2022 – Now : Manufacturing Support Dept – Unit Plant Support Sect.

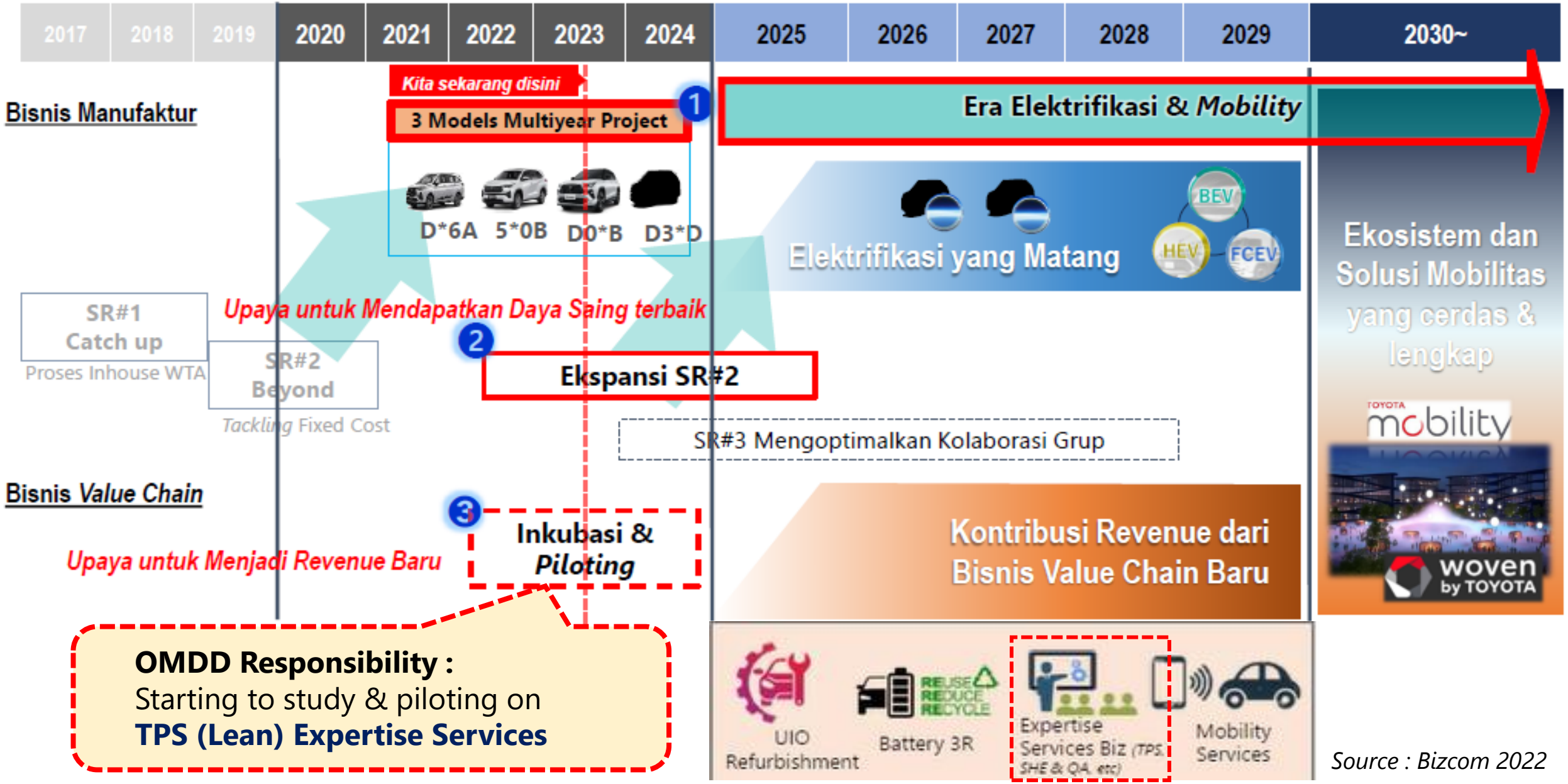
- **BNSP Certified Trainer (Senior Instructor)**

**Education** *(starting 2023)* **:**

- **Master Degree** of Industrial Engineering at University of Indonesia

# 1. Background [Company Hoshin]






**OMDD Responsibility :**
Starting to study & piloting on
**TPS (Lean) Expertise Services**

*Source : Bizcom 2022*

# 1. Background [TPS Development]



## OMD Div. Hoshin : TPS Embodiment to All Area through People Development

### → General Process of Development Milestone :

| Level | Beginner | | Intermediate → Advance | |
|---|---|---|---|---|
| Process | In-Class training | TPS Workshop in Genba | Jishuken Activity (OJD) Theme #1 | Jishuken Activity (OJD) Theme #2 |
| L/T | 3 Days → | 15 Days → | 70 Days → | 70 Days → |
| **Output** | **Understand TPS in General** | | **Capable to Implement TPS in Operation** | |

**Targeted Trainee [Beginner] :**

1. New TPS Leader (TMMIN & Supply Chain)
2. University (Education) *Issue of L/T*
3. Lean Operations for New Business

**Challenge :**
**Deliver TPS Essence with Shorter Lead Time Development**

### → Idea : Shortening L/T Development [Beginner]

| Process | In-Class training | TPS Simulation |
|---|---|---|
| L/T | 4 Days → | |
| **Output** | **Understand TPS in General** | |

**TPS Workshop** (18 Days) **vs.** **TPS Simulation** (4 Days)

**General Contents :**

| | | | | |
|---|---|---|---|---|
| TPS Workshop | TPS Lecture (All) | Genba (process) introduction | Observe "MUDA" | Develop "Kaizen Idea" |
| TPS Simulation | TPS Lecture (Basic) | Simulation & Analysis | Summary & Discussion | |

Content : 1) TPS Basic ; 2) JIT & Jidouka; 3) MIFC; 4) Pull System & Kanban; 5) Standardized Work; 6)Layout

# 2. Generate Idea



## I. Purpose

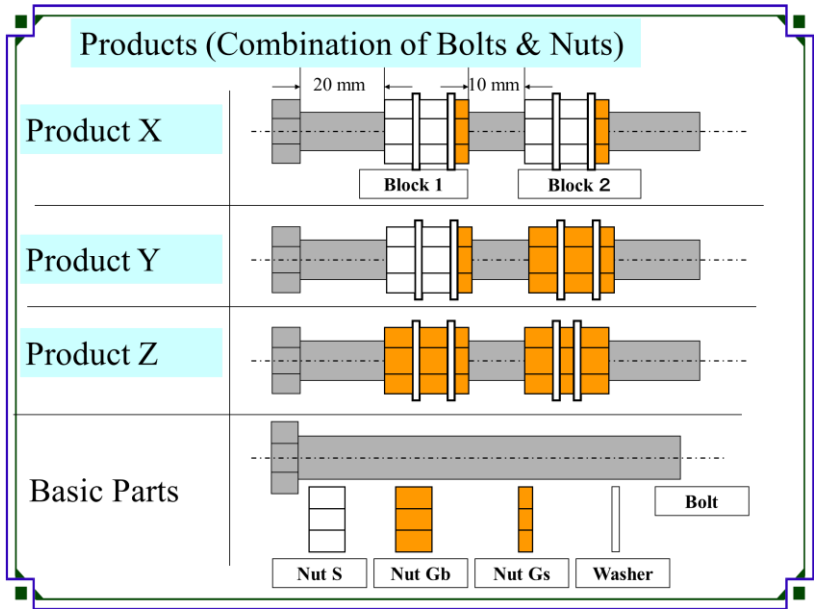
- To **Introduce & simulate** Toyota Production Systems → **Enhance TPS Mindset**
- To **visualize & compare** various of production systems
- To **get benefit** of TPS (Lean Manufacturing) implementation

**Pilot Project** → University (Major Industrial Engineering)

Linkage with TMMIN CSR Program :
**Link & Match to University** (collab OMDD + EAD)

## II. Benchmarking Data

**Ref. : TMC - OMDD**




**Bolt & Nut Simulation**


**Game Simulation :**

Game #1 Push System → Game #2 Pull System

**Reflection :**

- only compare push & pull system (focus on production area) – **Not Comprehensive**
- **Difficult to assy & dis-assy product** (high potential to problem "rust")

**Inspiration Idea :**

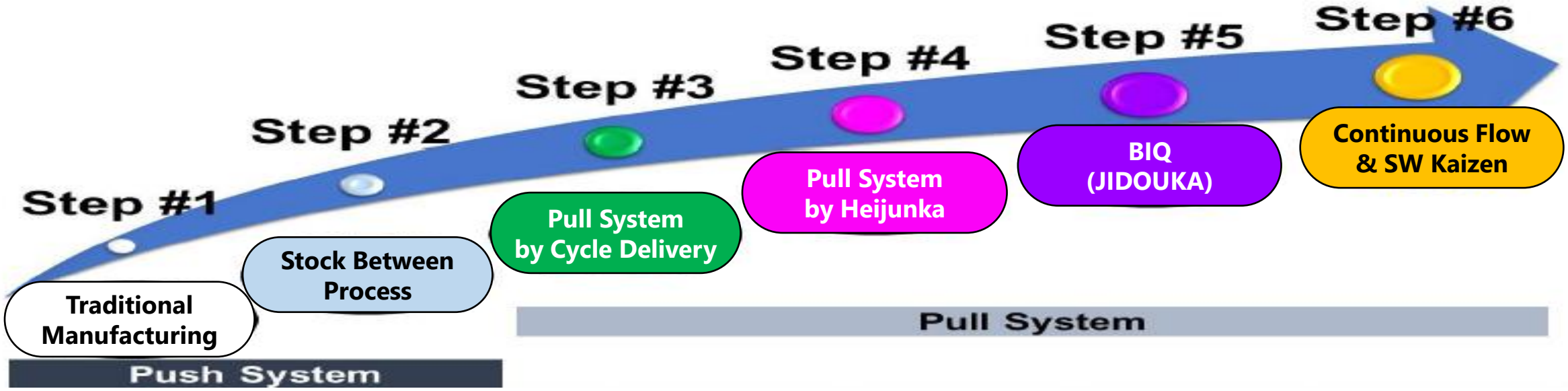
- **Create more comprehensive TPS knowledge in simulation**
- **Develop more easy product in assy & dis-assy process**

# 2. Generate Idea



## III. Concept of Simulation

TPS Basic Lecture → **Sub Lecture – Simulation – Cost & Profit Analysis** → Summary & Feedback




## Discussion & brainstorming to Generate Idea :

Discussion with Internal Div.

Nemawashi to Mgr Up (OMDD + EAD)

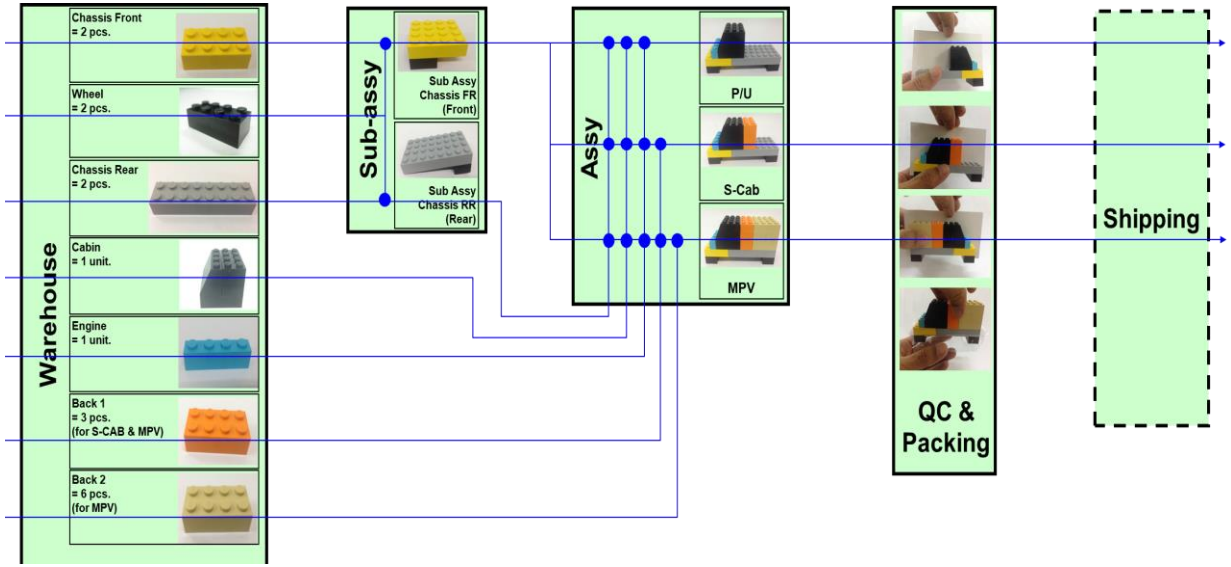
Discussion with University

# 2. Generate Idea



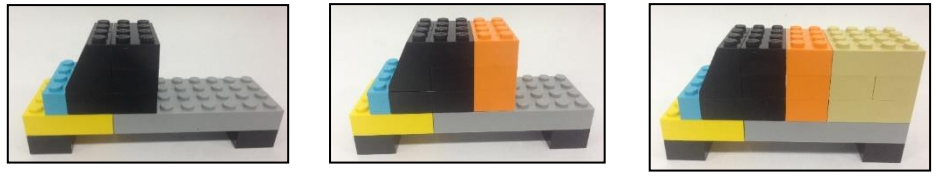
## IV. Simulation Information

**Process Flow :**




## PDCA Cycle

**Output (Finished Product)**



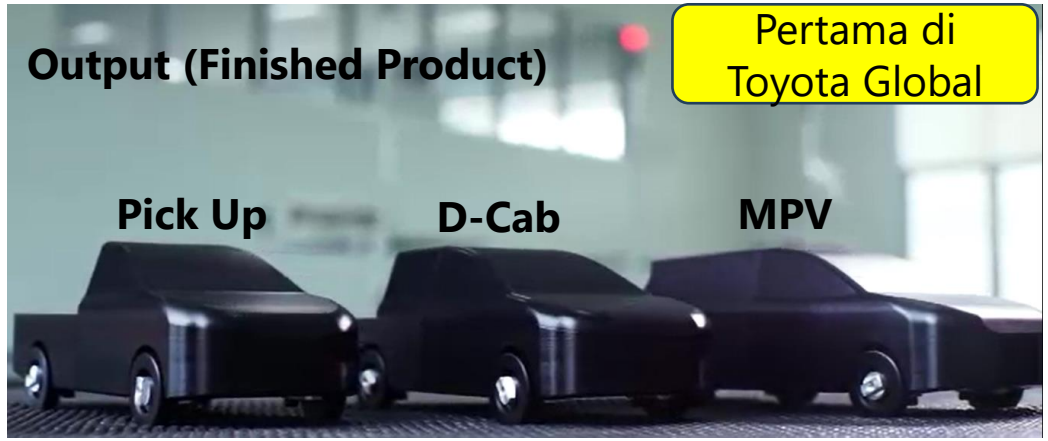
Pick Up | D-Cab | MPV

**Idea Inspiration**

**Reflection :**
<u>Scenario of JIDOUKA (BIQ) can not captured</u> in simulation (LEGO is high precision)

**PDCA Cycle : <u>Develop custom product</u> to absorb total scenario & design of simulation**

WS #1 (S/A Chassis) → WS #2 (S/A Tire) → WS #3 (S/A Body) → Final Insp. → Jidouka



# 2. Generate Idea

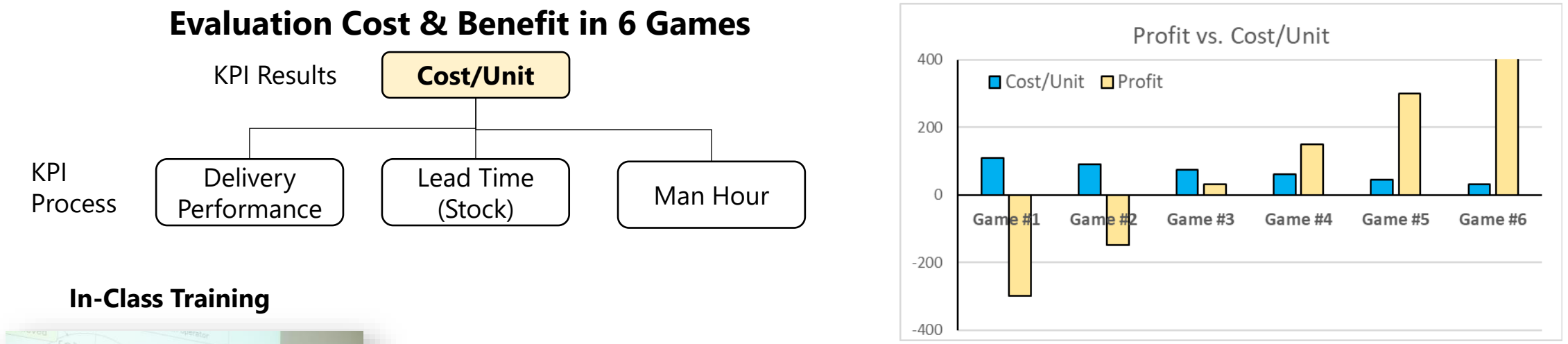


## V. Simulation Running

### Evaluation Cost & Benefit in 6 Games

KPI Results: **Cost/Unit**

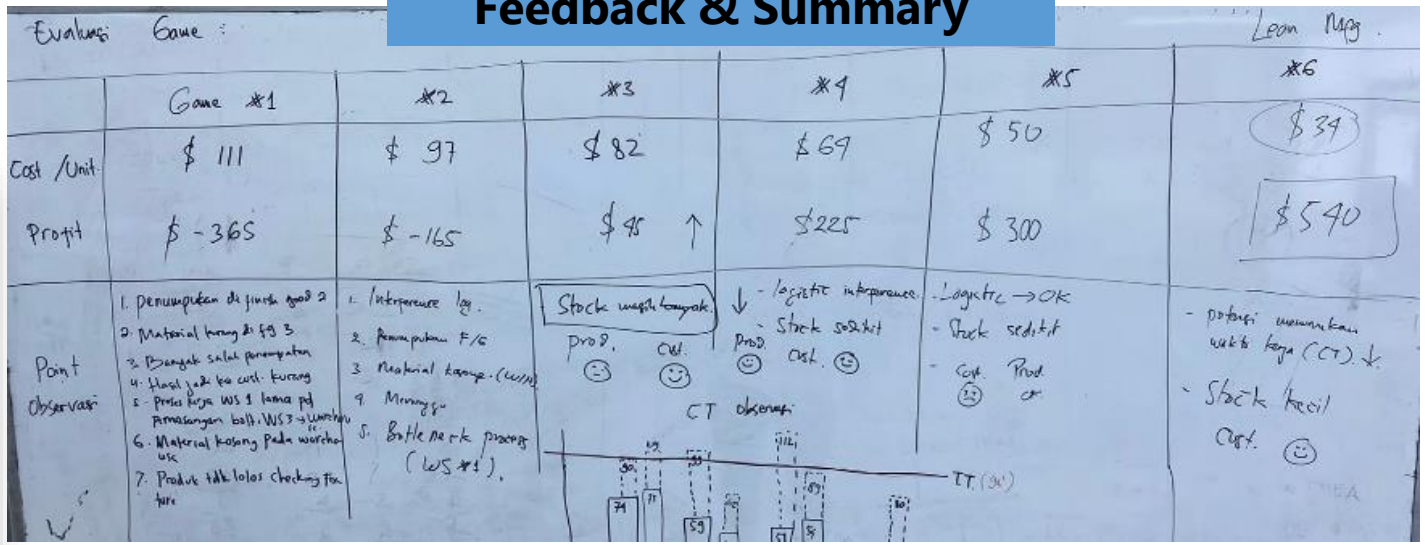
KPI Process: Delivery Performance | Lead Time (Stock) | Man Hour




### In-Class Training


### Running Simulation

### Feedback & Summary

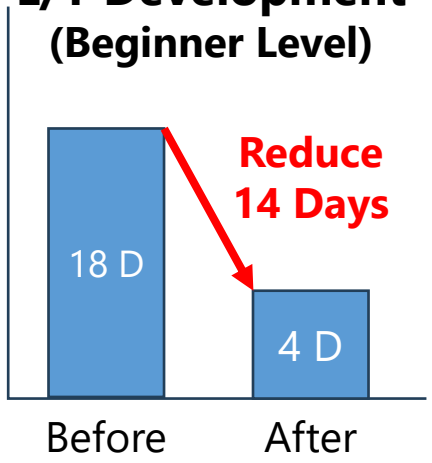


# 3. Evaluation Results

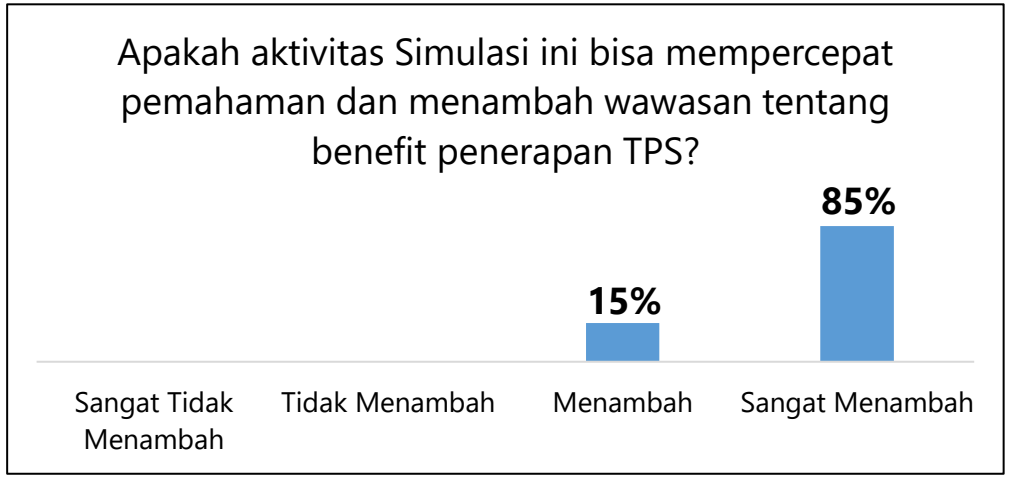


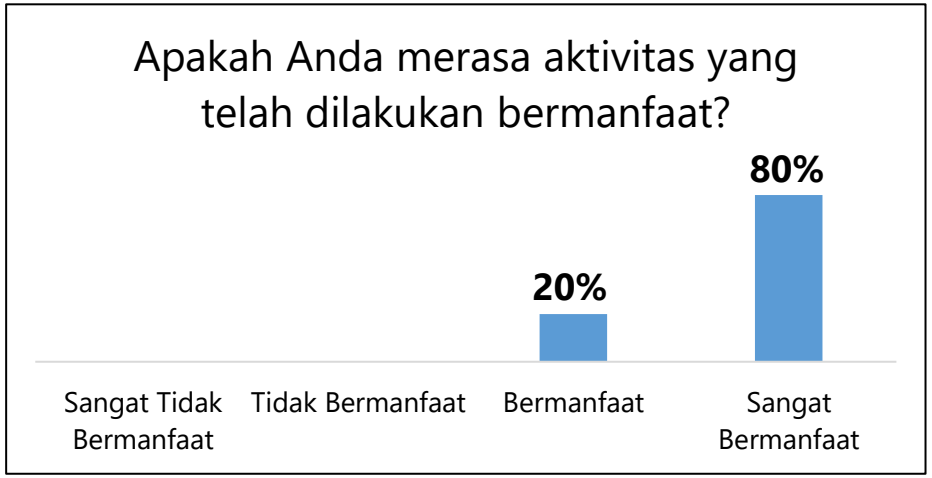
## I. Results

### L/T Development (Beginner Level)



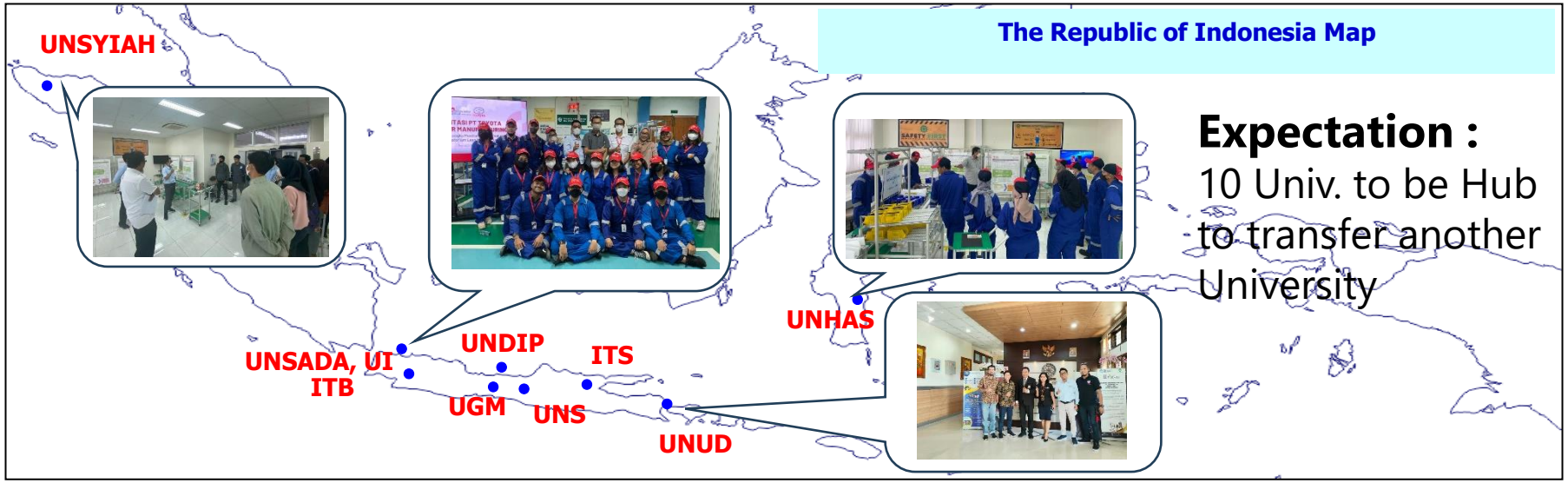

### Questionnaire to Trainee University (U-View) :




## II. Implemented on 10 Top University – Collaborate with EA-CSR

Genba Check by TMMIN-PD




**Expectation :**
10 Univ. to be Hub to transfer another University

# 3. Evaluation Results



## Testimonial

Setelah saya mengikuti pembelajaran TPS, jika hanya dari ppt (presentasi) saja sangat sulit membayangkannya. Namun setelah ditambahkan **simulasi dan praktek langsung**, saya lebih **mudah & cepat memahami, dan bisa merasakan langsung manfaat dari penerapan TPS** seperti effisiensi proses, penggunaan orang, dan waktu.

**Jirhan Tandhika**
Mahasiswa AKTI

Sharing to University

Sharing to Internal Division

Sharing to Akademi Toyota Indonesia

# 3. Evaluation Results [Sample Activity in University of Indonesia]



## TMMIN OMDD → Teknik Industri UI

| | | |
|---|---|---|
| Level | Beginner Level | |
| Process | In-Class training | **TPS Simulation** |
| **Output** | **Understand TPS in General** | |

eng.ui.ac.id/blog/pt-toyota-motor-manufacturing-indonesia-tmmin-sharing-knowledge-toyota-dna-dengan-laboratorium-sistem-manufaktur-departem...

Beranda | Profil | Pendidikan | Riset & Pengmas | Kerjasama | Fasilitas & Umum | Akses Cepat

PT Toyota Motor Manufacturing Indonesia (TMMIN) Sharing Knowledge Toyota DNA dengan Laboratorium Sistem Manufaktur Departemen Teknik Industri FTUI

January 17, 2023



Departemen Teknik Industri FTUI menerima kunjungan dari PT Toyota Motor Manufacturing Indonesia (TMMIN) pada 6 Desember 2022 lalu. Bertempat di Laboratorium Sistem Manufaktur DTI FTUI, kunjungan ini dilakukan dalam rangka evaluasi dan monitoring laboratorium *lean manufacturing*.

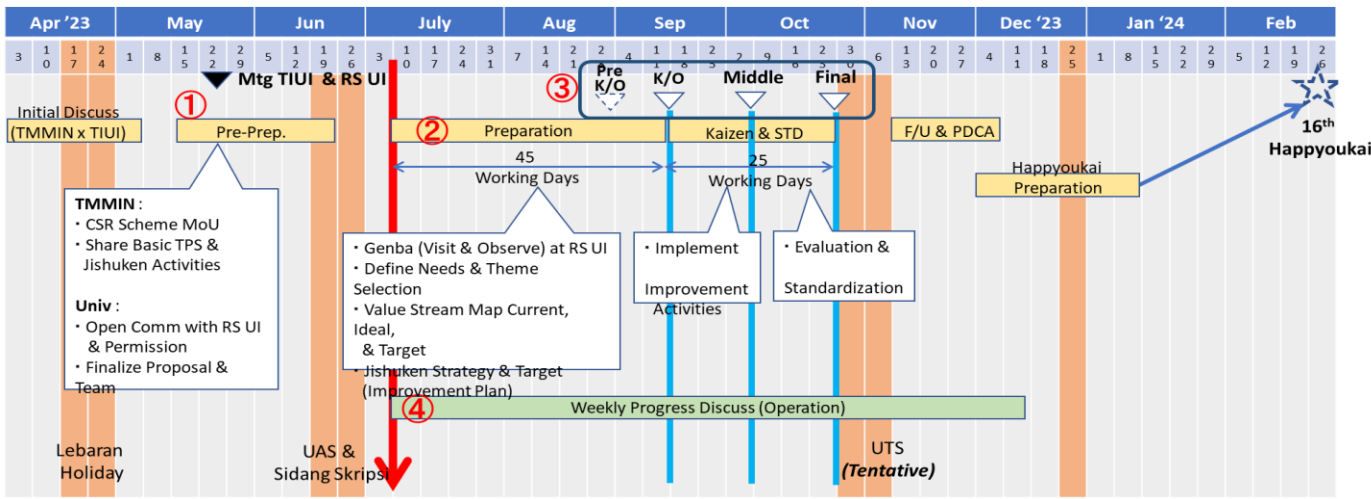

## Current Activity : TMMIN OMDD → Teknik Industri UI → RS UI

| | | |
|---|---|---|
| **Advance level** | | |
| Jishuken Activity (OJD) Theme #1 | Jishuken Activity (OJD) Theme #2 | |
| **Capable to implement TPS in Operation** | | |

## FY2023 : Starting Lean Operation development in RS UI (hospital)

UNIVERSITAS INDONESIA

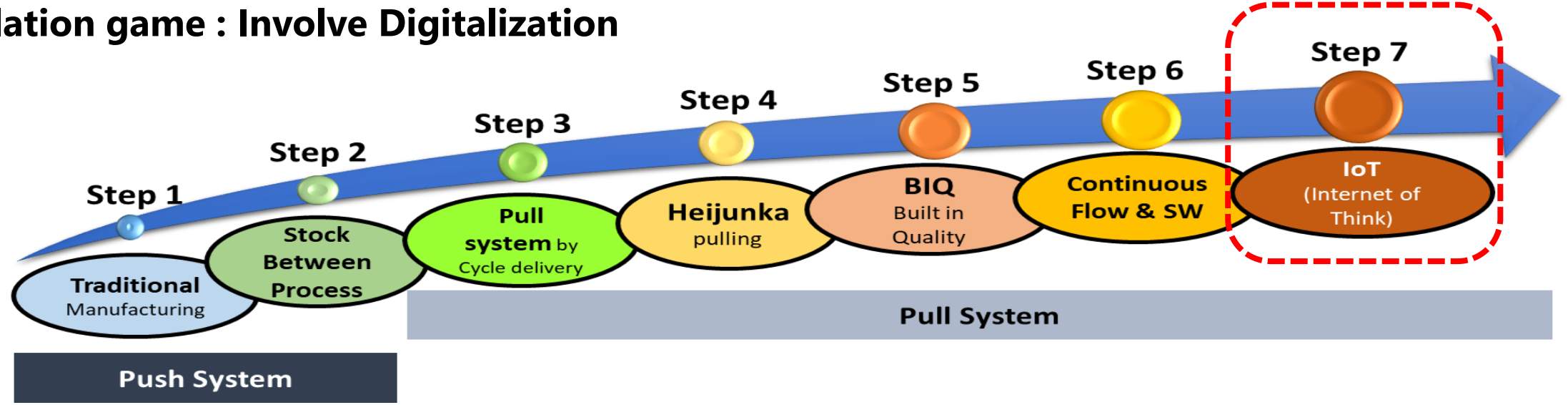
RUMAH SAKIT UNIVERSITAS INDONESIA



# 4. Next Activity



## Simulation game : Involve Digitalization




| Step #1 | Step #2 | Step #3 | Step #4 | Step #5 | Step #6 | Step #7 |
|---|---|---|---|---|---|---|
| **Basic (13 MP)** | **Reduce MUDA transport** | **Reduce MUDA waiting** | **Reduce MUDA over production** | **Reduce MUDA Defect & Repair** | **Productivity Up** | **Reduce NVW 1 IDL (PPIC)** |
| - | Improve Log. System | Push → Pull System | PushPull System | Improve Quality (BiQ) | SW Kaizen | - E-Heijunka<br>- Stock Monitoring |

**Direct Labor improvement (MP Prod. & Log.)** → **In-Direct Labor**


THANK YOU

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# Detail Comparison :

18 Days

## TPS Workshop @Genba

3 Days → 5 Days → 5 Days → 5 Days

**TPS Lecture (All)** → **Genba (process) introduction** → **Observe & finding "MUDA"** → **Kaizen Idea**

1. TPS Basic
2. JIT
3. Jidouka
4. MIFC
5. Prod. System
6. SW

**content material (basic → advance)**

1. Observe process + product knowledge
2. Draw MIFC current
3. Confirmation to genba
4. Draw MIFC Ideal
5. Draw MIFC Target

1. List of stagnation/MUDA
2. Observe system (push/sch/kbn)
3. Observe process (CT, TT, workload, loss time)
4. Visualize all problem

**System (JIT Level Up) :**

1. Setup Pull system (kbn)
2. Implement correct kbn Qty
3. Making waiting post
4. Heijunka Pullling

**Process (Capability/Productivity):**

1. Implement SW
2. S/W Kaizen (Job balancing)
3. Jidouka

## TPS Simulation @Room

4 Days →

**TPS Lecture (Basic)** → **Simulation** → **Summary**

1. TPS Basic
2. JIT
3. Jidouka
4. MIFC
5. Prod. System
6. SW

**content material (only basic)**

| #1 : Traditional Mfg | #2 : Stock between process | #3 : Pull System | #4 : Heijunka Pulling | #5 : BIQ (Jidouka) | #6 : Continuous Flow & S/W Kaizen |
|---|---|---|---|---|---|
| 1. Observe process + product knowledge; 2. Introduction of MIFC current → Ideal ; 3. Variuos of Prod. System | | | | | |
| 4. MUDA convey, waiting, stock<br>5. Push system (big stock), Silo production (un-sync) | | 6. MUDA over Prod. (CT<TT) | | 9. MUDA Defect | 11. MP Ideal<br>12. SW/Kaizen<br>13. Job balancing |
| | | 7. Kanban + Waiting post | 8. Kanban + Heijunka Pulling | 10. Jidouka<br>11. Pokayoke | |