



Roadmap for the extension of the ecosystem

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Abstract	The SuperCyberKids project addresses the urgent need for cybersecurity education for children aged 8–13 and their teachers. This roadmap (Deliverable 8.1, M33) offers a comprehensive plan to enable and facilitate exchange, dialogue, and mutual learning across a wide community of stakeholders. It highlights the importance of bridging the gap between formal, informal, and non-formal education and extending the ecosystem to additional school levels, education providers, and digital skills domains. Building on the results from WP2–WP6, this document outlines a set of strategic objectives, stakeholder engagement pathways, and concrete actions that promote sustainability, scalability, and transferability of results. It also connects cybersecurity education with broader European open science and open schooling initiatives, ensuring long-term impact beyond the project’s lifetime.
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Executive summary

The SuperCyberKids project addresses the urgent need for cybersecurity education for children aged 8–13 and their teachers. This roadmap (Deliverable 8.1, M33) offers a comprehensive plan to enable and facilitate exchange, dialogue, and mutual learning across a wide community of stakeholders. It highlights the importance of bridging the gap between formal, informal, and non-formal education and extending the ecosystem to additional school levels, education providers, and digital skills domains. Building on the results from WP2–WP6, this document outlines a set of strategic objectives, stakeholder engagement pathways, and concrete actions that promote sustainability, scalability, and transferability of results. It also connects cybersecurity education with broader European open science and open schooling initiatives, ensuring long-term impact beyond the project's lifetime.

1 Introduction

Cybersecurity is a fundamental skill for young people in the digital society. Children are increasingly exposed to online risks at an early age, while schools, families, and communities often lack the tools to adequately prepare them. The SuperCyberKids project has designed an innovative educational ecosystem that integrates game-based learning, a gamification platform, and teacher training to raise awareness and build resilience.

This roadmap is the culmination of project efforts, combining insights from research (WP2–WP3), ecosystem development (WP4–WP5), and pilot implementation (WP6). It lays out how knowledge generated in the project can be embedded into educational practice and policy, while also fostering sustainable stakeholder collaboration at the European level. It responds directly to the EU Digital Education Action Plan (2021–2027) and the Skills Agenda, ensuring that cybersecurity education becomes a core component of digital skills strategies.

2 Objectives of the Roadmap

The roadmap aims to:

- **Facilitate Stakeholder Dialogue:** Establish multi-level, multi-stakeholder platforms for discussion and exchange, ensuring that all actors — from teachers and students to policymakers and industry experts — can contribute to shaping cybersecurity education.
- **Extend the Ecosystem:** Build on the SuperCyberKids Learning Framework and gamification platform to integrate additional content and adapt materials for diverse educational levels (primary, secondary, vocational) and contexts (formal, informal, non-formal).
- **Support Sustainability and Scalability:** Use national sustainability plans and the scaling-up strategy developed in earlier project stages as a foundation for long-term use and further expansion.
- **Promote Open Schooling:** Link cybersecurity education to open schooling and open science practices, encouraging schools to collaborate with communities, researchers, and families in co-designing digital safety initiatives.

3 Stakeholder Engagement Strategy

The roadmap emphasises engagement across four interconnected domains:

3.1.1 School Education

- Teachers and school leaders will be empowered to integrate cybersecurity into daily teaching using the SuperCyberKids Learning Framework.
- Professional development initiatives will be created to align with EU digital competence frameworks such as DigComp 2.2.
- Peer-to-peer teacher networks will be established to exchange practices and co-develop lesson plans.
- School heads will be supported in embedding cybersecurity education into school development plans, ensuring sustainability and institutional ownership.

3.1.2 Informal and Non-Formal Education

- NGOs, parent associations, and community groups will be engaged to ensure that cybersecurity education extends beyond schools.
- The project's platform with digital games and resources on cybersecurity will be adapted for extracurricular settings such as youth centres, and libraries.
- Family engagement activities will be designed to promote intergenerational learning about cybersecurity.
- Informal learning spaces will be linked with formal education through collaborative projects that increase outreach and inclusivity.

3.1.3 Research, Innovation, and Business

- Research institutions will be invited to test and further refine game-based pedagogical approaches developed within the project.
- EdTech companies will be encouraged to co-develop new modules for the platform, expanding content to address emerging digital challenges such as artificial intelligence and disinformation.
- Cybersecurity businesses will be engaged to provide real-world insights and ensure that educational content remains relevant to industry practices.
- Partnerships with innovation hubs will be pursued to pilot novel forms of digital education and link them to market opportunities.

3.1.4 Policy Makers

- Policy briefs and Memoranda of Understanding will be produced to facilitate integration of project results into national and European strategies.
- Policymakers will be invited to join roundtables and conferences to discuss evidence from pilot cases and explore how cybersecurity education can be mainstreamed across Europe.
- The roadmap will contribute to the Digital Education Action Plan (2021–2027) and inform future revisions of digital competence frameworks.
- Ongoing engagement with ministries of education and European bodies will ensure that results influence both systemic reform and policymaking.

4 Roadmap Actions

4.1.1 Knowledge Sharing and Exchange

- Publications, including the *Handbook of Good Practices in Cybersecurity Education*, will be widely disseminated through both academic and practitioner networks.

4.1.2 Mutual Learning Activities

- Peer-learning events for teachers will encourage exchange of lesson designs, classroom experiences, and challenges encountered in implementation.
- School leaders will participate in leadership seminars on how to embed digital safety into strategic planning.
- Cross-sectoral dialogues will connect researchers, EdTech developers, businesses, and policymakers to share evidence and co-create solutions.
- A European "Cybersecurity in Schools" community of practice will be established to maintain momentum beyond the project's lifetime.

4.1.3 Ecosystem Extension

- The project partners will continue to promote the project to relevant stakeholders, establishing new connections. This will be done with the use of the Memorandum of Understanding (D8.3)
- Due to the excellent feedback from the pilot participants, the project partners started the development of more lesson plans that will be available in the languages of the consortium
- The SuperCyberKids Platform will be continuously updated even beyond the project's end, and by allowing external contributors to upload resources, it will be a living and sustainable platform continuously updated with new materials for educators to use

4.1.4 Open Schooling and Open Science

- Schools will be encouraged to design citizen science projects focused on digital safety and data protection.
- Teachers and students will collaborate with local communities to address cybersecurity issues relevant to their contexts.
- Partnerships with open schooling networks at the European level will enable integration of cybersecurity into broader innovation in education.
- Data and outcomes from the project will be shared in open-access formats to support replication and adaptation by other stakeholders.

5 Timeline and Milestones

- **M33:** Delivery of Roadmap (D8.1); launch of European stakeholder forum; initial dissemination to schools and policymakers.
- **M34–M35:** Implementation of webinars, peer-learning events, and transnational workshops; collection of feedback from stakeholders.
- **M34:** Final Conference will be organised as a major transnational dissemination event, held in Rome on October 28 immediately before the ESHA Biennial Conference. This event will bring together policymakers, educators, researchers, EdTech developers, and community stakeholders to present project results, share policy briefs and Memoranda of Understanding, and secure

commitments for continuation. Agreement on next steps for scaling the ecosystem across Europe will be reached during this gathering.

6 Conclusion

This roadmap provides a strategic framework for embedding cybersecurity education into European schools and beyond. By emphasising stakeholder engagement, fostering dialogue, and enabling mutual learning, *SuperCyberKids* ensures that its outputs contribute to systemic and sustainable transformation of digital education. It demonstrates how cybersecurity education can move from a fragmented set of initiatives to a coherent, Europe-wide ecosystem that empowers children, equips teachers, and informs policy.