Engineer’s Skills for National Manufacturing Initiatives

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Clients: Leading Employers at the heart of Innovation

Transportation & Mobility

Aerospace & Defense

Marine & Offshore

Industrial Equipment

High-Tech

Consumer Goods
- Retail

Consumer Packaged Goods
- Retail

Life Sciences

Energy, Process & Utilities

Architecture, Engineering & Construction

Financial & Business Services

Natural Resources

Leading Employers at the heart of Innovation
HOW we Cooperate with Academia
Continuous Educational Innovation

1. Research
2. Transfer
3. Projects
4. Programs

Digital Learning Practices
Professional Practices
Interdisciplinary Collaboration
International Collaboration

From pre-Grade 6 to Professional Life. General, Technical, Vocational
WHAT we do Together

Transforming the Learning Experience for the Z+ Generation

IOT: Virtual Twin
Virtual Labs
Professional Development for Educators

Tele Operated Labs
3D Extended Textbook
"Be an Engineer" PBL for Freshmen

Agency Funded Research
Global Collaborative Capstone
3D MOOCs Studio
The Future of Industry

National Industry Initiatives for Re-industrialization and for Development

2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

Innovation 25
create the future

CATAPULT
High Value Manufacturing

National Network for Manufacturing Innovation

INDUSTRIE DU FUTUR

Manufacturing Innovation 3.0

China
India
Germany
Sweden

2025
National Industry Initiatives

Similar Industrial Transformations, Common Policy Instruments

- Smart Factory
- Entrepreneurship
- Additive Manufacturing
- Internet of Things
- New Manufacturing Methods
- Demand Based production
- Customization
- Global Supply Chains

- R&D funding
- Foreign Investment Incentives
- Academic, Vocational & Professional Education
- Equipment funding for SMEs
- Centers and Clusters
- Supportive Regulation
Additive Manufacturing

From new ways of making things to making new types of things

- Smart Factory
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New Manufacturing Methods

From new ways of making things to making new types of things

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Global Supply Chains

Cloud for socio-technical innovation

- Smart Factory
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- Additive Manufacturing
- Internet of Things
- New Manufacturing Methods
- Demand Based production
- Customization

GLOBAL FACTORY 2012 - 2013

Global Factory

100 students, 12 Universities, 9 countries, 13 hours time difference; Yearly: September-January
Precision Agriculture at Global Scale

Digital Farm: Social, Multi-disciplinary, Collaborative

100 students, 14 Universities, 11 countries, 13 hours time difference; Yearly: September-January
The Internet of Things allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration between the physical world and computer-based systems, and resulting in improved efficiency, accuracy and economic benefit. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing Internet infrastructure. Experts estimate that the IoT will consist of almost 50 billion objects by 2020.
Internet of Things (IoT)

Central Enabler

- Smart Factory
- Entrepreneurship
- Additive Manufacturing
- **Internet of Things**
- New Manufacturing Methods
- Demand Based production
- Customization
- Global Supply Chains

HiFi representation of products & production systems
Simulates Physical and Programmed behaviors
Drives Physical Things
Digests Parameters from Physical World to reflect actual stage

The "Virtual Twin"
The Virtual Twin

Ubiquity

Webcam signal

Command & Feedback

7,125,10 km
The Virtual Twin

Endless Application Scenarios

Physical Instruction > Digital Operation
The Virtual Twin

A story that started at EDI in Hawaii

In association with
Start Young
EUropean Robotic LA Boratory (EURLAB) for High Schools

► Creating, testing and disseminating Open Source educational materials and practices in robotics for high school students

► Virtual and physical FabLab: “Problem-Based Learning” and “collaborative learning” approaches

www.eurlab.org
Tools: Not just Tools

New Tools = New Practices