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SUMMARY

The digital age is already influencing our life in a tremendously manner and new technologies are being deployed and adopted by the public sector are bringing in new, innovative ways in which citizens and businesses interact with public authorities. This causes new ways of working within the public sector, and the swift towards digital services are challenging how services traditionally are developed and delivered by public sector itself.

These digital advancement challenges those traditional education methods we are used to, within higher education. In all other aspects of society student, academic and administrative staff are used to a digital environment. Student expects to do their exam digitally and not be forced to reproduce their knowledge with a pen and paper. Today's process is ineffective and are facing several non-secure issues, as well as the need of rethinking how assessment is conducted.

One of the top issues of student and top management at Norwegian Universities and university colleges are how to digitalize the assessment practice. Several higher education institutions in Norway have done a lot, others have just started, while others are planning to start up. Common for these institutions are that they are all facing the same challenges; "what do we mean by digitalization of assessment", "how does this influence institutions existing practice" and "which technical and security issues do we need to address".

This paper looks at the national projects that have been initiated by at and is financed by the Norwegian Government and the Ministry of Education. The project is lead by UNINETT and includes participation of thirty higher education institutions as well as participation of the student democracy.

And to ensure that institutions get actual solution to try out different ways of digitalization the assessment process and to stimulate vendors to develop new solutions, the project has established collaborating with several vendors.

The project is focusing on:

- National taskforces working with organizational, technological and legal perspectives
- Coordinating and facilitating exchange of experience
- Coordinating institutional test of pilot applications
- Establishing necessary infrastructure
- Development agreement with vendors
- Preparation for a national procurement process

ABOUT THE PROJECT “DIGITAL ASSESSMENT”

UNINETT has established a national project to ensure that students get access to digital examination, and that the whole workflow for digital examinations will be digitized. The project is operated in close collaboration with the educational institutions in the Norwegian higher education sector.

The experiences made in development will form the basis for the specification of a joint procurement.

The two-year project aims to start a public procurement process for new solution(s) by Q1 2016. We seek solutions that can handle the examination/assessment process in its entirety. The institutions' awareness and knowledge about what should be included in a digital examination process is not yet fully formed. It was therefore difficult to accurately describe the needs and scope, at the start of the project, even with clear goals and success criteria.

The solution should facilitate a continuous process and support the working processes by making relevant information available for students, lecturers, examiners, invigilators and administrative personnel. We envisage that the system must be able to handle different types of exams, both current and future assessment methods. The sector is in the process of developing and restructuring new forms of assessment of knowledge and a solution for digital examination and assessment must accommodate this.

DIGITAL ASSESSMENT AS A WHOLE

Digital assessment as a whole covers a wide area of issues, different aspects connected to transforming the current analog process to a digital one, need to address the pedagogical perspective as looking at what opportunities technology presents in order to “re-assess” our assessment practices and look at assessing students more efficiently and in more innovative ways, as well as looking into organizational, legal and technical issues.

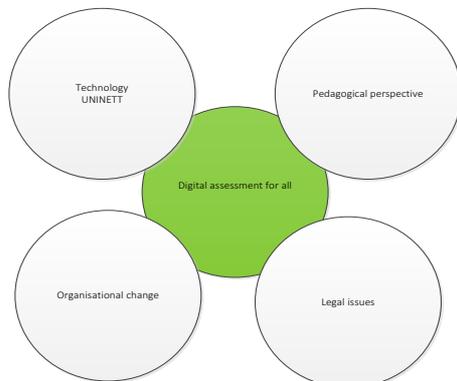


Figure 1: Digital assessment as a whole

Although all aspects are important, this project has its main focus on the Technological perspective. This doesn't mean that organizational, pedagogical and legal issues are out of scope, and in some matter we have to deal with these questions as well. To ensure these areas are covered the project has a wide cooperate with different adequate units and resource persons.

PROJECT ORGANIZATION

The digital assessment project is initiated and a part of the eCampus program, a program financed directly by the Norwegian Ministry of Education. The eCampus goal is to contribute to increased digitalization within higher education in Norway.

The project is lead by UNINETT and includes participation from most universities and university colleges in Norway, as well as participation of other public service providers in the sector and the student democracy.

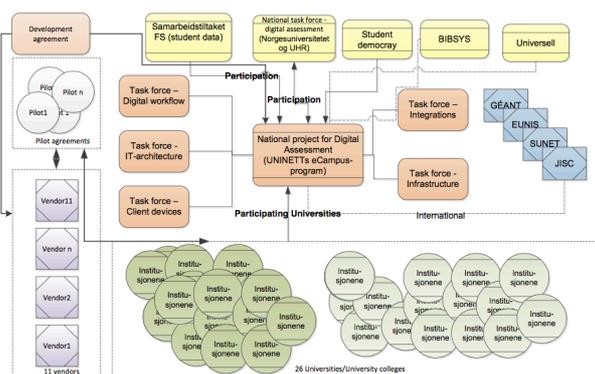


Figure 2: Project organization

To collaborate with suppliers who are working within the digital assessment discipline is also a part of the projects main focus.

Project activity

Total contributors to the project are approximately 70 persons that represent different skillset. The main group are administrative and technical resources, and there is also a wide representation of pedagogical staff as well.

The main project are divided into different work groups and task forces:

Main project group:

Mainly project managers of institutional digital assessment projects and educators, working with the project manager preparing plans and as an advisory board for project decision and priority

Task force - Digital workflow:

Administrative and IT-specialist resources working with assessment and some experienced educators. Describing a national digital process for digital assessment, to ensure a digital first choice (UFS-148)

Task force - IT-architecture:

Institutional IT-architects. Establish an IT-architecture description for digital assessment. (UFS-148)

Task force - Integrations:

IT - architects and IT - specialists. Establish standards and a technology interface (UFS-146)

Task force - Client devices/BOYD:

IT - specialists and specialist in universal design in cooperation with law specialists. Establish guidelines for client devices (UFS-147)

Task force - Infrastructure:

IT - specialists, network specialist, structural design engineer and specialist in universal design. Establish guidelines for technology and building infrastructure (UFS-145)

LESSON LEARNED IN THE PROJECT “DIGITAL ASSESSMENT”

Working on the “edge”

The assessment processes a very essential part of operations in higher education, a part of the universities funding is linked to complete courses and passing students.

To change from paper-based procedures to digital procedures requires change in the operations procedures at the university, the assessment regulations at the university and the perception or understanding of the assessment processes, among both students and staff at the university.

Major changes in higher education

There are major changes in Norway’s higher education sector, universities are merging with university colleges, forming new larger, more attractive institutions for the students. But they become more widely spread with units hundreds of miles apart. The units in the new institution can have cultural differences, but the understanding and wish to move towards digital assessment seems to be a common goal among the management of the new institution. They often want to move to fast, and they make unrealistic promises about digital assessment to be more attractive to the future student. As new knowledge has emerged as a result of this national project, most of the universities have revised their goals for implementing digital assessment, and adjusted their implementing plan to more realistic.

New workflow for the assessment processes

Digitalization of the assessment processes, and moving to a new workflow it’s a big “change management” project. Some tasks disappear in the paper-based workflow, and new tasks are introduced in the digital workflow. And this gets even more complicated when we are operating in an immature market with no turnkey product, immature solutions from vendors, several promising solution but lacking features supporting workflow.

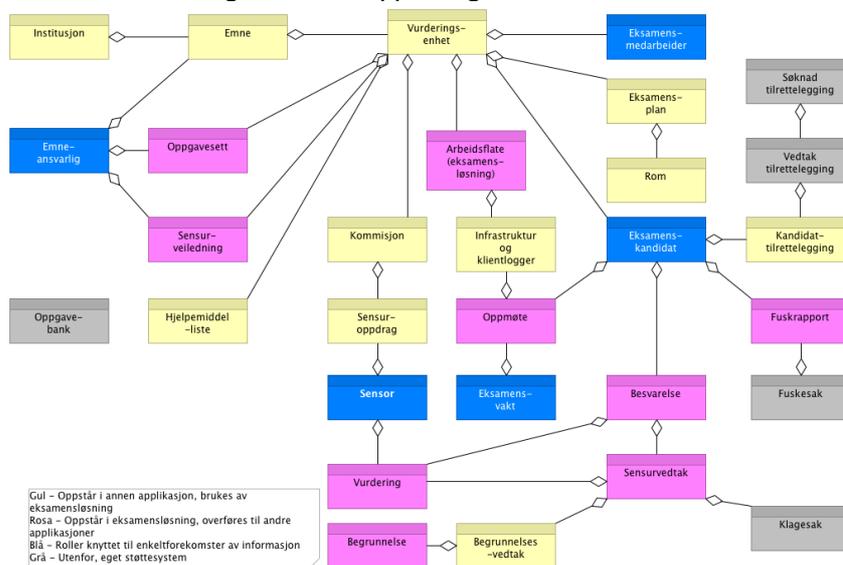


Figure 3: Digital assessment process as described in UFS 148 (translated into English, June 2015)

PROJECT DELIVERIES

The project is organized and the working is focused in these main areas;

- Sharing knowledge
- Market development
- Pre-standardization descriptions
- Establish necessary infrastructure
- Prepare procurement

Sharing knowledge

Although the knowledge and understanding of implications and opportunities that digitalization of the assessment process matures, there is still a great need of better understanding. To facilitate the sharing of knowledge between institutions, different project, with vendors and other stakeholders is an important and very appreciated task. We also strives to share knowledge with our colleagues internationally. By different measures:

- Arranging several national seminar series about digital assessment
- A common website for digital assessment
- Participation in several national taskforces
- International collaboration e.g. GEANT, EUNIS(ELTF), SUNET(SW)

Market development

In the pre-procurement phase, it was decided to run the investigation and tests of possible solutions as a “National pilot under the supplier development program¹”. The project has to sign development contract with interested vendors/suppliers of solutions for digital assessment, coordinate the investigation and tests of the different solutions and give all the vendors/supplier access to same documentation about integration and standardization work. This procedure was chosen because of need to understand requirements and interact with immature market.

A market analyses has resulted in dialog with eleven interesting vendors/suppliers of different kind of solutions within the digital assessment area.²

Testing

To facilitate and make it easier for institutions to try out different vendors and solutions for digital assessment, we have prepared a contract template, an experience report template, a common progress overview and developed a standard integration point. Information from all experience report goes as feedback to relevant task forces and will be input to upcoming specification.

Pre-standardization descriptions

In this immature market, we use Campus Best Practice (CBP) documents, and other reports as pre-standardization descriptions to generate commend understanding of needs and requirements for digital assessment. In the end, CBP documents will be part of the requirements in the “call for tender” next year. We also recognize the need to update the CBP documents during test and investigation phase of the project.

- UFS145/CBP145 - Infrastructure
- UFS147/CBP147 - Integrations
- UFS146/CBP147 - Client devices
- UFS148/CBP148 - Digital assessment process & IT-architecture
- UFS149/CBP149 - Logging and monitoring in digital assessment
- UFS150/CBP150 - Regulations & Cloud services

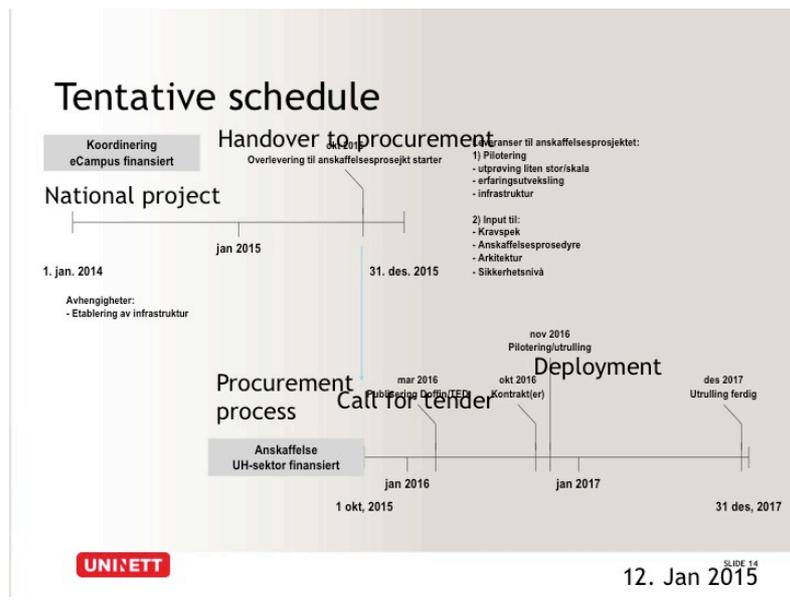
Translation financed by GÉANT sponsored the European Commission. CBSs are free, openly available documents available from the GÉANT website³. And in Norwegian at UNINETT web site for digital assessment⁴

Establish necessary infrastructure

To ensure a secure and robust environment for full digitalization of the assessment process, it is necessary to establish an infrastructure that supports a digital way of working. This means that we need to define the requirement to all adjacent services, e.g. establishing 24/7 emergency response.

Preparing procurement

A procurement process is under planning with a planned call for tender 1.march 2016. The procurement will be managed by a new separate project governed by UNINETT AS. Handover to this new project are planned mid autumn 2015.



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Freddy is an experienced manager and ICT-strategist. 20-years experience working with ICT in government, public sector and as a consultant. The last 11 years within Higher Education



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REFERENCES

¹ The Confederation of Norwegian Enterprise (NHO) and the Local Governments Organization (KS) are the initiators of the National Program of Supplier Development . The program is conducted as a partnership between national innovation stakeholders, ministries, government agencies, municipalities and businesses. The program is conducted in the period 2010-2014.

² Market development(n.d.) describe at website, (<https://www.uninett.no/seminar-om-digital-eksamen/leverand%C3%B8rer>)

³ GÉANT website (n.d.) http://services.geant.net/cbp/Knowledge_Base/Pages/Home.aspx

⁴ UNINETT website (n.d.) <https://www.uninett.no/digitaleksamen>