ORGALIME

Position Paper

Orgalime views on the upcoming EIT KIC on value added manufacturing:

For entrepreneurship, sustainable employment in manufacturing and a successful transition into the digital age

Brussels, 4 May 2015

INTRODUCTION

Orgalime welcomes the decision of the European Parliament and of the Council to have the EIT set-up a KIC on value added manufacturing in 2016[1]. We believe that this is a unique opportunity to complement the existing research and innovation support instruments. Additionally we think that it is one of the elements that has the potential to help raise the industry's contribution to GDP to as much as 20% by 2020[2].

Well-trained employees and students, entrepreneurs and intrapreneurs bring value through innovation to European manufacturing and to the economy. A KIC can also provide companies with a comprehensive insight into the available European talent pool.

In addition, the KIC could create a European network for manufacturing innovation, providing new contacts and opportunities for cross-border cooperation.

We think that the EIT KIC can help generate more innovation in the EU through the appropriate training of the right target groups. Indeed students exposed early to entrepreneurship challenges get a better grasp of market needs and what it means to develop a product or a service with customers in mind. Similarly lifelong training generates innovation.

By fully making use of the competence of the KIC participants, educational projects can combine state-of-the-art research results with experience from practitioners and entrepreneurs in individual courses or in full curricula. This is not commonly done today.

Consequently we have listed items we would like to see incorporated in the KIC on advanced manufacturing to answer industry's needs and also added some extra wishes. Orgalime leaves the "how" (online, coaching, teaching factories, FabLabs etc.) open. However we think that access to full-scale production environments and use of modern digital technologies would bring new dimensions to education and foster entrepreneurship.

[1] DECISION No 1312/2013/EU
[2] COM/2014/014

Orgalime, the European Engineering Industries Association, speaks for 41 trade federations representing some 130,000 companies in the mechanical, electrical, electronic, metalworking & metal articles industries of 23 European countries. The industry employs some 10 million people in the EU and in 2014 accounted for more than €1,825 billion of annual output. The industry accounts for over a quarter of manufacturing output and a third of the manufactured exports of the European Union.

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1. PROBLEM SOLVERS OF TOMORROW

Our industry needs people who can combine engineering skills with ICT skills. The digitalisation of manufacturing and the convergence of production and communication technologies makes this point a must. In our opinion the convergence of the three academic disciplines of mechanical engineering, electrical engineering and computer science is one of the most important trends for education and qualification. Future engineers will need to understand other disciplines and be able to work with colleagues from different disciplinary backgrounds. For example, to fully exploit data analysis (big data) and make sense and value of it, engineers need to understand how this works for the machine, the system and business. Orgalime recommends that the KIC fosters this combination of skills. This is crucial for our industry.

Similarly Orgalime sees a need for a KIC that proposes activities offering design skills to engineers (students or graduates in companies). Design is a facilitator of change and gives a complete view of a problem and thus generates a better grasp of business and innovative ideas.

Orgalime would welcome STEM courses for non-STEM graduates in order to generate more innovation in STEM areas. In addition this will help the employability of those students. A diversity of profiles (training, gender, ages, culture etc.) will foster innovation and is highly needed. Activities like design thinking courses would be very suited to have students from different background cooperate and understand how to innovate.

In parallel it would be beneficial that the KIC addresses management skills especially on how to integrate and manage multiple profiles team (ICT, engineering, marketing etc.) and how to cope with uncertainty within companies.

2. “SKETCH TO DELIVERY” MINDED ACTIVITIES

Orgalime would like students and executives to better understand what value to customer means and how to act on it. Students and executives need to understand what innovation and entrepreneurship is about theoretically, but also from experience. Case studies and real life projects are most welcome. Students and executives would not only develop products from research, but also learn about value creation: learn about target markets, their needs and how to take them into account in the development of products or services. Additionally students and executives need to understand that failure and failing fast is also part of entrepreneurship. ,

Orgalime also recommends building activities for transferring R&D results to market and translate them into new business (new services for manufacturing) and new opportunities for companies. The KIC should help with the uptake of research results by students and executives, but also support SMEs and midcaps to adapt to new technologies. The broad implementation of results from research and innovation projects in industry is crucial. This can be put into action directly in companies (including start-ups and SMEs) and can involve university incubators, science parks or research institutes, test-beds and demonstrators.

We want “sketch to delivery” minded activities: not only should student and executives think about a product or a service that will bring value but should also see all the phases of the business development. Good design implies less problems for after sales and maintenance. Activities should help students and executives understand the consequences of a badly thought-out product or solution.
Orgalime also advises to put emphasis on innovation generation and self-created experiments (bottom-up from the student to the teacher – active pedagogy mind-set).

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Orgalime wishes to have internships and apprenticeships be built into the EIT KIC activities curriculum. A connection with industry will help students gain in maturity and a sense of real business life.

3. INTERDISCIPLINARITY

Orgalime would like to see different technologies and competencies interact in a "systems approach" to leverage available knowledge in a sustainable production system.

Innovation grows from the end user's experience and from new views on things. The end user's needs can be deducted by observation (design) or interrogation (marketing). Therefore we expect the KIC to be strong on inter-disciplinary teaching.

Orgalime would welcome universities oriented in economics and management fields (and not only technical universities) to partner up and ensure that economic and business courses are given to engineers with a strong market orientation mindset.

Orgalime recommends including human resources specialists from economics and social sciences faculties to improve evaluation and training for all educational levels. Entrepreneurship is a mind-set and not a top-down approach.

The majority of tomorrow's job are yet to be created. Students and executives should learn to keep on learning and reinventing themselves. Resilience is also a key part of entrepreneurship; resilience can be taught.

On a governance level, the presence of entrepreneurs in the managing board of the EIT KIC would be useful. This would ensure a more entrepreneurial and more industry minded KIC. Similarly Orgalime wishes to see SMEs and Midcaps represented, or actively involved.

4. THE SPECIFICS NEEDS INDUSTRY HAS

Orgalime would like the KIC to address skills in cybersecurity and know-how-protection as manufacturing value chains are more and more interconnected. Trust is crucial to implement visions of advanced, connected manufacturing such as Industrie 4.0.

Similarly Orgalime welcomes the EIT focus on linking with other KICs, which Orgalime believes is important. Indeed with the digitalisation of the economy, links can be established with the ICT KIC and also with the Climate KIC on advanced manufacturing for clean technologies. The health KIC is also important because robots and advanced medical or ambient assisted living devices are designed and manufactured by the engineering industry.

5. VALUE CHAIN INVOLVEMENT

The importance of issues related to supply chains should be highlighted to students. Core knowledge lies in interaction, information exchange and quality, as well as in systems and processes. Large integrated industries as well as smaller independent suppliers need to be able to work together along the value chain, using common standards for systems integration, quality, and processes.

Start-ups are special in the whole manufacturing value chain. Orgalime is therefore pleased to see that start-ups are an item underlined by the EIT. Start-ups and their hands-on approach to creativity are one of the aspects that make advanced manufacturing attractive to the youth.

6. ENABLING LIFELONG LEARNING

Orgalime recommends including lifelong learning in all work related activities and in an extensive manner. Indeed lifelong learning is strongly correlated with innovation and what Europe needs is innovative employees, intrapreneurs and entrepreneurs.

Lifelong learning is fundamental for the manufacturing industry. Currently manufacturing is facing a substantial change in the work environment through digitalisation. Training and further education is one of the main pillars that can bring solutions.

Consequently we wish to see a significant part of the KIC dedicated to executive and professional ongoing training. This can bring concrete and immediate benefits to Europe's economy. In particular, the KIC could contribute to European quality standards in training courses, which would be welcomed by industry.

Additionally the boundaries between shop-floor workers, process engineers and developers is blurring. Orgalime recommends that the KIC reaches out to shop-floor workers in executive programmes as well.

7. NOT ONLY MASTERS AND DOCTORATES

Orgalime would welcome the inclusion in KIC activities of, or at least active links to, all post-secondary education schools which are of relevance for manufacturing and industry, and not only universities (German Fachhochschulen, French BTS/IUT etc.). Industry has a very big need for staff with these profiles.

Similarly vocational training is also very valued in manufacturing. Orgalime would welcome KIC activities that can increase the attractiveness of vocational training in electricity, electro-mechanical and mechanical engineering, etc.

If the KIC can "upgrade" the image of those education programmes, it would make them more attractive to secondary school level students, especially girls. This would be very beneficial to the manufacturing industry.

8. REACH OUT ACTIVITIES

Our industry will need ever more engineers and technicians in the upcoming seven years and beyond. The KIC activities should be built in a way that children can also be a part of it because they will be the first graders of universities in ten years. Orgalime welcomes initiatives making children discover STEM, electricity and mechanical engineering in primary schools.

Consequently we would welcome items like LabFab open to primary schools, with outreach activities towards those schools to cultivate boys' and girls' interest in engineering and in science in general. Additionally entrepreneurial didactic activities could be built in so that the entrepreneurship seeds are sown early enough.

CONCLUSION

Orgalime believes that continuous dialogue between universities, research technology centres and industry will help increase the employability of students and of the workforce in general by making

them know how to find customers and contribute to EU employment. Strengthening education will help industry have increased access to those skills needed in the future.

Top class R&D infrastructure and a high performance education system are among the main building blocks of an innovative environment. Orgalime thinks that the EIT KIC on value added manufacturing will support these building blocks. A KIC provides more than just implementation of the results of research and development. Orgalime wants the KIC to respond to the needs of industry and the KIC should enable efficient transfer of new knowledge and practices from research and industry to the education system, on all levels.

Orgalime wants to stress that value added manufacturing is an enabler of competitiveness in other economic sectors. Hence every euro invested impacts all industries that manufacture items be it chemicals, materials, food, packaging, cars, etc. Orgalime trusts that the foreseen budget for the KICs of 2016 will be maintained and strongly advocates against any budget cuts in the KICs.

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