

UNDERSTANDING THE IMPACT OF SMART MANUFACTURING

Public-Private Collaboration Smart Manufacturing

25 September 2018



Role – Public Private

- 1) Government – Facilitate transformations
- 2) Industry – Embrace the transformation
- 3) Talent Institution – To enable the transformation

The tripartite model.... Is it happening?

Focus on Point #3: Talent Institution

- 1) Existing Workforce
- 2) Future Workforce



Existing Workforce

The key is to enable the workforce to understand what we need Now!!!!

We need the current and existing industries to transform their manufacturing from whatever state they are currently in to Industry 4.0, which supports:

- a) Mass customisation
- b) Defect free operations – Rejects are a thing of the past
- c) Zero downtime
- d) Extended tool life
- e) And many more



Existing Workforce – The 11 Pillars





Existing Workforce – What's Available

- 1) Drone Technology
- 2) Data Scientist
- 3) IOT Engineer
- 4) Security Officer
- 5) And the list goes on and on....

Tell me who needs them in your operation now... SME... LLC...

We need transformational workforce... This will enable the current Industry to migrate to the next level.

We need Hybrid and holistic programs.



Industry 4.0: Leader Development



INDUSTRIES

**TOP
DOWN**

ORGANISATION

Top & Senior Level Leader

- Top Leadership
- Strategic (Vision, Mission)

Middle Level Leader

- Master Project Planning
- Project Deliverables

Lower Level Leader

- Project Lead
- Sustainability



- Industry 4.0: Leadership by Data
- Leadership 4.0: Take Charge & Embrace Change
- 21st Century Leadership: Beyond Human

- Product & Finance Technology
- Technical Ladder for Technical Leadership Role
- Introduction to the Concept of Decentralization of Decision Making

- Authentic Leadership Role Play
- Take Charge: I'm Responsible & Accountable
- Industry 4.0: Data is KING



Industry 4.0: Talent Development



INDUSTRIES

**TOP
DOWN**

ORGANISATION

Corporate Culture

- Top Leadership
- Strategic (Vision, Mission)

Program Management

- Master Project Planning
- Project Deliverables

Execution

- Project Lead
- Sustainability



- Why Industry 4.0?
- Industry 4.0: Adapting Technology as a New culture
- Industry 4.0: What's the ROI?

- Industry 4.0: Step 1 to 6
- Predictive Maintenance Through Industry 4.0
- IT for OT (Non-IT)

- IIoT M2M Real-Time Dashboard
- AR using Unity & Vuforia
- Big Data Analytics on RF Test Data

- Industry 4.0 : PDCA with MAA Steps



Existing Workforce – The Tripartite?

Holistic and Hybrid Capabilities?

- 1) Upskilling the current workforce.
- 2) Engineers + Technicians + Manufacturing Executives
- 3) The institution has this knowledge available by different sectors.
- 4) Both the Industry and the Institution need to work together to make this possible.
- 5) The Government needs to facilitate and enable the right funding mechanism to make this possible.

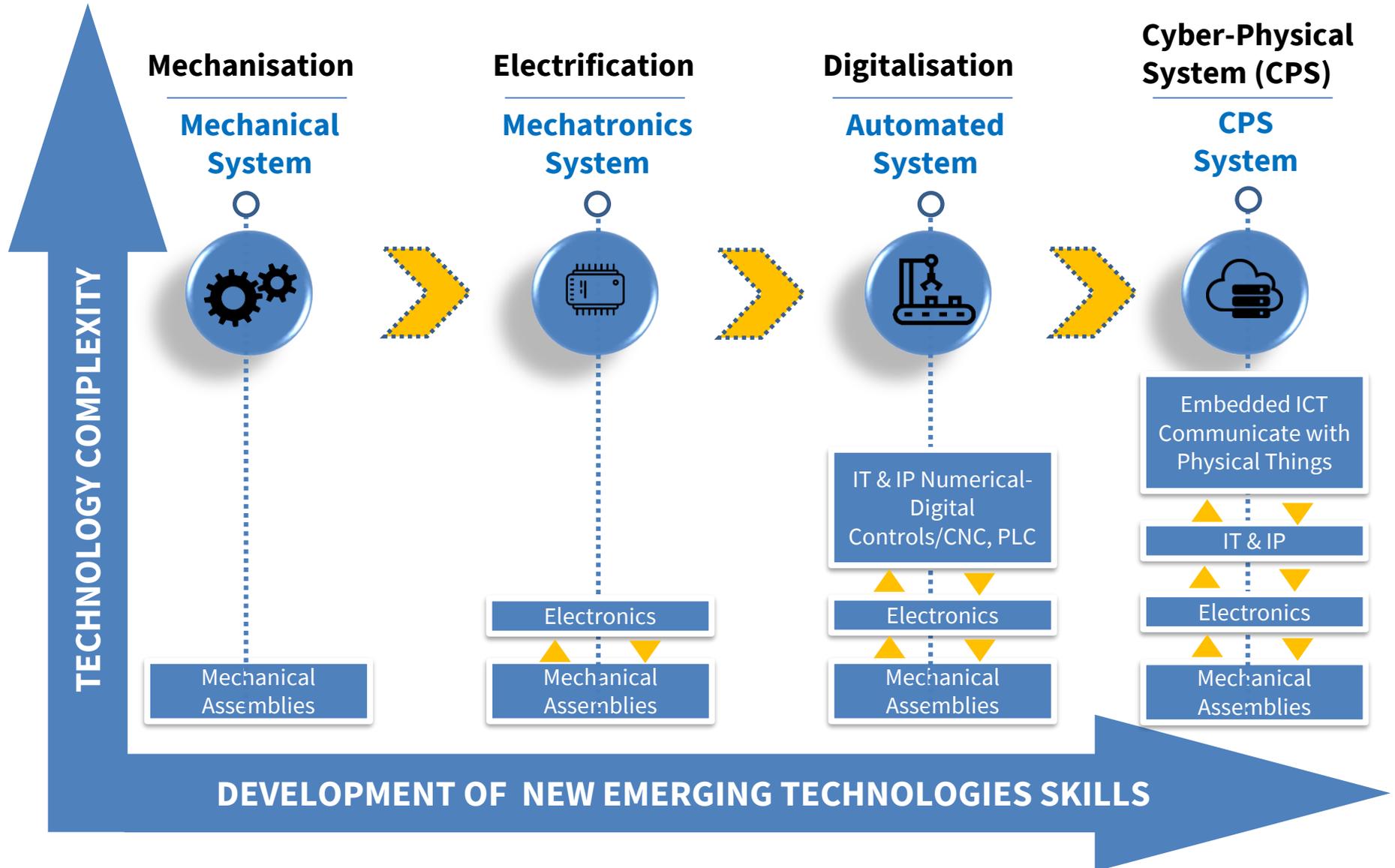


Future Workforce

- 1) Immediate Future – Universities to enable the transformation to happen... To create more hybrid programs.
- 2) Distant Future – Universities to create totally new programs and to obsolete some of the older programs.

Immediate Future

Industry 4.0: Technology Vs Skill





Industry 4.0: Training Strategy



ACADEMIC LEVEL



TOP
DOWN

TOP UP Knowledge DEGREE

- Data analytics
- Strategic System Integrator

- Statistical data modelling for predictive action plan
- Industrial technology & challenges

FIRST DEGREE

- System Developer/Designer
- Cloud/Cyber security experts

- Augmented Reality system development for 2D & 3D
- Cyber security for SSL, HA for IoT embedded system

DIPLOMA/CERT./TVET

- Industry Specialist
- Automation & Robot Specialist

- What is predictive maintenance?
- What is M2M interconnectivity?
- Robot system programming & safety

- Special grant for Industry 4.0 entrepreneurship among unemployed graduates

Immediate Future

Industry 4.0: Changes in Skillsets



OT Engineer

R&R :

- Process Control
- Machine Maintenance
- Yield, Cost & Quality Improvement

Skills

- ✓ Sensors
- ✓ Controller
- ✓ Machine Operation
- ✓ Automation

IT Engineer

R&R :

- Transactional of data
- Order & Supply system
- Web & System Development

Skills

- ✓ Computer System
- ✓ Cybersecurity
- ✓ Logistic
- ✓ CRM
- ✓ Network
- ✓ Server

New Skills to Acquired

- ✓ Industrial Internet of Things
- ✓ Cybersecurity
- ✓ Supply Chain
- ✓ Horizontal & Vertical Integration
- ✓ Simulation & Augmented Reality
- ✓ Cloud Computing
- ✓ Additive Manufacturing
- ✓ Big Data Analytics
- ✓ Autonomous Robot
- ✓ Artificial Intelligent
- ✓ Block Chain
- ✓ Cryptocurrency



Future Workforce – Immediate Future

The Industry + Institution & Government need to find a way to bridge the gap immediately.

At the moment, we do not need a lot of Data Scientists, Cyber security officers, and so on.

We do need Engineers who know how to do propel Data analysis, and to secure their machines...



Future Workforce – Distant Future

Distant future –Universities to create totally new programs and to obsolete some of the older programs

Institutions to work closely with industry to understand what type of future jobs before developing any new programs.

The future jobs possibly – Enhancement of current jobs..?????!!

Eg. Stage 1 – Cloud Stage 2 – Data Analytics

Stage 3 – AI ----- What will be the new job????

Eg... RPA – Robot Process Automations – What is this...



Future Workforce – Distant Future

RPA – Robot Process Automation

It's a combination of Data analytics + Process Improvement + Machine learning and Decisions.

What do the students need to know –

- 1) Statistics
- 2) Coding
- 3) Good logics...

It cuts across many industries:

- 1) Business and finance
- 2) Manufacturing
- 3) HR & Operations....



Future Workforce – Distant Future

Deep learning for Java aka **Deeplearning4Java**

It's a combination of Data analytics + Coding + system and logic architecture... combination of Mathematical and Computer Science faculties.

What do the students need to know –

- 1) Java coding
- 2) Linear algebra
- 3) Calculus
- 4) Statistics
- 5) Machine learnings



Future Workforce – What We Can Do

Institutions should look into:

- 1) Keeping the core programs and top up
- 2) Merge faculties and create new ones if needed.
- 3) Work even more closely with the Industry than ever before....



Thank You

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