

Position Paper on Microelectronics Skills and Competences

The purpose of this paper is to contribute to policy-making in the European microelectronics sector in relation to skills and competencies. The microelectronics sector supplies many different industries, including automotive, aerospace and medical devices. With customized, innovative and high-quality products, microelectronics has been identified by industry and governments as an important driver for future economic growth in the EU.

However, the competitiveness of the sector depends to a large extent on the knowledge, skills and competences acquired through vocational education and training (VET) and work-based learning, which are needed to design, produce, operate and maintain modern, state-of-the-art machinery and production systems with a powerful microelectronics component.

The four trends that are having the greatest impact on the skills required by the microelectronics industry are:

1. Big data & Artificial intelligence
2. Power management innovation
3. Cybersecurity & Security by design
4. Connectivity innovations

Over the past decade, however, microelectronics has experienced a shortage of skilled workers and innovative mindsets, hampering the competitiveness of European industry related directly or indirectly to the sector and the employability of workers.

Although disruptive technologies offer new business opportunities for microelectronic devices and components, understanding the scope of technological changes and integrating them into one's own business is a complex task requiring new skills. The analysis of future skills needs, conducted as part of the METIS project, led to a clear conclusion. As technology continues to evolve, workers in companies directly or indirectly involved in the microelectronics sector will need to be upskilled and reskilled.

With this in mind, this position paper is intended to help decision-makers across the EU to recognize the importance of skills and abilities related to the four areas identified in the European microelectronics sector and to provide them with a set of recommendations to support the development of skills and abilities in this area. The main objective of the METIS project is to support the training of the current and future microelectronics workforce in new development and production methods and to maintain and sustain the global leadership of the European industry.

In this position paper, we would like to highlight the project's recommendations to further advance skills in the four critical areas of microelectronics in the EU:

1. The four critical areas skills and competencies are crucial for today's workforce in microelectronics. The competitiveness of microelectronic companies depends on the skills possessed by their workforce. To exploit the full potential of advanced manufacturing, vocational training and production organizations must focus on developing a workforce capable of exploiting the potential of the four critical areas. We call on vocational education and training regulatory bodies across Europe to use strategic workforce planning approaches to design robust training programmes for skilled workers in the four critical areas. We also call on national accreditation agencies across Europe to prioritise the four critical areas skills in their systems. Knowledge in the four critical areas acquired in an informal environment should be better recognized and incorporated into formal qualification pathways.
2. To help European industry build the four critical areas skills needed to meet the demands of the 21st century, we call on European, national and regional authorities to increase joint activities with industry and educators. For example, the use of the METIS e-learning courses, which was launched as part of this European project, could be promoted. Online courses are useful to deepen know-how on the basics of the four critical areas. When combined with hands-on experience, e-learning can also enable a deeper understanding of the four critical areas in the specific area of work required.

3. The importance of the four critical areas with VET training should be better promoted across Europe, especially in a context of an ageing workforce and demographic pressure. Member State authorities should consider the attractiveness of VET-based careers to unlock the power of new and emerging technologies such in the four critical areas.
4. A rapidly changing production landscape with increasingly innovative technologies requires training institutions that are able to constantly update their educational offerings in line with this changing reality. We call on the relevant national and regional authorities to design reformed vocational education and training systems in which curricula are rapidly adapted to the four critical areas innovations. Industry should be involved in these efforts as an important driver of technological progress in this area.
5. We call on the EU to increase the funding available to vocational training institutions for the purchase of the necessary technical equipment in the field of the four critical areas. The four critical areas equipment can be expensive for VET organizations, especially when considering specific market segments. Moreover, technological advances in the four critical areas make previously purchased equipment relatively obsolete in a short time. EU founding is well-positioned to provide support to VET organizations in the purchase of relevant four critical areas hardware and software for teaching students. Increasing the financing pool at disposal would be very helpful in this respect.

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