World Manufacturing Forum - Report

Recommendations for the Future of Manufacturing

Prof. David Romero – WMF Ambassador (Mexico)
dromero@ims.org / @davidromero_mex
World Manufacturing Forum

Believes

Manufacturing Stakeholders Have Unprecedented Opportunities to Build Global Wealth Creating:

• Jobs for All
• Resilient Economy
• Sustainable Development
• Socially-Oriented Goods and Services
• Strong Partnerships and Collaborations

Manufacturing is a Peacekeeper
A White Paper to Enhance the Impact of Manufacturing

• Identify a Desirable Future where Societal Prosperity is for All
• Envision the impacts affecting Sustainable Growth
• Propose How to Act to the Key Manufacturing Stakeholders

Time to Act is Now
Manufacturing in Numbers

- Reaching More End-Users
- Continuous Investment in R&D
- Creation of New Job
- Operators 4.0 & Skills Reallocation
- Alignment with Circular Economy Paradigm
Societal Megatrends

• Aging Population
• Upgrading Status of Minority Populations
• Worsening Scarcity of Natural Resources
• Steady Migration and Mobility of Young Talents
• Digitising Interconnection and Cyber Threats
• Progressive Global Warming
Manufacturing Challenges

- Competences & Skills Gap for Advanced Manufacturing
- Zero-Waste Manufacturing
- Global-Agile Supply Chain Networks
- Energy & Resource Efficiency
- Mass Personalisation
- Integration of IT, OT and ET
- Data Security and Data Authority
- The Paradox of SMEs Digital Divide
Future-Oriented Manufacturing

- Cognitive Manufacturing
- Hyper-Personalised Manufacturing
- Global Risks-Resilient Manufacturing
- Circular Manufacturing
- Inclusive Manufacturing
- Rapidly Responsive Manufacturing
• Top recommendations for key manufacturing stakeholders in order to ensure global resilience.
Cognitive Manufacturing

- Hyper-Connected Intelligence Machine
- AI-Driven Operations
- Manufacturing as a Service
- Smart Optimisation of Resources
Hyper-Personalised Manufacturing

- Embed sensors into goods & create mechanism to use direct feedback on usage
- Create flexible manufacturing processes to adapt products to consumer trends
- Develop ways to involve customers in the design of products
- Use 3D printing to accelerate prototyping and testing
Global Risk-Resilient Manufacturing

- Reinforce Cybersecurity
- Integrate Blockchain Technologies
- Exploit Social IoT Systems
- Respond to Off-Shore Threats
- Involve Stakeholders in the Digital Value Chain
Circular Manufacturing

- Shift to Renewable Raw Materials
- Redesign Products & Material Selection
- Implement Service-Based Model
- Conserve & Recover Resources
- Develop New Ways of Production
Inclusive Manufacturing

- People-Oriented Innovation
- Technology-Oriented Innovation
- Environment-Oriented Innovation
Rapidly Responsive Manufacturing

• Repetitive Manufacturing Ability
• Rapid Product Realisation
• Digitally Empowered Factory Operations
• Agile, Adaptive, Responsive & Robust Manufacturing Capabilities
• Flexible Production System & Supply Chains
Cultivate a Positive Perception of Manufacturing

• Create awareness in the Society
• Explain the role of Manufacturing to citizens
• Explain the careers opportunities
• Attract talents
• Cover the skills gap
Promote Education and Skills Development for Societal Well-Being

- Retrain and up-skill workers
- Cognitive-based skills
- Educate the whole society to help deal with the pervasiveness of the technology
- New training approaches for multidisciplinary
Develop Effective Policies to Support Global Business Initiatives

- Clear regulations and policies
- New funding schemes
- Global standards and regulations
- Responsible trading policies
- Do not stop innovation: AI, Data Privacy and Security
Digital infrastructures are the backbone of the 4th Industrial Revolution
- Digitalisation enables the sharing and the circular economies
- Prevent the national, regional and cultural digital divide
- Cybersecurity is a Must
Encourage Eco-System for Manufacturing Innovation World Wide

- Disruptive and paradigm-changing innovation is needed
- New socially-oriented and cultural-divide aware products
- New forms of collaboration, partnership, knowledge-sharing and co-innovation among a vast network of trusted actors
- Foster start-up oriented eco-systems led by large companies
Create Attractive Workplaces for All

- Be appealing to talent and workers
- Virtuous circle on Manufacturing attractiveness
- Health, safety, comfort, positive socialisation, diversity and fair compensation are the key drivers
- Inclusion regardless race, colour, religion, gender, age, disability, sexual identity and national origin
- Human centric Manufacturing paradigm jointly with a Urban Manufacturing
Design and Produce Socially-Oriented Products

- Address specific segments of the society
- Public authorities are encouraged to create ad-hoc innovation policies
- Academia is encouraged to educate people regarding the importance of socially-oriented products
SMEs are a vital part of the manufacturing business globally.

Assisting SMEs with digital transformation is key promoting a robust global manufacturing sector.

Digital transformation is an opportunity but can easily become a threat for SMEs.

Global knowledge-sharing Labs, Competence and Technology transfer Centers and Hubs are envisaged to spread locally.
Explore the Real Value of Data-Driven Cognitive Manufacturing

- Understand the value of data
- Data as factor of production such as raw material, capital, labour and energy
Environmental health and sustainability is still a major issue
Country specific policies are needed
Education and awareness on environmental and sustainability initiatives
Companies remain financially healthy while they adhere to environmental policies
Academic communities are encouraged to keep working on performance indicators for sustainability
The WMF Report is available for download at the following link:

https://www.worldmanufacturingforum.org/report
SAVE THE DATE!

WMF Annual Meeting 2019

25-27 September 2019 Villa Erba, Cernobbio

"New Skills for the Future Manufacturing"