INDUSTRY 4.0

CHANGE OR NOT?

NRMCA CONFERENCE PRESENTATION 27 JULY 2019
PRESENTATION OUTLINE

• Journey of industrial revolution
• What is Industry 4.0?
• Building blocks of Industry 4.0
• Potential implications & way forward
• 360 AppSolutions
HENRY FORD STORY
INDUSTRY 1.0
Mechanization, steam power, weaving loom

INDUSTRY 2.0
Mass production, assembly line, electrical energy

INDUSTRY 3.0
Automation, computers and electronics

INDUSTRY 4.0
Cyber physical systems, internet of things (IoT), networks

1784  1870  1969  Today
PHASES OF EARLIER 3 INDUSTRIAL REVOLUTIONS

1. 1760 to 1840 - Ushered in Mechanical production; railways and steam engine
2. 1870 to 1940 - Mass production; electricity and assembly line
3. 1960 to 2010 - Computers; semi conductors, main frame computing, personal devices, internet
Industry 4.0 is the evolution to cyber-physical systems, representing the fourth industrial revolution on the road to an end-to-end value chain with Industrial IoT and decentralized intelligence in manufacturing, production, logistics and the industry.
<table>
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<tr>
<th>Design Principle</th>
<th>Description</th>
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<tr>
<td><strong>Interoperability</strong></td>
<td>Cyber-physical systems, humans and Smart Factories to connect and communicate with each other via the Internet of Things (IoT) and the Internet of Services (IoS)</td>
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<td><strong>Virtualization</strong></td>
<td>Virtual copy of the Smart Factory created by linking sensor data (from monitoring physical processes) with virtual plant models and simulation models</td>
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<td><strong>Decentralization</strong></td>
<td>Ability of cyber-physical systems within Smart Factories to make decisions on their own</td>
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<td><strong>Real-Time Capability</strong></td>
<td>The capability to collect and analyze data and provide the insights immediately</td>
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<td><strong>Service Orientation:</strong></td>
<td>Offering of services (of cyber-physical systems, humans and Smart Factories) via the Internet of Services</td>
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<tr>
<td><strong>Modularity:</strong></td>
<td>Flexible adaptation of Smart Factories for changing requirements of individual modules</td>
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BUILDING BLOCKS OF INDUSTRY 4.0

Industry 4.0

Autonomous Robots
Simulation
System Integration
Internet of Things
Cybersecurity
Cloud Computing
Additive Manufacturing
Augmented Reality
Big Data
IMPACTING ALL ASPECT OF VALUE CHAIN
DIGITAL ENTERPRISE
ENTIRE VALUE CHAIN IS DIGITIZED AND INTEGRATED
POTENTIAL IMPACT

Economy
- Growth
- Ageing
- Productivity
- Employment
- Labor substitution
- The nature of Work

Business
- Customer expectations
- Data enhanced products
- Collaborative innovation
- New operating models

National & Global
- Governments
- Countries, regions & cities
- International security

Society
- Inequality
- Community

Individual
- Identity, morality & ethics
- Human connection
The Vision
Malaysia's vision for the manufacturing sector in the next 10 years

Strategic partner for smart manufacturing & related services in Asia Pacific
Primary destination for high-tech industry
Total solutions provider for advanced technology

The National Goals
Specific goals to guide and measure the progress of transformation

Labour Productivity Growth
Manufacturing Contribution to Economy
Innovation Capacity
High-skilled Jobs
The Shift Factors

A set of shift factors that need to be optimised in a balanced manner

The Enablers

Specific enablers that determine the strategies, policies and action plans

- **Funding**
  Funding & Outcome-based Incentives

- **Infrastructure**
  Enabling Ecosystem & Efficient Digital Infrastructure

- **Regulations**
  Regulatory Framework & Industry Adoption

- **Skills & Talent**
  Upskilling Existing & Producing Future Talents

- **Technology**
  Access to Smart Technologies
TOP 10 SKILLS TO BE RELEVANT IN INDUSTRY 4.0

**in 2020**
1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

**in 2015**
1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity

Source: Future of Jobs Report, World Economic Forum
POTENTIAL AREAS OF CHANGES:

**4 Main Drivers**

<table>
<thead>
<tr>
<th>Internet of Things (IoT)</th>
<th>Cloud Computing</th>
<th>Data Analytic Engine</th>
<th>System Integration</th>
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<td>Gathering data from machinery &amp; equipment</td>
<td>Storing big data on centralized system</td>
<td>Understand &amp; predict future trends</td>
<td>Allowing multiple systems to communicate &amp; integrate processes</td>
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Systems like CRM (Customer Relationship Management), PLM (Product Lifecycle Management), ERP (Enterprise Resource Planning) and MES (Manufacturing Execution Systems) must be integrated and good at interoperating – Only after this is achieved will you be ready to introduce 4.0 technologies.
POTENTIAL IMPLICATIONS

- Robot Assisted production
- Predictive Maintenance
- Additive manufacturing of complex parts
- Machines as a service
- Big data drive quality control
- Production line simulation
- Smart supply network
To Change or Not To Change?

“That is the question”

Change is inevitable, **WHAT** and **WHEN** do you want to change?
360 AppSolutions
Business Software and App Developer

App and software development house striving to improve quality of life through innovating and integrating business processes

Automate Integrate Make over

AppSolutions... Building Solutions!
360 Concrete
A total concrete delivery management system for your business that encompasses the entire process from ordering to delivery.

GPS Monitoring
Live movement of trucks & mileage

E-DO Verification
DO verified immediately & no missing DO

Live Order Progress
Update on orders immediately

Online Ordering
Order anytime & anywhere from the app

Mixer Drums Monitoring
Track all discharge of concrete

QC Test Cube
Immediate updates of cube testing results

IoT Compatible
IoT sensors for monitoring of digital indicators

Big Data
All transaction is captured for use of data mining

360AppSolutions.com
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THANK YOU