Factories of the Future: Education, Research & Industry

Importance of Manufacturing

- Industry, & manufacturing in particular, high on political agenda
- Importance of manufacturing clear
- Manufacturing reliant on research, development & innovation
- Education, knowledge & skills essential for success of industry in Europe
- Clear need for deep collaboration between industry, research & education
- ‘Factories of the Future’ encompasses this collaboration
Factories of the Future: Education, Research & Industry

Achievements to Date

- 150+ PROJECTS
- Public-private partnership supporting research & innovation in production technologies
- Launched in 2009
- 1,000+ organisations from across Europe
- High involvement of SMEs: 200+ to date
- Expanding – increasing involvement from across all of Europe
- Majority of projects feature demo activities

Success = Continuation under Horizon 2020

Formal agreement between EU & EFFRA = €1.15 billion

‘Factories of the Future 2020’ – strategic research roadmap

Factories of the Future: Education, Research & Industry

Achievements to Date: Projects

- Since the start of the partnership, projects have been launched to address multiple challenges
- Projects are multi-sector
- High involvement of SMEs
- Themes under FP7:
  - Sustainable manufacturing
  - ICT-enabled manufacturing
  - High performance manufacturing
  - Exploiting new materials through manufacturing
- Success = technology breakthroughs, spin-offs
- Continuation of partnership under Horizon 2020
Actions Taken

- EFFRA has incorporated importance of collaboration between industry, research & education into ‘Factories of the Future 2020’
- Previously highly successful collaboration in the partnership under FP7 & will be under Horizon 2020
- EFFRA worked with partners to argue for EIT KIC (European Institute of Technology – Knowledge and Innovation community) on Added-Value Manufacturing (KIC AVM) & 2016 launch
- Close collaboration between EFFRA, ‘Factories of the Future’ partnership & KIC AVM a priority

FoF Project Examples
Factories of the Future Projects – Knowledge, Skills & Education

VISTRA

“Virtual Simulation and Training of Assembly and Service Processes in Digital Factories”

- VISTRA aims at the development of a comprehensive platform for simulation and training of manual assembly processes.

Project Consortium

- Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI)
- ADAM OPEL AG
- Fraunhofer IGD
- Serious Games Interactive
- Stiftelsen Fraunhofer-Chalmers Centrum For Industriematematik

Total Budget: € 5.3 million
www.vistra-project.eu

MANUSKILLS

“Envisioning an advanced ICT-supported build-up of manufacturing skills for the Factories of the Future”

- Studying the use of enhanced ICT-based technologies and training methodologies to facilitate an increase of young talent interest in manufacturing and to support their training of new manufacturing skills.

Project Consortium

- Politecnico di Milano
- Aalborg Universitet
- Dassault Systemes SA
- Ecole Polytechnique Federale de Lausanne (EPFL)
- Highskillz Ltd.
- Stiftelsen Sintef
- University of Patras

Total Budget: € 1.4 million
www.manuskills.org
Factories of the Future: Education, Research & Industry

Education Key: Knowledge Triangle

Address Need for Employment: Implementation of Added-Value Manufacturing
KIC is vital for providing needed skilled graduates & employment with long-term careers.

- Established ‘Factories of the Future’ network – business, RTOs, universities & associated organisations
- ‘Factories of the Future 2020’ – to contribute to strategic agenda for a KIC
- Bridge with other initiatives & strategic areas (e.g. KETs, Smart Specialisation)
- Build on existing links with regional programmes (e.g. Regional Innovation & Implementation Centres [RICs])

Factories of the Future: Education, Research & Industry

Factories of the Future 2020

- At the centre of the ‘Factories of the Future’ partnership
- Developed by EFFRA with input from stakeholders from across Europe (companies [including SMEs], research organisations, universities, platforms, associations etc).
- Development included two pan-European consultations in which RTOs & universities played an important part
  - Identifies challenges & opportunities facing manufacturing
  - Identifies existing technologies & enablers needed
  - Defines research & innovation priorities to use technologies & enablers to meet the challenges
- Call topics are based upon these research & innovation priorities
Factories of the Future: Technology & Enabler

Factories of the Future 2020

Challenges & Opportunities

- Manufacturing Future Products
- Economic
- Social
- Environmental

Technologies & Enablers

- Advanced Manufacturing Processes
- Mechatronics for Advanced Manufacturing Systems
- Information & Communication Technologies
- Manufacturing Strategies
- Knowledge Workers
- Modelling, Simulation & Forecasting

"Factories of the Future 2020"

Knowledge Workers

European ‘Factories of the Future’ are not only expected to provide global manufacturing competitiveness, but also to create a large amount of employment opportunities for citizens.

A key enabler in achieving transformation of the factory to meet challenges & ensure competitiveness

- Tech-based approaches (ICT & automation): accommodate age-related limitations
- Technical, educational & organisational ways to increase the attractiveness of factory work
- Approaches to skill & competence development, as well as skill and knowledge management
- Ways to organise & compensate factory knowledge workers.
- Human-centred work-environments based on safety and comfort
- Ways to integrate future factory work in global and local societal agendas & social patterns
Factories of the Future: Education, Research & Industry

Factories of the Future 2020

Objective - Enhancing the role and utilizing the potential of people working in factories.

Concerns:
- How people work and learn
- How people interact with technology
- How people add value to manufacturing

Priority Actions
- Recruitment of highly-skilled people
- Continuous development of skills and competencies
- Active skills transfer (skills & knowledge sharing)
- Safer workplaces
- Human-robot interaction: Assist older & disabled workers
‘Factories of the Future 2020’

Education

Factories of the Future 2020: "Bring a majority of manufacturing engineering graduates & doctorate holders into manufacturing employment and increase the opportunities for technician employment"

2008 - 14.1% of EU tertiary students in engineering, manufacturing & construction education

Recurrent issue of skills shortage

Solutions

- Relevant, indepth & practical education for students (highly skilled graduates)
- Advanced long-life training of skilled workers
- Efficient take-up of new manufacturing knowledge
- Active engagement of ageing or disabled workers

Factories of the Future

The Future

- Adaptable workplaces for changing worker demographic
- Continuous skills improvements:
  - Multi-skilled jobs
- Factories closer to customers
- Energy & resource efficient

- Innovative SMEs
- High-level of customisation & quality
- Rapid adaptable production lines
- Re-manufacturing
- Focused on zero defects
- Interconnectivity, communication & data:
  - Storage via cloud
European Factories of the Future Research Association (EFFRA)

Who We Are

- Non profit, industry-driven European association
- Representative of private side in public-private partnership
- 125+ members
- Members:
  - Small, medium & large enterprises
  - RTOs & Universities
  - European associations

- Shape the research agenda ‘roadmapping’
- Promote the partnership & projects
- EFFRA Innovation Portal
- Support members

Thank You

maurizio.gattiglio@primaindustrie.com

@EFFRA_Live
EFFRA.Live
EuropeanFactories
EFFRA.EU