

# *Chuỗi cung ứng dưới tác động của ngành công nghiệp 4.0*

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## Công nghiệp 4.0

- Công nghiệp 4.0 là **sự chuyển đổi số** của thị trường công nghiệp (*chuyển đổi công nghiệp*) với **quy trình sản xuất thông minh** hiện đang dẫn đầu. Công nghiệp 4.0 đại diện cho cuộc cách mạng công nghiệp thứ tư trong **sản xuất, hậu cần và chuỗi cung ứng** (*Logistics 4.0*), công nghiệp hóa chất, năng lượng (*Energy 4.0*), giao thông, tiện ích, dầu khí, khai thác mỏ và kim loại và các phân ngành khác, bao gồm các ngành công nghiệp tài nguyên, **chăm sóc sức khỏe**, dược phẩm và thậm chí cả các thành phố thông minh.

# INDUSTRY 4.0 - THE FOURTH INDUSTRIAL REVOLUTION



**Industry 4.0 defined, explained and visualized - with evolutions and data**



3rd platform, innovation accelerators, OT and manufacturing meet in transformation

## Công nghiệp 4.0 — chuyển đổi số



# Công nghiệp 4.0 — chuyển đổi số

## FROM INDUSTRY 4.0 TO FOURTH INDUSTRIAL REVOLUTION

1



Mechanization  
Steam engines  
Water/steam power  
New manufacturing  
Iron production  
Textile industry  
Mining and metallurgy  
Machine tools  
Steam factories

2



Technological  
Electrification  
Production line  
Mass production  
Globalization  
Engines/turbines  
Broad adoption  
of telegraph,  
gas, water supply

3



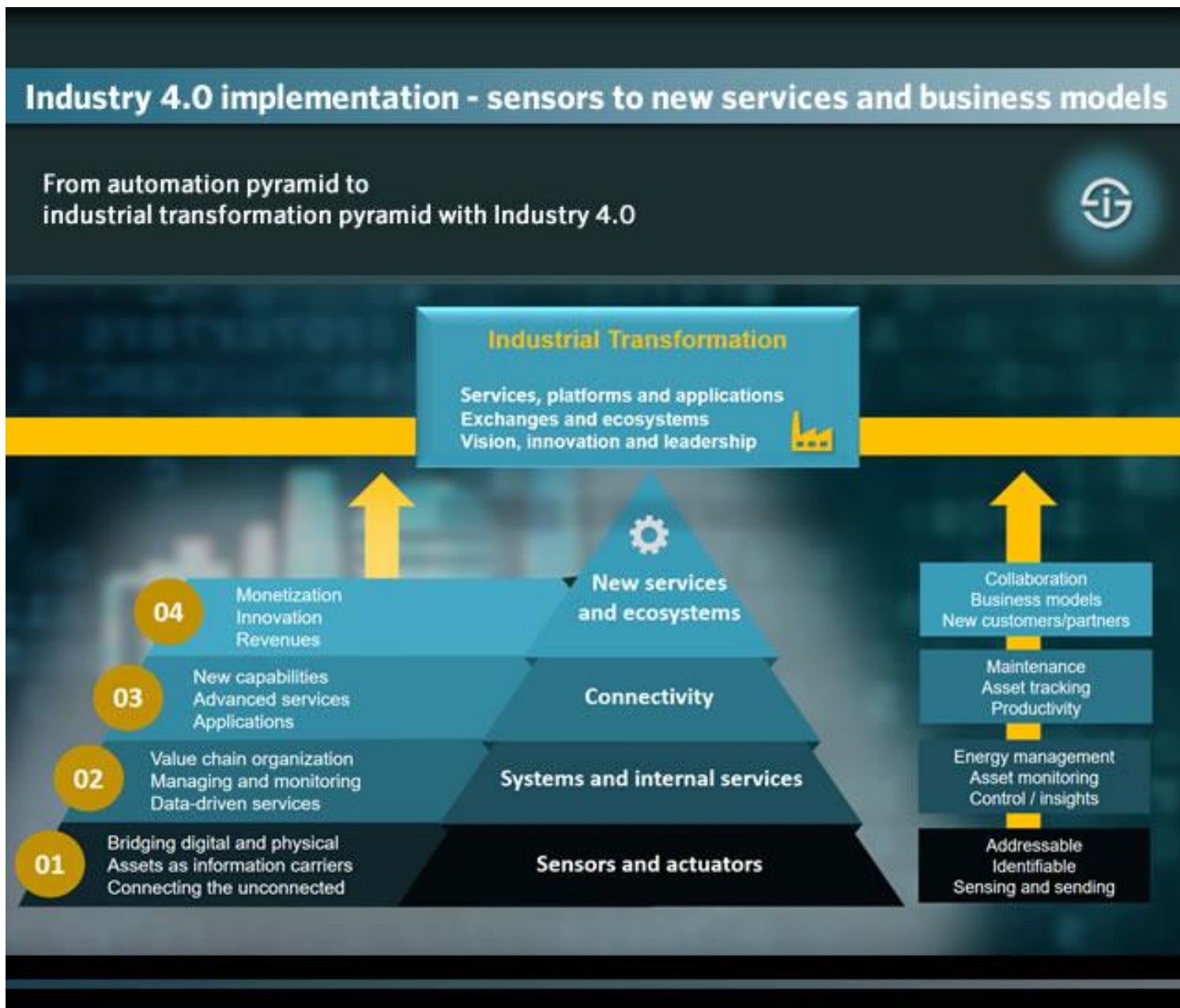
Computer /Internet  
Digital manufacturing  
PLC/Robotics  
IT and OT  
Digitization  
Automation  
Electronic/digital  
Networks  
Digital machines

4



Convergence IT /OT  
Autonomous machine  
Advanced robotics  
Big Data/Analytics  
Internet of Things  
Digital ubiquity/Cloud  
Smart factory  
Machine learning & AI  
Cyber Physical

# Công nghiệp 4.0 — chuyển đổi số



# Industry 4.0 refers to the convergence and application of nine digital industrial technologies



Many application examples already exist for all nine technologies

# Công nghiệp 4.0 — sản xuất

## In fact, Industry 4.0 offers *multiple* benefits—enhanced productivity is just the beginning

**Increased productivity**  
... e.g., through a higher level of automation that reduces production time, enables better asset utilization and inventory management



**Increased flexibility**  
... e.g., manufacturing flexibility through machines and robots that can execute the production steps for a large number of products

**Increased quality**  
... of products via sensors and actuators that monitor the current production in real time and quickly intervene in case of errors



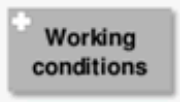
**Increased speed**  
... from the first product or factory idea to the finished product through consistent data and, e.g., new simulation opportunities.



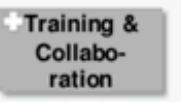
Manufacturing conditions



More occupational safety through increased automation



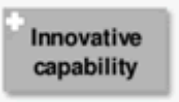
Better working conditions through ergonomically adapted workstations



Increased collaboration in the production network through consistent data availability



Better environment protection through optimized use of resources (e.g., more energy-efficient operation of machinery)



Increased innovative capability through new technological possibilities in manufacturing



# Công nghiệp 4.0

—  
bản đồ

## Industry 4.0 - a staged approach with value opportunities at each step



### INDUSTRIE 4.0

Value and Industry 4.0 maturity



- Connect to gather
- Sensing, monitoring
- Big data, right data
- Data to information
- Machines, networks, processes



- Intelligence and understanding
- From information to knowledge
- Patterns and transparency
- AI, cognitive, analytics and analysis



- Predictive capability
- From knowledge to wisdom to forecast
- Preparedness and preparation
- More AI and cognitive
- Maintenance, innovation, service



- Autonomous action and machines
- Self-optimizing systems
- From wisdom to (re)action
- From forecast to production
- Agility, flexibility, true innovation
- Transformation

Industry 4.0 vision

What is happening?

Why is it happening?

What will happen?

Autonomous action?

Stage 1: See

Stage 2: Understand

Stage 3: Prepare

Stage 4: Adapt autonomous

Industry 4.0 development and roadmap - each stage as an enabler



Value opportunity

Value opportunity

Value opportunity

Value opportunity

Value opportunities at each stage and leading to higher overall value across the journey



# Logistics 4.0 Hậu cần 4.0


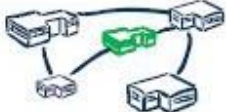
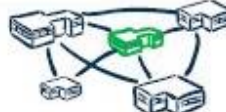
























## SUPPLY CHAIN AND LOGISTICS IN INDUSTRY 4.0



Supply chain and logistics management and evolutions  
in Industry 4.0 and industrial transformation  
- from digital supply chains and autonomy in Logistics 4.0 to people and data



## Logistics

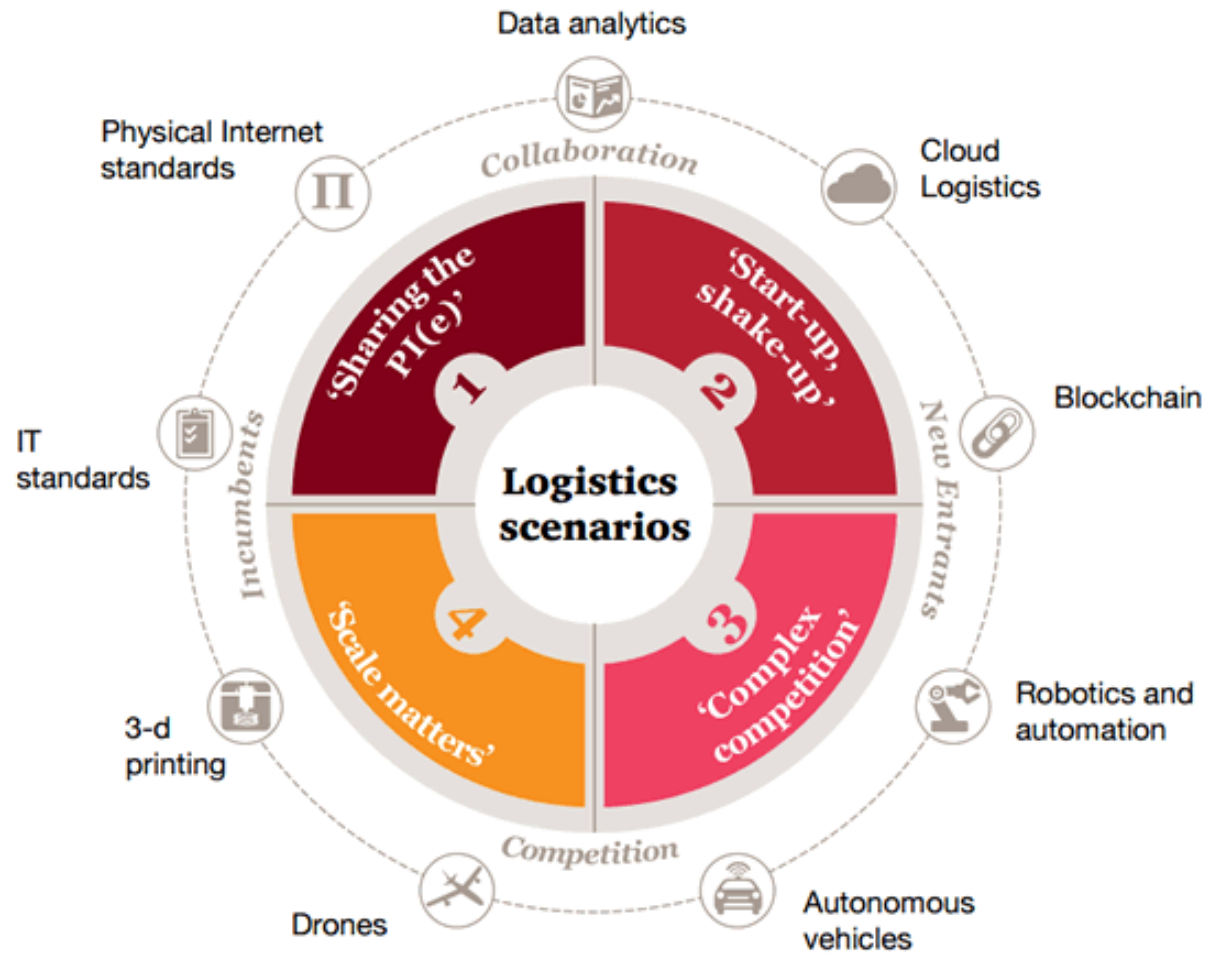
<b>Supply Chain Logistics</b>	 Local Operating Structure	 Global Operations Structure	 Partial Global Resource Planning / Controlling	 Complete Global Resource Planning / Controlling	 Open and Flexible Operations Footprint
<b>Inbound Logistics</b>	 Push Delivery Process	 Pull Delivery Process / JIS	 Vendor Managed Inventory	 Autonomous Inventory Management	 Predictive Inbound Logistics Management (Big Data)
<b>Warehouse Management</b>	 No Automation	 Automatic Warehouse System	 Automatic Warehouse Network	 Supply Chain Warehouse Network	 No Warehouse in Supply Chain
<b>Intralogistics / Line Feeding</b>	 Manually steered rack, trolley	 Manually steered train	 Autonomous FTS on fixed routes	 Autonomous FTS on open area	 Autonomous FTS on open area steered by production machine
<b>Outbound Logistics</b>	 Push Delivery Process	 Order-Based Delivery Management	 Active Delivery Management	 Automatic Delivery Management	 Predictive Delivery Management
<b>Logistics Routing</b>	 Decentralized Vehicle / Equipment Fleet	 Centralized Vehicle / Equipment Fleet	 Pre-planned and Centralized Fleet	 Real-Time Routing and Connected Navigation	 Autonomous Transportation Vehicle / Equipment

# Logistics 4.0 chuyển đổi số



Requires the right data and information at the right moment, time and place

# Logistics 4.0 chuyển đổi số



# Logistics 4.0 robots & cobots



# Logistics 4.0 robots & cobots



# DIGITAL SUPPLY CHAIN AND DIGITAL SUPPLY CHAIN NETWORKS





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