

# A new approach to digital degrees

Anna Sandberg Telléus and Anna Lindgren

The Ladok Consortium, Sweden

anna.sandberg.telleus@gu.se, anna.lindgren@chalmers.se

## Abstract

In a time of ever-increasing digital transformation, we see that all areas in the society need to constantly adapt to this development, not least the education sector. This in combination with international mobility calls for continual evaluation of the student administration processes, to ensure the students and alumni to be able to access and share the qualifications they have earned.

To meet these requirements, the development of an improved and further digitized system for digital degrees in Sweden is taking place. The functionality is based on the approach that instead of focusing on the document (i.e. the degree certificate) the focus is on the digital decision which is made and saved digitally. There will still be a document, but this will merely be a representation of the actual decision and therefore have no further legal meaning. This way of looking at the document makes it possible for the student to retrieve new documents when needed.

## 1 Background

In Sweden, almost all higher education institutions use the same system for education administration. The Ladok system is owned and used by 40 higher education institutions and the Swedish Board of Student Finance (CSN). System development takes place jointly for all higher education institutions, although each higher education institution owns and assumes responsibility for the content of its own register. The joint operational management of Ladok is undertaken by the Ladok Consortium, which is also responsible for the operation of Ladok. This cooperation between the Swedish higher education institutions enables us to develop a system and processes that are commonly used, and to collaborate in further evaluating these.

With the current version of Ladok, which the higher education institutions started using in 2017-2018, came the opportunity to digitally issue degrees in Ladok. This meant that a decision on paper was replaced by a digital decision. With this process, the decision in Ladok, namely the data that includes

all the information on what has been decided (such as what degree has been issued, which courses are included, etc.) becomes the central and legally binding artefact. In the digitized process, the degree certificate no longer constitutes a decision document, but is only a visual representation of the decision in Ladok. This corresponds well with the decreasing role papers have in today's society; to digitally verify data is what is, and will in the future be even more, important.

This digitization of the degree process has been handled in different ways at the different higher education institutions. Not all higher education institutions have yet started using the possibility to make these decisions directly in Ladok, and some have different ways of distributing the information and documents to the students. There has therefore been a demand for joint management in Ladok, so that all higher education institutions in Sweden can use, and consequently all students will meet, the same processes. The Ladok Consortium is therefore working with an automation and digitization of existing processes, based on the assumption that the decision on a degree is made in Ladok and that the document is only a representation of the decision.

## 2 Identified requirements

In contact with Swedish higher education institutions and with students we have identified the following requirements, which we aim to solve within this project:

- Students need to be able to access their degree in a simple and secure way.
- Students need to be able to share their degree with external recipients (e.g. employers, higher education institutions).
- Students need to be able to present a correct degree certificate with a professional appearance.
- External parties need to be able to verify that a student has a degree.
- The system needs to handle changes that affect the degree certificate.

## 3 Our digital approach to degrees and documents

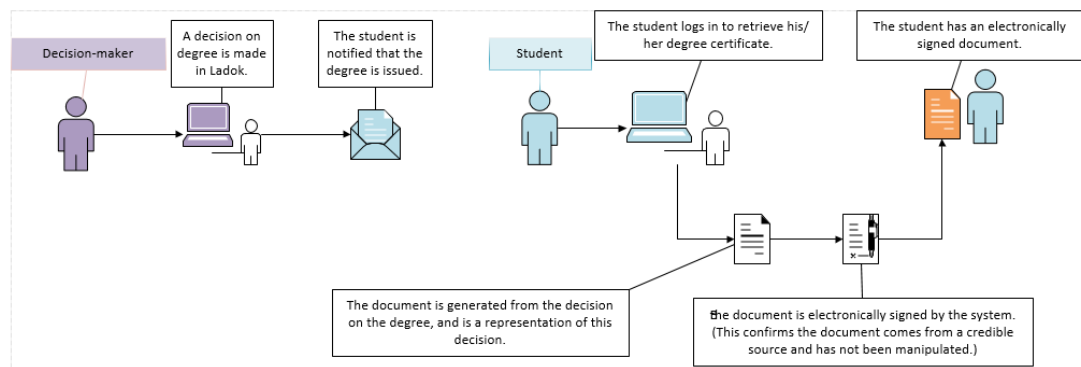
The coming functionality is based on the assumption that, when it comes to issued degrees, the central and important part is the digital decision that is made, and saved, in Ladok. When the information needs to be verified, by for example a future employer, the verification should be done directly against this information. The student will also be able to receive a digital document where the information in the digital decision is visualized, but the signification of this document is merely a representation of the actual decision and therefore has no further legal meaning. This way of looking at the document makes it possible for the student to retrieve new documents when needed.

## 4 Suggested solution

The technical solution that is being investigated and worked on is based on the above approach. The decision on a degree is made by the decision-maker directly in Ladok, and it is the information thus saved in this system that is central; external parties can verify against this, and degree certificates can be generated based on this. The information cannot be manipulated and therefore the focus on

verification against this means increased legal certainty. Previously, when the document was the main source for information on the degree, this could quite easily be manipulated in order to present a degree that you don't have, or to amend its content, such as grades. If those who are to verify degrees will be referred to Ladok as a source of information, the forging of documents will be uncalled-for.

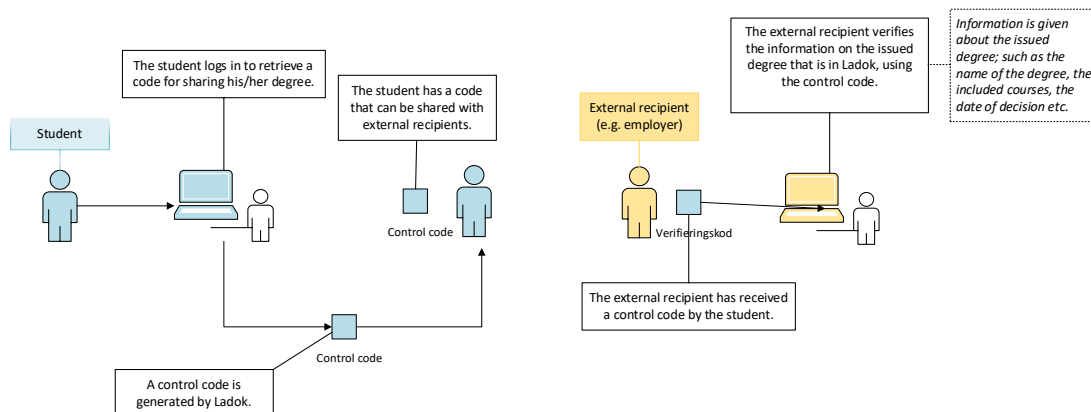
When the student is notified that a decision on the degree has been made, he or she can log in to "Ladok for students" and download the degree certificate himself/herself. The document is generated based on the decision, i.e. from the data saved in Ladok, and the student then has the opportunity to obtain new documents if necessary. Corrections of clerical errors that affect the document will result in updating of this information in the newly obtained document, so that the document contains the current information contained in Ladok. The actual decision on the degree cannot be changed, however, with anything other than a removal of the previous decision that may be replaced by a new one.



**Figure 1:** The process from decision to distribution

In order to give external recipients access to the information regarding the degree the student/alumni holds, he or she can retrieve a code from Ladok and share with the recipient. The recipient can use this to access the information, which always is the current and correct one. This will hopefully reduce the forging of documents, since the document will not be the primary source for verifying a degree.

The technology used for this verification is based on attaching a control code to the data holding the issued degree. The recipient who has received this code then can access the relevant information on the issued degree directly from Ladok.



**Figure 2:** The process for verifying a degree using a code

How does this work with notions like verifiable credentials or electronic wallet? Very well, actually. Since there is no paper original, and the degree certificate is not the main source of information, the students can use the electronic data to whatever they feel. It could be downloaded to a personal wallet, used in a block chain infrastructure or anything else that might arise in the future. Of course the solution delivered by Ladok covers the whole chain from issuing to verification from start, but this approach enables the future possibility of moving data to other systems.

## 5 Identified benefits

In summary, we see the following benefits of this solution:

- The student can retrieve his/her diploma himself/herself once the decision on the degree has been made.
- The processing time is reduced as the manual work on distribution is no longer needed.
- Legal certainty increases as it is the decision in Ladok that is central and against which verification is made.
- Legal certainty increases when changes/corrections are made at the place in Ladok where the error occurred and that this is then reflected in everything that comes out of Ladok (in this case the degree certificate).
- There will be clearer traceability of any changes as these can be traced where they occurred.
- The higher education institutions must start handling their data correctly in Ladok, as this will be what is shown to students.
- This is a step towards the student/alumnus being able to own their data.
- The focus on the decision in Ladok enables more innovative solutions in the future, such as verifiable credentials.

## 6 Author biographies



**Anna Sandberg Telléus** works for the national Swedish Ladok Consortium in the team developing functionality for degree processing. She is the team product manager, and is thereby responsible for prioritizing what development is to be made in this area. She is employed by the University of Gothenburg, where she previously worked as a degree officer. Anna holds a degree in Informatics from Växjö University.



**Anna Lindgren** works for the national Swedish Ladok Consortium in the team developing functionality for degree processing. She is employed by Chalmers University of Technology, Gothenburg, where she previously worked as a degree and admissions officer. In 2020, she was project manager for a national feasibility study that investigated the needs that exist in the sector, for a comprehensive solution for digital degrees. Anna has a background in human relations and holds a degree in Psychology from University West in Trollhättan.