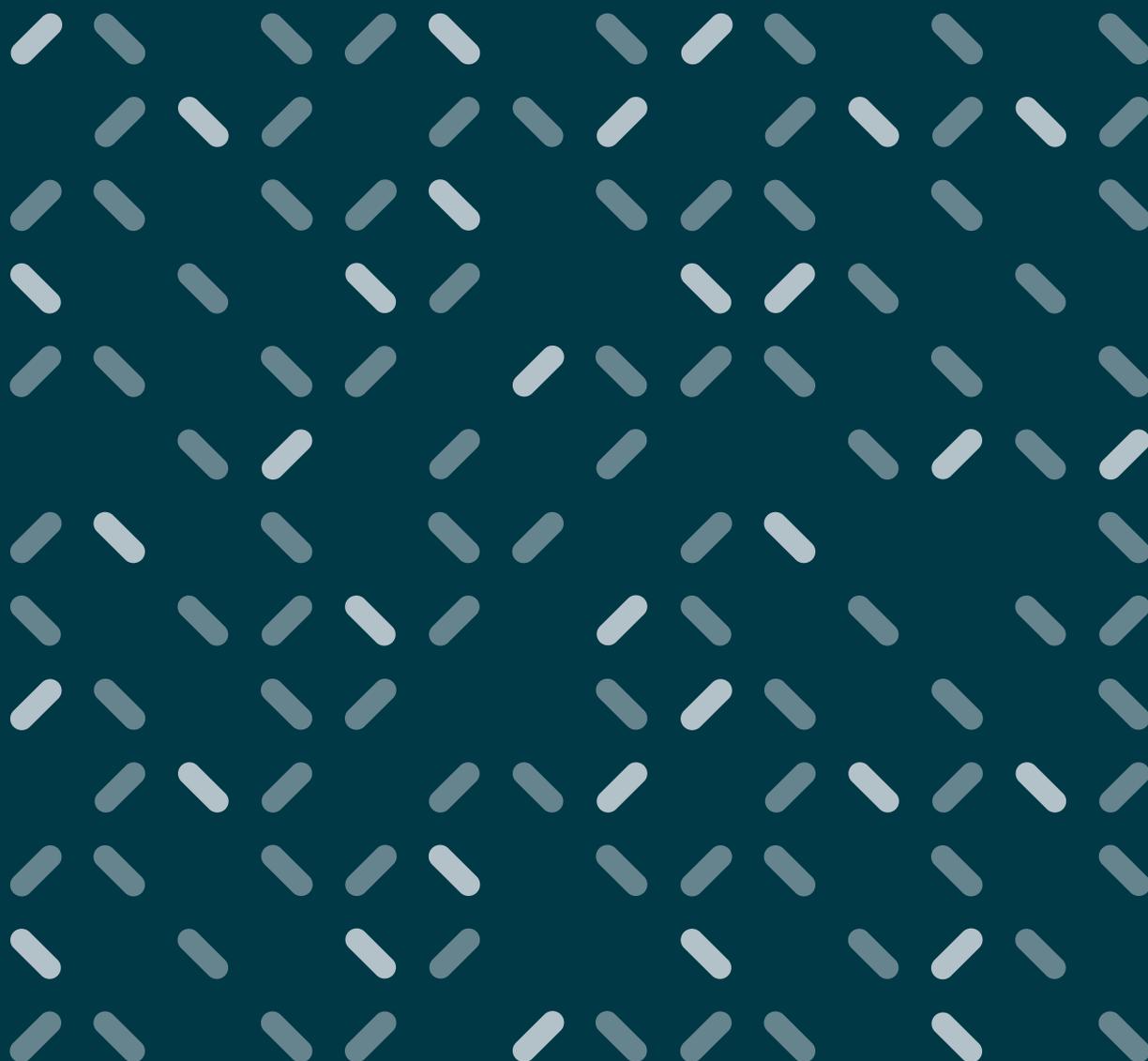# Introduction of Welfare Technology for Children and Youths with Functional Disabilities

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Introduction of Welfare Technology for Children and Youths with Functional Disabilities

Organisational prerequisites for the introduction of welfare technology using the Municipalities of Risør, Sandnes, Horten and Drammen as examples.

Summary
This report is part of the project 'Testing of Welfare Technology for Children and Youths with Functional Disabilities' by the Norwegian Directorate for E-health and National Welfare Technology Programme. The study investigated the organisational prerequisites for the successful introduction of welfare technology for the user group. Representatives from the testing municipalities of Risør, Sandnes, Horten were interviewed. The report highlights areas of importance for the successful introduction of welfare technology in municipalities.

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1 Introduction

Through its National Strategy for E-health 2017-2022, Norway has a vision to digitalise health and care services to make them easier, better and more uniform for the population[1]. The report on a national need for knowledge on e-health points out that the field of e-health is marked with a high degree of complexity [2]. At the same time, challenges are indicated pointing towards the need for changes in terms of organisational competence, laws, ethics and technology. Efficient national steering and execution capacities within the field of e-health requires knowledge of such complex interaction, and knowledge on processes surrounding development, introduction and the application of e-health in the sector, as well as the effect of specific e-health initiatives on political goals for health and care.

Through grant schemes, the Norwegian Directorate for E-health and Norwegian Directorate of Health's National Welfare Technology Programme (NVP),[3] focuses on the testing of welfare technology for children and youths with functional disabilities and their families. The objective of the grant scheme was to *identify and test commercially available welfare technology to enable children and youths with functional disabilities to more easily take part in and cope with leisure activities[4]*. Four municipalities have received a grant, these being the municipalities of Risør, Sandnes, Horten and Drammen.

Through research and reports, the Norwegian Centre for E-health Research (NSE) contributes to increased knowledge within the field. This report looks at the organisational prerequisites for the introduction of welfare technology for children and youths with functional disabilities based on the tests in the four grant-receiving municipalities.

The report consists of seven chapters. Chapter 2 describes the background and objectives of the report. Chapter 3 presents the four municipalities and their testing sites. Thereafter, Chapter 4 provides an account of the data collection methods. Chapter 5 presents the conceptual frameworks that formed the basis for our analysis and we also point out some organisational prerequisites that must be fulfilled for successful implementation of the welfare technology for children and youths with functional disabilities. In Chapter 6, we present the results of the experiences of the municipalities during the testing process, and assess them in relation to the conceptual frameworks and the organisational prerequisites that must be fulfilled. Chapter 7 combines all the commonalities and concludes by reflecting over the importance of steering the processes surrounding the introduction of welfare technology from the top.

2 Background and objective of the report

The purpose of the municipalities' initiative was to identify and test commercially available welfare technology solutions to enable children and youths with functional disabilities to more easily take

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[1]National Strategy for E-health 2017-2022, Norwegian Directorate for E-health

[2]National Need for Knowledge on E-health, Report version 1.0, Norwegian Directorate for E-health, 2017

[3]The Norwegian Directorate of Health, Directorate of E-health and the Norwegian Association of Local and Regional Authorities (KS) collaborate of the implementation of welfare technology. Further information from the programme is available at
https://helsedirektoratet.no/velferdsteknologi and https://ehelse.no/velferdsteknologi

[4] Norwegian Directorate for E-health's Grant Scheme 2017: https://helsedirektoratet.no/tilskudd/teknologisk-stotte-i-fritidsaktiviteter-for-barn-og-unge-med-nedsatt-funksjonsevne-og-deres-familier

part in and cope with leisure activities. The activities intended to support the habilitation and rehabilitation processes of each individual. The grant awarded to the municipalities for execution of the initiative was given over two periods (2016 and 2017). The municipalities of Horten and Drammen applied and they were awarded a grant for the first period (2016). Thereafter, two other municipalities were included in 2017, these being Risør and Sandnes.

During the first period (2016), the municipalities of Horten and Drammen were awarded a grant for testing welfare technology within the target group. The Norwegian Centre for E-health Research (NSE) contributed with a knowledge summary surrounding existing welfare technology tests in the Nordic countries for children and youths with functional disabilities[5], and thereafter a qualitative research study based on the experiences of families when testing welfare technology in Horten and Drammen[6].

User needs and the user group's experiences with technology were key topics in the knowledge summary and the following research study. The knowledge summary revealed that the field has still not been researched. Literature on welfare technology tests for children and youths with functional disabilities was sparse. NSE's subsequent research study showed that there is considerable potential for welfare technology in this user group. Seventeen families with a total of 18 children were involved in the study based on their participation in the project through the testing of welfare technology. A total of 19 parents/guardians were interviewed about their experiences with welfare technology for their child.

Regardless of the type of welfare technology the families tested, the parents in the municipalities of Drammen and Horten generally had good experiences with testing technology as a tool for their child's participation and coping skills. Throughout the study and in line with the purpose of the effort, welfare technology for children and youths with functional disabilities proved to be significant in connection with increased participation, coping with leisure activities and daily chores. Participation and coping skills were expressed through independence, structure/control/predictability, communication social participation, confidence, respite, normalisation, play, entertainment and interests. The results of the study show that welfare technology promotes the child's social contact with family and friends, whilst contributing to language skill development. Keeping in mind that the target group is vulnerable to isolation and limited contact in their surroundings, the study shows that welfare technology can enhance social participation.

Objective of the report

This report is a result of NSE's work through the second period (2017) of the initiative. The overarching objective of this work was to strengthen the knowledge base from the first period of the project - to determine whether the further commitment of the National Welfare Technology Programme (NVP) to the testing of welfare technology for children and youths with functional disabilities would be extended.

NSE has looked at the four grant-receiving municipalities (Risør, Sandnes, Horten and Drammen) and the approaches they employed. How the tests were organised in the municipalities, entrenchment, roles, distribution of responsibility, adaptation of infrastructure and support are all examples of the highlighted elements.

The purpose of the report is to acquire knowledge that can support the work of the municipalities when implementing welfare technology for the user group.

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[5] https://ehelse.no/Documents/Velferdsteknologi/4B_kunnskapsoppsummering_NSE.pdf

[6] https://helsedirektoratet.no/Documents/Velferdsteknologi/NSE-rapport.pdf

The analysis of the material includes some general assumptions about basic organisational components for successful introduction of e-health solutions.

3 Testing in the four municipalities

3.1   Frameworks governing the responsibility of the municipalities for children and youths with functional disabilities

The Norwegian Health and Care Services Act sets out the frameworks governing the responsibility of the municipalities for children and youths with functional disabilities requiring habilitation[7]. Within the frameworks of the 'responsibility to provide', they shall offer a proper, complete and coordinated service. Children and youths who require habilitation shall have the opportunity to be fully included and take part in all aspects of life. In order to achieve this objective, the services shall establish, reinforce and further develop interdisciplinary habilitation services. The specialist health service has the same 'responsibility to provide' in order to offer the necessary specialist health services within and outside institutions. The regulations give the municipalities and specialist health service the freedom to organise the services they offer based on local conditions and needs. How the services are organised and coordinated under one undertaking as habilitation services varies. Regardless of the organisation, a wide range of municipal services will be key elements in the habilitation process. Special needs education, physiotherapy, ergotherapy, speech therapy, community nursing, respite measures, support contacts, user-controlled personal assistance (BPA), residential care for children and supported living homes are examples of services that could be necessary for the user group.

3.2   Services offered in the municipalities of Risør, Sandnes, Horten and Drammen.

In compliance with the Norwegian Health Services Act, children and youths with reduced functional ability are offered adapted leisure activities in the four testing municipalities. The municipalities offer different services. They cover a wide range of activities, but not all the municipalities offer everything. The municipalities offer support persons and respite care for individuals and groups. Leisure activities are offered to children and youths with functional disabilities through a leisure time assistant for a group, individual support persons, respite care homes, activity-based respite care, after school supervision for lower and upper secondary school pupils, respite care institutions for children and youths, respite care places and activity departments for children and youths.

3.2.1   Testing sites

The tests include a heterogenous user group with different resources, needs, skills, ages, functional disabilities and diagnoses, e.g., intellectual disabilities, Down's syndrome, cerebral palsy, ASD/autism spectrum disorders, ADHD, muscle diseases, neurological diseases and damage, and impaired vision. The four testing municipalities are spread over four regions in the southern part of Norway with varying population densities. Risør is the smallest municipality with 7,000 citizens. Followed by Horten with 27,000, Drammen with 68,000 and Sandnes with 75,000 citizens.

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[7]From the Norwegian Directorate of Health's Guide 2015: Habilitation is defined as time-limited, planned processes with clear goals and instruments where multiple actors cooperate to provide the necessary assistance in combination with the user's own efforts to achieve the best possible function and coping skills, independency and social participation in society. The target group for habilitation relates to persons with reduced functional ability caused by congenital or early acquired conditions. Common to the target group is that their development does not follow the expected developmental stages.

In two of the municipalities, the pilot project was placed with the Agency for Childhood and Youth Services (school), whilst the other two municipalities placed the project with the Agency for Health and Care Services or Agency for Health and Social Affairs. The extent to which the projects were affected by the agencies, to which they attached, is highlighted in Chapter 6. The projects were entrenched in all the municipalities through cooperation between multiple agencies, such as the agency for childhood and youth services, health and care, health and social affairs, cultural affairs and recreation, and the voluntary sector.

The above is listed for each of the testing municipalities in the table below. It also shows factors, such as the age of the users and number of persons who took part in the tests.

Partaking municipalities	Population	Partaking agencies	Testing group: age and number of users
Risør (Aust-Agder)	7,000	Health and Care/Habilitation Unit	Age: 8-29 Users: 6-10 children and youths
Sandnes (Rogaland)	75,000	Health and Social Affairs/Living Conditions, Recreation and Cultural Affairs	Age: 8-14 Users: 12-15 children and youths, distributed between three activity groups
Horten (Vestfold)	27,000	Childhood and Youth Services, Health, Cultural Affairs, Voluntary Sector	Age: 5-25 Users: 8 children and youths
Drammen (Buskerud)	68,000	Childhood and Youth Services/Health and Care	Age: 10-16 Users: 13 children and youths

Table 1: List of testing sites

3.3   Welfare technology solutions tested in the municipalities

In combination, the four municipalities have tested welfare technology both individually and in groups. The technology was categorised as confidence-boosting and coping technologies within the following areas: 1) Language and communication technology, 2) educational games and play 3) Technology for time, planning and structure, 4) Localisation technology and 5) Interaction technology.

Individual services means testing at home with the involvement of family or testing in collaboration with schools. Several technologies were tested here, for example, language and communication technology, including computer-based software, such as Aski Raski, Text Pilot and Dragon Box. Milla Says, a smartphone application, was also tested. According to the project managers, these tools aim to promote the language skills of users, regardless of whether it concerns symbols, reading or writing. Technology for time, planning and structure is expected to help children and youths to complete chores. It is expected that watches, HandiCalendar, Cognitass cognition, Tidviser pluss and Mobilize Me will be useful assistive devices with an alarm and notification feature. Localisation technology, including GPS (Oaxis, Careto GPS) on telephones and watches (Xplora/GPS watches), are tools that are designed to support independence and the feeling of being able to cope. The interaction tool, JodaCare, intends to promote interaction and improve the flow of information between the private and professional network associated with the user.

As examples of the municipalities' testing of welfare technology in activity groups with support persons and/or respite care workers, educational games and play, such as Geofencing, Pokémon GO, Treax Pads and First Lego League were used. These tools aim to stimulate social and physical activity. They can also contribute towards improving communication in an activity group.

NSE's report from the first period[8] reiterates the experiences obtained from several of the aforementioned technologies.

Figure 1 shows a graphical presentation of the technology solutions selected by the municipalities. The five technology categories (types of technologies) are highlighted using colour codes. Furthermore, there is a graphical presentation of the four municipalities and the type of technology that was tested in each municipality.

Technological solutions in municipalities

TECHNOLOGY

- Language and communication
- Time, planning and structure
- Localization
- Interaction
- Educational games

Drammen
- Handi (from NAV)
- Mobilize Me
- xPlora watch
- iPad with apps:
  - Coding
  - Book-creator

Horten
- Aski Raski
- Milla Says
- Text Pilot
- Cognitass cognition
- Mobilize Me
- Tidviser pluss
- Careto GPS
- Jodacare
- Dragon Box

Sandnes
- First Lego League
- Pokemon Go
- Treax Pads

Risør
- GPS-watch with geofencing
- Playstation Just Dance
- Playstation Move
- Geocaching

Figure 1. Graphical presentation of technology solutions in the municipalities

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[8] Trondsen and Knarvik, 2017

4 Data collection method

To investigate organisational prerequisites for the introduction of welfare technology for children and youths with functional disabilities in the municipalities of Risør, Sandnes, Horten and Drammen, we conducted individual interviews and reviewed written documents.

4.1 Selecting interviewees

In dialogue with the project managers in the four municipalities (during the initial round of interviews via Skype), we created a mutual understanding of the topics of the report and discussed the interviewees of relevance. The selection of interviewees was connected to the objective of the report, i.e. to obtain knowledge about organisational prerequisites for the introduction of welfare technology for child and youths with functional disabilities in the municipalities. Based on the said dialogue, we selected relevant interviewees, who were then asked to attend an interview. In addition to the municipal project managers, representatives were appointed from the services in which the projects had been entrenched (health, childhood and youth services or other), representatives from the allocation office or those involved in the administrative decision on medical care/assistive devices and representatives from management. We also wanted to interview representatives from IT, but this was not possible within the project's timeframe.

Once the relevant interviewees had been selected, and asked to attend an interview and given their consent, the project managers arranged dates and times for the interviews with the interviewees.

The sample consisted of 16 persons in total with four in Drammen, three in Horten, three in Sandnes, four in Risør and two from NAV assistive technology centres. Of these, we interviewed five men and eleven women.

4.2 Interview guide and execution of interviews

A semi-structured interview guide was used regarding topics connected to:

- entrenchment of the project in the municipalities;
- defined roles and responsibility;
- products and delivery;
- management.

As factors for an implementation model, these areas help us to understand both the purpose and status of the municipalities' implementation process for welfare technology services. Chapter 5 explains and describes the four bullet points in more detail.

The purpose of the interviews was to quality assure our understanding of each of the municipalities' projects in terms of facts about the municipalities and knowledge on the organisational aspects of them.

The interviews lasted for approx. one hour. They were primarily conducted by two researchers from NSE, who visited each municipality and individually interviewed the interviewees in a physical meeting. One of the researchers asked the questions and the other took notes. Video recordings were not used.

The interviews in Drammen were conducted with a researcher physically on site and a researcher participating via Skype. Interviewing of the two persons from NAV were conducted via Skype. Both researchers and interviewees were present at the same time.

A review of the documentation was carried out to support and quality assure the overarching approach of our study and to gain an insight into the municipalities' projects.

The next chapter presents the conceptual frameworks that formed the basis for our analysis and we also point out some organisational prerequisites that must be fulfilled for successful implementation of the welfare technology for children and youths with functional disabilities.

5 Conceptual frameworks

To succeed with implementation of welfare technology, some prerequisites must be in place[9]:

1. A change in the mindset of what municipal health and care services are and shall be.
2. Offer the right solution that fits end user's needs. Assess needs and question whether technology could be part of the solution.
3. The change process and objectives must be entrenched throughout the municipality; politically, administratively and professionally - from the municipal leaders at the top down to the employees of the services, especially the IT and operations service.

These three points are presented in NVP's community benefit report and form a suitable basis for our analysis.

Our report intends to provide knowledge about organisational prerequisites connected to successful implementation, which that special emphasis is placed on the aspects mentioned under Point 3 above. Out investigation was based on som overarching principles and topics connected to organisational prerequisites, and are crucial for successful implementation. These refer to both the Norwegian Agency for Public Management and eGovernment's)[10] project wizard (Prosjektveiviser) and roadmap to service innovation[11].

5.1   Implementation and innovation

The roadmap to service innovation[12] is a practical method that aims to enable municipalities to change public services. Through the grant scheme, NVP recommends municipalities to follow the method in their work on implementation and the realisation of community benefits[13].

Implementation and innovation are two central concepts in the study on the municipalities' welfare technology projects.

In the Report to the Norwegian Storting (White Paper), No. 7: An Innovative and Sustainable Norway, innovation is defined as: "Innovation is the process of developing new ideas and realising them in a way that gives more value to society[14]." We have observed that innovation processes often grow from the bottom-up and depend on enthusiasts as a driving force behind them.

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[9] https://helsedirektoratet.no/publikasjoner/gevinstrealiseringsrapporter-nasjonalt-velferdsteknologiprogram

[10] Norwegian Agency for Public Management and eGovernment.

[11] See the Norwegian Association of Local and Regional Authorities' roadmap to service innovation.

[12] http://www.samveis.no/metodikken/

[13] https://helsedirektoratet.no/publikasjoner/gevinstrealiseringsrapporter-nasjonalt-velferdsteknologiprogram

[14] Report to the Norwegian Storting (White Paper), No.7 (2008-2009)

The roadmap to service innovation refers to the project wizard[15], which is the recommended project model of the Norwegian Agency for Public Management and eGovernment for steering digitalisation projects in public enterprises. The method provides tools that shall ensure that the interests of the users of the services, providers of the service and the municipality as an enterprise, are maintained throughout the implementation process.

Implementation of welfare technology means that parts of the existing services are digitalised or new services are established as a result of digital solutions. When investigating organisational prerequisites for successful implementation of welfare technology in the municipalities for the target group, we consider 'implementation' and 'introduction' to mean the same thing. Implementation is characteristically a process that is steered from the top-down. By applying some of the overarching principles and topics in the project wizard that are crucial to successful implementation, the significance of management and corporate governance is highlighted as a crucial organisational prerequisite for successful implementation.

The following provides a more in-depth description of each area.

5.2   Areas of importance to successful implementation

As mentioned above, we have studied the experiences of the municipalities connected to the testing of welfare technology based on the project wizard. This is a practical approach and a method to which the municipalities are familiar. The project wizard builds on some overarching principles and topics of significance to successful implementation. We elected to focus on the principles of *continuous business entrenchment, defined roles and responsibility, the project's products/deliveries and deviation management.* These principles support Point 3 in the prerequisites for successful implementation (see page 8), which is the main focus of our analysis. The interview was built up on these topics, as we believe that these principles are important in relation to organisational prerequisites for implementation. As a result, we wanted to obtain information about the degree to which the projects paid attention to these matters.

The concepts are explained in this sub-chapter. We will also adjust some of the concepts in relation to the context we have studied. In the context of the projects, the original concept, i.e. 'continuous business entrenchment' will be more recognisable as 'continuous entrenchment'. We also believe that 'deviation management' is a misleading concept and have replaced it with 'management and corporate governance'.

Continuous entrenchment

To guarantee successful implementation, the project must be continuously entrenched in the enterprise. This is an important principle in the project wizard, and means that municipal management must take ownership of the project. The project shall be justified in terms of specific needs, the benefits to end users and the municipality as an enterprise. Herein lies the expectation of a socioeconomic gain. The reason for carrying out the project must be documented, approved and valid throughout the lifetime of the project.

Entrenchment applies to several levels, both vertically and horisontally in the organisation.

Defined roles and responsibility

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[15] https://www.prosjektveiviseren.no/god-praksis/avviksleiing

By focusing on roles and responsibility one is forced to identify actors that must be represented in the implementation; the contribution of actors on which one depends to implement the service. These could external actors, but also actors from other agencies, departments or sections within the municipality.

An implementation project that follows good standard practices has a project steering committee responsible for ensuring success of the project with delegated authority from the enterprise's management within set frameworks. The project steering committee shall reflect the interests of all involved parties, the enterprise (enterprise manager), user (representative of the user-friendly practise) and service provider (representative of those responsible for ensuring that the technology works according to expectations). We would like to highlight these three main roles to reveal whether the project emphasises the roles differently and whether this could be significant to potential scaling.

Project's products and deliveries

What shall the project deliver and to which quality? During the testing projects, the product was synonymous with the technology being tested. In an implementation project, however, the product is more than technology. The product becomes more of a combined delivery, which could, for example, be a new service. It can either be based on adjustments to an existing service, due to welfare technology, or it can be established as a completely new service. In the perspective of the delivery of a service, one will be concerned about at which point a welfare technology transforms from being a technology into an important component in a municipal service connected to an administrative decision.

Consciousness surrounding the deliveries of the project is important in terms of who must be involved in order to establish a new service. The latter instance is also significant to the realisation of community benefits.

Management and corporate governance

Implementation of welfare technology means that one works broadly across the organisation. In such contexts, it is important that the municipality takes ownership of the project. Corporate governance of the projects is a foundation for entrenchment in the enterprise and is enabled by setting requirements for the execution of the project in terms of time, costs, quality, uncertainty, benefits and scope. This is not founded on the need to control, but an interest in the community benefits obtained by the municipality through the application of welfare technology.

6 Results

This chapter presents the findings of the investigation based on the conceptual frameworks presented in Chapter 5. The results are presented along three dimensions: a) the principles of the project wizard, b) NVP's prerequisites for successful implementation and c) the actors who will play a main role when the welfare technology is offered as part of the municipal services for the user group. The Chapter is introduced with 'Roles and responsibility' (6.1), which presents the latter-mentioned dimension. This introduction also refers to the further division of the Chapter.

6.1   Roles and responsibility

The following concerns the principle of 'roles and responsibility'. Defined roles and responsibility must be in place when implementing a service. One should also know who will be responsible for

which part of the service, as this will enable the contributions of the actors to develop a specific service.

The main roles linked to offering welfare technology as part of municipal services for children and youths with functional disabilities are held by *the representatives of the user (e.g., municipal experts), representatives of the service provider (e.g. allocation service, IT service) and representatives of the municipality as an enterprise (e.g., managers, politicians).*

With regard to roles and responsibility attached to those involved representing the user, service provider and municipality as an enterprise, the testing of welfare technology for children and youths with functional disabilities varies in the four municipalities.

The analysis of the interview material concerning the representatives of the four testing municipalities, shows that the user-aspect was extremely well-taken care of in all the tests. The impression is that focus on the needs of users is the main key in the development of services. Those representing the user play a clear and active role in all the projects of each municipality. This is discussed in more detail in sub-chapter 6.2.

The degree to which the projects focus on actors that represent the providers of municipal services for children and youths with functional disabilities varies. Some of the projects include actors from the municipality's allocation unit, IT service, NAV or schools. Chapter 6.3 discusses this in more detail.

Those representing the municipality as an enterprise will legitimise the project and ensure that financing is in place to execute the planned initiatives. How the projects worked with entrenchment, management and the realisation of benefits are important aspects of this and are highlighted in Chapter 6.4.

6.2   User perspective

NSE's report from the last period of the project regarding the experiences of using welfare technology for children and youths using the municipalities of Drammen and Horten as a starting point[16], shows that children and youths with functional disabilities constitute a target group with good digital skills.

The needs and experiences of users with the technology correspond to the experiences that have already been researched, as well as the focus of the four municipalities in their tests. Through their parents/guardians and the children who actually use the technology, the user groups for the projects' initiatives are very involved. This applies to taking part in selecting the technology, test planning and the actual testing phase. Some projects had user representatives (parents), as part of the project reference group.

The needs of the user groups are further included in the work implemented by municipal experts through specific initiatives. The experts work closely with the users and their task is to maintain the users' interests. The experts understand the value of the project's defined goals and ambitions, thus creating motivation for taking part in the realisation of benefits where applicable.

The Municipality of Risør selected users through including the municipality's habilitation unit and caseworkers with allocation responsibilities. The municipality carried out workshops to which they invited persons and relevant experts in the municipality to define the need and suitable types of technology.

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[16] Trondsen and Knarvik 2017

The Municipality of Drammen, which has tested welfare technology at a special school, has adopted the following approach:

"The project has been entrenched in the school's activity plan, as an area of commitment. The project has been implemented in a school concerned with how technology shall fit in with the defined learning objectives and it was entrenched through the pupils' individual learning plans prepared in cooperation with parents. Different pupils have been given different equipment. The staff possess the competence that enables them to advise pupils. Since compensatory supportive communication has always been used, the school has assistive device consultants, a scheme that has existed over time. Cognitive assistive devices are newer, but the procedures are very similar.'

The interviewees expressed the importance of understanding users' needs and in which situations they will benefit from using welfare technology. The user group consists of individuals who require individual personal adaptation. In all the four municipalities, technology was selected based on a needs assessment of each family's requirements, wishes and abilities. In order to succeed with implementation, it is essential to offer the right solution for the end user's needs. See Point 2 in NVP's community benefit report (see page 8). Consequently, this will be a permanent needs-driven process that must be carried out for this user group for each new technology that is subject to assessment. Throughout the project period, the projects have focused on this aspect, which is necessary when new service models have to be assessed.

In Community Benefit Report 2, NVP estimates that the assessment of needs and adaptation of technology constitutes one of three important prerequisites for successful implementation (see page 8). Our findings show that the municipal projects have done an outstanding job in this respect. Perspectives that intend to maintain the user aspect of the service seem to be well maintained in all projects.

6.3   Adaptation of products and deliveries

In this Chapter, we address the principle related to products, deliveries and those representing the service provider.

By highlighting the projects as a municipal service, we will be able to uncover perspectives from the points of views of the municipality as a service provider.

Several of the municipalities have established workshops and group work as new activities in connection with testing of the technology. These can also be considered new 'products', which are looked upon by the municipalities as an important result of the project, in addition to the technological applications.

Implementation of welfare technology means that the service must be followed up and incorporated into all the activities of the organisation, and it must also be established as a municipal service. During testing, the municipalities experienced problems that required in-depth review prior to implementation of the initiatives, as they would have contributed to the shaping of the final product or delivery. A presentation of the problems that were indicated during the interviews is found below.

6.3.1   Welfare technology as essential medical care or consumer technology

Public authorities, such as the health service, allocation managers or the allocation office in each municipality make decisions on health services, but technology services are excluded. The explanation is that welfare technology is not considered a health service, unless it must be assessed as essential medical care or practical assistance.

All the projects have encountered problems connected to the question of whether welfare technology should be a part of public health services or whether it should be considered consumer technology where acquisition is a personal initiative. The leaders we interviewed indicated that the municipalities will define the threshold for when welfare technology stops being consumer technology and be-

comes an important component in a health service to which an administrative decision is attached. This will be done through an implementation perspective based on legislation.

Interviewees from all the municipalities brought up this problem. Welfare technology for children and youths spans a wide spectre of technologies, and in some cases it is not defined as essential medical care. Therefore it is natural to establish thresholds that determine the responsibility of the municipalities. The municipalities seemed to indicate that there is no guidance material to support them in this work.

Several of the municipal unit managers we interviewed consider technology solutions connected to educational games/play as public property and a form of everyday technology that people purchase themselves. Therefore, the municipalities have not established allocation routines. The Municipality of Sandnes brought up an important perspective that highlights the problem. The municipality has not established routines for this, because there is simply no demand for it. Technology is not allocated; a service is provided (physiotherapy, leisure time assistant, support person). In this context, welfare technology is not a service in itself, but part of the content of the service. The Municipality of Sandnes has therefore acquired the actual technology and uses it as part of the service.

Furthermore, the threshold between welfare technology as essential medical care and consumer technology must be better clarified. The interviewees expressed that the municipalities wanted to be involved in passing on knowledge to users and their family members by giving them advice and guidance about suitable technologies and the experiences of other users, etc. Some of the interviewees, who work closely with the users, pointed out that this could be connected to the fact that this is a vulnerable group that does not always *'have a filter'. They are vulnerable to online contact and must be protected against themselves. Parents must be involved.*

Apart from this, municipal services must maintain the ethical and legal aspects in a totally different way than private individuals. This explanation is hugely significant in terms of how welfare technology should be implemented in municipal services. The Municipality of Drammen tested localisation technology by using GPS watches. However, this created problems due to legal restrictions and personal data protection. The project therefore abandoned testing with GPS watches. Some of the parents found the watches[17] very useful and one family chose to continue using them, even though the municipality ended the project period.

To conclude, it can be said that the project managers and representatives of the allocation units in the four municipalities expressed that they need more knowledge to determine when welfare technology should be incorporated as part of essential medical care for this user group. More reports and research-based knowledge is required to determine when welfare technology quantitatively improves services, whilst considering user rights, ethics, personal data protection, finances, competence, etc. The limit of the municipalities' responsibility for using welfare technology is multifaceted and the interviewees found that they did not have enough knowledge at the present time to handle it.

6.3.2 Improved coordination with NAV is needed

As an actor, NAV plays an important role in connection with children and youths with functional disabilities. NAV is a provider of technology-assisted devices through assistive technology centres, which determine when a person is entitled to public assistive devices according to law. Here, we see transferability when using welfare technology. The assistive technology centres assist municipalities, employers and other partners with consultancy, guidance, training and adaptation. In addition, the assis-

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[17] Trondsen and Knarvik, 2017

tive technology centres have an administrative responsibility. This means they have to ensure that borrowed assistive devices are allocated in accordance with national insurance rules and since they are assistive device agents; they have to manage their finances. Efficient procurement, good product flow and reuse of assistive devices are keywords here[18].

NAV was involved in the projects to some extent. The Municipality of Drammen has included NAV in the project group. However, there continues to be some uncertainty surrounding what is to be added to the municipality's technology portfolio and what is to be offered through NAV.

The communication with NAV is steered by administrative decisions, which means that it can take a long time from ordering technology until a final administrative decision is passed. The technology is developing fast and the municipalities/NAV (those who will be offering this technology) must be up-to-date with that available on the market.

All the municipalities wanted to establish new services supported by welfare technology. The project managers consider it both necessary and purposeful that the municipalities have a technology port-folio to follow the delivery of services. Nevertheless, there continues to be considerable potential for improving the coordination between the municipalities and NAV to establish mutual knowledge ex-change related to the work on welfare technology.

6.3.3 Need for more involvement of the IT service

The technology solutions used in the projects we have studied vary, and in Chapter 3 we presented the tested technologies. Regardless the type of technology, the implementation of a municipal ser-vice will necessitate the establishment of procedures (case processing), routines, training, mainte-nance, operation, etc. These are more general matters that require the involvement of more munici-pal departments, for example, IT, the caretaker service and allocation unit. These are factors assigned to the role of a service provider and have not been prioritised in the completed phases of the pro-jects.

Of these, the IT function is the most discussed role. In Horten, Sandnes and Risør, the IT department was a peripheral actor in the project and it was rarely involved. The reason primarily being that the tested technologies only affected the municipal structure to a limited degree. At the same time, it is found that all the projects have tried to involve the IT departments, but their engagement was somewhat lacking. Regardless of the type of technology concerned, the Municipality of Horten estab-lished direct service agreements in its project with suppliers of the technology when the provider took care of user support and training.

In the Municipality of Drammen, the project cooperated well with the Drammen Region Municipal ICT Service (D-IKT). The cooperation was established because the pupils used iPads to support learn-ing in schools. D-IKT offered user support and maintenance, and ensured that employees received training on how to use an iPad. D-IKT is an inter-municipal partnership between the municipalities of Drammen, Nedre Eiker, Røyken, Sande and Svelvik. D-IKT supplies ICT services to the five munici-palities. By gathering the services in one place, the municipalities acquire the advantages of econo-mies of scale and streamlining.

Technologies such as smart telephones, tablets, sensors and accompanying online and cloud services, virtual robots and apps, are in many contexts classified as 'lightweight IT'[19]. Welfare technology used for children and youths with functional disabilities fall into this category.

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[18] https://www.nav.no/no/Person/Hjelpemidler/Tjenester+og+produkter/hjelpemiddelsentralen--359477

[19] https://www.magma.no/styringsmodeller-for-digitalisering

The extensive use of this type of welfare technology represents a steering issue for many organisations[20]. One reason is that digital solutions based on lightweight IT are increasingly procured and implemented by local units and end users without involving the IT department. The development is driven by the need of competent users for innovative digital services in combination with user-friendly digital technologies[21]. This naturally challenges the established relationship between IT departments and professional environments in the municipalities.

If welfare technology is to be delivered as a municipal service, it normally means that the municipal IT service is highly involved in procurement, user support, operations and maintenance. All the managers indicated that the needs of the project to coordinate with the IT service had not all been uncovered.

6.4   Entrenchment, management and corporate governance

This chapter discusses the principle of the project wizard concerning entrenchment, management and corporate governance, in addition to the role of those representing the municipality as an enterprise. These are important elements during implementation and do not apply only to preparatory work and decision-making. These are processes that must be carried out on a continuous basis. Management carries out the role attached to the business side of the municipality's development of welfare technology services. Corporate governance means implementation of activities that will help realise the municipality's goals. Management is therefore responsible for the projects and shall ensure that the expected benefits of the projects are actually realised[22]. We present the experiences of the municipalities in relation to these elements through highlighting work on entrenchment, management and benefits.

6.4.1   Entrenchment
'Entrenchment' has become a very common word in planning, project work and development, as it indicates the necessity of important actors having the knowledge, interest and feeling of commitment to the execution of a project. *'Important actors'* in a municipality will be political bodies, administrative/expert managers and professionals, who will be performing the activities in a project[23]. Entrenchment must be applied continuously to ensure that all parties follow up the intentions with their essential contribution. If anyone is replaced in the organisation by choice or change of employment, a special need will arise to update the new actors and public services about the function and content of the service.

With reference to the projects on which this report is based, work on entrenchment is an ongoing process. The projects aimed at user group 'children and youths with functional disabilities' are organised as cross-sector projects in all the municipalities with concurrent defined entrenchment in the agency to which the projects are attached. All project managers were concerned with establishing good cooperation with other agencies that help maintain the interests of users. The Municipality of Horten's project appears to have closer cooperation with the Agency for Health and Care Services than the other municipalities. This is because more of those in the user group are over 18 years of age and are organised under adult habilitation.

The projects are entrenched differently in the plans of each municipality. Risør has entrenched the project in the municipality's activity plan when the project focuses on activities included in the com-

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[20] https://www.magma.no/styringsmodeller-for-digitalisering

[21] Bygstad, 2017; Lacity and Willcocks 2015

[22] https://www.prosjektveiviseren.no/bibliotek/tverrgaende/gevinstrealisering

[23] http://www.kommunetorget.no/Temaomrader/Kommunal-planlegging/HVORFOR-planlegge/Flere-grunner-til-a-planlegge/Forankring/

petence plans, area plans, financial plans and long-term municipal plan for service development. The Municipality of Drammen's entrenchment in plans largely seems to depend on the agency to which the project is attached. Entrenchment is more tightly connected to local plans, such as 'Learning Pathway Drammen' and the municipality's digitalisation strategy.

The Municipality of Sandnes has entrenched the project in the *'Strategy for Welfare Technology'.* The Municipality of Horten exercises general entrenchment of welfare technology, but it is not especially connected to children and youths with functional disabilities.

Unit leaders were particularly concerned that welfare technology should be coordinated between several government agencies. This is because it will be significant to later implementation and result in better coordination of welfare technology. In the municipalities of Horten and Risør, they expressed a specific need for a *welfare technology coordinator.*

Needs analyses and selection of the right technology are important fundamental components, which the municipalities must know about. However, it is not enough to establish entrenchment of activities in municipal services. In order to scale-up the service and offer it to more users, administrative and political decisions are required, which in turn means that socioeconomic reasons to do so must exist.

All the municipalities have adapted the projects as part of a larger municipal project connected to welfare technology, in which children and youths with functional disabilities are now included as the user groups.

Bodies that shall follow up administrative decisions, money and adaptation are currently less involved. These must adopt ambitions and frameworks for development work. Initially, these will be the municipal council and executive committee (or the district council, city government and city council).

6.4.2 Management
'Management wants counts and stories'.

The statement is from one of the interviewees and provides a good indication of management's expectations with regard to welfare technology. Welfare technology can be looked upon as an instrument for providing good services for the population (creates good stories) in a sustainable way (is countable).

Managers are important agents of change in all organisations. The attitudes, motivation and ownership of managers to new services lead to change and are therefore paramount. The Municipality of Drammen is about to introduce a programme connected to welfare technology adapted to each manager's imprint, which will ensure adequate managerial entrenchment and ownership to the change processes linked to welfare technology.

Managers placed in the part of the municipality where the benefits of the project will be realised, are responsible for following up the results of the project. Therefore, the managers at this level must feel strong ownership to the project.

The interviewees from all the municipalities express that management in their own municipality are positive and interested in welfare technology, however the degree to which the managers are involved varies. Our impression was that some of the municipalities have entrenched the projects at management level more than others. For example, in the Municipality of Sandnes the project manager has been placed with the chief municipal executive's staff.

Interviewees from the Municipality of Risør stress that entrenchment at management level in relation to inter-municipal cooperation surrounding welfare technology, when the priorities and efforts of the municipality are connected to welfare technology, are entrenched in inter-municipal cooperation.

In terms of budgets, the project in the Municipality of Sandnes has been entrenched in the budget of the department for recreation and cultural affairs. This creates more obligation and motivation for managers to retrieve the benefits of projects than when they are project-financed. At the same time, it is feasible that entrenchment at managerial level will more committed in all projects.

6.4.3   Realisation of community benefits

The projects' focus on community benefits has primarily been connected to quality rather than financial and business benefits. This could be due to the fact that those who are most involved in the projects first and foremost represent the interests of users and maintenance thereof.

NVP has published two community benefit reports[24] on the testing of confidence and coping technologies conducted by the developing municipalities involved in the programme. These benefit reports serve as a guide for the municipalities and are used by the projects to underline the *potential* of welfare technology. They are not used to *plan* their own work on community benefits.

NVP divides community benefits into three categories:

1. Higher quality

2. Time saved

3. Avoided costs

Experience has shown that work on the realisation of community benefits safeguards adequate processes for the introduction of welfare technology in municipal health and care services[25]. Several of the interviewees, both project and unit managers, believe that work on the realisation of community benefits contributes to stronger entrenchment by managers and employees of the service. It is important to note that this does not exclusively apply to the health and care services, but also managers of other municipal agencies. The user group 'children and youths with functional disabilities' is organised under 'Children, Youth and Schools' up until users turn 18 years of age. Afterwards, the Agency for Health and Care Services takes over.

All the projects in our investigation have primarily focused on community benefit category 1. The purpose of the projects was to namely assess the need for and to identify suitable technology. The idea was to improve services for the 'children and youths with functional disabilities' user group and for welfare technology to be a useful tool in this respect. In a long-term perspective it will probably be relevant to highlight that the current efforts of the agency for children and youth affairs will affect all three of the community benefit categories for the agency for health and care services.

The project manager and other actors in the Municipality of Sandnes are the ones who most clearly express that they also have ambitions with regard to community benefit categories 2 and 3. The Municipality of Sandnes will be cutting its budget by millions, but will still continue to support welfare technology innovation. The department manager of adapted recreation and cultural affairs is very involved in the project and has contributed with funding through budgets. The manager sees that the technologies are suitable for group activities and that such initiatives reduce the need for individual support persons. In turn, this cuts costs in the department's local budget, whilst helping the users to become diligent users of technology that will make an impact within a long-term perspective.

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[24] Melting J. and Frantzen L. 2015 and Melting J. 2017

https://helsedirektoratet.no/publikasjoner/gevinstrealiseringsrapporter-nasjonalt-velferdsteknologiprogram

[25] Melting 2017

7 Conclusions

It is important to stress that within the timeframe of the projects, they have focused primarily on *testing* instead of *implementation* of welfare technology. The projects must rather be seen as part of a more long-term process where implementation of successful technology solutions is the goal. Nevertheless, in one of its sub-projects, the Municipality of Sandnes had a goal to implement welfare technology as part of the municipality's services for children and youths with functional disabilities.

For successful implementation of welfare technology, some prerequisites must be in place[26]:

1. A change in the mindset of what municipal health and care services are and shall be.
2. Offer the right solution that fits end user's needs. Assess needs and question whether technology could be part of the solution.
3. The change process and objectives must be entrenched throughout the municipality; politically, administratively and professionally - from the municipal leaders at the top down to the employees of the services, especially the IT and operations service.

Tasks related to understanding the needs and interests of users seem to be well maintained. See Point 2 above. All the projects have paid attention to this and allocated time and resources. All the interviewees believed that more research-based knowledge was needed to define good welfare technology services. Attention, time and resources to maintain the interests of users are important elements of the implementation process. These will not however lead to implementation, unless followed up by activities designed to establish the organisational prerequisites and put them in place.

7.1 Need for good guidelines

The technology rapidly changes and new products continually come on the market. Problems attached to the principal questions of what constitutes a municipal task, what should be allocated through NAV and what should users be responsible for themselves, arose in the projects in the aftermath of offering welfare technology to children and youths with functional disabilities. Particularly with regard to technology for educational games/play, some diffuse areas have been uncovered regarding welfare technology in terms of when it is to be considered part of a municipal service or an assistive device distributed through NAV/assistive technology centres. These are connected to questions concerning rights, ethics and financing, and require good and clarifying guidelines.

7.2 Cooperation between municipal agencies

Children and youths with functional disabilities constitute a user group that needs assistance based on a lifetime perspective and various agencies are responsible for following them up depending on whether they are under or over 18 years of age. Welfare technology aimed at this user group therefore requires coordination between multiple agencies and it challenges established organisational frameworks.

The projects were entrenched in all the municipalities through cooperation between multiple agencies, such as the agency for childhood and youth services, health and care services, health and social affairs, recreation and cultural affairs, and the voluntary sector. With regard to the municipalities of Risør and Horten, coordinated community benefits and knowledge exchange could be obtained through closer inter-municipal cooperation.

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[26] https://helsedirektoratet.no/publikasjoner/gevinstrealiseringsrapporter-nasjonalt-velferdsteknologiprogram

Risør and Horten are considering whether to employ a welfare technology coordinator who, inter alia, will be responsible for coordinating activities related to welfare technology across the agencies and during inter-municipal work.

7.3 More committed manager involvement

Initiatives related to the establishment of welfare technology for children and youths with functional disabilities in the form of a permanent municipal service, were not clarified in the municipal projects. If the projects want to take a step closer to implementation of the services, it must be reflected in the project's activities. The projects find that IT departments are difficult to engage. This could probably be explained by the fact that when IT departments are involved, other initiatives, such as procurement, maintenance and operations are also triggered. The municipalities' business affairs are also affected requiring the passing of decisions to finance new welfare technology services.

The introduction of welfare technology continues to depend on enthusiasts with professionals safeguarding the interests of users. This is critical. The initiatives in the projects mainly come from professionals who work closely with the users and also attempt to entrench the projects upwards in the organisation. This is considered service innovation, which is paramount to NVP. The representatives of the municipalities we spoke to are extremely concerned with the innovation aspect. According to the municipalities, the testing of welfare technology contributes to new knowledge that will lead to improved services for children and youths with functional disabilities. All the projects are still in the initial phase of the implementation process. Nevertheless, they have already uncovered problems that require more detailed clarification and decision-making before welfare technology can be established as a municipal service. The problems concern organisational adaptation and cultural change processes, as well as a changed mindset in terms of what municipal welfare technology service shall be.

The implementation method that forms the foundation for the project wizard is based on a more top-steered process, and from here the initiative is founded on the expectations of enterprise managers with regard to potential improvements and community benefits.

Point 3 (see page 18) is the platform for the projects included in this report. The municipalities are efficient in entrenching the activities in strategy plans and include it in their work on development and innovation. Nevertheless, many focus less on entrenchment in business affairs, i.e. that which will affect municipal budgets. This concerns activities that take care of a municipality as a business undertaking, and it must be defined, paid attention to, and given time and resources. If the municipalities are to succeed with scaling the projects to enable them to be fully implemented in the municipalities, there must be more commitment and engagement from the managers. In this way, the foundation for a continuous improvement process is built where the needs of users, service providers and business are maintained, and one is conscious of the organisational prerequisites for the introduction of welfare technology.

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