



European Institute of
Innovation & Technology

SIA thematic factsheet on Added-Value Manufacturing

EIT Strategic Innovation Agenda (SIA) 2014 – 2020

EIT 2018 Call for KIC proposals

DECISION No 1312/2013/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on the Strategic Innovation Agenda of the European Institute of Innovation and Technology (EIT): the contribution of the EIT to a more innovative Europe (Annex – Factsheet 4) (L 347/918 Official Journal of the European Union 20.12.2013 EN)

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1. The challenge

One of the major challenges defined in the European Innovation Agenda and which also has to be addressed within the framework of Horizon 2020, is the competitiveness of Union Member States on the global market. One of the sectors where the problem is particularly urgent is manufacturing.

Manufacturing in European countries is under considerable strain: increased competition from other developed economies, low cost production in developing countries, and scarcity of raw materials are putting pressure on the European manufacturing companies. Parallel to this, there are further factors driving change in the manufacturing sector: new market and societal needs, rapid advances in science and technology, environmental and sustainability requirements.

One possible answer to address these challenges is the development of a "high value (or added-value) manufacturing" industry. This concept defines an integrated system including the whole cycle of production, distribution and end-of life treatment of goods and products/services applying a customer/user driven innovation system. Rather than competing primarily on cost, added value manufacturers deliver value by delivering product/service innovation, establishing process excellence, achieving high brand recognition and/or contributing to a sustainable society.

The manufacturing sector is of considerable economic, social and environmental significance. In 2010 the manufacturing sector accounted for 15,4 % of the Union's GDP and over 33 million jobs. This figure increases to 37 % if power generation, construction, and associated business services are included. At the same time, manufacturing also contributed to about 25 % of the waste, 23 % of greenhouse gases and 26 % of NO_x generated in Europe.

Bearing this in mind, it is quite clear that the overall objectives in the field of manufacturing must be increased competitiveness of Europe within the global market as well as the development of more sustainable and environment friendly manufacturing processes.

2. Relevance and impact

A KIC on added-value manufacturing will help meeting Horizon 2020 priorities in terms of advanced manufacturing and processing, and its specific objective of "transforming today's industrial forms of production towards more knowledge intensive, sustainable, low-emission, trans-sectoral manufacturing and processing technologies, to realise innovative products, processes and services".

It will be able to mobilise investment and long-term commitment from the business sector, and to expand and create new markets. It could have in particular a function in supporting the actions defined in the Strategic Research Agenda of the European Technology Platform (ETP) "Manufuture":

- Eco-design;
- Development of added-value products and services;
- Development of new business models;
- Development of advanced manufacturing engineering processes;
- New emerging manufacturing sciences and technologies;
- Transformation of existing research and education infrastructures to support world-class manufacturing.

Whilst supporting the development of new products, services, business models and manufacturing processes, emphasis should be put on sustainability and eco-innovation, with the reduction of resource and energy inefficiencies, maximising positive environmental impacts, but also contributing to strengthening positive economic and social impacts. Concretely, such clean approach will imply energy and material efficient processes and machinery, the use of renewable power sources, and/or the employment of smart energy management, leading thus to significant reductions of waste and emissions. By contributing to the development and deployment of more sustainable, resource-efficient and competitive manufacturing, a KIC would be able to trigger industry and consumers behavioural change and to create systemic impact.

A KIC on added-value manufacturing could also have a very important role and impact at regional level: Fostering the creation of interconnected regional clusters with local transfers and collaboration, developing competences in high-end manufacturing technologies, and developing excellence in manufacturing technologies would be the key missions of a KIC at regional level. In this connection, specific attention could be given to those regions more affected by declining manufacturing capacity as well as to SMEs.

One of the major challenges for reaching the above aims is the availability of a highly qualified workforce which is sufficient in quality as well as in numbers. A KIC would therefore have a very important role to play in re-shaping the education landscape in this field. By creating closer links between skills demanders and education providers, a KIC would promote joint post-graduate degrees, post-graduate professional training and industrial "real-life" courses.

Capacity-building will be also a central element of a KIC in added-value manufacturing. This concerns not only the supply of high qualified work force, but also the possibility of establishing the KIC as a forum for interaction and promotion of cross-disciplinary skills and competences, particularly for the combination of multiple key enabling technologies as proposed by the High-Level Group on Key Enabling Technologies (KETs)¹.

A KIC on this area will have the potential to bring together different actors and stakeholders in this very transdisciplinary sector, including key upstream and downstream parts of the value chain. This includes processing industries (e.g. steel or chemicals) which are immediately linked with the value chain for added-value manufacturing.

3. Synergies and Complementarities with existing initiatives

A KIC as described above would be complementary to a number of other Union initiatives, as well as at the level of Member States and industry associations.

In addition to the already mentioned ETP "Manufacture", it could also establish links with the ETPs on Smart Systems Integration and the Joint Technology Initiative (JTI) on Embedded Computing Systems. The Public Private Partnership (PPP) on Factories of the Future and others potentially to be launched under Horizon 2020 within this thematic area as well as a number of Framework Programmes (FP) projects would also be natural co-operation partners. The KIC would take into account the research priorities and action plans defined in the framework of the ETPs and the research work carried out so far by the JTI, PPP and FP projects in this area.

Similarly, it would build on eco-innovation market replication projects, under the Competitiveness and Innovation Programme (CIP), where experience in the area of more sustainable manufacturing has been developed. Such experience will continue with Horizon 2020 namely in the context of the Climate action, environment, resource efficiency and raw materials societal challenges. Synergies may also be considered with the Environmental Technologies Verification (ETV) pilot programme, which aims at promoting high value environmental technologies by providing a third-party validation of their performance.

An added-value manufacturing KIC could be also a connection point for synergy effects with the European Technology Research Council, which the High-Level Group on Key Enabling Technologies recommends for promoting excellence in technological research and innovation.

A KIC in this area would be complementary to these activities since it would focus on transdisciplinary activities within the knowledge triangle with a strong focus on entrepreneurial education.

¹ 1) http://ec.europa.eu/enterprise/sectors/ict/files/kets/hlg_report_final_en.pdf

4. Conclusion

A KIC which focuses on the integration of all stakeholders concerned with manufacturing and which puts a strong focus on re-shaping the education agenda in this field would be well-suited to address the challenges outlined above.

It also meets the criteria put forward for the selection of KIC themes in the SIA:

- It addresses a major economic and societal relevant challenge Europe is facing (to increase the competitiveness of the Member States on the global market and contribute to the development of a more sustainable and environmentally-friendly manufacturing process), and contributes to the delivery of the Europe 2020 agenda of smart and sustainable growth.
- This KIC focus is aligned with the priorities defined in Horizon 2020 and complementary with other Union activities in the area.
- It can build on a solid industrial sector which will be attracted by a KIC.
- It offers possibilities for various emerging products, services and business models, and – above all – it will be well-suited to address the urgent need for qualified people in this sector.
- It takes a systemic approach and thus requires transdisciplinary work and the development of new education across the boundaries of disciplines.
- It will bring together a critical mass of excellent research, innovation, education and training stakeholders along the value chain, which would otherwise not unite.
- It will address the European paradox, since it will capitalise on the Union's strong research base and find new innovative approaches to ensure a more competitive, sustainable and resource-efficient manufacturing sector.