

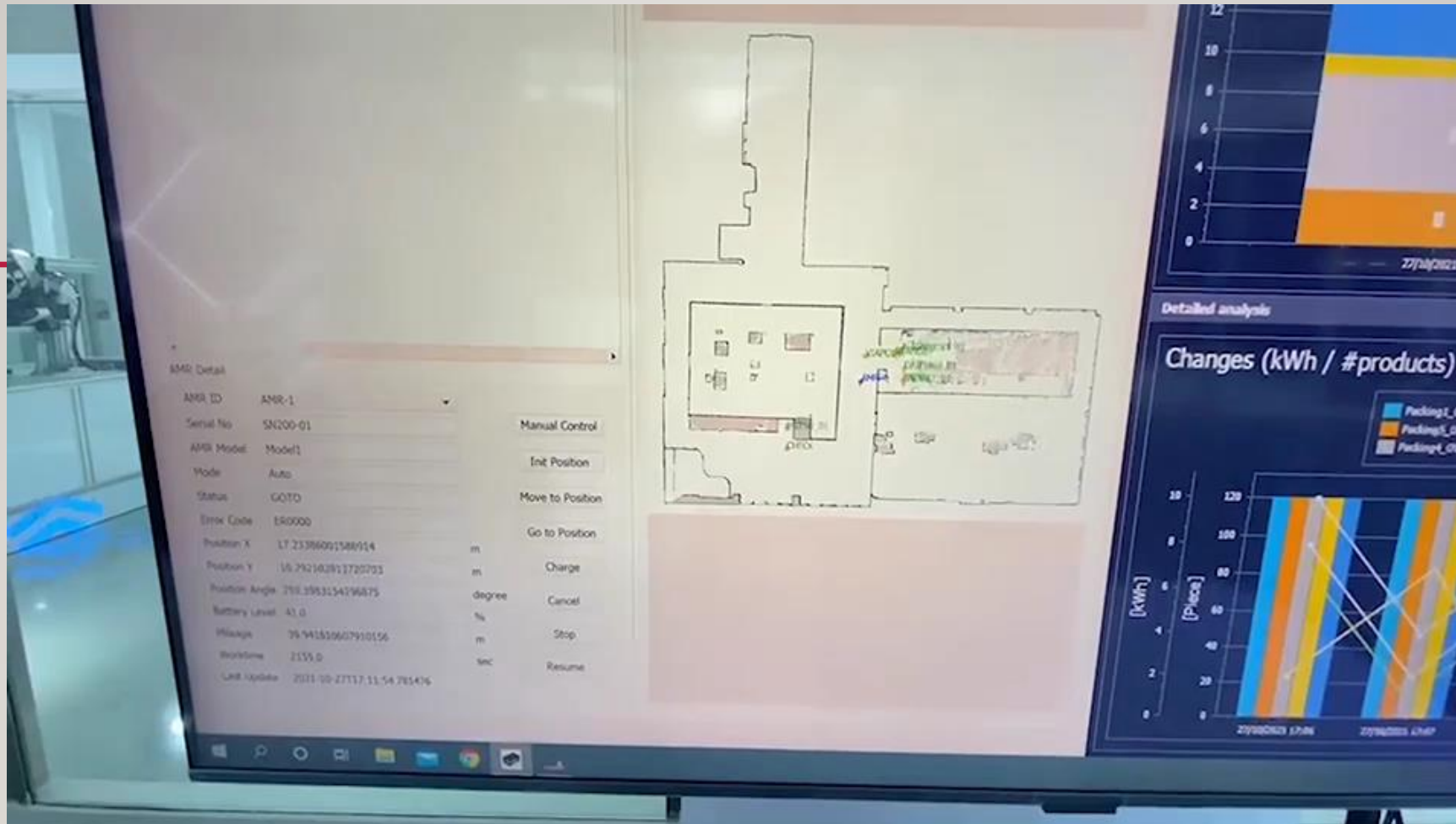
DEVELOPMENT OF INDUSTRIAL AI AND ROBOTICS TOWARDS INDUSTRY 4.0

Presented by Dr Kunlachat Seniwong Na Ayutthaya
R&D Manager in Robotics and Automation Division

INDUSTRIAL AI AND ROBOTICS PLATFORM

(INDUSTRIAL USE CASES)

1. AMR, Co-Bot and 3D vision application
 - Using AMR and Co-Bot transfer material between production line and warehouse system
2. AMR and Lifter module application
 - Using AMR transfer material between production line and warehouse system

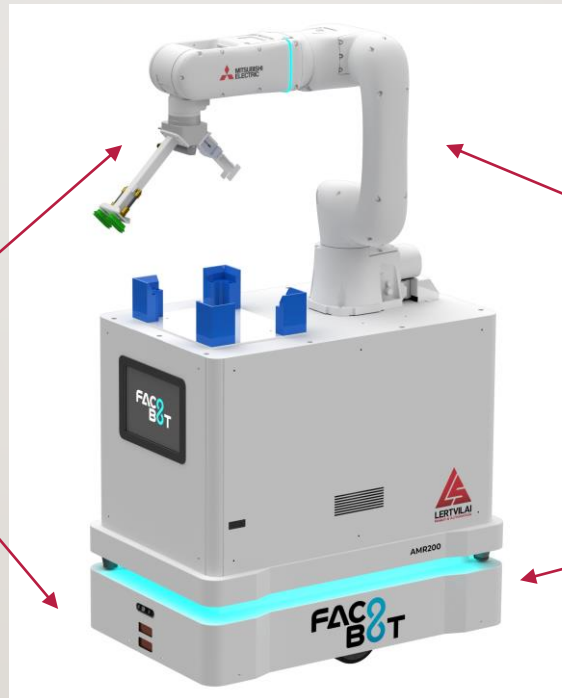


Automation Park center : The center of HRD, Innovation and Automation education in EEC (**Burapha University**)

AMR, CO-BOT AND 3D VISION APPLICATION

3D camera

- Bin-picking
- Reference plate matching
- Obstacle avoidance



Co-bot module

- Handling with material
- Change camera position

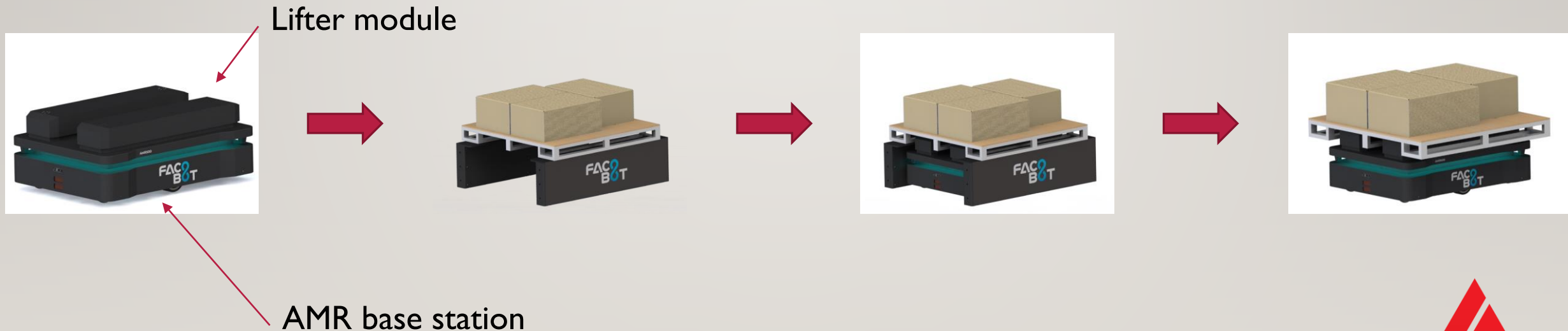
AMR base station

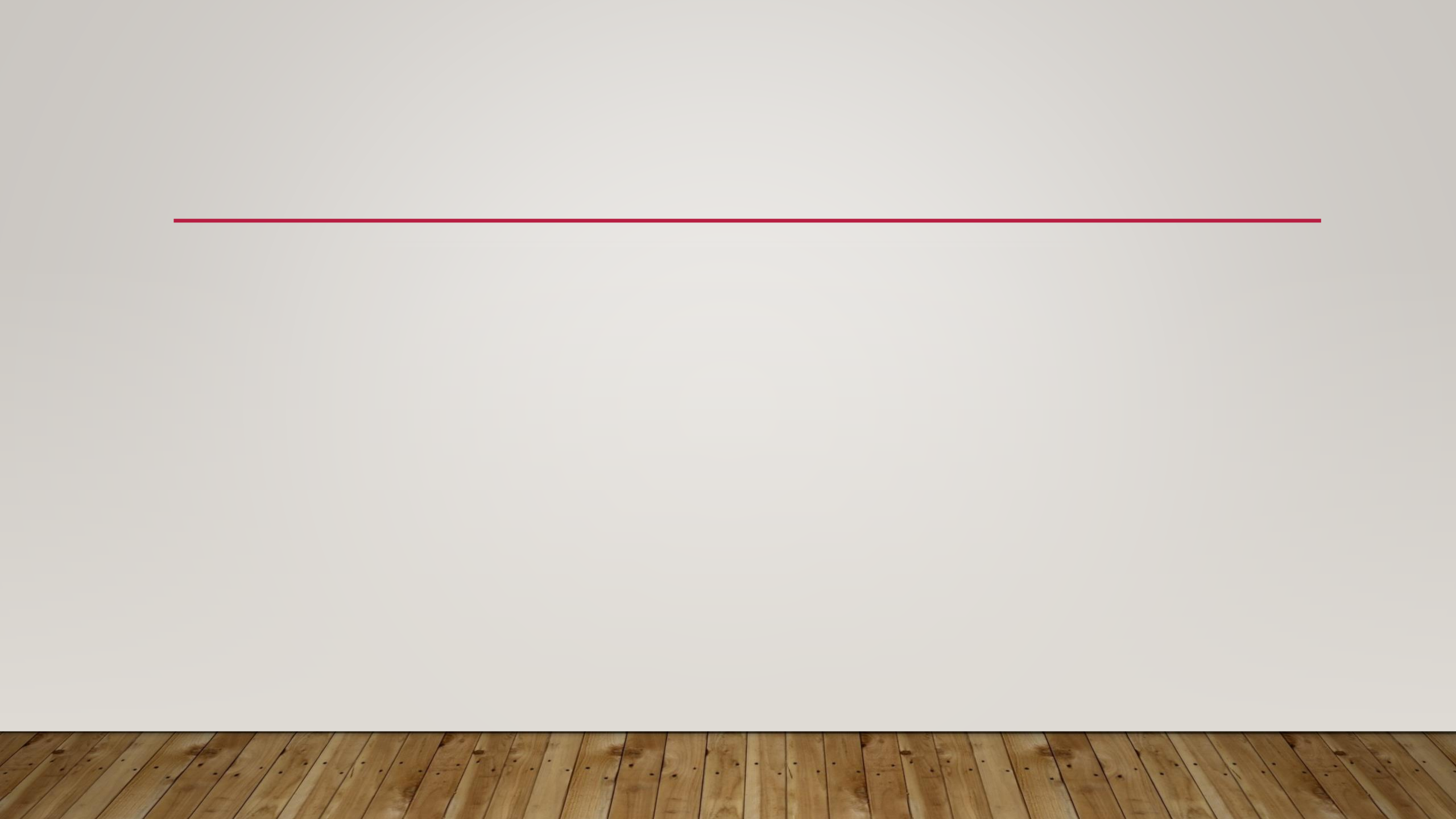


Lertvilai FACoBOT AMR - Yawata Factory

AMR AND LIFT UP MODULE APPLICATION

- AMR base station (Mobile)
- Lifter module





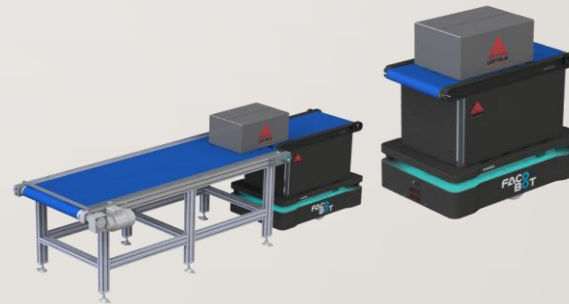
แนวทางการลงทุน และแนวทางการลงมือใช้งาน



AMR Base station



AMR + Towing module



AMR + Belt Conveyor module

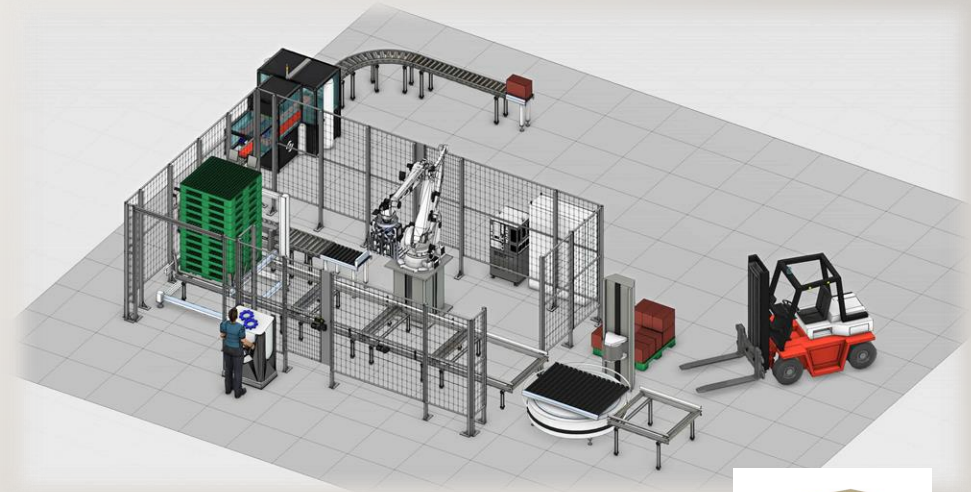


AMR + Co-bot module

item	Model	Standard Price
1	AMR200	900,000.00
2	- Towing Module	300,000.00
3	- Belt Conveyor	150,000.00
4	- Robot Application (Power Supply for Robot)	200,000.00
5	AMR500	1,000,000.00
6	- Lifter Module	250,000.00
7	- Towing Module	350,000.00
8	AMR Manager Software (AMR control and manage via WiFi) *** via 5G Private network (option)	300,000.00

AUTOMATION PROJECT USING AMR REPLACE FORKLIFT TRUCK

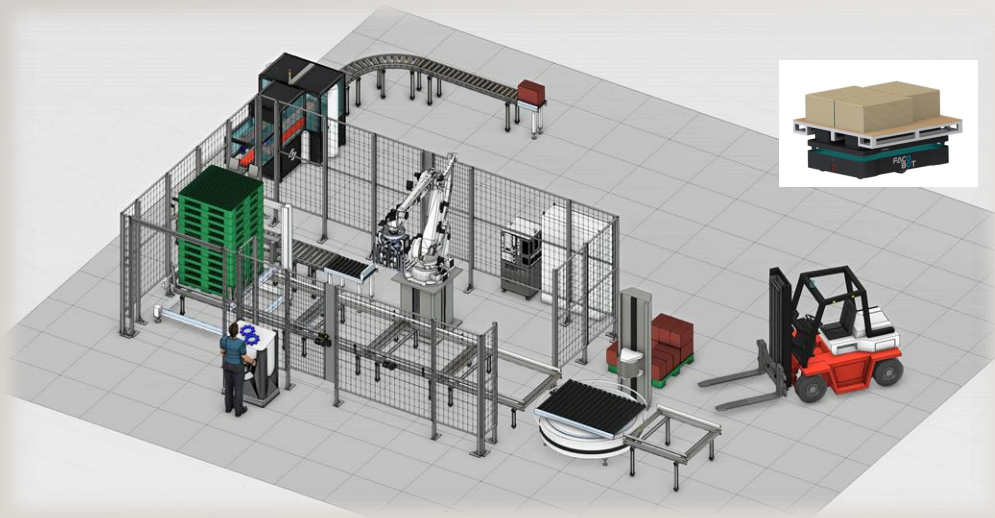
APPROXIMATELY BUDGET (3,XXX,XXX – XX,XXX,XXX BAHT)



RETURN ON INVESTMENT (ROI)

Example Automation project approximately cost 3,000,000 baht

- Robot & Automation system cost = 1,500,000 baht
- AMR cost = 1,500,000 baht

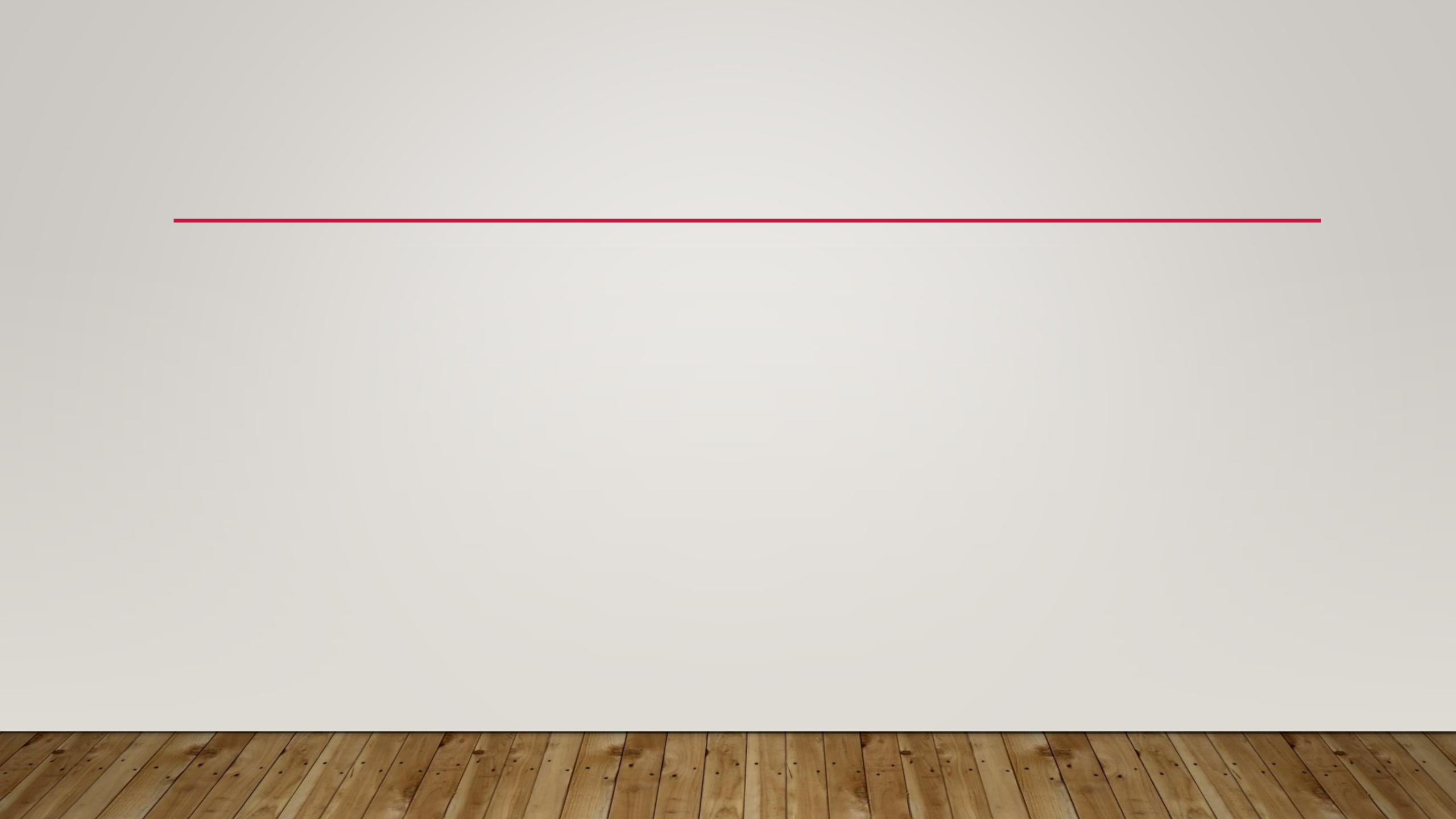


RETURN ON INVESTMENT (ROI)

		Year 1		Year 2		Year 3	
AMR	Cost	1O	1O (D&N)	1O	1O (D&N)	1O	1O (D&N)
1,500,000							
Forklift	1,000,000	1,000,000	1000000		-		-
1O (D)	200,000	200,000	-	200000		200000	
1O (D&N)	400,000	-	400,000	-	400000	-	400000
Total		1,200,000	1,400,000	1,400,000	1,800,000	1,600,000	2,200,000

RETURN ON INVESTMENT (ROI)

		Year 1			Year 2			Year 3			Year 4		
Robot&Automation	Cost	2O (D&N)	3O (D&N)	4O (D&N)	2O (D&N)	3O (D&N)	4O (D&N)	2O (D&N)	3O (D&N)	4O (D&N)	2O (D&N)	3O (D&N)	4O (D&N)
1,500,000													
2O (D&N)	400,000	400,000	-	-	400,000	-	-	400,000	-	-	400,000	-	-
3O (D&N)	600,000	-	600,000	-	-	600,000	-	-	600,000	-	-	600,000	-
4O (D&N)	800,000	-	-	800,000	-	-	800,000	-	-	800,000	-	-	800,000
Total		400,000	600,000	800,000	800,000	1,200,000	1,600,000	1,200,000	1,800,000	2,400,000	1,600,000	2,400,000	3,200,000



ความยาก ความท้าทาย และอุปสรรคในการใช้งาน

- Clear objective
- Find appropriate technology
- Integrate and installation
- Transfer technology to customer (Operate and maintenance)
- AMR :Traffic management, system communication
- *** AI : Prepare dataset
 - Light condition, object come in random position

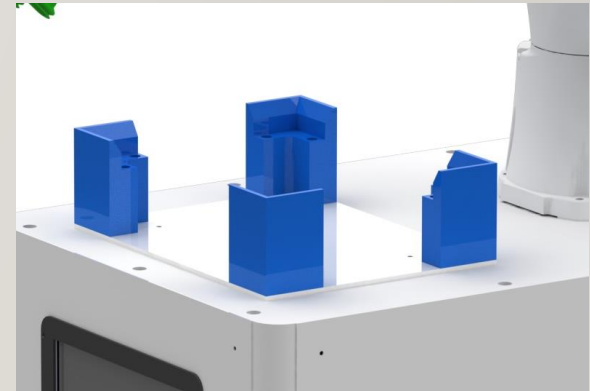
AI : PREPARE DATASET

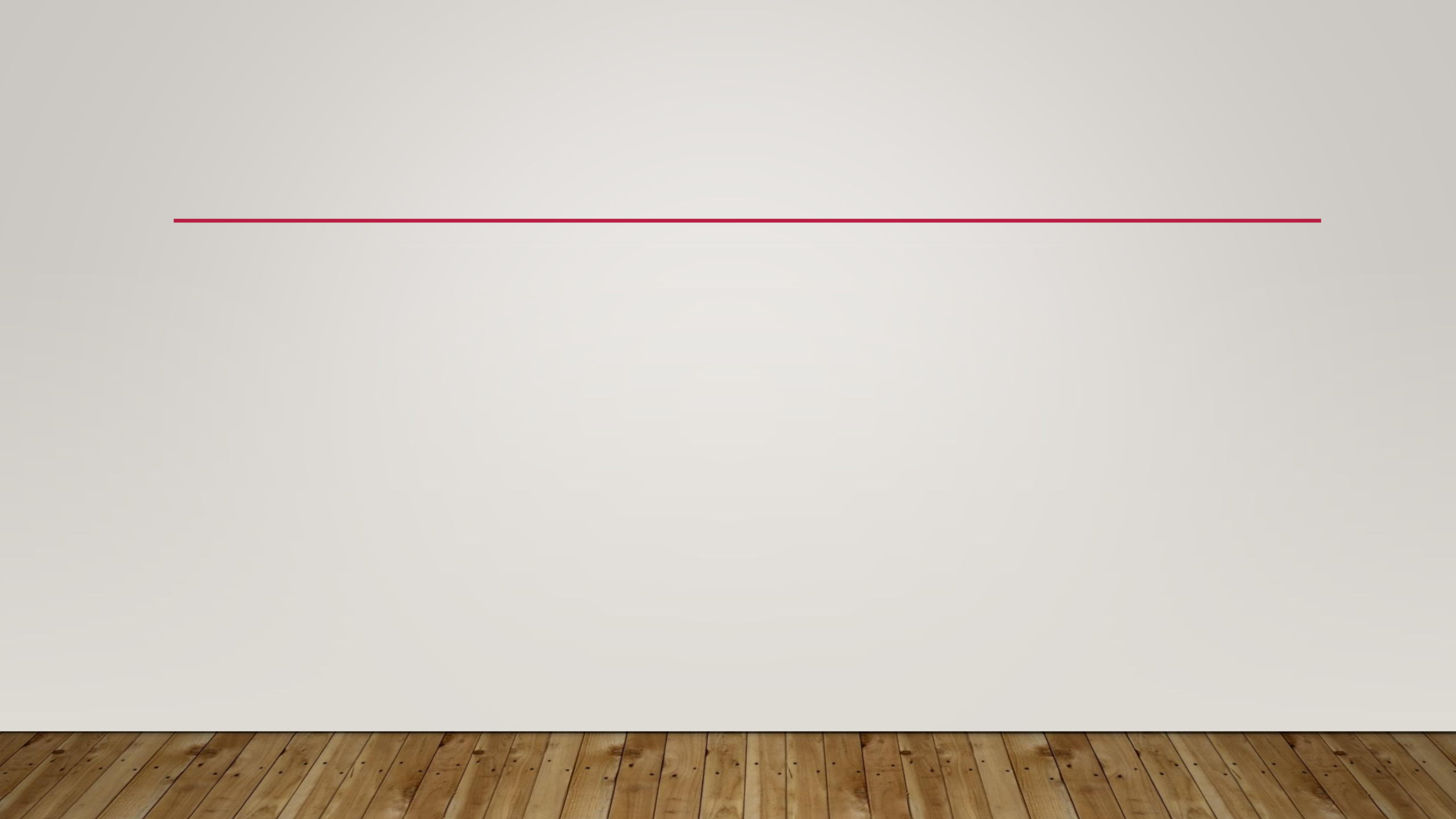


Challenge

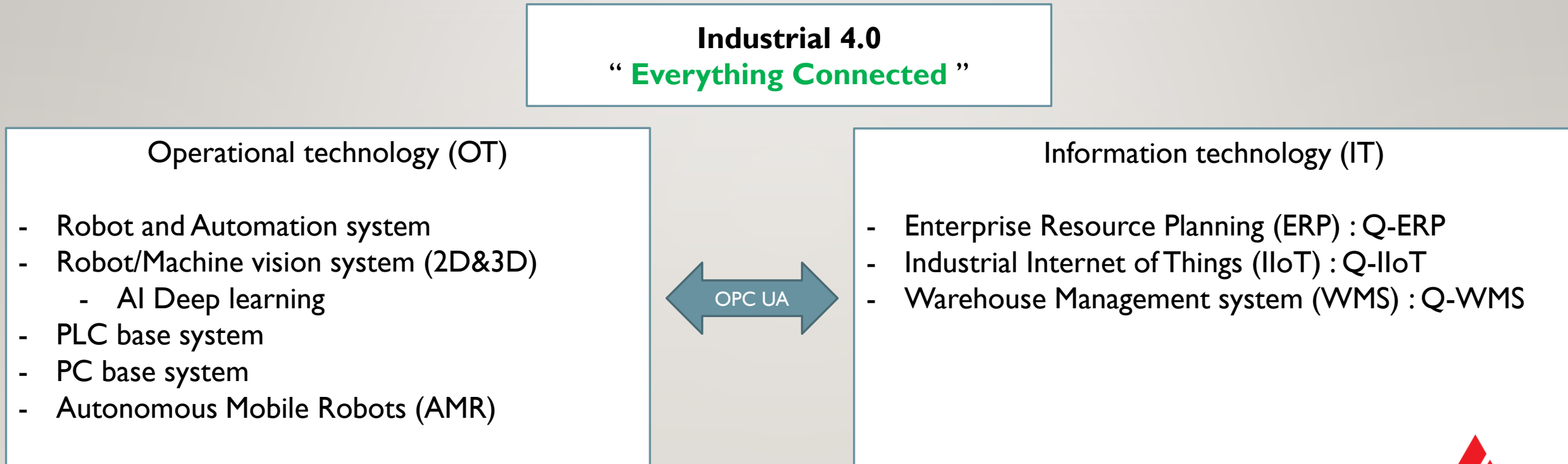
- AMR stop in error position.
- Object come in random position.
- Different light condition.

*** Use AI Deep learning***





ความพร้อมของหน่วยงานในการสนับสนุน INDUSTRIAL AI AND ROBOTICS PLATFORM



*** OPC UA : Open Platform Communications United Architecture

*** Q mention to Quadra Technology company

THANK YOU

