Challenges in creating Pedagogical Materials for the industrial environment

As stated in Transform Erasmus + Project, specially along the three webinars performed to characterize the current state of the art of the The Fourth Industrial Revolution, known as Industry 4.0, is profoundly transforming economic, technological, and labor paradigms worldwide. In this context, education and skills training play a fundamental role in ensuring that the workforce is prepared to meet the challenges and seize the opportunities arising from this new industrial era.

Formal education and business training must adapt rapidly to close the gap between the current skills of the European workforce and the demands of the global market. Designing methodologies that incorporate innovative technological tools and collaborative approaches is key to ensuring that human talent can perform in a highly digitized and technologically demanding environment.

Continuous learning is one of the most important challenges for operators to master in the Industry 4.0 model. It is usual for operators to have continuous training during their stay, companies seek to enhance their understanding of the machines they are working with, as well as their ability to react correctly to an industrial environment that is becoming increasingly based on smart systems.

Training, however, has become a complex and challenging task. In many cases, systems have become sophisticated, making the knowledge gap far beyond what any training can bridge, thus, simplification becomes necessary. In other cases, operators resist the new technologies, fearing losing their jobs as the machines replace humans. Another main challenge is time constraints. The working day is limited, and operators' schedules are usually overcharged, adding more restrictions to the structure and duration of any training.

FlashCOMP is a European project focusing on enhancing composite manufacturing to reduce waste and cost. The project includes developing an IoT-based solution that includes a decision Support System (DSS) for the real time monitoring of the resin infusion process. Operators need to interact with the new system in several ways: they are expected to be able to read system notifications, understand them, and react with correct actions.

Cofinancé par l'Union européenne
Projet cofinancé par la Région Nouvelle-Aquitaine
Funded by the European Union

The project includes training for the operators in two different industrial environments: yacht construction and aeronautics. After the FlashCOMP solution is developed and installed, a training program is to take place in the company's sites. As operators' knowledge of English is limited, the training program will be presented in local languages. To prevent any linguistic difficulties, a short training course of trainers will take place in June and July 2026, where engineers from the two industrial sites will be trained to provide training courses with special attention to pedagogical and technical skills.

The ESTIA team has been working for the last year to identify the knowledge gap between what operators know today and what they need to know when the FlashCOMP solution is fully installed in the near future. This knowledge gap was then translated into pedagogical materials on a profile basis. A total of 8 operator profiles were identified at the 2 industrial partners.

Another version of the pedagogical material is being developed, made for engineering students and more adaptable for academia in form of a 24h course that stretch on 3 days.

The course materials will be completed and published online by October 2026 and will be available under the CC BY Creative Commons license. Stay tuned!

Cofinancé par l'Union européenne
Projet cofinancé par la Région Nouvelle-Aquitaine
Funded by the European Union