Annual 2025 NREN educational activities and services survey result

April 2025

Issue Date: 14-04-2025
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Executive summary

1 Evolving Role of NRENs in Education

Driven by the EU's push for digitalization and shifting geopolitical contexts, National Research and Education Networks (NRENs) have been expanding their traditional roles beyond connectivity. Today, many NRENs provide digital services that support remote and hybrid learning. While not all NRENs are equally resourced, there is a clear trend of growing involvement in educational infrastructure, calling for continued investment and collaboration.

However, the provision of direct educational services typically remains outside the core mandate of most NRENs. Such services are often the responsibility of national or regional authorities, such as Ministries of Education or designated agencies (e.g., CGIE in Luxembourg). In federal systems like Germany, responsibilities are shared across different levels of government. Some NRENs are actively exploring these services through initiatives or pilot projects, while others continue to focus on providing infrastructure and tools rather than direct service delivery.

2 Educational Services Landscape

This overview, based on the work of the Task Force on Educational Services and Activities (TF-EDU), reflects seven years of surveys (2019–2025) mapping NRENs' education-related services focusing on the European landscape.

3 Categories of Services

NRENs offer a variety of services:

- **Identity and Access Management (IAM):** Including systems like eduID and eduGAIN.
- **Videoconferencing:** Longstanding core service repurposed for education.
- **Digital Learning Environments:** LMSs and repositories.
- **e-Content & Digital Courses:** Often developed or procured in-house.
- **Digital Assessment:** Tools for testing, grading, and proctoring.
- **Learning Analytics:** Data collection and analysis to support learning.
- **Micro-credentialing (Open Badges):** Digital certifications of skills or achievements.
- **Digital Wallets:** Secure containers for credentials and IDs.
- **AI Services:** Tools using AI for assessment, personalization, and analytics.

4 Survey Results and Trends

According to the 2025 TF-EDU survey, IAM, videoconferencing, and digital learning environments are among the most commonly offered services. While there has been a slight increase in the number of NRENs providing educational services over the years, the overall number of services has remained stable, with newer services like AI replacing older ones.

Figures 1.2 and 1.3 illustrate how service offerings have evolved. The data reveal wide variations in portfolio size across NRENs. Many are actively developing new services, indicating that this domain remains dynamic and responsive to changing educational needs.

Most active development areas include:

- **AI services** (13 NRENs)
- **Digital wallets** (13 NRENs)
- **Learning analytics** (12 NRENs)
- **Open badges and credentialing** (11 NRENs)

Student mobility

From 33 responding NRENs on the questions if they are supporting various student mobility projects we have received the following results:

- Erasmus+ mobility scheme (13 NRENs)
- University Alliances (3 NRENs)
- Standards development (1 NREN)

5 Conclusion

NRENs are increasingly recognized as crucial enablers of digital education. While their role in delivering educational services may vary depending on national context, their involvement in supporting education infrastructure and innovation continues to grow. The TF-EDU data confirms a stable commitment, with steady innovation in emerging service areas like AI and digital credentialing.

Educational services and activities in details

In response to stimulus from the EU for the digitalization of education and the shifting geopolitical landscapes, National Research and Education Networks (NRENs) have significantly expanded their roles to support the evolving needs of educational communities. Beyond their traditional focus on connectivity, NRENs are now providing comprehensive digital services tailored to facilitate remote and hybrid learning environments. There is a broader trend of NRENs evolving into central providers of digital education services, addressing the increased demand for secure, reliable, and scalable educational infrastructures. However, disparities remain, as not all NRENs possess the resources or capacity to fully meet these growing demands, highlighting the need for continued investment and collaboration within the global NREN community.

Most NRENs indicated that providing educational services falls outside their direct responsibilities. Instead, such services are typically managed or decided by other national or regional entities—such as Ministries of Education, directorates, councils, or designated agencies (e.g., CGIE in Luxembourg). In federal systems like Germany, responsibilities for education are divided between national and state-level bodies. Some NRENs are in the process of exploring or planning these services (e.g., setting up task forces or investigating tools like eduID), while others clarified that they focus more on infrastructure (like network connectivity) or supporting institutions with information and tools rather than delivering educational services directly. In several cases, NRENs operate as consortia or coordinating bodies rather than service providers themselves.

6 Education services

This section is based on the work of the Task Force on Educational Services and Activities [TF-EDU] and gives an overview of the activities of NRENs in supporting education, detailing how many and which services they offer; it also gives a brief overview of the services. It is mainly based on the surveys among NRENs that TF-EDU carried out the last seven years from 2019 to 2025 about their activities supporting education. In 2025 we have the highest percentage of response rate, 84% of the European NRENs have responded.

6.1 Categories of educational services

The surveys defined a number of service types (see Figure 1.1) and asked the NRENs whether their service offering included any of these education-related services.

Figure 1.1: Categories of education services NRENs offer

Explanations of the less self-explanatory services are as follows:

- An open badge/micro credential is a validated indicator of an accomplishment or skill that can be earned in a learning environment. Usually these are like mini degrees or certifications (hence “micro”). This enters the realm of NREN competence when it takes the form of a digital certificate.
- Learning analytics refers to collecting, analysing and reporting data from learning environments in order to improve the learning process of students. This information can then be made available to students, teachers or training management.
- Student management systems are software systems for the administration, documentation, tracking, reporting and delivery of educational courses and student performances.
- Identity and Access Management for education refers to Trust & Identity applications that are specific for educational purposes, e.g. an educational ID (eduID) that works like an electronic student ID.
- Artificial intelligence services refers to services harvesting AI for example for Large Language Models (LLMs), assessments or any other tools.

6.2 NRENs education portfolio

This section gives an overview of the current state of the educational activities among NRENs, laying out how common it is for NRENs to offer education-related services and what kind of services these are. Figure 1.2 presents a summary of how many European NRENs offer any education service in their portfolio and how this has developed over the last four years, indicating a slight upward tendency and a steady trend in the last years. The number of such services offered varies considerably between NRENs, as is shown in Figure 1.3.

A look at the details (shown in Figure 1.3 and Table 1.1) reveals that in the 2025 survey NRENs very commonly offer Identity and Access Management (IAM) solutions , Videoconferencing and Digital Learning Environments for education. Given that IAM is one of the core competences of NRENs, this is not surprising. Similarly, videoconferencing is a service that has been offered for a long time by many NRENs and that can therefore be repurposed for the specific needs of the education sector, making this a relatively easy service to establish. Digital learning environments and e-content are also frequently encountered, with 27 NRENs offering these services.

Comparing results across the years, there has been a slight increase in the numbers of education-related services offered by NRENs in Europe, however results shows that the number of services offered are not growing, rather new services replacing old ones, such as AI services are added recently to NREN portfolios or being developed.

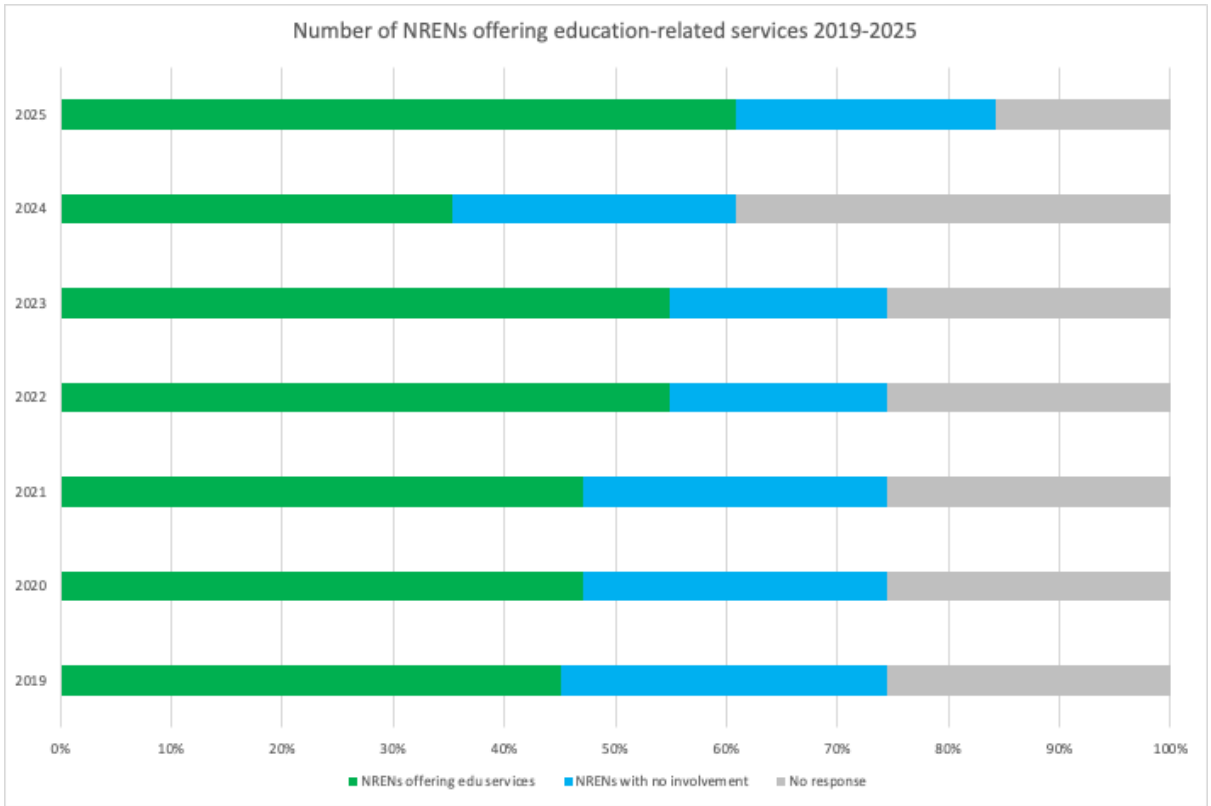

Figure 1.2: Number of European NRENs offering education-related services 2019–2025 The majority of NRENs offer services that specifically target education, and the figure even shows a slight increase over the years. Note that in 2024 the survey response rate was 10% lower. The extent of the commitment differs, as becomes clear in Figure 1.3 and Table 1.1.

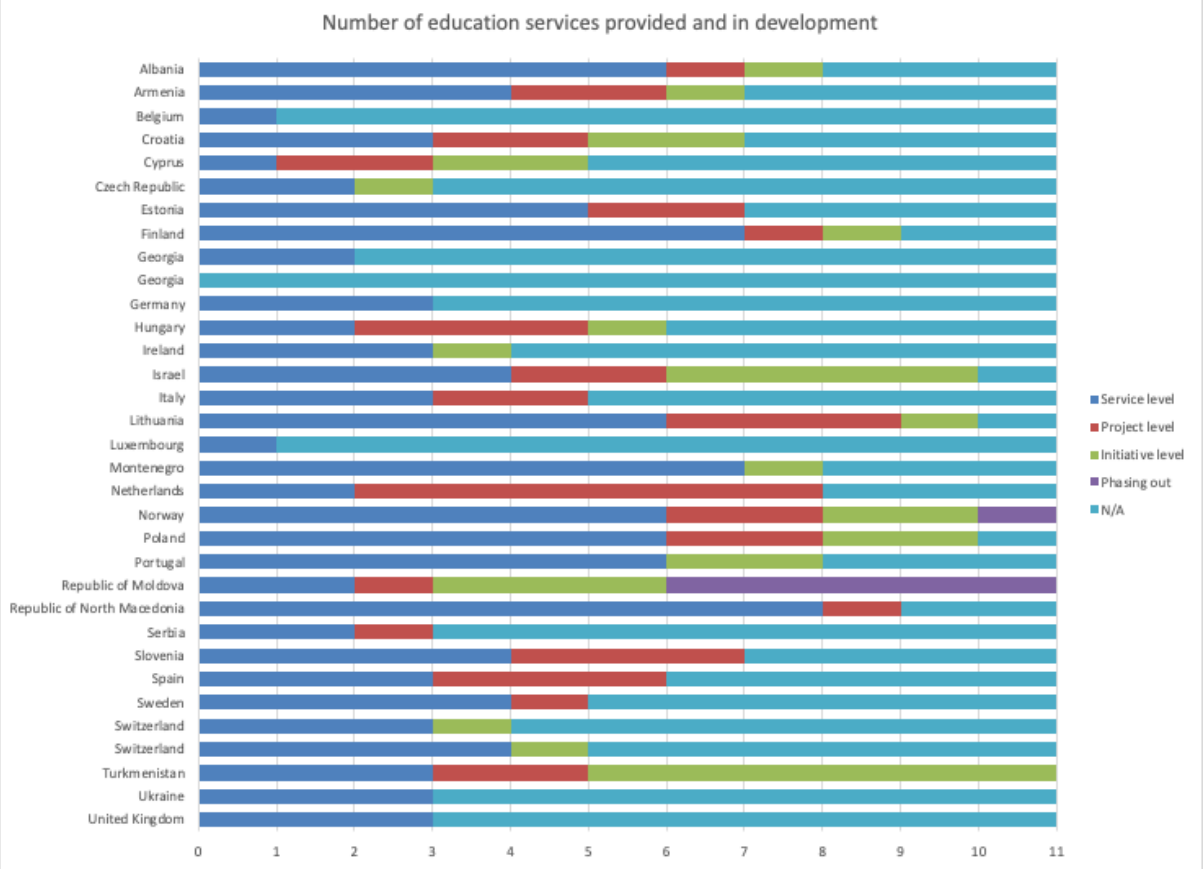

Figure 1.3: Number of education services provided and in development, by European NRENs according to the 2025 TF-EDU survey. The figure shows all European NRENs that provided information that participated in the survey. Clearly, the portfolio size of education services differs considerably between NRENs. The TF-EDU surveys asked about the maturity level of the services on offer. In this figure, these data have been condensed into services on offer (mature service-level services) and offers in development (services in initiative or project phase).

Figure 1.3: Number of education services provided and in development, by Non-European NRENs according to the 2025 TF-EDU survey, which allows a glimpse beyond the confines of the European NREN community.

The numbers make it clear that this is a well-established area of activity for many NRENs. This is further enforced by the large number of NRENs that are developing new services for the sector, as shown in Figure 1.3, many of which will eventually become a part of the NRENs' service portfolio. Among the services in development (project or initiative level), the four most common categories are "Open badges, digital credentialing" category (11), "Digital wallets development" (13), "Learning Analytics" (12) and "AI services" (13).

Name of your organisation	Country	Digital Learning Environments (LMS, repository, digital hubs)	National course catalogue (development, content)	Identity and access management solutions (eduGAIN, MyAcademicID, eduID, eduVPN, etc)	National educational database (student information system, records, finance)	e-Content or online/blended courses (proprietary, procured, in-house)	Digital assessment (testing, electronic grading, proctoring, anti-plagiarism)	Videoconferencing and other multimedia for education	Learning Analytics and/or educational data mining	Certification (open badges, digital credentialing)	Digital wallets development	AI services (access to LLMs or any other tool)
RASH	**Albania**	Service level	Service level	Service level	Service level	Service level	Project level	Initiative level	Service level	N/A	N/A	N/A
ASNET-AM	**Armenia**	Service level	Initiative level	Service level	N/A	Service level	Project level	Service level	Project level	N/A	N/A	N/A
Belnet	**Belgium**	N/A	N/A	Service level	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CARNET	**Croatia**	Service level	N/A	N/A	N/A	Service level	N/A	Service level	Project level	Project level	Initiative level	Initiative level

CYNET	**Cyprus**	Initiative level	N/A	Service level	N/A	Project level	N/A	Project level	N/A	N/A	N/A	Initiative level
CESNET	**Czech Republic**	N/A	N/A	Service level	N/A	N/A	N/A	Service level	N/A	N/A	N/A	Initiative level
EENet	**Estonia**	Service level	N/A	Service level	Service level	Service level	Service level	N/A	Project level	N/A	Project level	N/A
CSC	**Finland**	N/A	Service level	Service level	Service level	Service level	Service level	Service level	Service level	N/A	Initiative level	Project level
GRENA	**Georgia**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GRENA	**Georgia**	N/A	N/A	Service level	N/A	N/A	N/A	Service level	N/A	N/A	N/A	N/A
DFN	**Germany**	N/A	N/A	Service level	N/A	N/A	N/A	Service level	N/A	N/A	N/A	Service level
Pro-M	**Hungary**	Project level	N/A	Service level	N/A	N/A	N/A	Service level	Project level	Project level	Initiative level	N/A
HEAnet CLG	**Ireland**	N/A	N/A	Service level	Service level	N/A	N/A	Service level	N/A	N/A	Initiative level	N/A
IUCC	**Israel**	Service level	Initiative level	Service level	Initiative level	Project level	Service level	Service level	Initiative level	Initiative level	N/A	Project level
GARR	**Italy**	Project level	N/A	Service level	N/A	Service level	N/A	Service level	N/A	Project level	N/A	N/A
Kaunas University of Technology	**Lithuania**	Service level	N/A	Service level	Service level	Service level	Service level	Service level	Project level	Project level	Initiative level	Project level
Fondation Restena	**Luxembourg**	N/A	N/A	Service level	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MREN	**Montenegro**	Service level	Service level	Service level	Service level	Service level	Service level	Service level	Initiative level	N/A	N/A	N/A
SURF	**Netherlands**	Project level	Project level	Service level	N/A	N/A	Project level	N/A	Project level	Service level	Project level	Project level
Sikt	**Norway**	Service level	Project level	Service level	Service level	Phasing out	Service level	Service level	Initiative level	Initiative level	Project level	Service level
PSNC	**Poland**	Service level	N/A	Service level	Service level	Service level	Project level	Service level	Service level	Initiative level	Initiative level	Project level
FCT|FCCN	**Portugal**	Service level	Service level	Service level	N/A	Service level	Service level	Service level	Initiative level	Initiative level	N/A	N/A
RENAM Association	**Republic of Moldova**	Project level	Phasing out	Service level	Phasing out	Phasing out	Phasing out	Service level	Initiative level	Initiative level	Phasing out	Initiative level
UKIM	**Republic of North Macedonia**	Service level	Service level	Service level	N/A	Service level	Service level	Service level	Service level	Service level	N/A	Project level
AMRES	**Serbia**	Project level	N/A	Service level	N/A	N/A	N/A	Service level	N/A	N/A	N/A	N/A
ARNES	**Slovenia**	Service level	Project level	Service level	N/A	Service level	Project level	Service level	N/A	Project level	N/A	N/A
RedIRIS	**Spain**	Project level	N/A	Service level	Service level	N/A	N/A	Project level	Service level	Project level	N/A	N/A
SUNET	**Sweden**	Service level	N/A	Service level	N/A	N/A	Service level	Service level	N/A	N/A	Project level	N/A
Switch	**Switzerland**	Service level	N/A	Service level	N/A	N/A	N/A	Service level	N/A	Service level	N/A	Initiative level
Switch	**Switzerland**	N/A	N/A	Service level	N/A	N/A	N/A	Service level	N/A	Service level	N/A	Initiative level
Academy of Sciences of Turkmenistan	**Turkmenistan**	Initiative level	Service level	Initiative level	Project level	Project level	Initiative level	Service level	Initiative level	Service level	Initiative level	Initiative level
URAN Association	**Ukraine**	Service level	N/A	Service level	N/A	N/A	N/A	Service level	N/A	N/A	N/A	N/A
Jisc	**United Kingdom**	N/A	N/A	Service level	N/A	N/A	N/A	N/A	Service level	Service level	N/A	N/A

Table 1.1: NREN portfolios of education services The table aims to give an overall impression of areas of activity and therefore lists services in production as well as those in development. The most common services are T&I, videoconferencing and digital learning environments. As in Figure 1.3, the participation of some international NRENs in the survey created the opportunity to compare the activities of European NRENs with those of international NRENs and the table shows the education service portfolio of those in addition to the European NRENs (lower end of the table).

From the global perspective we have received responses from:

Africa:
- West and Central Africa
- Eastern and South Africa
- South Africa
- Uganda

Americas:
- Canada
- Ecuador
- USA
- Latin America

Asia-Pacific:
- Bangladesh
- China
- Japan
- Malaysia
- Nepal
- New Zealand
- Pakistan
- Singapore
- Sri Lanka
- Vietnam

Middle East:
- Morocco
- Jordan
- Lebanon

Country of your organisation (or if multiple countries, main office)	Region	Digital Learning Environments (LMS, repository, digital hubs)	National course catalogue (development, content)	Identity and access management solutions (eduGAIN, MyAcademicID, eduID, eduVPN, etc)	National educational database (student information system, records, finance)	e-Content or online/blended courses (proprietary, procured, in-house)	Digital assessment (testing, electronic grading, proctoring, anti-plagiarism)	Videoconferencing and other multimedia for education	Learning Analytics and/or educational data mining	Certification (open badges, digital credentialing)	Digital wallets development	AI services (access to LLMs or any other tool)
Côte D'Ivoire	Africa	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ghana	Africa	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Malawi	Africa	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
South Africa	Africa	N/A	N/A	Service level	N/A	N/A	N/A	Service level	N/A	N/A	N/A	N/A
Uganda	Africa	Service level	Project level	Service level	Initiative level	Initiative level	Service level	Service level	N/A	N/A	N/A	Initiative level

Canada	Americas	Service level	Initiative level	Project level	N/A	N/A	Service level	Service level	N/A	N/A	N/A	N/A
Ecuador	Americas	Service level	Service level	Service level	Service level	Service level	Service level	Service level	Service level	Service level	Service level	Service level
United States of America	Americas	N/A	N/A	Service level	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Initiative level
Uruguay	Americas	Service level	Service level	Service level	Initiative level	Project level	Project level	Service level	Service level	Project level	Project level	Project level
Bangladesh	Asia-Pacific	Service level	Project level	Phasing out	Initiative level	Initiative level	Initiative level	Phasing out	Service level	Service level	Initiative level	Initiative level
China	Asia-Pacific	Service level	N/A	Service level	N/A	N/A	Project level	N/A	N/A	N/A	N/A	N/A
Japan	Asia-Pacific	Service level	Project level	Service level	N/A	Service level	N/A	Service level	Initiative level	Initiative level	Initiative level	Initiative level
Malaysia	Asia-Pacific	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nepal	Asia-Pacific	Service level	Service level	N/A	N/A	Service level	Service level	Service level	N/A	N/A	N/A	N/A
New Zealand	Asia-Pacific	N/A	N/A	Service level	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pakistan	Asia-Pacific	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Singapore	Asia-Pacific	N/A	N/A	Service level	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sri Lanka	Asia-Pacific	Service level	Initiative level	Service level	Initiative level	Project level	Project level	Service level	Service level	Service level	Initiative level	Initiative level
Vietnam	Asia-Pacific	Service level	N/A	N/A	N/A	N/A	N/A	Service level	N/A	N/A	N/A	N/A
Jordan	Middle East	Phasing out	Initiative level	N/A	Phasing out	Project level	Project level	Phasing out	Project level	N/A	N/A	N/A
Lebanon	Middle East	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Morocco	Middle East	Initiative level	N/A	Service level	N/A	N/A	N/A	Initiative level	N/A	N/A	N/A	N/A

Table 1.2: NREN portfolios of education services Non-European NRENs. The most common services are Identity and Access Management, videoconferencing and digital learning environments, highlighting the similarity of the European NREN situation.

6.3 Reflection on past and future horizons

In 2024, the most in-demand educational services were related to federated access and identity management (e.g., eduID, eduGAIN), driven by the ongoing growth in hybrid, remote learning and student mobility activities. Learning Management Systems (LMS), particularly Moodle, continued to be widely used, alongside videoconferencing platforms like Zoom and MS Teams. Cybersecurity services, especially those addressing phishing, ransomware, and DDoS attacks, also saw high demand. Additionally, institutions relied heavily on cloud consultancy and support for infrastructure migration and performance monitoring, particularly for high-bandwidth research needs. Other key areas of usage included admission and enrolment systems, Jupyter Notebooks, multimedia services, MOOCs, and lecture recording platforms.

Conversely, the least used services included legacy tools that were not adapted to cloud environments, low-localized training portals, and niche research support tools that suffered from limited awareness or relevance. Despite the general rise in AI interest—especially within pilot projects like BrAIn (Croatia)—AI tools were not yet

considered centrally critical by most institutions. Open content sharing platforms and services like Switch Verify were also among the least utilized. Overall, while distance learning platforms and secure identity access remained essential, the adoption of newer AI-driven services and tools is still developing and dependent on broader institutional integration efforts.

In 2025, educational service providers plan to significantly advance the integration of Artificial Intelligence (AI) across teaching and learning environments. This includes expanding successful initiatives like the BrAIn project into more grade levels and incorporating responsible AI tools into academic workflows such as summarization, tutoring, and research assistance. The focus remains on ensuring these developments align with institutional values and uphold privacy, transparency, and data protection. There is also a continued emphasis on digital sovereignty, compliance with evolving regulations, and embedding cybersecurity-by-design into service infrastructures.

Alongside AI integration, several institutions are enhancing their offerings by renewing cloud-based service contracts, expanding digital libraries, and adding new educational courses. Other planned improvements include implementing federated login systems for streamlined access, improving infrastructure resilience and accessibility, and introducing new services such as modernized learning management systems (LMS), digital credentials, joint admission systems, and updated student information systems (SIS). Efforts are also underway to promote student mobility, support secure cloud solutions, and communicate the value of these services more effectively to stakeholders and funders. Some organizations will maintain existing services without major changes, ensuring stability while others focus on strategic service combination and alignment with international standards.

In planning for the future, educational and research institutions are focusing on several key strategic areas to enhance and modernize service delivery. A major emphasis is being placed on the integration of Artificial Intelligence (AI) across educational services, including AI for education, digital libraries, and adaptive learning platforms. Institutions are also investing in building AI competence among educators and decision-makers to ensure responsible and effective adoption. This shift includes exploring tools like GenAI and intelligent agents to transform learning, teaching, and assessment. Additionally, strategies are being developed to guide universities into the AI age, with institutions like the University of Montenegro drafting long-term digital transformation plans.

Other long-term priorities include strengthening federated identity and trust frameworks (e.g., eduGAIN) to support interoperability, user-centric design, and cross-border lifelong learning. Cybersecurity remains a core pillar, evolving into proactive, intelligence-driven services with a strong focus on sector-specific threat intelligence and awareness programs. Infrastructure and digital services are also expanding, with ongoing development of community cloud services (emphasizing digital sovereignty), video conferencing, and digital learning environments (e.g., LMS, digital credentials, learning analytics). Strategic mergers, like that of HEAnet and EduCampus, aim to refine and enhance service offerings, while centralized platforms hosted by NRENs will continue to support scalable, flexible education nationally and internationally.

6.4 Summary

Between 2019 and 2025, education-related services provided by European NRENs have shown steady slow growth. Additional services were under development (project or initiative level) that same year, indicating continued expansion. Mature offerings include identity and access management (IAM), videoconferencing, and digital learning environments. Meanwhile, emerging areas of development involve digital wallets (13 NRENs), AI services (13), learning analytics (12), and digital credentials or open badges (11). The range and maturity of services vary significantly across countries, influenced by whether NRENs act as service providers, coordinators, or consortia, and shaped by differing national education systems—federal versus centralized governance.

NRENs are becoming increasingly involved in educational service delivery, particularly through digital infrastructure and support. However, systemic differences, funding gaps, and governance challenges remain. Collaboration through TF-EDU and similar initiatives is essential to strengthen the global NREN role in education.