

**MANUFUTURE PORTO MANIFESTO**

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### Context

Competitive and Sustainable Development is emerging as the *mandatory global strategic vision* to be deployed as to meet the economical, social, environmental and technological challenges that today's European societies are facing.

*Manufacturing*, generating wealth and jobs by fully exploiting knowledge and resources, is the *fundamental enabler* and *sustainer* of Europe's Competitive and Sustainable Development. Manufacturing in Europe provides presently 41,5 % of the added-value (over €1,535 million) and 30,4 % of the employment (34 million people), with each job at the factory floor generating two other jobs in services.

Manufacturing, as the heart beat of growth and development, must become increasingly High Added Value, Competitive and Sustainable, by building on *competences and knowledge* coming from *High Education and R&D*.

Transformation of Industry, as well as transformation of the High Education and Research and Innovation Systems, may be considered as the forthcoming *European Scientific, Technological and Industrial Revolution*, that is necessary for Europe to lead at global level.

The *Manufuture Platform* has developed the *strategic intelligence* – encompassing Vision, Strategic Research Agenda and Industry Roadmaps – enabling the *stakeholders* to power and drive such a *Revolution*. The stakeholders involved at the European level range from Industry to Academia and Research Institutes, from Public Authorities to Financial Institutions.

The common understanding that has been gained since the Platform was launched in 2003 until today has been validated by nearly 400 hundred stakeholders in December 2007 and has been put together in the present **Manufuture Porto Manifesto**.

This Manifesto is also meant to be an answer of the stakeholders to the EC Recommendation “Integrated Guidelines for Growth and Jobs (2008-2010)”, which has been proposed for a Council Decision on the guidelines for the employment policies of the Member States (under article 128 of the EC Treaty) at the 14<sup>th</sup> December 2007 meeting of the Portuguese Presidency of the EU.

The alignment with many of the microeconomic guidelines of the Recommendation – namely those regarding R&D investment, innovation deployment, industrial base competitiveness, sustainable growth and better regulation – is of paramount importance. Some of the critical issues targeted by the employment guidelines – dealing with improving quality and productivity at work, investment in human capital and need to adapt education and training system in response to new competence requirements – are also present in the Manifesto.

The aim of the **Manufuture Porto Manifesto** is nevertheless that of going one step further to drive strategy into action, this being the reason why it is structured into very concise lines of action for each challenge which has been selected as priority.

## Prioritary Challenges

1. **Leading sectors** of the European industry need to further reinforce their competitiveness through increased investment in R&D

*lines of action*

1.1 – increase awareness on the economic impact of R&D investments and their leveraging effect on future sustainable competitive advantage

1.2 – tackle large investments in R&D with new funding models, building on R&D tax incentives (a proven risk-sharing mechanism) as well as on novel financial tools, such as the *Risk Sharing Financing Facility* recently launched jointly by the EC and the European Investment Bank

2. **Mature manufacturing sectors** are presently in crucial and urgent need to add value and decrease costs by embedding design and technology, as to compensate for the fierce competition from the emerging economies

*lines of action*

2.1 – stabilize mature sectors through medium-long term strategies supporting the development of R&D-based competencies in high-value complex manufacturing technologies which are unique and difficult to replicate outside of Europe

2.2 – improve SME access to the best R&D resources and institutions

3. It is crucial for Europe to intensify the exploitation of leading-edge science, technology and knowledge, creating wealth and highly-qualified jobs, specially in **emerging sectors** which will foster future high-value markets

*lines of action*

3.1 – invest in novel R&D intensive businesses built on disruptive technologies, such as nanotechnologies

3.2 – improve innovation management while shifting from cost to high value adding

3.3 – promote a new culture of risk acceptance and dealing with failure as to foster entrepreneurship

3.4 – strongly increase European expertise in venture capital investment (due-diligence of ideas, technologies, market evaluation, business and management skills appraisal)

3.5 – leverage the globalization of early-stage high-tech companies

4. With highly qualified human resources at all levels being the differentiating asset, European manufacturing has to regard expert labor as the most critical sustainable resource and has to contribute to offset USA advantage (Europe has only 5,5 researchers per 1.000 inhabitants against 9 in USA) and to revert the present brain drain to USA

*lines of action*

4.1 – define a manufacturing industry education and training agenda, articulating with universities and poly-technical schools on the requirements for advanced research-based specialized training capable of providing crucial domain-specific skills and fostering new teaching principles and new engineering disciplines in under-graduate courses, post-graduate industrial training, industry theses, cooperative R&D initiatives, life-long training, etc.

4.2 – increase employment of researchers in industry, while anchoring company strategic research and innovation activities on nuclei of internal staff able to network and access the external competencies needed

4.3 – participate in the university modernization process that is on-going in many European countries towards greater autonomy and increased responsibility in responding to societal needs, namely through the active involvement in public-private partnerships for the governance of research and higher education institutions

5. The need to keep manufacturing operations in Europe calls for **industry transformation** as well as for the **improvement of existing industrial units**, as to ensure strong cost reductions, increased flexibility and smaller response times while keeping high standards in product quality with increasing complex novel products

*lines of action*

5.1 – strong investment is needed in green-field projects and/or in revamping existing factories

5.2 – generalize the use of benchmarking of industrial best practices, specially in sectors that are under strong pressure from low wage countries, leading to both technological and organizational enabling changes

5.3 – manage increased product complexity, by spreading subcontracting/outsourcing and building collaborative networks over the complete supply and value chain

5.2 – enhance process flexibility through the use of state-of-the-art technology

5.3 – strongly increase cooperation with R&D&I entities

5.6 – make governments constantly aware of the extreme burden of the high costs of the good infrastructure in western countries which results in an excessive (industry) taxation

6. Visionary concepts like *Factories as a Product* – to be sold globally by European companies - or *Knowledge-based Factories Made in Europe*, should aggregate and align the vast and rich European know-how in concrete initiatives paving the way for the transformation of the industrial fabric towards the **European leadership in sustainable manufacturing**

*lines of action*

6.1 – enable digital production

6.2 – control and install disruptive technological processes

6.3 – design and deploy a competitively sustainable European Production System

7. The quest for regulation, a differentiating attitude of European governments and institutions, has to be used to the advantage of European manufacturing

*lines of action*

7.1 – to facilitate and stimulate new business development – as in the case of energy, environment, transport or health markets – towards future areas of European leadership

7.2 – to encourage and not hamper entrepreneurship and to safeguard productivity from useless bureaucracy

8. A significant amount of European R&D, engineering and design output is often left unprotected to copy by Asian competition

*lines of action*

8.1 – reinforce awareness on IPR generation and on other IPR related issues (such as protection, licensing and commercialization)

8.2 – improve existing patenting practices in Europe

8.3 – create a simpler and more effective European framework for IPR management

9. Promote the image of manufacturing near the population as to attract the interest of young educated and skilled people

*lines of action*

9.1 – promote public awareness of the relevance of manufacturing science and technology in the products, systems and services which build the backbone of today's society

9.2 – demonstrate the need for science-based innovation in competitive (creating jobs and wealth) and sustainable (environmentally friendly) manufacturing

9.3 – advertise creativity, sophistication and added-value in jobs in modern European manufacturing

**10.** Differences across European regions should lead to specific positioning and strategies by each region as to maximize their capabilities and resources

*lines of action*

10.1 – develop and/or reinforce regional innovation platforms

10.2 – promote most developed regions as benchmarks and engines to other regions and build networks across regions with specific objectives of mutual benefit, such as competitive cost supply chains to large OEM's

10.3 – build a European competence map in manufacturing science and technology organizing the tremendous potential of universities and R&D institutes across Europe for the use of industry and other stakeholders

- . the universities and research centers are expected to describe and advertise their competencies in research and education as if they were tier-1 suppliers in a supply chain

- . an *European Manufacturing Engineering Curriculum* (following the example of the GME, Global Education in Manufacturing initiative) should be agreed by leading European universities

10.4 – increase emphasis on knowledge sharing and research collaboration across regions, institutions and industries, developing new mechanisms of knowledge flow

**11.** The seamless integration of EU, national and regional policies - crucial for stimulating targeted, problem-solving R&D and innovation efforts - calls for the urgent attention of the EC, national governments, regional bodies, industry associations and academia

*lines of action*

11.1 – initiate an appraisal of research strategies in political bodies to encourage “human driven innovation” and organization innovation, instead of an overemphasis on mere technological innovation

11.2 – align efforts to overcome fragmentation in EU R&D efforts, taking full advantage of European Technology Platforms, Joint Technology Initiatives, etc., paving the way to an “European Manufacturing Technology Institute”

11.3 – simplify procedures and ease the burden of bureaucratic requirements to be met by projects, initiatives and stakeholders in EU Framework Programs, ERDF projects, as well as in national and regional support measures

*Porto, on the 4<sup>th</sup> December 2007*

*The Manufuture Platform Stakeholders*