
SPIRIT PROJECT SUMMARY

Telepresence can be deemed as the next generation of communication applications that will substantially enrich immersive experiences in both human-to-human and human-to-machine interactions with blurred boundaries between the physical and the virtual world. It is expected that such systems will have a game-changing impact on how people will communicate and collaborate with each other in different sectors, including education, training, entertainment, retail, healthcare, manufacturing and many more.

The SPIRIT-project brought together recognised European players that have been active for several years in immersive telepresence and aimed at realising Europe's first multi-site, interconnected framework dedicated for supporting heterogeneous collaborative telepresence applications.

Through innovative research, the project consortium provided solutions to tackle some of the current technical challenges like low-latency communication, high bandwidth demand, and complex content encoding/rendering tasks in real-time. Through the use of Open Calls and the mechanism of financial support to 3rd parties (FSTP) opened up these facilities and closely collaborated with startups, SME's, innovators but also larger research groups on defining requirements and testing applications and infrastructure at large scale.

Consequently, the project realised significant impact for the consortium partners, but also those innovators by opening business opportunities to them. Testing of new applications, new tools, new algorithms, new infrastructure... enlarged the portfolio of available equipment in the SPIRIT testbeds and improved significantly the performances and capabilities. Consortium partners strengthened their expertise in the field and improved their status regarding future collaborations and exploitation of the project results.

The Open Call participants benefited from the access to these unique, and otherwise not accessible test facilities supported by the know-how and expertise of the SPIRIT partners. This testing allowed them to raise the TRL-level of their products, illustrate the potential of their research, certified the performance and operational readiness of their tools and created new business opportunities. This strengthens European businesses and prepares the user community for immersive technologies and applications.

In view of the advances and research going on worldwide, it is important for Europe to prepare for, experiment with, and innovate on immersive telepresence “now”, even if the technology is not sufficiently mature yet and the user experience might not be fully satisfactory yet. SPIRIT contributed to that field and community by providing many building blocks and performing/enabling experiments.

Various innovations on network-layer, transport-layer, application/content-layer techniques, as well as security and privacy mechanisms to facilitate the large-scale operation of telepresence applications, have been developed within SPIRIT. These cover key aspects of collaborative telepresence dealing with content formats, network resource management, scalability, split rendering, and security. Both hologram- and avatar-based immersive communication platforms are integrated into the project testbeds and have been used for open call partners and end-user validation.

SPIRIT also showed how partners and Open Call participants can benefit from such a cross-border and multi-partner collaborative action. It clearly showed the need for such collaborative action in Europe but also what the benefit is from such actions.

The multi-site testbed which was realised within SPIRIT will remain operational beyond the duration of the project and will remain the core of research and new developments by the SPIRIT partners to strengthen their own portfolio. This guarantees the sustainability of the work realised in SPIRIT. The innovations realised by the SPIRIT-partners generated input towards standardisation bodies which also ensures a legacy and a continued impact of the SPIRIT work in the field. The SPIRIT testbed will also remain the basis of new collaborations, some with the Open Call participants, some as part of new research projects, bilateral, national, or EU-funded. Becoming part of collaborative actions such as the BeyondXR cluster, will help to generate and trigger such new actions.

As a EU-funded project and making use of the FSTP-scheme, the SPIRIT-project clearly showed that this scheme and collaboration through Open Calls is effective and leads, if properly managed to a success.

All 27 Open Call experiments successfully completed their planned activities and provided valuable feedback to the SPIRIT consortium through their reports and interactions. For each Open Call experiment one of the SPIRIT partners was appointed as Patron, who served as direct contact and liaison between the experiment and the consortium. This improved greatly the success as well as the feedback to the SPIRIT consortium.