

CSC's feedback on the call for evidence for "Quality education for all: a 2040 roadmap"

Building a sovereign and interoperable European digital education infrastructure

CSC agrees with the three interconnected structural challenges that have been identified as the main problems to be addressed by the European Commission's upcoming Education Package, particularly the lack of sovereign digital education infrastructure. Indeed, the ability to control critical data, digital infrastructure, and technology choices creates the foundation for resilient education systems and societies.

However, we regret to note that the scope of the Education Package seems to be limited to school education. It would be considerably more effective to identify challenges shared by all levels of education and develop solutions that transcend their boundaries. We also emphasise the importance of interoperability, including defined standards, data models and architectures, for any sustainable infrastructure. However, technical interoperability is not enough. In accordance with the European Interoperability Framework¹, all levels of interoperability must be taken into account to achieve successful implementation: special attention must be paid to organisational and legal interoperability, where the needs and possibilities for structural changes must be assessed.

Identifying shared challenges

One example of a challenge shared across education levels relates to the collection and production of data. Systematic and coordinated data collection at different points of the education path would allow to examine and seek solutions to problematic societal developments affecting the education sector through a broad knowledge base that spans all levels of education. The evaluation of educational quality as a means of generating knowledge, together with the promotion of digitalisation in educational evaluation, is also essential for producing comprehensive, relevant, and high-quality evidence to support educational development and decision-making, including when it comes to the other structural challenges mentioned in the Call for Evidence, such as the decline in basic skills.

When developing solutions for data collection and production, good existing national solutions and best practices should be identified and used as reference solutions. These could include, for example, Finland's VIRTU Higher Education Achievement Register, education administration's

¹ <https://interoperable-europe.ec.europa.eu/collection/iopeu-monitoring/european-interoperability-framework>



reporting portal Vipunen², JODA learning outcomes assessment system for basic education³, and the Valssi quality evaluation system for early childhood education and care⁴.

Leveraging existing national and European solutions and collaboration structures

Developing a sovereign European digital education infrastructure does not require creating new centralised solutions but rather federating existing ones based on shared standards and APIs. Implementing and scaling existing solutions in a federated way is a much faster and more efficient way forward. New solutions should only be developed where no existing solutions exist.

Examples of scalable national solutions include Finland's EXAM - electronic exam software for higher education⁵ and Norway's Sikt AI, a shared AI platform for the knowledge sector, from primary school through higher education and research⁶. Using Sikt AI as a starting point, CSC is currently working with Sikt to develop a centralised AI management service for all public sector organisations⁷. The aim is to give institutions access to modern AI within a framework that treats privacy, security, and digital sovereignty as core principles.

Other key building blocks of a European education infrastructure are existing collaboration structures, such as the Higher Education Interoperability Framework⁸. The framework, including its approach to collaboration between public and private digital service providers in the field of education, should also be scaled to all education levels. Another example is the upcoming Education EDIC whose themes are very similar to those identified in this Call for Evidence. It would also be important to study what we can learn from efforts to build European infrastructures for research and examine the existing collaboration structures with solid track record such as national research and education networks (NRENs) and their European interconnector GÉANT⁹.

Grasping the opportunities of AI

Artificial intelligence can play a key role in responding to all the three challenges the education package aims to address. When it comes to tackling the decline in basic skills, AI solutions can offer personalised learning support based on individual learning data. Teacher shortages, on the other hand, could be alleviated by developing AI tools for easing teachers' workload and offering new kinds of skills development opportunities.

² <https://vipunen.fi/en-gb>

³ <https://www.karvi.fi/fi/arvioinnit/esi-ja-perusopetus/joda-oppimistulosten-arviointijarjestelma>

⁴ <https://www.karvi.fi/fi/arvioinnit/varhaiskasvatus/valssi-varhaiskasvatuksen-laadunarviointijarjestelma>

⁵ <https://e-exam.fi/in-english/>

⁶ <https://sikt.no/en/tjenester/sikt-ai>

⁷ <https://csc.fi/en/news/csc-and-sikt-launch-collaboration-to-advance-the-safe-use-of-ai/>

⁸ <https://education.ec.europa.eu/focus-topics/digital-education/hub/workshops-and-working-groups/interoperability-framework>

⁹ <https://geant.org/>



To ensure that all this can be done without jeopardising privacy or other key European values, AI solutions for learning and teaching must be developed as a part of the sovereign European digital education infrastructure. Developing safe, resilient and trustworthy European solutions based on e.g. the Norwegian Sikt AI service mentioned above would allow for Europe's education sector to freely grasp the numerous opportunities offered by AI.

Building sustainable sovereignty through horizontal ecosystems

Developing a sovereign European digital education infrastructure is not a one-off project but requires long-term goal-oriented funding mechanisms and collaboration structures, not only for the infrastructures as such but also for the data and skills needed to fuel them. Sovereignty cannot be achieved if any of these aspects are neglected, so data sovereignty and systematic horizontal competence development must go hand in hand with the infrastructure development efforts.

In addition, the digital infrastructure for education must be closely tied to the overall technological sovereignty framework, which includes computing and AI capacity, data management and network connectivity. Building European competence requires a stronger horizontal approach to building European capabilities, and thus all parallel initiatives must be developed as an ecosystem, not as separate entities. CSC urges the Commission to make efforts towards a technology ecosystem where for example the AI Factories are used also for developing European AI solutions and capabilities for educational purposes.

Education and research institutions can support Europe's overall technological sovereignty agenda also by favouring European cloud and AI solutions whenever possible. This would create increased demand for European solutions and thereby fuel their further development. It would also create a new paradigm where Europeans learn to use European digital solutions from very early age, making it more natural to carry on doing so at later stages of their lives as well.

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CSC - IT Center for Science is a Finnish centre of expertise building digital solutions for data management, scientific computing and education. We are the hosting organisation of EuroHPC supercomputer LUMI and LUMI AI Factory and the operator of Finland's national education and research network FUNET. In addition, we develop Finland's national digital education infrastructure and support the Finnish education system with data production, reporting and analytics.