

Boardroom Questions

Industry 4.0 – The fourth industrial revolution



If machines and products become more connected, what does the future look like for global manufacturers?



By 2020 there will be a projected 30 billion connected "things" and a revenue opportunity of USD 1.7 trillion for the ecosystem

IDC: Worldwide Internet of Things Forecast, 2015-2020 (IDC#256397)

Only 1 in 5 manufacturers are demonstrating high levels of maturity in both smart products and smart factories

KPMG: i4.0 maturity assessment study, 2017

Industrial revolution

The advent of cyber physical systems

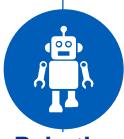
1st Steam, water, mechanical production equipment

2nd Division of labor, electricity, mass production systems

3rd Electronics, IT, and automated production

4th Cyber-physical systems - integrated and interconnected

Technologies enabling the i4.0 movement



Robotics



Cloud



Machine-to-machine



Digital twinning



AI & virtual reality



Data & analytics

What is i4.0 ... and the potential opportunities and risks?



Industry 4.0 (i4.0) is a shift from digitization to cyber-physical systems through integrated and interconnected technologies such as Internet of Things (IoT), robotics, big data and augmented decision support



Pitfalls to avoid include:

- **Underestimating the importance of people** e.g. limited planning to retrain existing workforce or find high-tech talent
- **Adopting new technologies** without tying them to strategic business objectives or knowing their expected ROI
- **Insufficient cyber security**
- Lack of strong, enterprise-wide **governance** structure



Potential benefits include:

- **Greater flexibility** to adapt to customer demands;
- Enhanced **speed** to market
- '**Competitive edge**' with smarter products;
- **new revenue streams** from aftermarket services
- Enhanced business models to **avoid being disrupted**

Boardroom Questions



- 1 How different do we imagine our **manufacturing facilities will look in the next 5 -10 years** in light of rapidly increasing i4.0 technologies (e.g. advanced automation, IoT, artificial intelligence, etc.)?
- 2 How are we addressing **innovation and disruption** in our sector?
- 3 Have we considered **new revenue streams** or business models based on '**smart product**' **initiatives**?
- 4 How well have we **integrated supply chain partners** to speed up products to market, lower manufacturing risk and improve connected products?
- 5 How confident are we that we are getting **adequate return** on our i4.0 investments?
- 6 What **criteria** are we using to decide which i4.0 technologies to invest in?
- 7 What 'Smart Factory', 'Digital Factory' or '**Industry 4.0**' **initiatives are already underway** at our organization?
- 8 How are we encouraging successful i4.0 pilots/initiatives to be **shared/embraced** across our enterprise?
- 9 How is the move towards new i4.0 technologies being **received in our organization** (e.g. with skepticism or seriousness)?
- 10 Given the rapid advances in i4.0 technologies, what initiatives are we engaging in to attract/retain and support the **workforce of the future**?
- 11 How confident are we that our connected factories, supply chains and product data are secure from **cyber-attacks**?

Questions for senior management



- 1 How can we grow our market share?
- 2 Is our operating model fit for purpose?
- 3 How do we improve our productivity and dramatically impact our cost curve?
- 4 What does our i4.0 roadmap look like?
- 5 What are the expected returns on our i4.0 investments?
- 6 How do we ensure successful i4.0 pilots are adopted across the wider enterprise?
- 7 What is our competition doing?

What actions can the Board consider?



- 1 Take stock of what i4.0 pilots/initiatives are already underway and determine criteria for scaling them across the enterprise
- 2 Conduct an i4.0 maturity assessment and benchmarking
- 3 Hold an innovation workshop to enable a strategy and performance-led i4.0 road-mapping
- 4 Appoint an i4.0 leader or steering committee to ensure enterprise-wide, holistic i4.0 adoption, addressing governance, people, risk, etc

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