

Education and Training Resources from SPIRE projects

Enhancing the impact of resources beyond the project



Context – Every SPIRE project contains a wealth of valuable learning that could be used to educate and train those in industry and higher education. Recognising this, funding calls now oblige SPIRE projects to develop education and training materials.

Taking forward the recommendations of the SUSCHEM *Educate to Innovate* pilot in getting more educational resources from FP7 projects, SPRING has evaluated how these could be applied to the SPIRE programme.

Issues – More value could be obtained from the broader resources developed in projects, not just those specifically designed for education and training.

Until recently, projects lacked the frameworks and guidance to enable learning to reach its maximum impact.

Preconceptions about what makes a useful resource can lead to well-intentioned but misguided over-engineering which act as a brake to progress. Examples include “polished” products such as bespoke software (which can soon look dated, or just fail to work on different operating systems), or over-emphasising the production of whole course modules (course content varies across the EU, so one size doesn’t fit all).

Recommendations – Our key recommendation is to focus on what those developing educational and training resources actually want.

Resources should be:

- **Rich in content** from industrial case studies
- **Flexible in use:** easy to integrate in existing curricula, adaptable to different learning styles, approaches and languages
- **Appealing to a broad community:** undergraduate, master level, and life-long learning
- **Accessible** across different media platforms

Use existing routes to “market”. There is often more value in resources that can be incorporated into existing/ new courses than in stand-alone resources.

Don’t overlook the educational value of other resources from projects, e.g. photos of demonstrator technologies, state-of-the-art reviews etc.

Other topics and themes that are valuable for education and training include how problems were identified and addressed; learning from approaches that didn’t work; challenges of applying innovations to real industrial settings; and societal needs.

All these resources can be made more accessible to those interested in energy and resource efficiency solutions for the process industries through SPIRE’s new Project Output Summaries framework:

www.spire2030.eu/projects/outputs

For more guidance on enhancing the impact of SPIRE projects, see: www.spire2030.eu/spring



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Education and Training in SPIRE projects

Maximising the learning opportunities for project participants



Context – SPIRE projects have an expectation of educating and/or training participants in addition to developing innovative new technologies. However, this training varies greatly in both quantity and quality across projects.

Issues

Educational resources are developed too late in a project to have real impact for the project participants.

Different participants may have very different education and training needs or expectations, which often results in an over-focus on academic or high-level professional training.

Projects often work independently and miss opportunities for coordination of training activities on common topics across SPIRE projects.

Educational resources are sometimes designed as bespoke modules or packages, reducing potential for materials to be incorporated flexibly into pre-existing courses.

Recommendations

Education and training activities should be started as early as possible in a project to ensure that participants can apply new knowledge to their research activities. In many cases, project partners may have existing internal know-how that can be valuable for other partners, so this can be developed into *intra-project* training courses.

SPIRE projects should aim to share resources that could be incorporated or adapted into education and training courses, not just complete modules. The sharing of these resources can be done via the new Project Output structure developed in SPRING (www.spire2030.eu/projects/outputs).

Engaging with more ‘education-focused’ academic staff could allow better cross-project liaison to develop educational resources that could be used both within projects and to support teaching of students.

Projects should aim to integrate more ‘task’ based engagement for students, as demonstrated in the COCOP project, whereby students are given practical tasks based around gathering project data.

Where industry partners take a PhD student to work 100% on the project within the company, students gain hands-on experience of industrially-based research, and they can often be more effective by being able to work on data within the company ‘firewall’. This approach was used successfully as part of the EPOS project.

Training should also be considered for technical staff and operators, not just scientific and senior engineering staff within industry. This will require consideration of the different types of training required by such colleagues, including the potential need for materials to be available in multiple languages

www.spire2030.eu/spring



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