

# AR/VR - INDUSTRY 4.0 AND THE DIGITAL TWIN WHERE NEXT?

*Noreen Ryan*



**Industry 4.0**



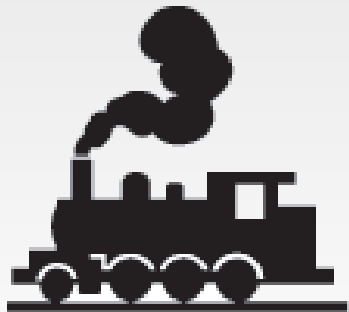
**Digital Twin**



**Virtual Reality**



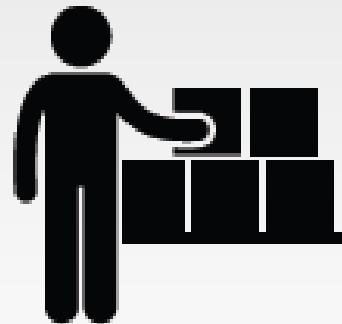
INDUSTRY  
**1.0**



**1784:**

Mechanization,  
Steam & Water Power

INDUSTRY  
**2.0**



**1870:**

Mass Production &  
Electrical Energy

INDUSTRY  
**3.0**



**1969:**

Electronic & IT Systems,  
Automation

INDUSTRY  
**4.0**

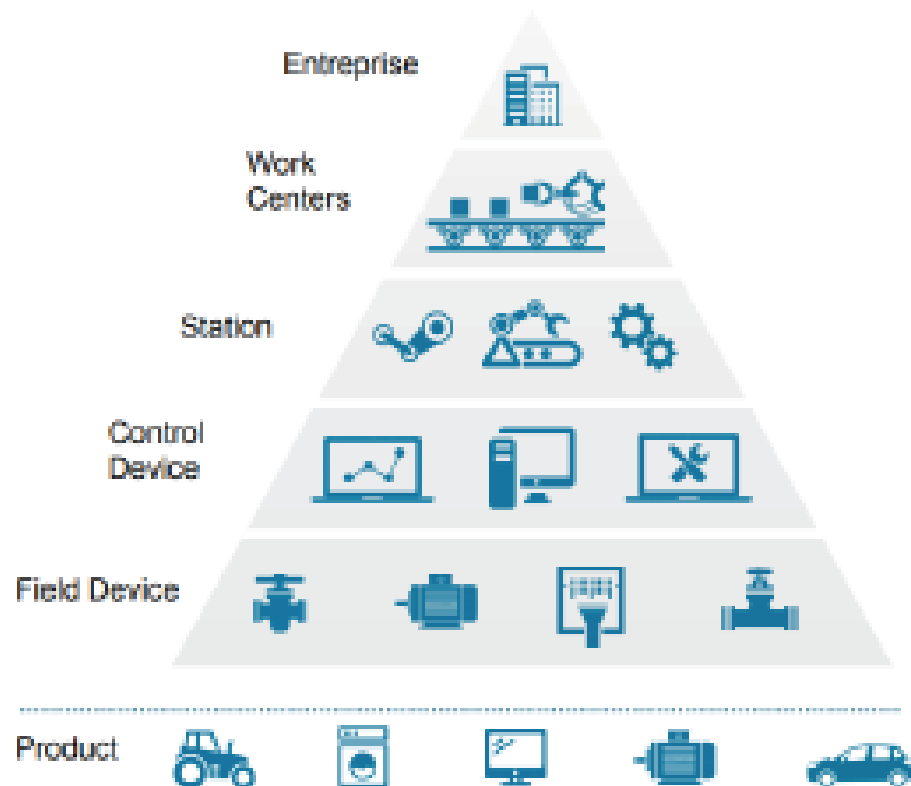


**TODAY:**

Cyber Physical Systems,  
Internet of Things

# Industry 3.0 >>> Industry 4.0

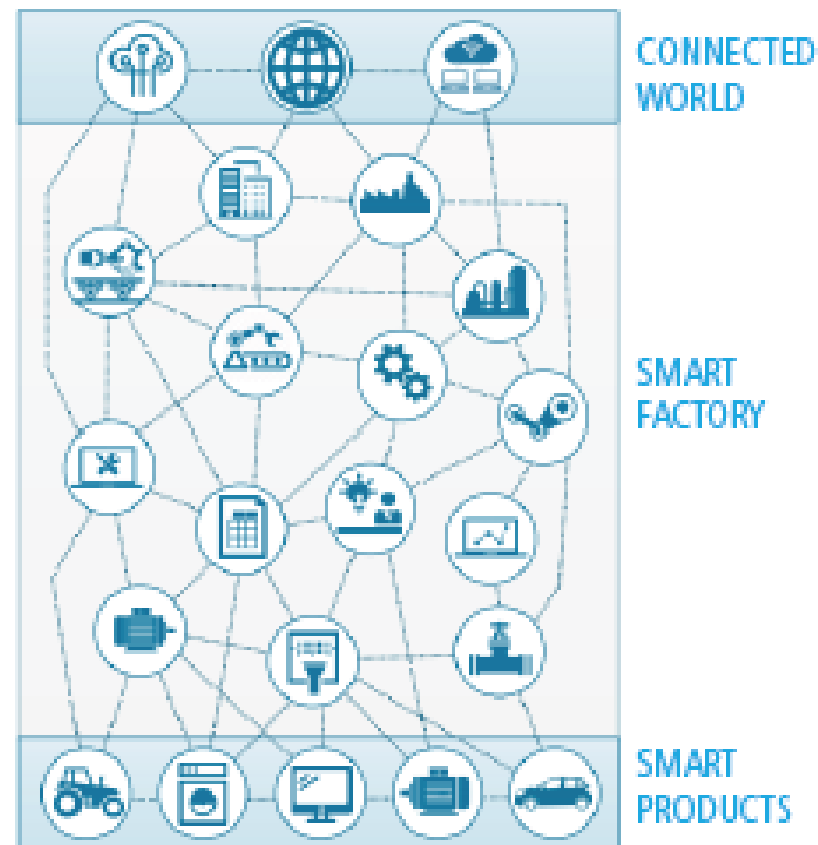
## Industry 3.0



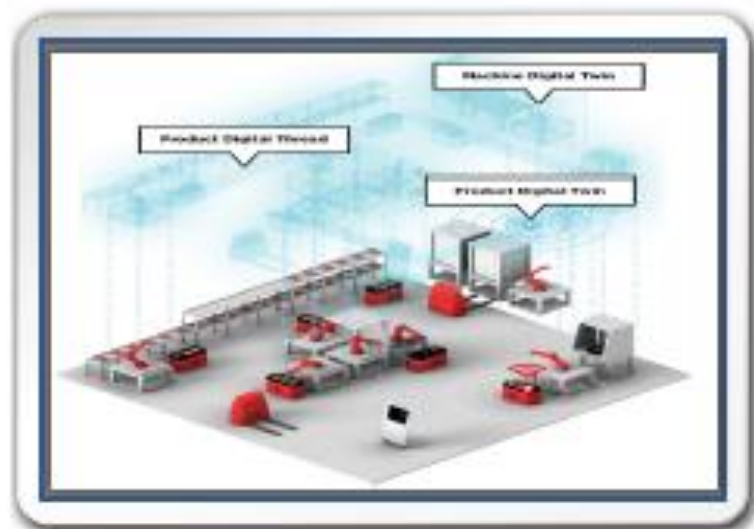
- Hardware-based structure
- Functions are bound to hardware
- Hierarchy-based communications
- Product is isolated

## Industry 4.0

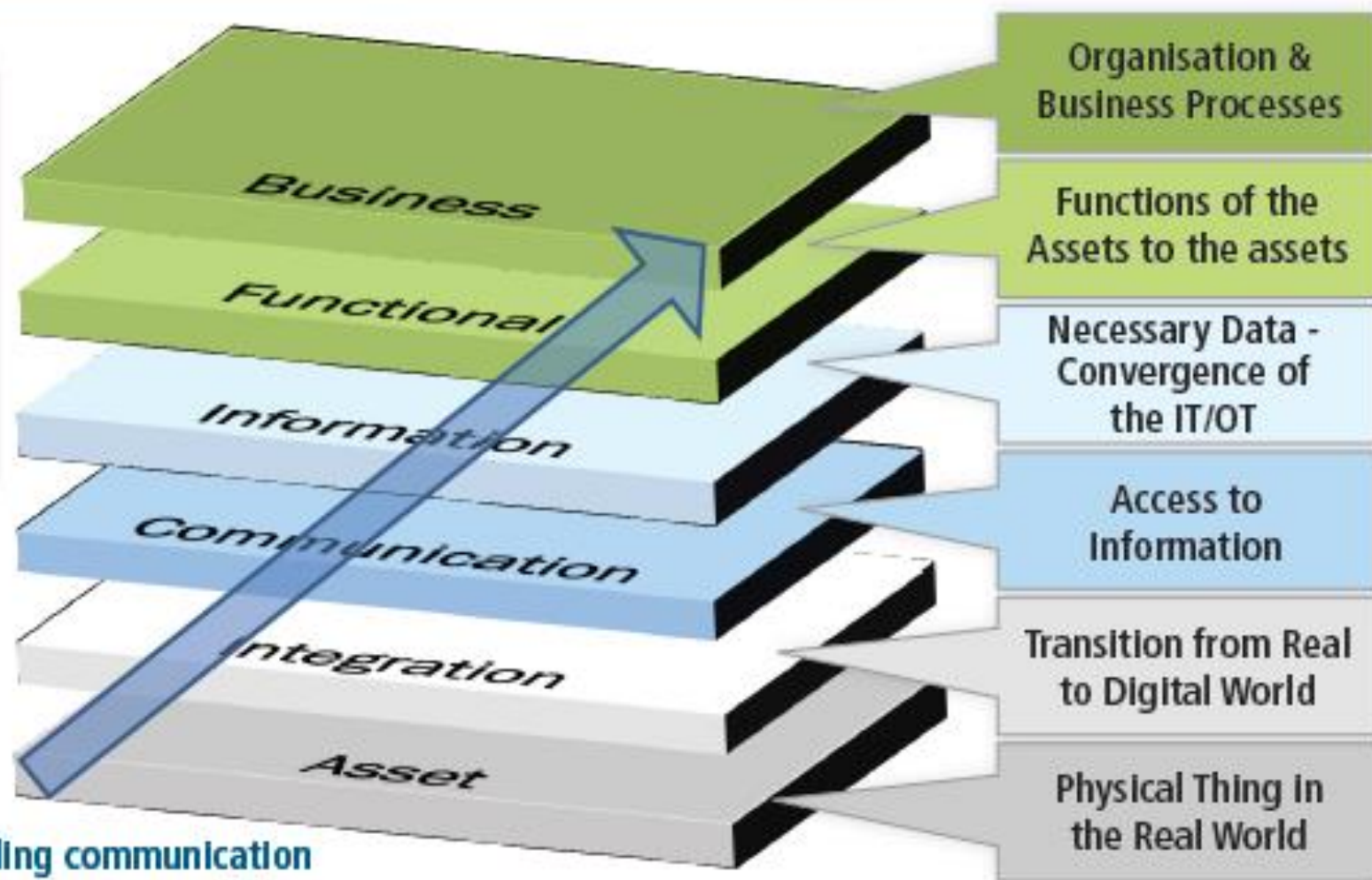
- Flexible system and machines
- Functions are distributed throughout the network
- Participants interact across hierarchy levels
- Communication among all participants
- Product is part of the network



# RAMI - Reference Architecture Model Industry 4.0 (RAMI4.0)



Breaks down complex processes into easy-to-grasp packages, including data privacy and IT security.



Enabling communication across layers, providing a convergence of IT/OT.

# World Economic Forum

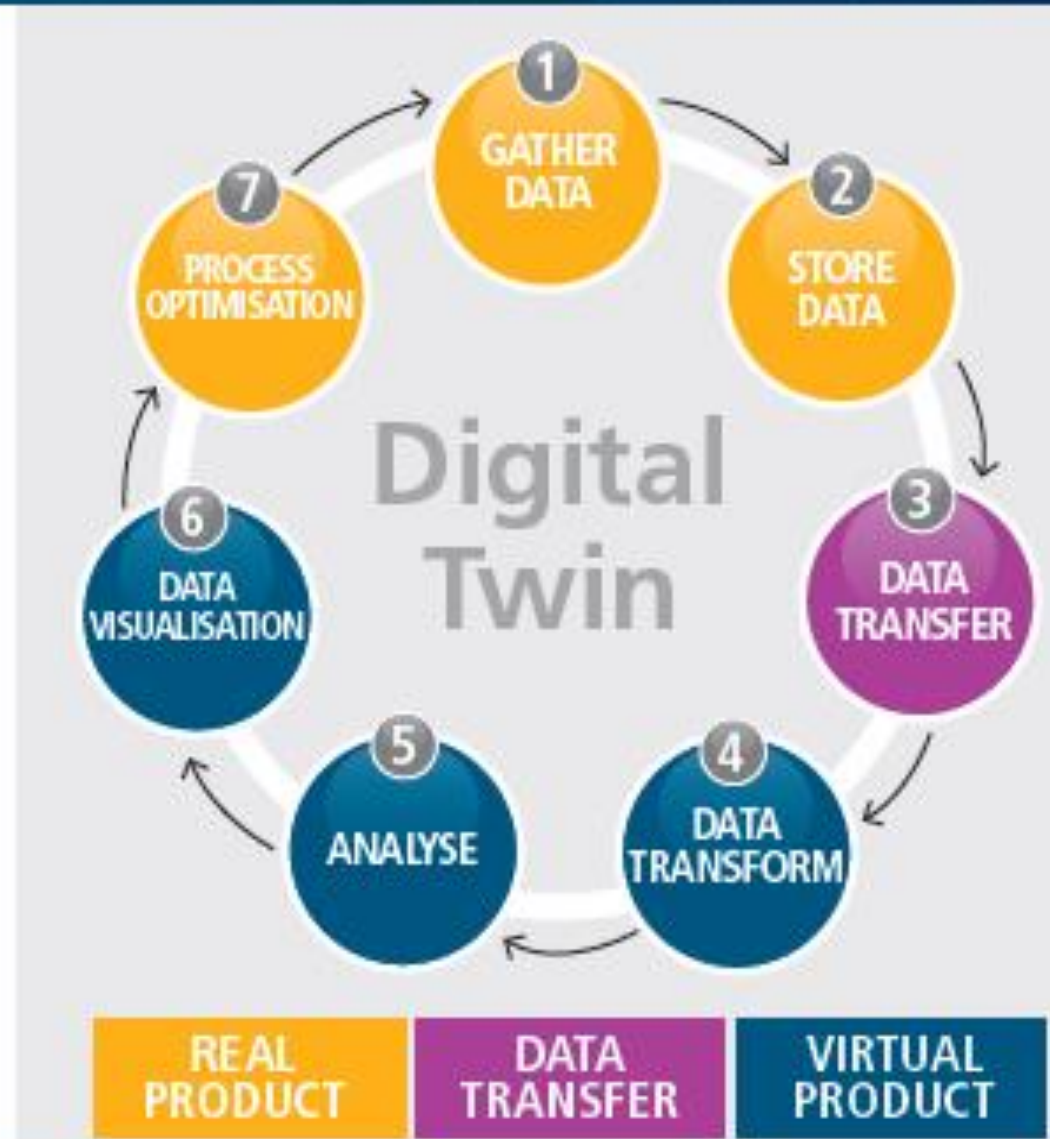
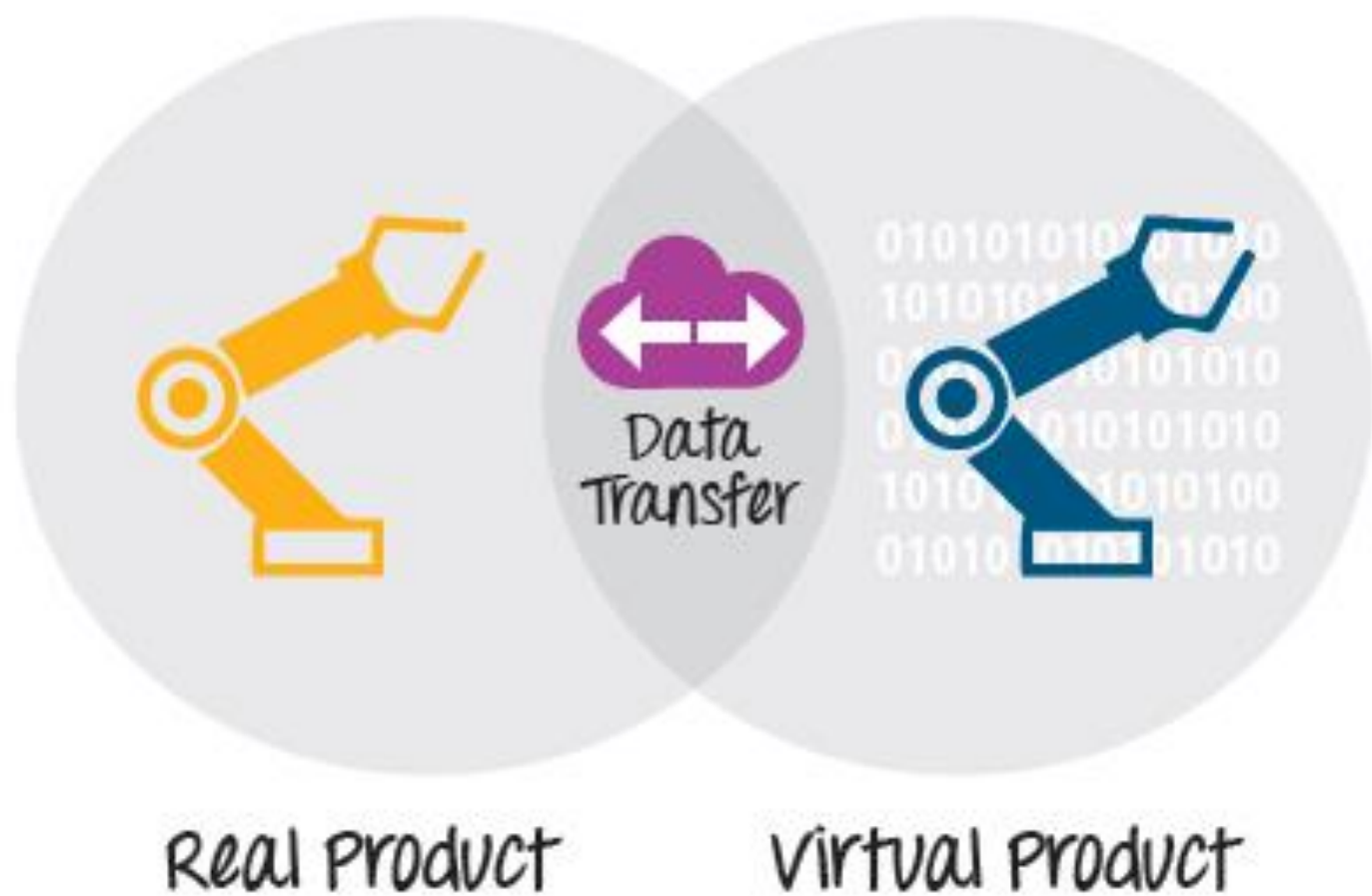
DPS Selected as Factory of the Future Lighthouse



135 Companies Screened > 35 Self Assessed > 16 Visited & Assessed > 9 Plants world wide selected as Lighthouses

# Digital Twin

Combination of Physical and Digital World





## Virtual Factory Layout (2D > 3D > VR)



2D Layout



Point Cloud Scan



3D Layout

## Safety Training in VR



## Plant Simulation in VR



## Remote Virtual Design Review



# Employee of the Future



## Head

- *E2E SC Master*
- *Entrepreneurial*
- *Faster Forward Mindset*



## Heart

- *Passion*
- *Customer Centric*
- *Growing Self*



## Capabilities

- *Robotics*
- *Automation*
- *Digital Competency*
- *Software*



# THANK YOU



COMPANIES OF Johnson & Johnson