



達易智造
DOT ZERO
Connecting Excellence

Smart Management for Machinery and Metal Processing

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01

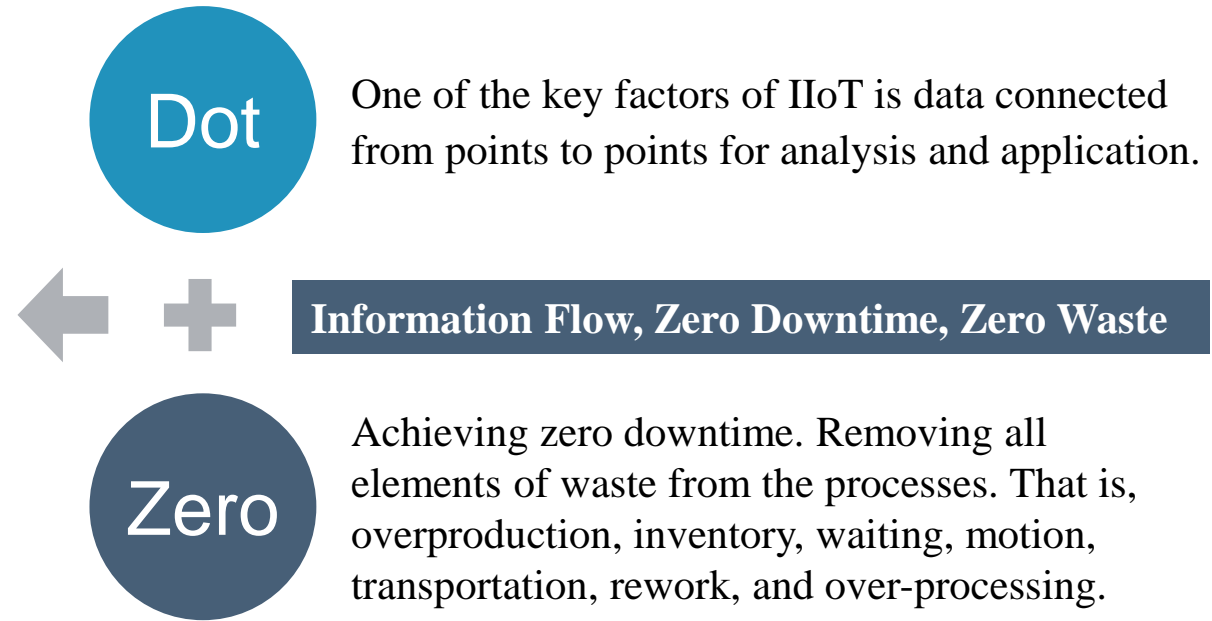
Company



Brand Concept



達易智造
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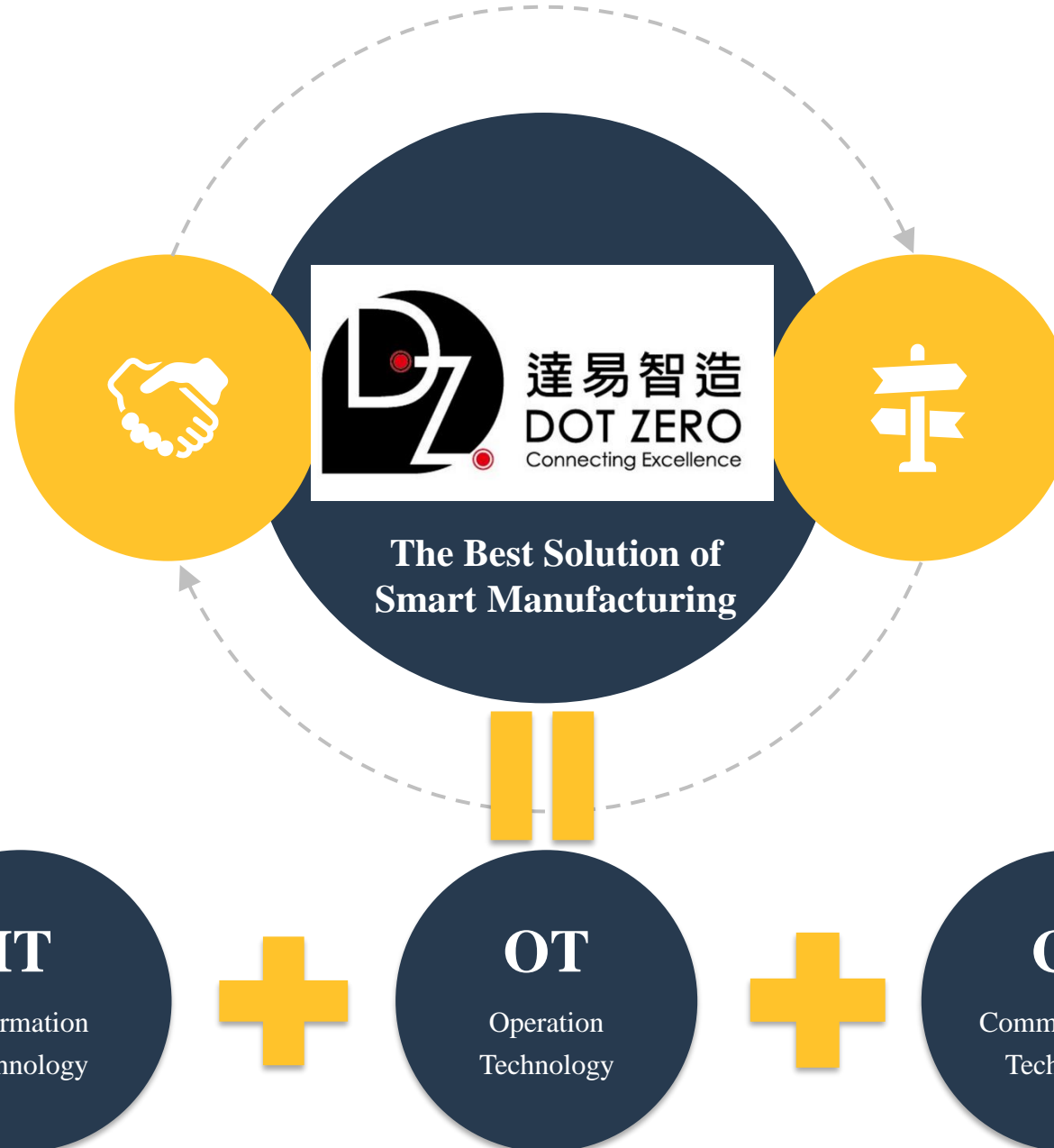


Why Co-Create

ADVANTECH

Advantages:

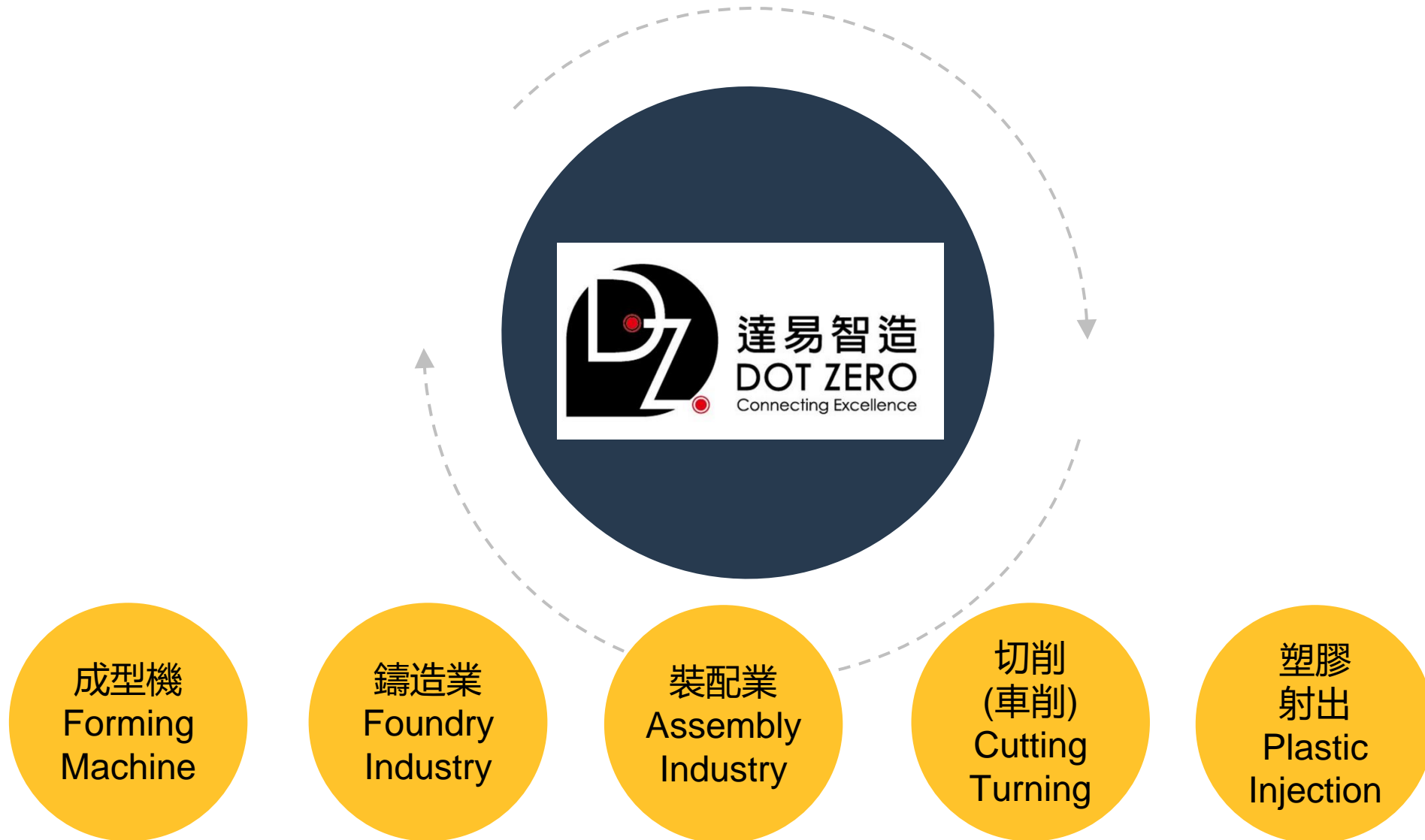
1. WISE_PaaS platform and SRP production line
2. iFactory, a competitive industrial computer that has entered the international market
3. IoT brand marketing and sales channels



Advantages:

1. Domain know-how in metalworking industry
2. Domain focused on solution planning and development
3. Field test solution

Dot Zero Specializes in

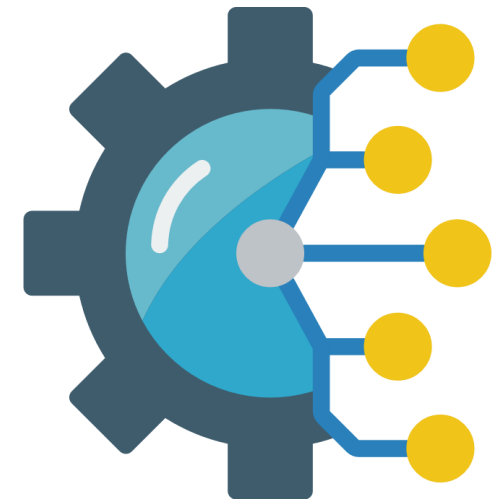


Target Customers





Industry 4.0



TPS and Process Digitization

“Everything that we do is to pay close attention to **the lead time; from the moment the customer gives us an order to the point when we collect the cash.** Thus we can reduce the lead time by **removing non-value added wastes.**”



Founder of Toyota Production System –
Taiichi Ohno (1912-1990)

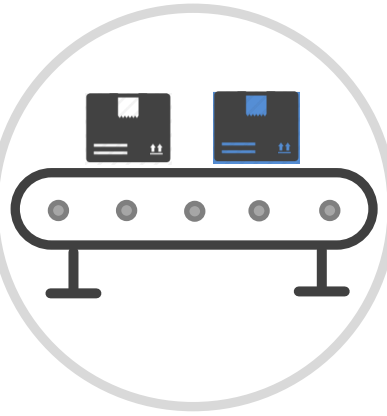


Four Industrial Revolutions



Industry 1.0

Mechanization and the introduction of steam and water power



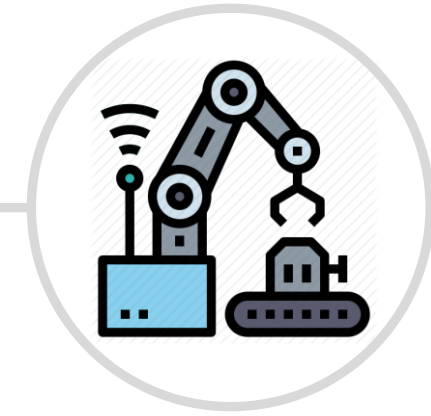
Industry 2.0

Mass production assembly lines using electrical power



Industry 3.0

Automated production, computers, IT-systems and robotics



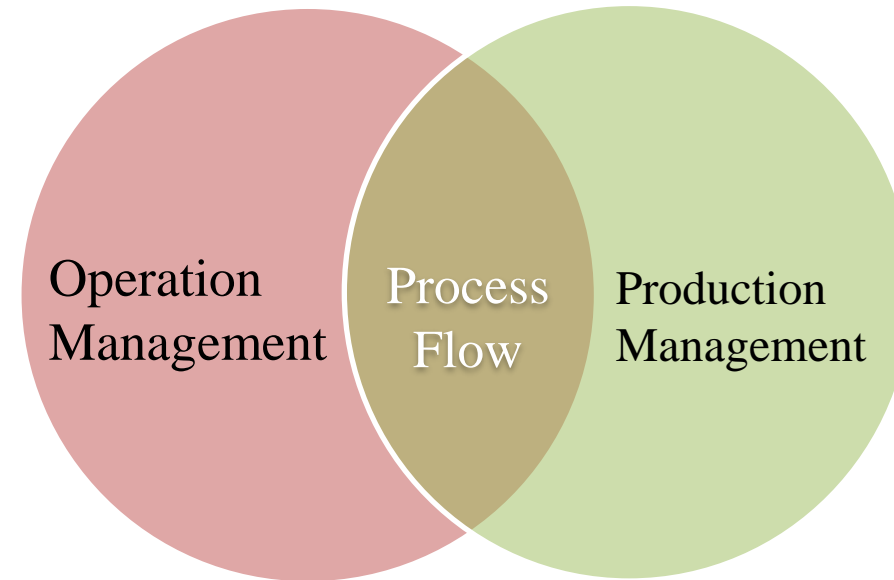
Industry 4.0

The Smart Factory. Autonomous systems, IoT, machine learning

Manufacturing Problems Today



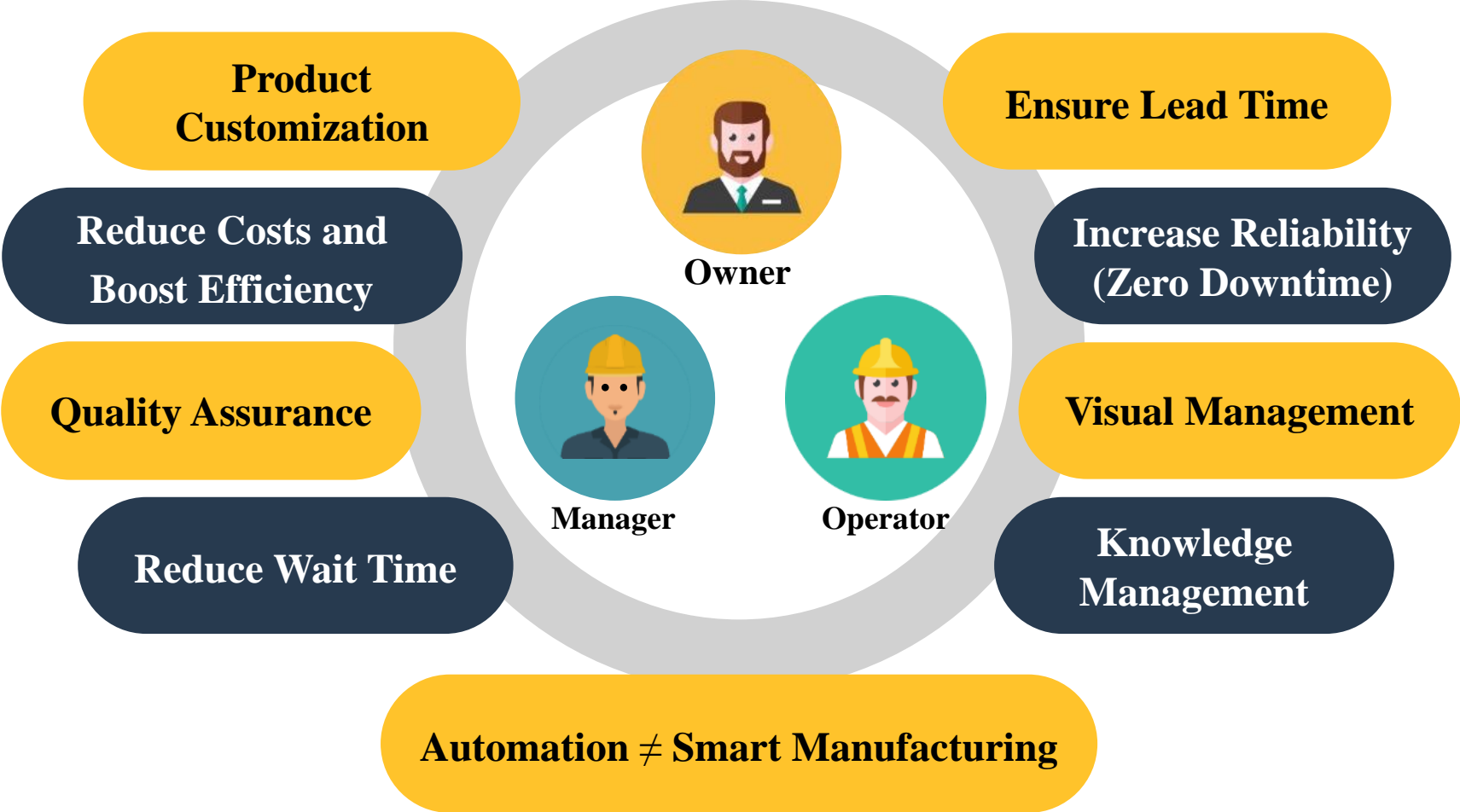
Source: Frost & Sullivan






Problems may be isolated. The KEY is to focus on “Process Management**”**

- Management time **is much longer** than production time.
- Variation within management process **are more than** variation within production process.
- Response time in management process **are far slower** than response time in production process.
- Automation in management process **are far lower** than automation in production process.

Challenges Ahead



Pain Points from Factory Daily Management

Manager 	What is the production capacity!
	How to improve factory competitiveness and profit!
	How to increase the company's cash flow!
Factory Manager 	The gap between the information on the system and the scene
	Overall equipment effectiveness
	Shop flooring reporting
	Product delivery
	Quality
Device Manager 	Remote monitoring!
	Large number of machines
	Instant machine status
	Product history
	Maintenance schedule
	Reduce job failure, quality improve
Increase work efficiency	

No pain

No gain!

Visualization & Continuous Improvement



Manufacturing Challenges

Rapid Market Change

1. Short product lifecycle
2. Highly customized design

Territory Reshuffle

1. Emerging markets compete for mass production market
2. Maturing market maintains her edge in customized product markets

Slow Growth on Per capital Output

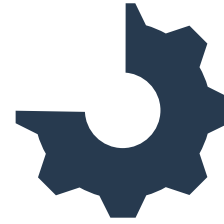
1. Labor Shortage
2. Digitized production; management through Big Data



Enterprise Transformation

Digital factory

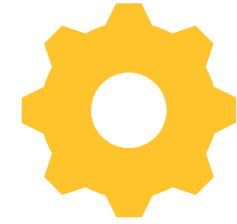
1. Reduce manpower-only management
2. Improve factory data accuracy
3. Digitalized and paperless process
4. Real-time and visualization of information



Smart Manufacturing Management

Management indicators

1. OEE
2. Production history and tracking
3. Information sharing and standardization



Continuous Improvement

Continuous Improvement

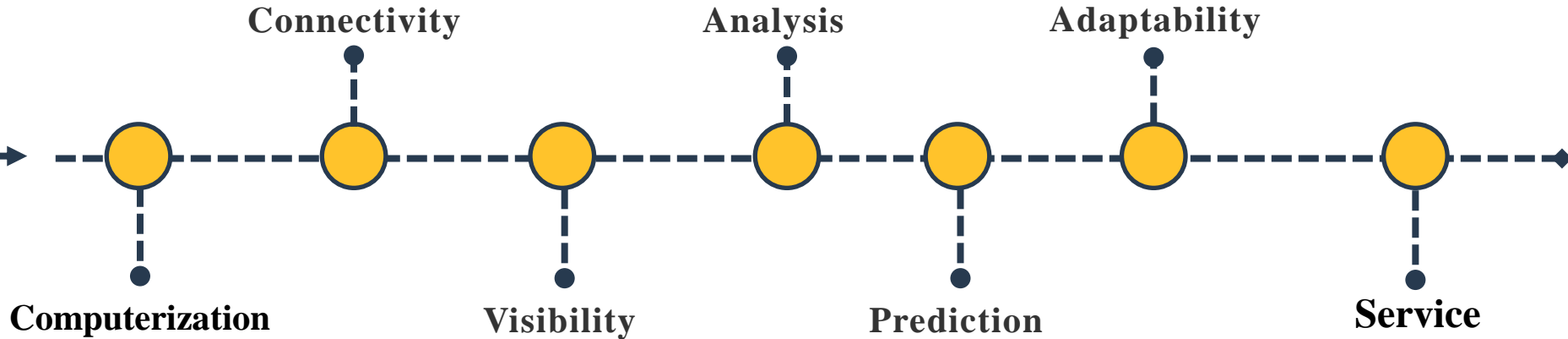
1. Science and rationalization can make correct improvements
2. Standardization, increase work quality and efficiency
3. Cultivate a culture of effective teamwork.

Digital Transformation

裝置層 (Edge Tier)

DZ平台層 (Platform Tier)

企業層 (Enterprise Tier)





03

Product

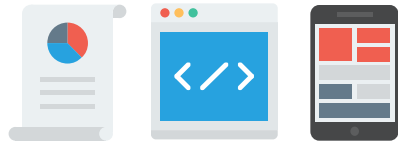


Smart Management - DZ Connect

Information

Equipment

Factory



Data Collected



Machine

CNC / Non-CNC / PLC /
Automation Integration
/Measuring Equipment



Man

Dispatch production

Net/Device



Connect

Information Integration



Router



Model

Standard



Equipment
Management
System



Shop Flooring
Reporting



Work In
Process

Optional



Statistical
Process
Control



Equipment
Performance
Measurement



Value
Stream
Mapping

Cloud



OEE App

DZ Connect App

Automatic
Announcement App

DZ Connect

Order

Schedule

Reporting

Quality

Equipment
Maintenance

Shipping



Shop Flooring
Reporting



Equipment
Management
System



Work In
Process



Statistical
Process
control

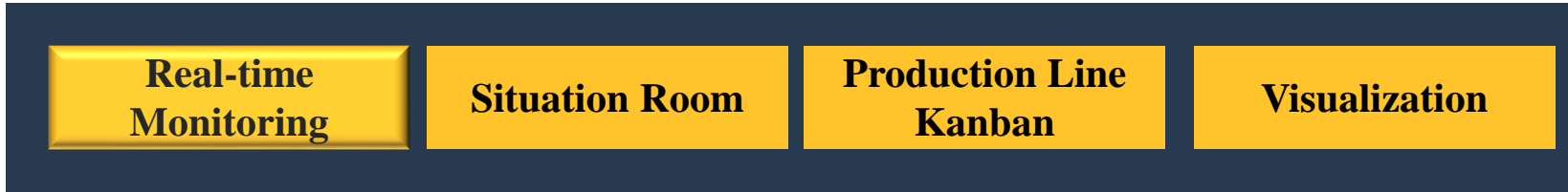


Equipment
Performance
Measurement



Value
Stream
Mapping

DZ Connect



Equipment



- Machine Status Monitoring
- Machine Status History
- Factory Alarm Analysis
- Machine Status Flow Chart
- Machine Utilization Report



Operation



- Order Management
- Shop Floor Reporting



Factory

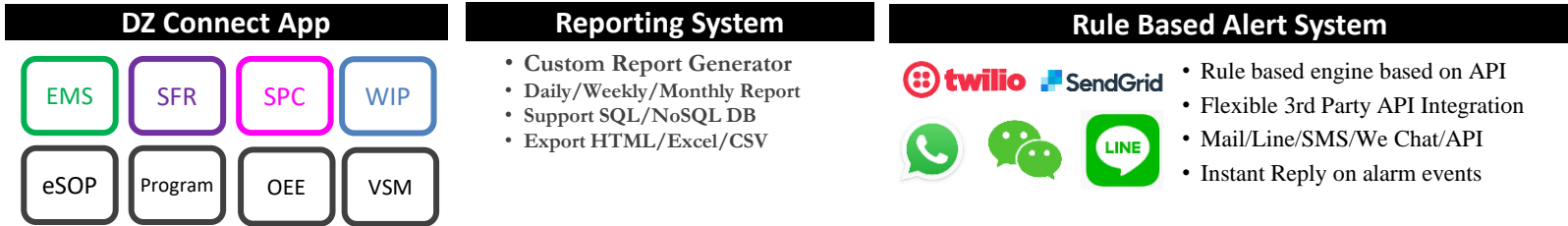


- OEE

Architecture

■ IT Microservice

Services can be implemented using different programming languages, databases, hardware and software environment, depending on what fits best.



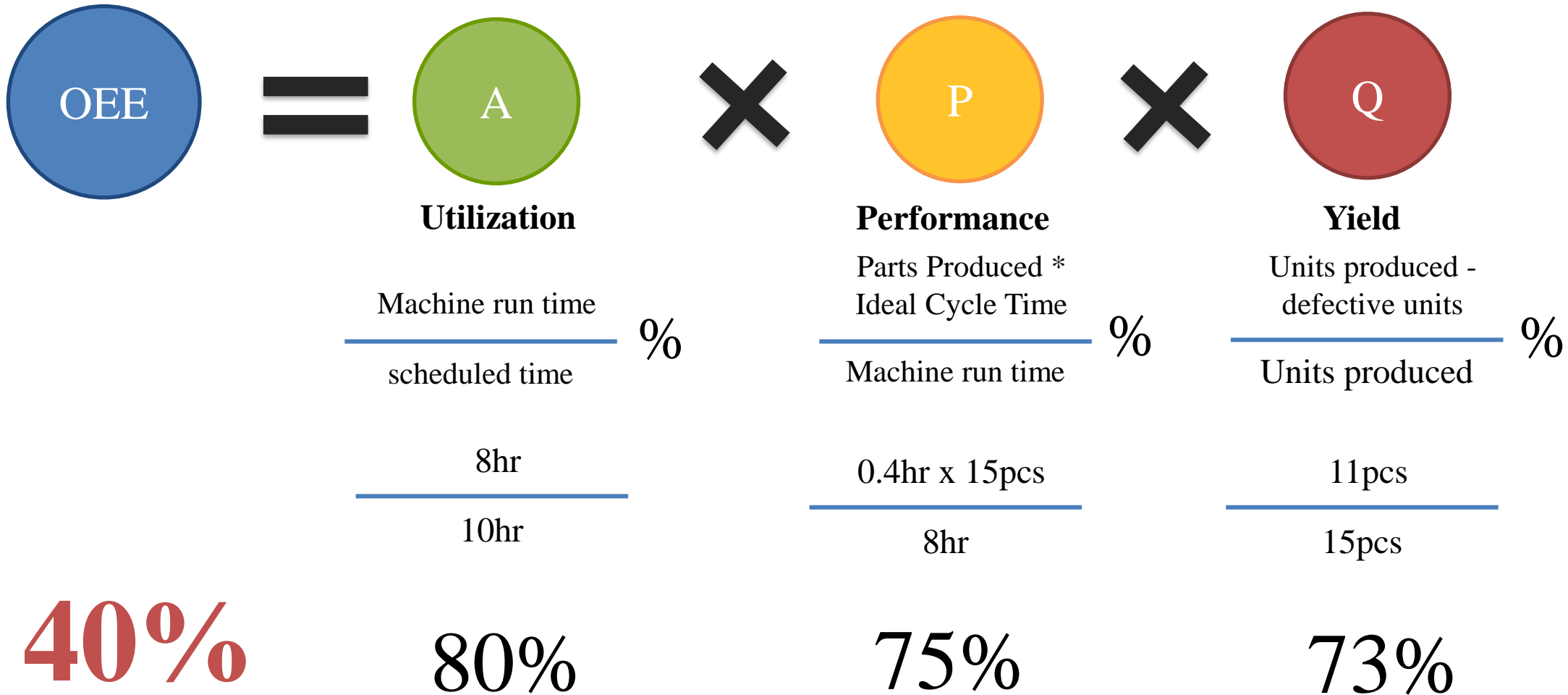
■ Cloud-edge co-existence

Combine the virtually limitless computing power of the cloud with intelligent and perceptive devices at the edge of the network to create a framework for building immersive and impactful business solutions.



OEE

OEE(overall equipment effectiveness) is a measure of how well a manufacturing operation is utilized (facilities, time and material) compared to its full potential, during the periods when it is scheduled to run.





04

Case Study





Forming Industrial Corp. deliver high quality electrical & machinery products driven by Industrial Internet of Things (IIoT) smart tools and platforms connect systems

Industrial Internet of Things (IIoT) technologies helps Forming Industrial Corp digitally transform products and shopfloor operations with better visibility into production performance and customer experience

Forming Industrial Corp. a SMB electrical and machinery manufacturer based in Kaoshiung, the industrial capital of Taiwan, recognized the need to adopt IIoT technologies and the importance of embracing a full digital transformation to expand better visibility into production performance and customer experience. Forming Industrial initially asked their in-house IT staff to develop such IIoT platform; however soon to realize the value of adapting Azure IoT solutions developed by Microsoft partner – Dot Zero it needed to realize value significantly and much faster. The adaption of IIoT solution have increased the connectivity of Forming Industrial Corp.’s selected production line by 100% (versus manual in the past), as well as increased productivity by 22%, OEE by 16%, reduced down time by 23%.



英鈿工業

Products and Services

Azure IoT Hub
Azure IoT Edge
Azure SQL DB
Internet of Things (IoT)

Organization Size

Small & Medium Business

Industry

Manufacturing

Country

Taiwan

Business Need

Remote Monitor
Predictive Maintenance

Partner

Dot Zero
<https://www.dotzero.tech/homepage-en/>



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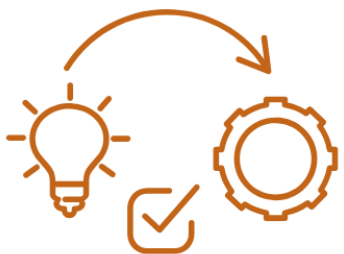


Job Shop



Difficulties

- Difficult to track machine status in real time.
- Availability (including loading) cannot be monitored accurately.
- Manual data collection.
- A gap between standard and actual working hours.



Implementation

- Equipment Management System(EMS)
- Shop Floor Reporting (SFR)



Benefits

- **33%** ↑ in productivity
- **Over 120** devices connected
- **34%** ↑ in availability
- **100%** reduction in data input time

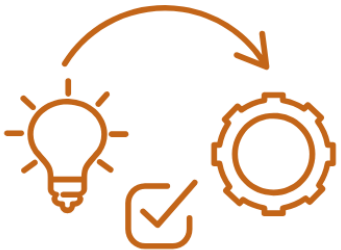


Die & Mold



Difficulties

- Unclear output value and production capacity.
- Unable to share information by multiple plants.
- Manpower management.
- Hard to visualize production efficiency.



Implementation

- Equipment Management System(EMS)
- Shop Floor Reporting (SFR)



Benefits

- **61** devices connected
- **25%** ↑ in productivity
- **53% to 71%** OEE enhanced
- Multi-plant Remote Production Management
- Digital Factory Display

Achievements

We Create Value

1. Over 12 countries, 200 companies, connection exceeds with 3,000 machines
2. Industries: Die & Mold, Automotive, Job Shop, Aerospace, Semiconductor
3. 15% productivity improvement for average 3~6 months

33%



JOB SHOP
increased productivity in 8 months

33%



AUTOMOTIVE
increased productivity in 8 months

25%



DIE & MOLD
increased productivity in 3 months

12%



MEDICAL
increased productivity in 12 months

21%



JOB SHOP
increased productivity in 6 months

41%



AEROSPACE
increased productivity in 5 months





Thank You!