# EUNIS 2019: Transformation of IT at Norwegian University of Science and Technology (NTNU)

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## 1 Summary

As a result of the merger between NTNU and 3 university colleges in 2016, all IT functions at NTNU were reorganized. All common services were streamlined, and moved to the central IT department. IT support for research activities were centralized, and remained locally only at 4 out of 7 faculties.

Upping the ante even more during this merger transformation, the Norwegian Government initiated an efficiency program for the Public Sector[i], where the general budgets are reduced by about 1% per year, channeling new funding into strategically important areas of research and education.

To meet the challenging economic reality of a decrease of funding of traditional activities and increase within strategic areas, starting in January 2018, a internal transformation program was initiated at the IT department, aiming at shifting the IT workforce from standard IT operations towards skills needed for a transformational digitization program. The IT department is using new techniques to acquire and transform a targeted workforce, limiting the costs related to external assistance such the hire of consultants.

NTNU established a digitalization program in 2018 to use IT as a strategic tool for transformation in this challenging economic situation. The program aims at spending approximately NOK 100 million every year until 2025, to deliver a cost efficient, agilent and flexible digitalization of the university. The IT department meets this opportunity using a well-honed project system, based upon the in-house cross-breed project administration method, internally developed with inspiration from frameworks such as ITIL, Togaf and Prince 2 to mention a few to secure that projects are performed in such a manner that the total user satisfaction are high and total lifecycle costs are as low as possible.

# 2 Transformation of IT at NTNU

## 2.1 Transformation

During 2019, roughly 50 man-years (over 20% of the IT department) are changing from IT operations to transformational digitization tasks. There is continuous focus on how to the reshape the workforce in order to be relevant for transformational digitization. Activities and projects that contribute to transformational digitization, are subject to a high degree of attention and follow up.

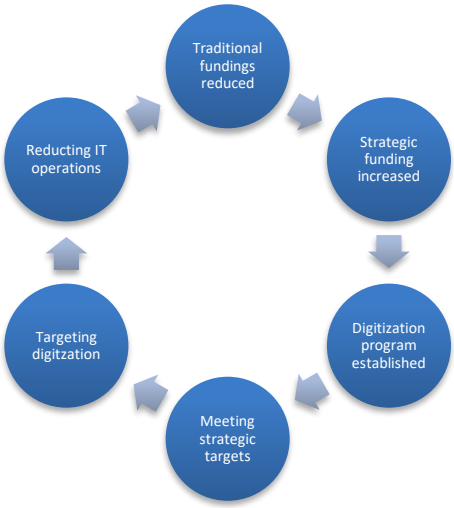


Figure 1: Handling shifts in funding towards strategically important areas for the Norwegian Government and the board of NTNU.

In addition, one of the thirty-odd projects running under the digitization program umbrella is shutting down older services and servers, increasingly reducing the workload within IT-operations.

## 2.2 Changes in recruitment policy, and high focus on project management

Digitizational transformation requires new skills and talents, forcing the IT department to change it´s recruitment policy. In some areas of expertise, it is difficult to obtain the necessary personnel in the ordinary workforce market, due to a general lack of personnel in the market and high salaries for important competencies. This has inspired the NTNU IT to come up with several new recruitment and competency shapement approaches. One example is the hiring of a group of junior project managers, developing them in a newly established in-house training program for transformational digitization project management, instead of trying to hire experienced project managers, a previously attempted but often failed approach. This group of junior project managers are a mix of newly educated bachelors and masters from the university and experienced co-workers from potential transformational digitization targets of the NTNU such as economy and educational support. The newly recruited junior project managers study using a custom made project management curriculum as part of their onboarding at IT, with a broad range of subjects. Examples of subjects are traditional project management, using NTNU's excellent resources outside the IT department for this part, and the highly focused and agile Project Administration Method (PAM) developed by the IT department. PAM is a methodology honed over many years, inspired by such diverse sources as Prince 2, ITIL and Togaf, to mention a few, and in use by all parts of the IT department and gradually sifting throughout the whole NTNU organization as well. Last not least, the use of PAM is a walk in the park now, with an easy-to-use custom made Microsoft TeamSite application, guiding project managers and others through tasks and checklists.

## 2.3 Challenge the culture

In order to succeed in digitization, we must challenge the underpinning thinking of what to do and how to work. Impulses and inspiration to inspire culture change often come from close friends and

partners. Important partners within the higher education institution society typically involve the EU with institutions such as EUNIS, GEANT[VI] and others, and in Norway the BOTT[IV] cooperation and the UNIT[V] organization. NTNU is fortunate to have partners among the international, national and local commercial powerhouses in digitization such as Microsoft, Bouvet[VI], Enable[VII] and Kantega[VIII]. In addition vital insights and suggestions come from strategic partners such as Gartner group. Collecting impulses from our partners and friends, the NTNU IT has a constant focus on acquiring the very best knowhow, still working on building our core competencies and what we believe to be our strongest competitive advantages. Focusing on what is new and better is of course not sufficient: It is challenging to get rid of costly anti-digitization remnants and their artefacts; such as printers. As a result, the IT department itself is now a forerunner in the liberation from the use of paper, reducing paper waste. In the addition to the IT departments departure from printing, one of the smaller digitization projects (Digsik) as part of the transformational digitization program will on its own reduce the need for paper printouts of security data sheet to laboratories with approximately 180.000 pages a year. This project is one example, with approximately 30-40 projects running in parallel at any given time, with an approximate average time to completion of between one and two years each. Culture is challenged in many ways, with the digitization program and the change of focus from operation to a IT-supported digitization transformation of the NTNU at the core.

## 2.4 Change in working methods

Scrum methodology[ii] in software development tasks and transformational digitization has been used for several years at the NTNU IT department, yielding consistent good results. The methodology has proven its suitability for both simple and complex projects. However the process leading up to the prioritization of projects was somewhat lacking in terms of agility and adaptability to meet the ever changing desires and requirements of the university.

In the summer of 2017, Gartner Group's Bimodal methodology[iii] was introduced to remedy the lack of agility and adaptability. With the introduction of bimodal a fast track was introduced for non-complex activities with potential for major business improvements. Architecture as well as transformational digitizational competencies help to select good fast track candidates, and guide them to a successful completion.

To be able to use fast track more often, the underlying architecture must allow this, by more easily getting APIs of fast track systems to exchange data with existing systems. APIs are integrated via a Service Integrated Architecture (abbreviated TIA in Norwegian), a relatively low-cost and flexible solution where all new systems connect and exchange data.

To ensure better engagement, involvement and understanding of the university’s needs, the IT-department has established so-called Key Account Managers, which are listening posts through the university. The Key Account Managers typically works in close relationship with faculty and departments management as a strategic IT-advisors.

# 3 CONCLUSION

The IT business of higher education institutions dictate a strong commitment to continuous transformational digitization. Key success factors are the ability to use the challenges in budget reductions and high aspirations at the institutional level to transform the workforce and the culture of IT operations and the institution at large to reap benefits of digitization, as well as continuously changing the internal culture and workforce to cope with new challenges. Reducing the budget and human resources footprint of traditional IT operations while increasing the transformational potential of digitization requires agile thinking and keeping a close watch at resource usage. Cross-sector cooperation as well as close and strategic ties with commercial actors aims at getting new inspiration and competencies, still limiting the use of costly external consultants, and thereby reducing costs and yielding high quality transformational digitization. The willingness to create solutions that save money and give NTNU IT the competitive edge, is at the heart of the efforts of the IT department.

# 4 AUTHORS' BIOGRAPHIES

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