

“Bridging the Digital Talent Gap - Towards Successful Industry-University Partnerships” - Workshop proposes solutions to boost Europe’s digital talent pool

Closer cooperation between businesses and universities is the key element to boost the education offer in key digital technologies and attract talent. This is one of the findings of a workshop co-organised by Informatics Europe and the European Commission in Rome on 31 October 2019.



European Commission

Workshop report: “Bridging the Digital Talent Gap - Towards Successful Industry-University Partnerships”

Digital technology experts are a key enabler for Europe’s digital transformation. However, there is a shortage of ICT professionals and university graduates in domains such as artificial intelligence, cybersecurity and software engineering are lacking across the EU.

To discuss these challenges and share ideas, the European Commission and Informatics Europe co-organised the Digital Talent Gap Workshop. Around 120 experts from universities, businesses, technology transfer organisations and public policy makers shared their insights and proposed concrete solutions.

The workshop featured in-depth discussions in three different areas of Informatics: **Artificial Intelligence**, **Cybersecurity** and **Software Engineering**. While each area has its own challenges and issues, some cross-cutting ideas emerged during the workshop:

- **Industry-University cooperation and open dialogue** are crucial to keep the pace of the rapid evolution of digital technologies and reap its benefits. Our education systems need to

combine training a work force with a solid academic foundation, which is essential in a long-term perspective, **with the capability to rapidly reacting to changes** in the needs of businesses.

- **The academic offer needs to be expanded. Not only specialised master courses** are needed, but also **interdisciplinary curricula** to boost cooperation across different domains, and **flexible approaches** accessible to students from different backgrounds.
- There is **an absolute need to attract more students, including female students**, and **increase the number of graduates in Informatics**. Achieving this objective means raising awareness of the importance of Informatics from the early years of school and raising interest, among students, in knowledge that will be more and more shaping every aspect of our life.
- **Openness to societal inputs and awareness raising among the society at large** are essential to enable every citizen to understand the true nature and importance of informatics, and to demystify emerging technologies.
- The **European Commission and European associations** have a key role to play. Recommendations proposed by the participants in the workshop point to the development of European approaches and platforms, which would allow the EU to be a leader in technology and create a digital ecosystem able to attract, train and retain digital talents.

The European Commission is determined to step up efforts and contribute to overcome resource constraints and the lack of scale in specialised educational offer in the digital domain. The forthcoming Digital Europe Programme (DEP) will boost the development and deployment of advanced digital technologies across all sectors of the European economy. Advanced digital skills are a key component of this programme, which will support master courses, short-term trainings and traineeships in AI, Cybersecurity and HPC.

The findings of the workshop will support the preparation of future policies and funding programmes at European level, in particular the priorities of the Digital Europe Programme. The final report summarises the results of each session and discusses the recommendations put forward by the participants.

Summary of the recommendations

Artificial intelligence

- Universities need to develop more specific master courses in the area.
- Universities need to develop curricula that are accessible to students without a specialized Informatics background.
- Universities need to include in the Artificial Intelligence curricula contents that specifically address ethical and societal issues.
- The number of skilled graduates in Artificial Intelligence, including PhDs, needs to be increased, also to give small EU companies better chances to recruit talent in this field.
- More effective collaboration between academia and industry should exist at the stage of design and shaping of new curricula, also as part of national strategies for Artificial Intelligence.
- An EU institute for AI should be created, as a permanent structure that can support the development of EU tools and platforms for research and development in AI.

Cybersecurity

- Create a common understanding about the set of knowledge and skills needed to qualify Cybersecurity experts.
- Explore new ways to strengthen collaboration and create permeability between businesses and university, dialogue and constant exchange, allowing more experts from industry to contribute

to teaching and vice versa.

- Enhance and expand the offer of universities and other higher education institutions, for example through flexible learning pathways that allow students to combine academic assignments with hands-on experience in businesses.
- Extend the reach of universities and other higher education institutions to involve students who want to turn towards ICT, drop-outs or professionals in search of a career change or upskilling opportunities.
- Build a pipeline of Cybersecurity talent, strengthen the understanding of security risks posed by digital technologies and raise awareness.

Software engineering

- Improve the image of Software Engineering and a broad public understanding of its benefits through closer cooperation between academia and industry.
- The design of modern Software Engineering curricula should benefit from such a close collaboration. This might happen through dual study programs, where realistic industrial case studies are closely coupled with conceptual and fundamental aspects taught within the academic Software Engineering study program.
- Modern Software Engineering curricula should comprise multidisciplinary projects where students learn to cooperate with stakeholders from possible application domains.
- Certification programs for the Software Engineering profession as well as educational up-skilling programs in industry should be developed.
- Establish a working group at European level where stakeholders from universities and companies jointly develop guidelines and recommendations on how to close the gap between a research-oriented education and industrial needs.

The full report from the workshop is available on the website of Informatics Europe.

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