

# SMART WAREHOUSE สำหรับอุตสาหกรรมไทย ด้วยคนไทย

ผศ.ดร.กานดา บุญโสธรสถิตย์



## SMART WAREHOUSE

CHALLENGES	SMART WAREHOUSE	GOALS	
<ul style="list-style-type: none"><li>• <b>95% TRADITIONAL</b> + <b>5% SMART</b> [1]</li><li>• Loss / Defective / Expiration</li><li>• Stockout / Overstock / Deadstock</li><li>• Rework / Redundant works</li><li>• Overload of operators</li></ul>	<p><u><b>NO ANY TECHNOLOGY FITS ALL</b></u> under</p> <p><b>LIMITATION OF RESOURCES</b>, especially</p> <p><b>BUDGET !!!</b></p>	<ul style="list-style-type: none"><li>• max PROCESS EFFICIENCY</li><li>• max PRODUCTIVITY<ul style="list-style-type: none"><li>min MANPOWER</li><li>max UTILIZATION</li></ul></li><li>• max SERVICE LEVEL</li><li>• without HUMAN ERROR</li></ul>	
WAREHOUSE TECHNOLOGY			
3D-UNAI (IOT)	AGV (self-driving vehicle)	AS/RS (robotics & automation)	IOT SOLUTION + WMS (data analytics)
ดร.กมล NECTEC	คุณวรมน GEN SURV	คุณวิหิจ AUTO MOTION WORKS	ผศ.ดร.กานดา COTT / LOGIN

[1] <https://www.krungsri.com/th/research/industry/industry-outlook/logistics/warehouse-space/io/io-warehouse-space-20>

# WAREHOUSE TECHNOLOGY TREND

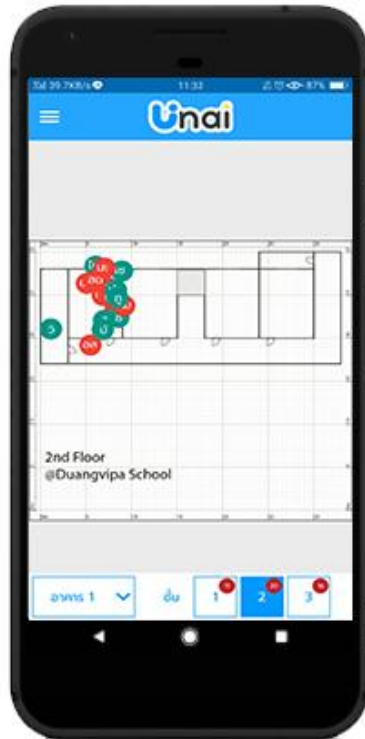
<https://www.dhl.com/global-en/spotlight/digitalization/logistics-trends.html>



## WAREHOUSE TECHNOLOGY

### 3D-UNAI (ดร.กมล NECTEC)

<https://www.nectec.or.th/news/news-pr-news/unai3d-location.html>



### AGV (คุณวรมน GEN SURV)

<https://www.gensurv.com/TH/category/agv.html>

Login

PL4 agv

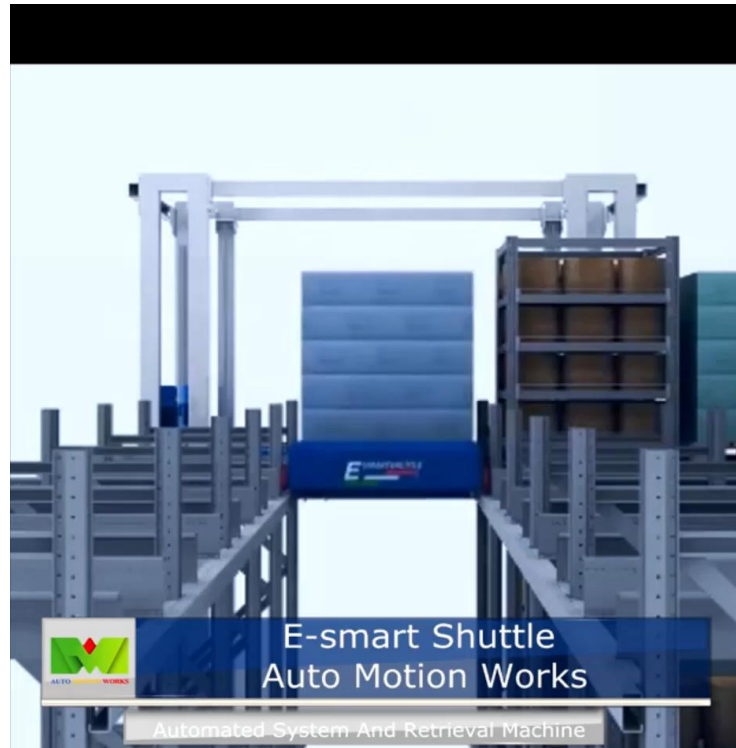


PL4 agv












### AS/RS (คุณวิจิ AUTO MOTION WORKS)

<https://www.automotionworks.com/products/storage.html>





# RACKING SYSTEM

Racking system	Selective	Drive-in	Pallet flow	AS/RS	
Criteria					
Storage density	Low				High
Selectivity e.g. FIFO	High				Low
Investment	Low				High
#SKU	High				Low
SKU volume	Low				High



# TRADITIONAL WAREHOUSE



## TRADITIONAL WAREHOUSE OPERATIONS : SELECTIVE RACKING + UNIT LOAD

### RECEIVING

- Attach barcode labels on products and pallets
- Scan them



### ZONE TRANSFER IN

- Check handover lists
- Sign off and Key in handover lists



### PUTAWAY

- Scan barcode labels on pallets
- Scan barcode labels on the locations for verification



### LOCATION TRANSFER

- Key in transfer requests
- Key in transfer updates



### SHIPMENT



### ZONE TRANSFER OUT

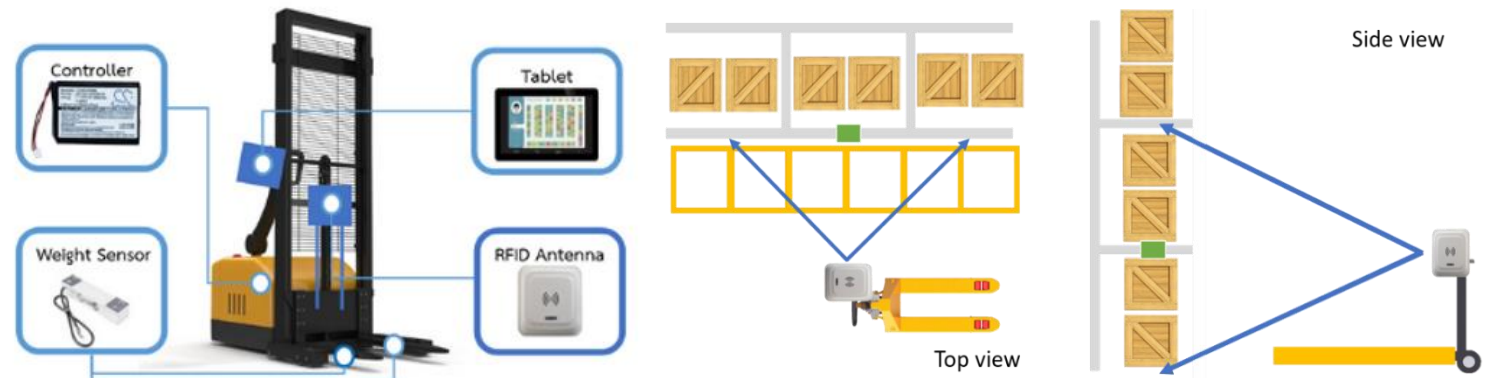
- Check handover lists
- Sign off and Key in handover lists



### PICKING

- Print out picking lists
- Key in picking updates





# SMART WAREHOUSE

## IOT SOLUTION + WMS

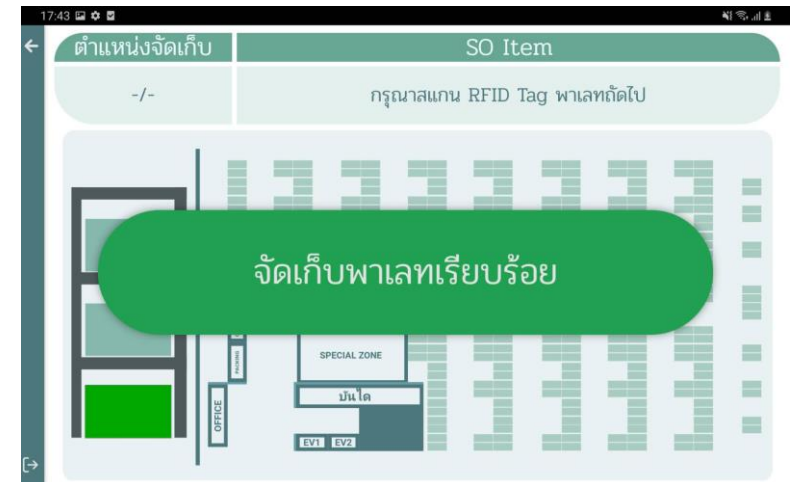
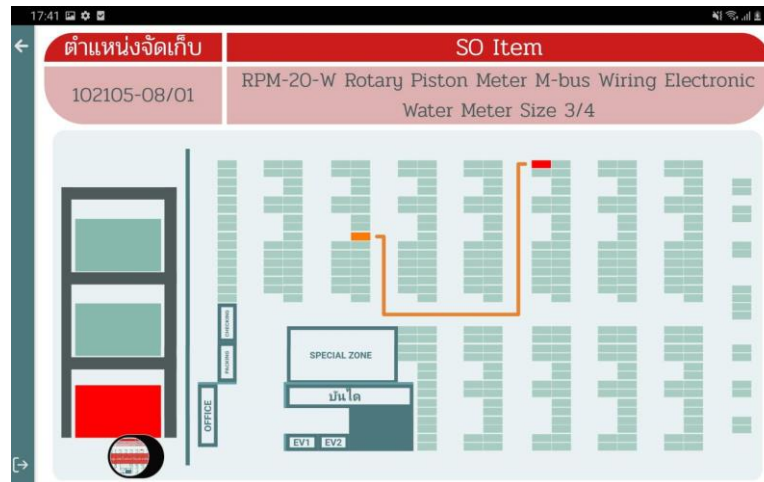


# SMART WAREHOUSE OPERATIONS : IOT SOLUTION FOR UNIT LOAD



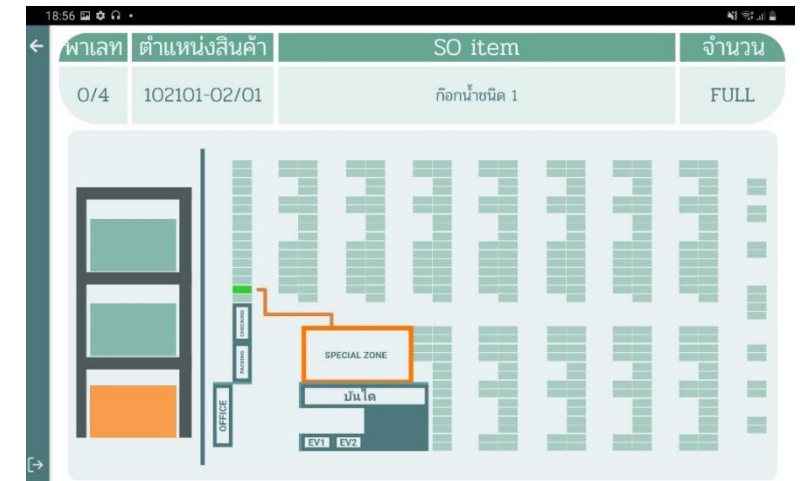
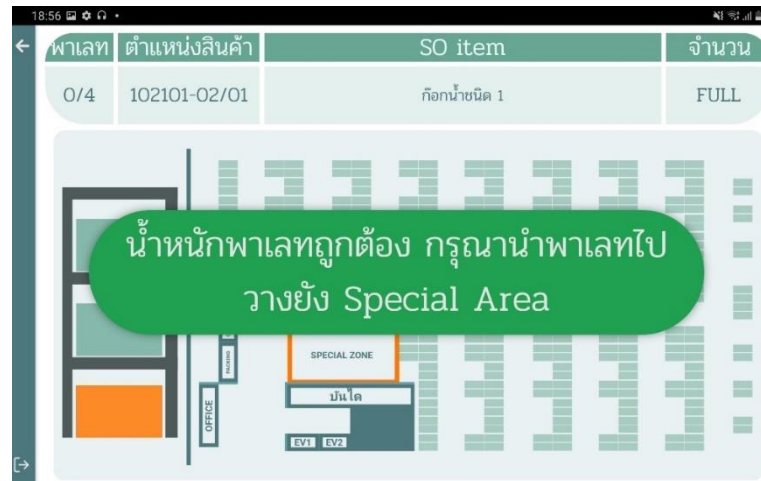
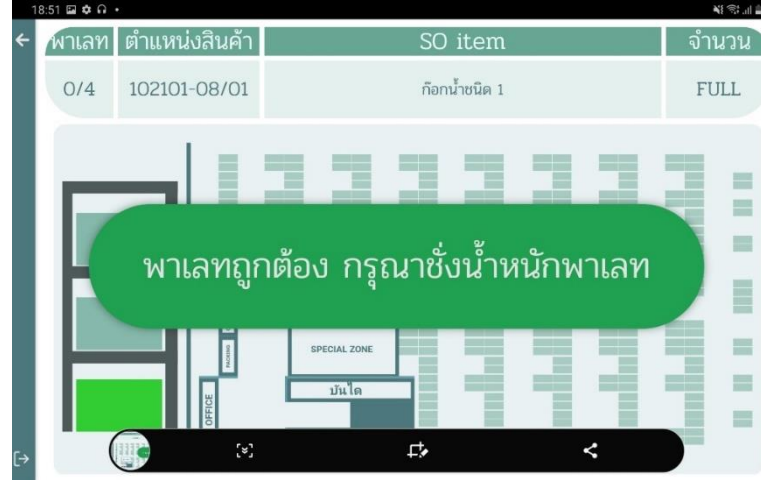
# SMART WAREHOUSE OPERATIONS : IOT SOLUTION + WMS

## PUT AWAY

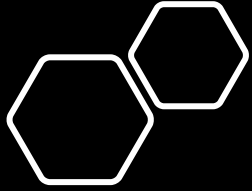


# SMART WAREHOUSE OPERATIONS : IOT SOLUTION + WMS

## PICK UP



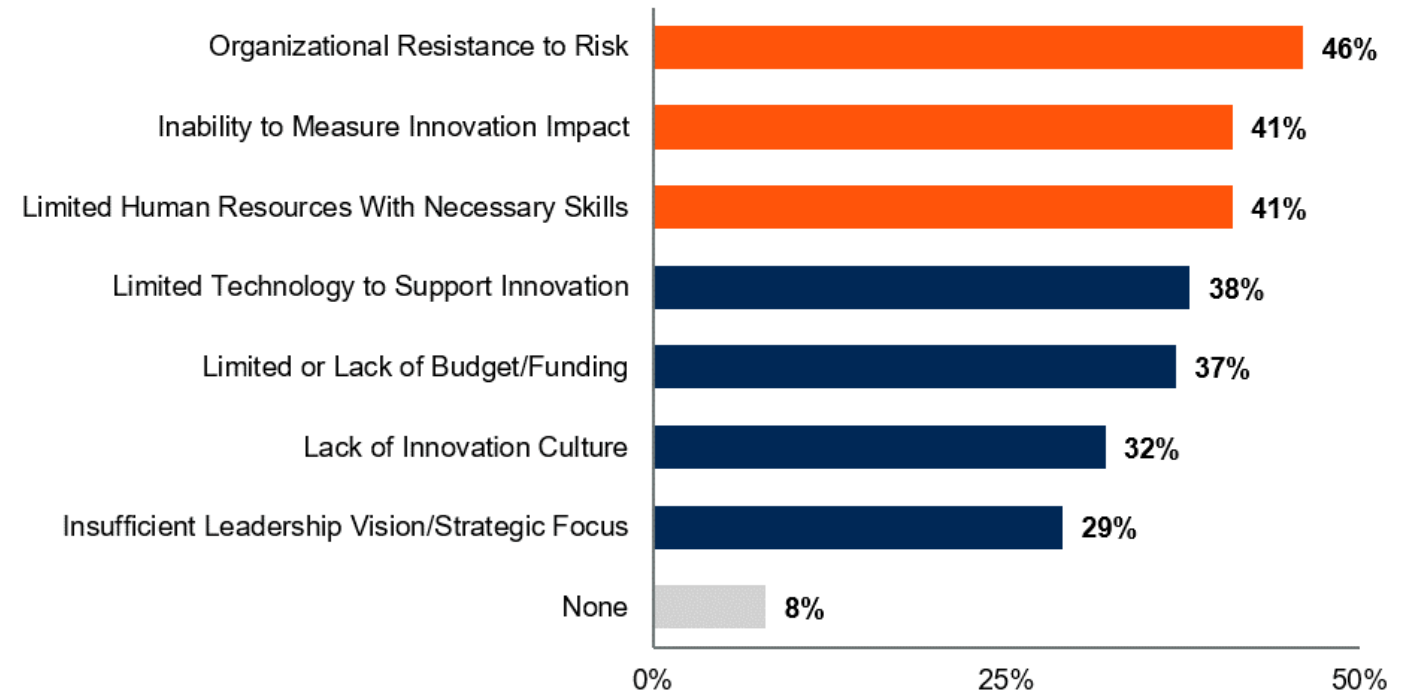




## HOW TO OVERCOME

- 1) Business process management
  - a) Shift study to learn organizational culture and process, and measure existing performance
  - b) Brainstorming with users - employees to find solutions for integrating lean and technology into warehouse operations, and measure their impact
  - c) Bi-weekly meeting with users – employees and working teams
- 2) Platform for designing smart warehouse to measure innovation impact (LOGIN)
- 3) “Digital Logistics” on the job training (LOGIN)

## CHALLENGES TO ADOPT TECHNOLOGY



n = 393

Base: All Respondents

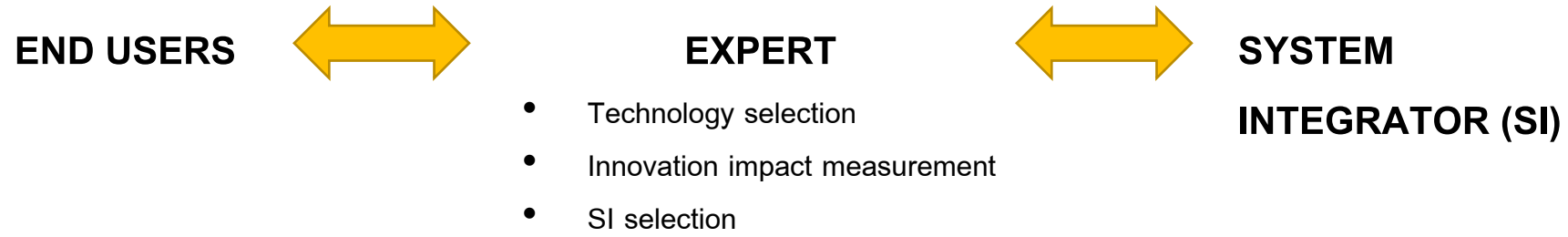
Source: Gartner 2019 CMO Brand Strategy and Innovation Survey

Q. What are the largest barriers your marketing organization must overcome in order to drive innovation?

ID: 432875

<https://aithority.com/technology/gartner-reveals-the-top-three-barriers-to-innovation-in-marketing/>

## SMART WAREHOUSE ECOSYSTEM



### GOVERNMENT

- Support to build use cases for extension to other organizations
- Continuously drive large-scaled organizations supporting their supply chain members (SMEs)
- Build and continuously support strong networks requiring multi-disciplinary areas

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