



# National registries for life-long learning infrastructure in Norway

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## Abstract

The Norwegian Government's Skills Reform (2020) - Lifelong Learning aims to ensure continuous skill enhancement to prevent obsolescence in the workforce. A significant measure in the reform is the establishment of a digital competence ecosystem to address the societal challenge of a widening skills gap. This paper discusses the development of the ecosystem, the challenges in the current situation, the needs of the target group, and the incorporation of various registers to facilitate lifelong learning.

The ecosystem aims to provide holistic and seamless user experiences, facilitate data accessibility, and promote closer interaction between the workforce and education providers. Despite a high level of education and a rich learning environment, rapid changes in the labour market necessitate continuous knowledge updating. However, a decreasing trend in training participation, especially among individuals with low formal education, presents a challenge.

This paper discusses some central components of a platform for lifelong learning, national registries, and certain services to enable such an ecosystem: A National Education Registry, a Learner Registry and Result registries. These registers will provide comprehensive overviews of formal educational offerings, collect, and verify digital credential data, an authoritative registry for individuals in education, and provide a framework for retrieving and sharing academic results, respectively. The development and establishment of this competence ecosystem for lifelong learning is a collaborative effort involving both public and private actors.

## 1 Introduction

*The Norwegian Government's Skills Reform – Lifelong Learning* (The norwegian government, 2020) aims to prevent anyone from becoming obsolete due to insufficient skills. The reform emphasizes

that everyone should have the opportunity to continually update and enhance their skills, enabling more people to stay employed for a longer duration. One significant measure in the Skills Reform is the creation of a digital competence ecosystem. The definition we have used for ecosystem is “An IT ecosystem is “the network of organizations that drives the creation and delivery of information technology products and services.” (IANSITI, 2006) . Currently, solutions and services seem disjointed to end-users, and there is limited data and skill sharing within the knowledge sector and with external actors.

To address the societal challenge and the widening skills gap, Sikt - Norwegian Agency for Shared Services in Education and Research, a public administrative body under the Ministry of Education and Research, plans to establish a digital competence platform for lifelong learning. This initiative will be a collective effort towards creating a digital ecosystem where both public and private actors can offer their services. The goal is to increase data flow and exchange within the skills field and provide more integrated digital services. The digital competence ecosystem will offer services to individuals and businesses seeking knowledge, enabling them to connect with a broad range of providers and facilitators. Data can be shared to track individuals and businesses throughout their entire journey within skill development.

A fundamental principle for this initiative is that the services should add value for one or more target groups and provide societal value in both the short and long term. A holistic approach with customized information for individuals and businesses seeking knowledge will boost motivation to participate in skill development, especially for groups with low formal skills (Øi, 2021). Sikt aims to make the technical infrastructure and seeks external partners to make services and user interfaces. The definition we have used for platform is “A platform is a group of technologies that are used as a base upon which other applications, processes or technologies are developed” (Rouse, 2020) In the ecosystem , individuals and businesses will get an overview of available skill offers from both public and private providers. They will receive services and tools that compile already acquired skills, receive personalized guidance on recommended skill development, and access shared learning resources, all as part of the ecosystem. Additionally, the ecosystem will enable market actors and innovators to use the generated data and offer digital services comparable to the public sector, promoting innovation and diversity in the skill offerings that utilize the ecosystem.

The work on the digital competence ecosystem is based on some of the recommendations from the concept selection study conducted by Competence Norway on behalf of the Ministry of Education in spring 2022 (Norwegian Directorate for Higher Education and Skills, 2022) The focus is on improving data flow and coordinating the digital service offering in the knowledge sector. Furthermore, we aim to mobilize a cross-sectoral initiative with partners such as the Norwegian Labour and Welfare Administration, Lånekassen (student funding), Digital Norway, Norwegian University of Science and Technology, Oslo Metropolitan University, The Norwegian Association of Local and Regional Authorities, The Norwegian Confederation of Trade Unions, and the Norwegian Confederation of Business, along with providers of non-formal and formal education. All the mentioned actors will be invited to contribute significantly to the establishment of the competence ecosystem. Sikt has invited central organizations to be member of Sikts committee for registries.

## 2 What are the challenges in the current situation?

Norway boasts a high level of education, a working environment rich in learning opportunities, high productivity, and a generally well-functioning work and social life. However, certain developments

necessitate actions within the competence field for Norway to sustain its current prosperity level. The labour market is undergoing rapid changes, partly due to digitization and automation of numerous work tasks. Consequently, there's an escalating need for continuous knowledge updating to ensure employees and businesses remain relevant and competitive.

Despite this need for continuous knowledge updating, a general trend in Norway indicates a decreasing number of employees participating in training (Norwegian Directorate for Higher Education and Skills, 2022). All employee groups are participating less in training, with those having low formal education participating the least. (Ianke, P. (2021). It is likely that those outside the labour market participates even less in competence development (Øi, S. V. (2021). For individuals with low formal competence, the biggest obstacle is lack of motivation (Official report for the Norwegian government, 2020). OECD mentions that good information, advice and guidance has an impact for increasing the number of persons in training (OECD, 2017)) For businesses and individuals with higher formal education, the barriers are lack of time, lack of funding, and insufficient flexibility regarding time and place (OECD, 2017). This development is particularly concerning because formal competence requirements in the workplace are increasing, and there is stiff competition for jobs for unskilled workers. Young people and immigrants with weak ties to the labour market is particularly affected (Kompetansebehovsutvalget, Fremtidige kompetansebehov I— Kunnskapsgrunnlaget, 2017).

### 3 Requirements of the designated target group

A national learning ecosystem is being developed aiming to cater to three primary requirements of the designated target group (Norwegian Directorate for Higher Education and Skills, 2022):

1. Creation of Holistic and Seamless User Experiences: The objective of the ecosystem is to deliver a user-centric, personalized experience that enhances motivation and promotes increased participation in competence development. This is particularly crucial for groups that are less motivated or those with lower formal competence, weaker ties to the workforce, or limited digital skills. By making competence offers more accessible and contextually relevant, the ecosystem is expected to encourage a broader participation in competence development.

2. Facilitation of Data Accessibility: The ecosystem is designed to enable improved data access and flow across diverse systems and areas of responsibility. is vital for innovators, framework setters, facilitators, and businesses, who require a comprehensive understanding of the supply and demand dynamics in both the competence offer and the job market. The data accessibility is compliant with GDPR either by consent of the individual user or by law regulations concerning data collection. This Aggregated data offering insight into current and future competence needs is of value for businesses and facilitators seeking knowledge.

3. Promotion of Closer Interaction between the Workforce and Competence Providers: The ecosystem aims to foster improved interaction between the workforce and competence providers by providing access to pertinent data and an ecosystem for information exchange and communication about competence development. This interaction by coupling register data and personal information is essential for the development of competence offers that are more relevant and tailored to needs. An increased insight into the needs of the workforce will benefit both public and private education providers, leading to more effective competence development strategies.

The primary target groups for our initiatives are individuals and businesses seeking knowledge, those who want to acquire competence, and those who offer competence, the competence providers. We also target framework setters, facilitators, and innovators, all of whom play crucial roles in ensuring competence development.

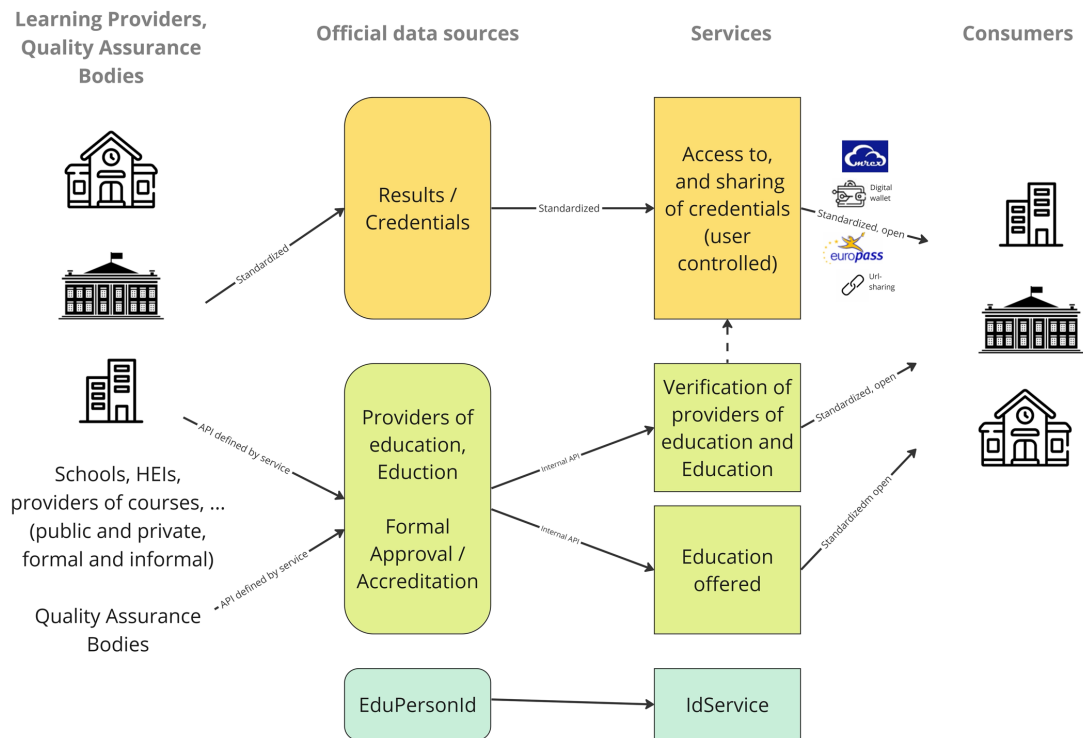
An actor can have multiple roles and thus belong to several target groups. For instance, the parties in the labour market can act as both facilitators and framework setters. Similarly, a private company can be both a knowledge-seeking business and a competence provider.

## 4 A platform for lifelong learning solution

The solution to the complex challenge picture within the competence field requires a holistic approach and cooperation between many actors. The collaboration must unite and coordinate digital solutions and services that can offer and exchange necessary functionality and data to create coherent user journeys for the knowledge-seeking individual or business.

The core of the initiative will be the development and establishment of a competence platform for lifelong learning. The Norwegian Directorate for Higher Education and skills has found three central areas (Norwegian Directorate for Higher Education and Skills, 2022) for which national registers with associated services need to be established. These areas are education offered and its formal status, results from education and central information about learners.

The figure below gives an overall picture of these data sources and the main associated services.



We will use international standards for integrations where they exist, these arrows are in the figure marked with “Standardized”. All services are open for consumers. Harvesting result information from official sources is also done using international standards on APIs and formats.

There are several initiatives in Europe that try to solve the challenges of upskilling or reskilling the workforce. We have investigated DigioVisio in Finland, Bird in Germany and NPULS in Netherlands and have started a collaboration to establish standards and discuss how to solve shared challenges.

## 4.1 Education

It is essential to have knowledge of all education offered, both formal and informal. This covers all levels of the educations from kindergarten to PhD, and also from any providers of competence, certifications and short-term courses offered outside the regular education sector. It is also important to know their status of approval or accreditation and it will be necessary to define criteria for classification and/or quality assurance of non-formal competence offerings included in the platform.

The Norwegian Sikt, with support from the Ministry of Education, was set to commence work in 2023 to establish a national education register as part of a national competence platform for lifelong learning. The register will provide a comprehensive overview of all formal educational offerings in Norway and offer a platform to generate and assign unique identities to education, as well as securely store information about educational offerings and their formal accreditation. Both study programs and courses are targets for the registry, both study programs and subjects are targets for the register, with continuous updating of changes from the educational institutions. In the next phase of development also non-formal education will be included. A more detailed presentation was given in last year’s EUNIS conference (Vangen, Bergen, & Haugen)

The current distributed management of educational data leads to multiple versions of the same data and poor data quality. A national education register will provide applicants and students with an easy way to determine if the desired education is accredited and will be beneficial for entities such as the Norwegian Diploma Portal and The Norwegian Universities and Colleges Admission Service (NUCAS), as well as contribute to reporting to European registers that Norway is obligated to.

In the initial development phase, the register will contain data on education at vocational schools, colleges, and universities, levels 5-8 in the national qualification framework. The register will be a primary source of educational data and provide both end-user and programmable interfaces for storage and retrieval of accreditation results, as well as an intuitive user interface for querying and managing education data and accreditation status.

The data will be stored in a tamper-resistant manner, and the data model will withstand organizational and structural changes in education providers as well as the structure of education. The register will be able to connect to international services such as The European Quality Assurance Register for Higher Education (Eqar) and Europass Digital Credential Infrastructure (EDCI), and the EU’s Qualifications Dataset Register (QDR or education overview). A unique ID per study program or course will provide multiple linking possibilities, e.g., linking with financing options from Lånekassen and accreditation information from NOKUT.

The goal is for the data in the education register to support processes requiring access to information about education and be a national digital identity for institutions and education programs and courses, as well as an authoritative source of information about education and their accreditations. The register will also be an authoritative source for accreditation for institutions and maintain changes over time, including changes in the description of institutions and education programs and courses and changes in

accreditation. The goal is also to include non-formal courses and micro credentials that do not award study credits.

A national education register will simplify the work of analysis and statistics by providing a unique ID for all education and contribute to simplifying the process of connecting data from various sources to obtain the desired knowledge base. With a national education register, Norway will be better equipped to meet the needs of an increasingly globalized world, where it is essential to have a good overview of educational opportunities and their quality levels.

## 4.2 Results from education

Storing diplomas and other results from education is crucial for several reasons. Firstly, it provides a permanent record of academic achievement, which is often required for further education or employment opportunities. Secondly, it allows for easy retrieval and verification of qualifications and skills, ensuring transparency and credibility. Thirdly, it helps educational institutions maintain accurate records for alumni tracking and statistical analysis. Lastly, it supports individuals in keeping track of their own educational progress and accomplishments.

In Norway we have the Norwegian diploma database (NVB), a national service that collects and verifies electronic diplomas from upper secondary education. The service automates and quality-assures diploma processing to streamline the admissions process for higher education. Diplomas are stored as data in NVB and used for scoring and verification against admission requirements.

NVB is now designated as the service that handles the storage of diplomas and documentation of competence from upper secondary education in accordance with the Education Act §3-1 and is crucial for ensuring accurate documentation and legal protection for students. Furthermore, NVB is also important for other societal processes that require digital original documentation from upper secondary education and must therefore be allocated sufficient resources and attention. To fulfil the aims for the competence platform NVB evolves into a results database which will contain all kinds of diplomas and results for any level of education. This also includes micro credentials. We need to establish a tamper-proof data infrastructure for long-term storage. The internal data model must take this into consideration, so our focus will be on the data that is needed and not necessarily which standards that are currently available.

Users and learners need a service for sharing their certificates of competence. The Diploma portal will provide access to all data sources documenting competence for a citizen and give the user access to share these with, for example, potential employers. In addition to results from all levels of education, data on authorizations, certifications, certificates and more may also be made available and shared.

The user need access to their data about their achievements. The Diploma portal is a digital self-service platform that provides a framework for retrieving and sharing academic results from higher education with educational institutions, employers, and other relevant stakeholders. The service is designed to facilitate access to and sharing of reliable and accurate results from all Norwegian universities and colleges, as well as results from exams in Norwegian and social studies needed to be granted permanent residency or citizenship. The Diploma portal is regulated in the University and College Act and is designed to prevent the use of forged transcripts and grade reports. The diplomas are digital signed by the institution, but for single results for courses we trust the source. There is an ongoing work on how results can be certified.

The portal was implemented in 2017 and ensures truthful information about transcripts, grades, other documentation of acquired competence, and decisions regarding the approval of foreign education and training.

The Diploma portal is also integrated with several recruitment platforms, streamlining hiring processes and ensuring secure exchange of academic results.

The Diploma portal is a result of international collaboration through the Erasmus+ project EMREX. This network allows the learner to access their own results from education and share these with any process in need of these credentials. Examples include student mobility, job application, applying for recognition and entitlements etc.

The use of the Diploma portal is increasing, and it is one of the fundamental services in the infrastructure for lifelong learning and the connection between work and education. Expanding the service with results from primary education, vocational education, and recognition of foreign education will simplify processes and provide value for many more areas that need this information. Today we already have a process to control and collect diplomas from upper secondary schools. Publishing these data to the Diploma portal, we will use the same standards as for higher education. This can also result in significant cost savings both in public administration and private business as we have experienced from making data from higher education available.

Sikt is a member of the DC4EU project. One of our goals is this project to integrate the Diploma portal to the EUDI (European Digital Identity) wallet infrastructure. This integration will exist in parallel with the existing EMREX connection. There are also ongoing activities to build a bridge between EMREX and the OOTS (Once Only Technical System) to support SDG (Single Digital Gateway) and the concrete user education scenarios mentioned in its regulation.

### 4.3 Identity of learners

To address the challenges associated with increasing mobility and flexibility in the education sector and enable lifelong learning, it is necessary to have an identity for learners, students, and academic staff without a Norwegian identity number. Students take exams at Norwegian educational institutions, both diplomas and exam results are digital. This means that students must be able to access their diplomas and results even after they have left Norway. They need this access for the rest of their lives. Researchers and visiting staff also need a Norwegian identity when they are in Norway or for academic work for Norwegian institutes.

To solve the issue with access to Norwegian institutions and to digital credentials from education, Sikt wants to establish an authoritative registry for individuals in education across levels of education. Such a registry will be particularly important for identifying individuals across organizations and over time, and for supporting digital access to results and other resources.

A national index of individuals studying at various institutions will be a crucial contribution to achieving this goal. Existing national registers, such as the national student register, can be repurposed for administrative purposes by multiple stakeholders and contribute to streamlining the flow of information between educational institutions and other entities that require information about students, such as Lånekassen.

Data sharing between educational institutions and other entities can help reduce data duplication and facilitate collaboration and knowledge development across the sector. However, there are several challenges associated with data sharing, such as regulations, costs, data scattered across different systems, and a lack of coordination and control over data sharing in public organizations. To address these challenges and facilitate data sharing, a harmonized and digitization-friendly regulatory framework is necessary, providing necessary regulations for reuse or further use of personal information.

Sikt believes that there should be legal provisions in the university and college act to ensure a legal basis for the establishment of a national index of individuals studying at various institutions. In Finland there already are an Act for student number registry (Finlex, 2021) Sikt's proposal for the Norwegian Ministry of Education is giving Sikt the authority to establish data-sharing services, with the possibility of additional provisions in a data-sharing regulation.

The planned learner registry will contain essential information about an individual's identity, including birth number, digital education ID, name, gender, and contact information such as physical address, email address, mobile number, and other digital media. Sikt is required to collect all these data according to Norwegian law. Additionally, the registry will include an index of where the person has an active enrolment and an index of sources for the individual's results. This will be a valuable resource for the education sector, contributing to supporting lifelong learning and mobility in education.

## 5 Summary

In order to be able to build a total infrastructure around lifelong learning, there is a need for some national components that providers of education can connect to. In addition to this, the individual education provider must have good local systems with good order in their own data connected to this common infrastructure. If this is done at local and national level by collaboration on data models and standard processes for handling these data in a life cycle perspective, the link to international cooperation could be enabled much more easily than today. The adoption of new international standards and connection to national and international networks is made possible via common contact points without each individual education provider having to do this development themselves. In addition, this makes everyday life easier for citizens who need access to this information, and it also provides greater legal certainty for them.

We strongly believe that these three registers and connected services described above will be an essential part of the infrastructure for lifelong learning in Norway. Some of these services are already up and running, others are now being developed, and others are only at a planning stage. Based on experience from the existing Diploma portal, we see that connection to new networks and the use of new standards for formats and exchange protocols can be implemented relatively easily when we have data models and services designed for this purpose.

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