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The DISH Tools

Preparation Tool for Innovation and Digital Skills Adaption
Process Tool for On-The-Job Training
Process Tool for Assessment and Recognition

Final Version
February 2022

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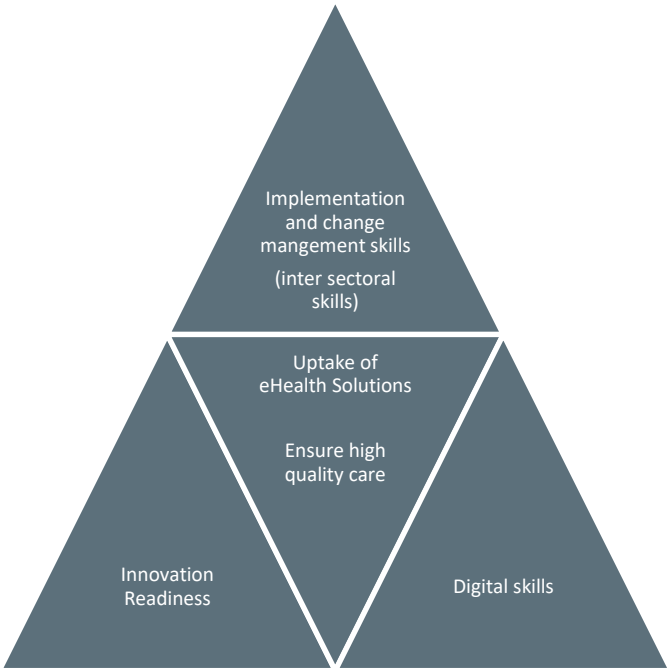
1 Introduction

This document is an overall introduction to the DISH Tools that have been developed within the ERASMUS + Sector skills Alliance project called DISH; Digital and Innovation Skills Helix in Health.

The DISH project has as it's main objective to provide health care professionals with digital skills, innovation readiness and implementation / change management skills, in order to ensure, that digital solutions in the health care sector are implemented, applied and exploited to their full potential. We call these kind of skills the "triple helix skills [1]"

Figure 1: The Triple Helix Skills



1.1 Responding to the overall challenge in the health care sector

One of the key challenges facing the European society, is the demographic change and the ageing population, and the effect that this change risks having on the European health care system. The demographic changes will increase demands from elderly people that need health care and social care at a time when there are fewer staff members and less public funding to meet the needs and demands for high quality care.

As a consequence, and in order to stay sustainable, the health care sector has changed and will change further during the years to come. The major changes which affect the working life and thus requires new competences and skills among the health care professionals (in both primary and secondary care sectors) are the following:

- Patients are rapidly released from hospital, and the transition of patients from one care facility to another, requires effective communication and coordination among staff.
- A more holistic and personalized view on the patient which requires more interdisciplinary collaboration, communication and coordination.
- Empowering of patients and better use of relatives' resources, requiring effective communication and new ways of monitoring.

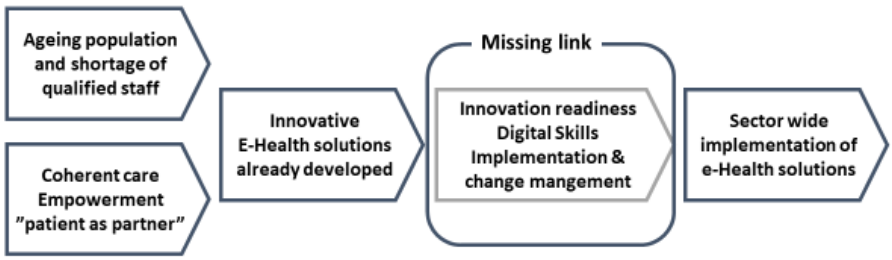
[1] The **triple helix skills model is inspired from the triple helix model of innovation, which** refers to a set of interactions between academia (the university), industry and government. In our case we have "translated" the model into interactions between academia, industry and the health care sector, which is the underlying idea for the development of the LIU Concept.

- A massive application of new technologies in the healthcare sector, which requires new ways of working and communicating with colleagues and with patients and relatives.

Many innovative eHealth solutions have already been developed and many health care providers have invested in implementing these into the clinical practice. However, time after time it turns out that the solutions are not being implemented or are only partly implemented, hence the full potential of innovation is not exploited. This despite that many projects have shown that the use of eHealth solutions in health care can assist to ensure the sustainability of the health care sector by a) increasing the flexibility of care and treatment, b) increasing the involvement of the patient / citizens and c) providing increased quality, security and knowledge sharing across the sectors.

One of the main reasons for the lack of implementation and use of new digital solutions, is the lack of relevant skills within the health care professionals on all levels. In the DISH project, we call this "the missing link".

Figure 2 – The missing link



1.2 The DISH Project and it's objective

The DISH project was developed to respond to this overall challenge and the "missing link" related to competences and skills among the health care professionals. A huge challenge when looking into skills development is that training in the 21st century, needs to evolve and integrate new training tools that can cope with a rapidly changing and demanding knowledge and information society, which is especially a challenge in the health care sector, given the above mentioned changes.

Moreover, work processes in the health care sector are becoming constantly more complex, demanding continuing development of the professionals' competences and skills for their effective performance, and it is therefore necessary to a) find the most cost-effective learning solutions that are more closely aligned with what happens in the real-world, b) design a learning experience more in-tune with the learner's cognitive abilities, and c) execute the learning process in respect with the organizational structure and culture and as a holistic learning process

The objective of the DISH project is therefore to look into this missing link by analysing present and future skills needs in order to succeed with the necessary digitalisation in the health care sector. Based on this analysis, the project has developed three tools, which will support a better uptake of digital solutions in the health care sector, based on skills development on all levels as well as a creation of a common understanding of the "urgency" that the health care sector is confronted with, if digital solutions are not implemented and exploited to their full potential. This "urgency" can only be dealt with in a proper way, if the health care professionals reach a common vision and understanding of the "urgency", if they get a certain level of innovative readiness, understand the importance of communication and interdisciplinary collaboration, and especially, reach a skills level, where they know how to apply these competences in practice.

The three process tools that the DISH project has developed that responds to the "urgency" and the missing link are the following;

1) A process tool for setting up a Preparation Team, where innovation-, technology-, competence and skills needs are discussed and planned for in a shared decision making process
2) A process tool for planning and carrying out On-The-Job Training, equipping health care professionals with "triple helix skills", which respects the above mentioned planning.
3) A process tool for planning and carrying out assessment and acknowledgement of the triple helix skills that health care professionals have obtained in a On-The-Job training process.

1.3 How to use this document

The present document will provide you with background information for the development of the DISH tools, such as the needs analysis that has been carried out as the first activity in the DISH project, as well as explanations of different frameworks and definitions, which are important for the understanding of the tools. The DISH tools will be presented in details, in order to make the process and application process clear, and last but not least, you will find all the hands-on check lists and guidelines to work with the tools within hospitals and other health care providers.

You can find the three tools, guidelines and checklists in downloadable versions on the DISH website on

www.dishproject.eu

1.4 The target group for this document and for the DISH Process Tools

The target group for this document is first and foremost emloyees within the health care providers who are responsible for innovation and internal competence- and skills development. This can be both managers, internal innovation consultants working in innovation departments or digital change officers. These employees can use this document, to get a detailed insight in how to use the DiSH Process Tools to plan and execute innovation processes as well as the competence- and skills development that is a natural part of any kind of innovation process.

The target group for the DISH Process Tools are health care professionals from the health care sector and on all levels, such as;

- Care workers
- Nurses
- Physiotherapists
- Occupational Therapists
- Midwives
- Medical doctors

- Health or service managers

Depending on the context, organizational situation and the digital solution that is supposed to be implemented, these different staff categories can or should be involved in the work with the DISH tools, related to the following overall considerations, which will be explained further when the tools are described in detail in chapter 5, 6 and 7. Considerations like these are important before entering into the concrete work with the DISH Process Tools;

- Who initiates the setting up of the Preparation Team? Who should participate in the discussions in the Preparation Team; from the management group, who will work concretely with the digital solution in question, who will facilitate the discussion and dialogue in the Preparation Team etc.
- Who should receive On-The-Job training, should different staff groups be involved in order to ensure interdisciplinary collaboration, who will provide the training,
- Who will carry out the assessment, who will be assessed, who will recognize and / or validate the new obtained skills and issue a diploma.

Within a specific learning context (a department in a municipality, a hospital ward, a private care company) different categories of employees will have different needs in terms of skills training. It is important to recognize this and thus make concrete plans to investigate varying needs in actual situations, which is important to discuss in the Preparation Team and to incorporate in the planning of the on-the-job training, and the assessment of obtained skills. The DISH Tools are designed to accompagny this concrete planning activities.

2 The DISH Process Tools

The DISH Process Tools have been developed through a European collaboration within an ERASMUS + project called DISH[2]. Partners from Denmark, Norway, United Kingdom, Poland, Germany, Belgium and Spain have joined intellectual forces, and have built these process tools, with the main objective to provide a structured process, which can make it easier for health care providers to offer on-the-job skills training to health care professionals on all levels. From the needs analysis that was carried out in the first part of the DiSH project, we have seen, that skills training in concrete digital solutions is often neglected in a busy working day, as the planning of this kind of "tailormade" training is seen as timeconsuming and complicated. Opting out on skills training, leaves the health care sector with a lot of digital solutions, which are not exploited fully, and therefore the return on investment in digital solutions becomes less evident. The DISH process tools have though been developed to accommodate this position by offering a set of process tools that can turn the complexity and the time-consuming constraint into a more manageable task.

2.1 The purpose of the DISH Process Tools

The main motivation for the development of the DISH process tools is thus to ensure that the health care sector gets the maximum return on investment from the digitalization of the health care products, by making it easier for the health care providers **to plan and execute continuous skills training** to health care professionals on all levels.

The development of the DISH process tools is based on the main assumptions that the lack of application and full implementation of eHealth solutions are a) lack of digital skills and b) resistance to change and innovation and c) lack of interdisciplinary collaboration and communication. This is the reason that the underlying organisational management framework for the development and application of the DISH tools within health care providers is Kotter's 8 steps for change management[3], which are;

1) Creating urgency
2) Form a Powerful Coalition
3) Create a vision for change
4) Communicate the vision
5) Remove Obstacles and create short-term wins
6) Build on change
7) Anchor the changes in the culture
8) The concept will go from concept to "a way of working"

The rationale behind using Kotter's "Leading Change" theory as an underlying model for the construction of the DISH process tools and their application is that a solid structure is needed to be able to make people leave their comfort zone and their habits, and overall to convince them of the necessity for change. It means that if you want your employees to work innovatively, developing new work methods and communicate more, you need to create a feeling of need or necessity. The employees should feel that there is a good reason to go through with the innovation process and acquire new skills. It is thus important to convince employees that change is necessary before starting the upskilling. This often takes strong leadership, time and visible support from key people within the organization. *Managing change isn't enough – you have to lead it.*

Skills training is something which is highly related to the feeling of "urgency" in the daily work situation, which is the reason the skills training needs to take place close to the everyday work and in concrete

[2] Digital and Innovation Skills Helix

[3] Kotter JP 2012. Leading Change. Boston, Massachusetts: Harvard Business . Review Press

and realistic work situations. We know from experience and from the needs analysis carried out in the DISH project, that skills training often somehow is neglected in the busy everyday routine within health care providers, because it takes time to plan in a good way and keep track of the needs and demands.

Skills training is normally a response to a concrete need. It cannot be a "standard product", but needs a flexible approach, and needs to be planned and developed close to the everyday work situation, in order to provide best possible return on investment. This means that detailed and complex planning as well as more interprofessional communication is needed, which takes time. The DISH process tools have been developed with the objective to provide the health care sector with some concrete process tools in order to structure the complexity and the needed flexibility, which can help the trainers and make them gain time and overview, so that skills training does not become a forgotten and "opted out" activity.

2.2 How to use the DISH Process Tools

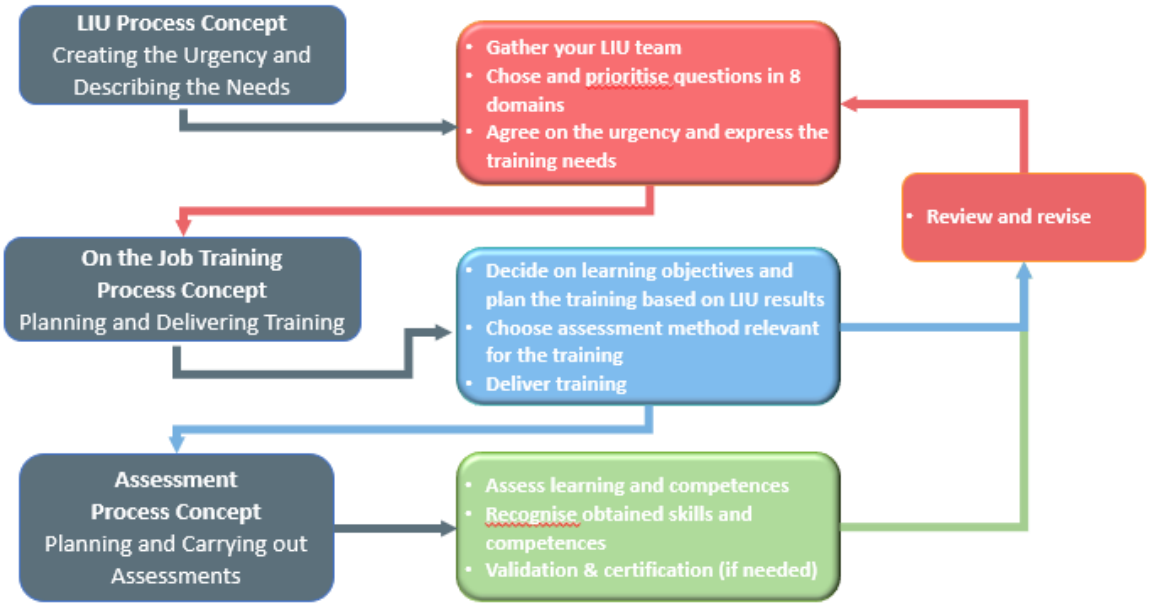
The full potential of the 3 DISH process tools is reached by using them all together in a structured process based on shared decision making.

The process tools will be described more in details later in this document; from chapter 5 to 7, and in this introduction of the tools, we will provide a quick overview of the process and how the tools are related. In chapter 8 to 10 you will find all the relevant work sheets that can be used to set up the Preparation Team, to plan and execute the training, as well as assessing the comptences and skills that the learners have obtained.

The overall process for the application of the DISH tools are the following as shown in figure 4.

1) When a health provider wants to introduce a new digital solution, a Preparation Team (LIU) is set up, where the clinical needs, the communication and coordination needs, as well as the training needs, are discussed and decided upon through shared decision making. It is important that the stakeholders manage to "create the feeling of urgency" or articulate in concrete terms the immediate challenge and need for new skills or / and organizational support through a shared decision making process.
2) When the urgency has been articulated and common decisions have been taken in the Preparation Team on how to move forward, the on-the-job training tool will be used to plan the skills training in details, and training material such as checklists, manuals etc will be developed.
   The concrete skills training will be carried out, which should be designed to respond to the specific digital solutions and competence and skills needs, as well as the local structures where the digital solution will be applied.
3) When planning the training, the assessment and acknowledgement of the obtained skills will also be planned, and for that task, the assessment and acknowledgement tool will be used. The assessment will be decided upon in advance and concrete learning objectives related to knowledge, skills and work behaviour will be described. Each learner will have the possibility to obtain a diploma for having carried through the training and a short description of the skills that the learner has obtained.

Figure 3: the relation between the 3 DISH Process Tools



3 The development process

The 3 DISH Process Tools are the main deliveries from the DISH project. The development of the Tools takes it's starting point in a Danish approach to skills training that comes from the lead partner of the DISH project; The Hospital of Southern Denmark.

The hospital started to work with the approach in 2017, based on a research project carried out in 2016. Together with the 4 sourronding municipalities and the educational institutions an analysis was carried out among the health care professionals, which showed that there was a need for competence and skills development in the area of digital skills. It all started with in the use of video equipment in the cross-sectoral work, and very concrete "hands-on" training needed to be combined with learning about workflows, intersectorial communication and also on behavior, culture and mindset in relation to innovation on the work place.

3.1 The needs analysis phase

In order to ensure that the European development of the DISH tools is based on concrete needs expressed by the target group and within the European DISH partnership, a needs analysis was carried out in the beginning of the project.

The result from this phase was a European baseline report, gathering input and feedback from the 6 participating countries as well as from European level.

In relation to the need analysis, the baseline report revealed that the context around training, digital competences and skills is very different between the participating countries in the DISH project.

Common to all countries is a lack of targeted support programmes for digital literacy, especially in the health sector. The infrastructure in the individual countries is unevenly developed and the promotion of digitisation is a perceptible strategic goal for everyone, with varying degrees of state and legal support. The underlying form of government and the structure of the respective health care system are relevant characteristics in this context.

The literature study in the baseline report shows that digital skills are increasingly demanded by all health professionals. The attitude to integrate new technologies into work processes is available. However, there is a lack of effective, implementable training programmes and their measurable evaluation. Germany, in particular, has not yet shown any sustainable, systematic efforts in this area.

In conclusion it is evident that the objective of the DISH project; to develop and ensure on-the-job training to improve digital skills among health care professionals is really needed.

3.2 Development phase

Based on the results from the needs analysis phase and the baseline report, three working groups were set up in the partnership; one group for each tool. The groups were lead and the discussion facilitated by the Danish Triple Helix partnership. The DanishLifeScience Cluster, led the development work related to the Preparation Team. The Hospital of Southern Denmark led the development work related to the On-the-job training tool, and University College Lillebælt led the work related to the assessment and acknowledgement concept.

The development phase was kick-started during the partner meeting in Bergen in June 2019, where three workshops were organized and where partners, based on the results from the needs analysis, discussed, co-designed and decided upon the objectives, the content and the scope of the three tools.

The first version of the tools were presented and discussed during the partner meeting in Liverpool in December 2019. During that meeting, the regional triple helix partnerships made the first initial planning on how they would implement the testing phase in their region.

3.3 Testing phase and fine-tuning

In order to ensure the relevance, usefulness and mainstreaming of the DISH Tools, a testing phase was planned in each country. Each country has tested the DISH tools and carried through training, focusing on the implementation of specific digital solutions. The testing phase from each country is documented more in details in chapter 11.

The use of the DISH tools has been evaluated and this document has been updated accordingly, so that it builds on the practical experiences of the work that has been carried through in the participating countties.

The testing phase and the following documentation and evaluation phase, have also provided material to elaborate implementation and policy recommendations, as well as good practice stories – either written og video testamonials.

All this material has been gathered on the DISH platform, which can be used by health care providers all over Europe to get inspired to plan and implement innovation processes, digital solutions and skills training.

You can find the website on:

www.dishproject.eu

4 Conceptual Understanding

A series of different theories and tools have been used to develop the DISH process tools. These span many themes; such as management theories, innovation theories and learning theories, as well as various European concepts that have been developed to ensure transparency and mobility in education systems and labour markets.

All these theories and concepts are presented in this chapter to give the reader a holistic understanding of the use and application of the concepts

4.1 Change Management and Kotter

As described in section 2.1., the underlying model for the development of the DISH tools, is Kotter's "Leading Change" Theory, which consists of 8 phases. These phases are shortly described in the following as they should be followed while applying the DISH Process Tools within the health care practice to obtain better uptake of digital solutions.

Step 1; Establishing an experience of necessity. According to Kotter, it is often underestimated how difficult it is to get people to leave their comfort zone and what they usually do, and in general to convince them that a change is needed. Kotter's theory is obvious to use as a structure and organizational model in the DISH tools, as they have as objective to move staff away from their comfort zones and familiar workflows. This means, for example, that when you want staff to work innovatively with the development of new working methods and new digital solutions, a feeling of a need or a necessity must be created among the staff. They must feel that there is good reason to start the process to learn and to change.

Step 2; Establishment of the governing coalition. Change and thus also innovation processes require a strong team, consisting of people with both formal and informal power. The team must lead the change together. It requires trust and a common goal. Four key characteristics of the governing coalition are: job influence, expertise, credibility and leadership. According to Anderson and Anderson's cube in Figure 4 on page 14, it can be said that in addition to management and expertise, there must also be "cultural bearers" involved in the process. In relation to the DISH tools, this governing coalition will be set up when establishing the Preparation Team (the LIU), which is presented in chapter 5.

Step 3; Developing a vision and a strategy. It is important to create a tangible, concise vision that staff and other stakeholders can relate to. Detailed plans rarely create excitement, engagement and willingness to change. It is therefore necessary not only to speak to the intellect of the people, but also and perhaps especially to their emotions. In this phase it is important to establish the "feeling of urgency", which was already mentioned in section 2.1, which is an important task within the Preparation Team, through the use of the shared decision making model which is shown in figure 8 on page 25.

Step 4; Dissemination of the vision of change. It is important that the members of the Preparation Team take the lead in spreading the positive message. Actions often count more than words. Kotter calls it "walk the talk". It can be said that this step is very much about three of the four quadrants in the change process cube, namely behavior, culture and mindset. In this phase it is important to discuss culture as well as values, workflows and routines, but it is also relevant to visually "show" how the change process is moving forward. The members of the Preparation Team, in collaboration with the training staff, who work with learning goals and visions for the training, should work together to disseminate positive messages.

Step 5; Create a basis for action on a broad basis. This step focuses on changing the systems and the structures that undermine the main objectives with change processes. Most often this is related to old habits and routines within staff as well as management, and based on Anderson and Anderson's model (figure 4) you can say that you have to work with all four quadrants at all levels in the cube in order to make the organization / workplace ready for the upcoming innovation / change process or skills training. In this phase, staff must be encouraged to come up with ideas themselves and to take the initiative to move change and innovation forward. The activity model, which is shown in figure 10, can be used as inspiration to support this process, being attentive towards how the staff like the skills training they are participating in.

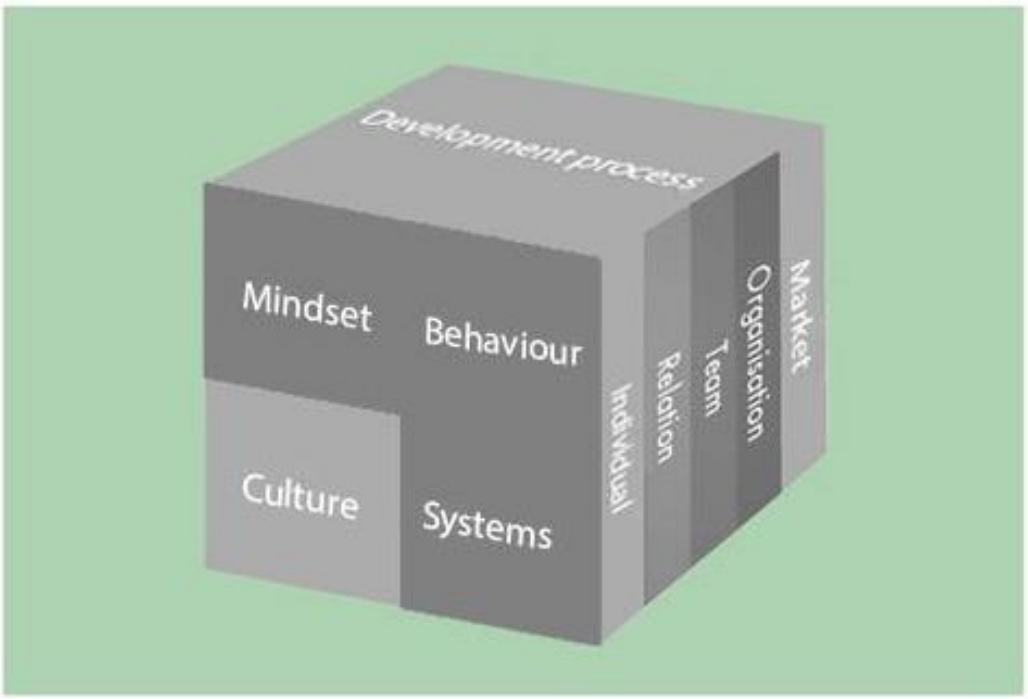
Step 6; Generating short-term gains. It is essential to create visible and fast results. The staff who participate actively to implement improvements in the process should be rewarded for their efforts. If this does not happen, the change process will stop after a while. According to Kotter, it is not enough to hope for short-term results, one has to plan them. Focusing on achieving short-term results has the side benefit that it helps maintain the sense of necessity.

Step 7; Consolidating results and producing more change. The credibility of the rapid results can be used to change systems, structures, guidelines, culture and behaviors that do not fit into the vision. Declining victories too quickly should be avoided, as it risks decreasing the “feeling of urgency” and thus putting an end to further change measures.

Step 8; Anchoring new ways of working in culture. It is important to show the connection between the new behaviours that will be installed, the effort that the staff has put into it, and the success of the organization. Related to the DISH tools and the health care sector, this supports an increased uptake of digital health care solutions and an improved quality in health care. Within the Preparation Team tools to ensure good management that can make the changes sustainable should be considered and chosen.

Figure 4: Change process cube[4]

[4] Anderson D, Anderson L 2012. Nøglen til Ledelse af forandring. Strategier for bevidst forandringslederskab. København: Gyldendal Business. (translated to English by the DISH project)



4.2 How to understand innovation in the health care sector

Because of the democrafic challenge, the European healthcare systems have focused massively on investing in, and implementing, technologies that support better, more efficient and effective care and treatment. The massive use of new technologies in the European healthcare system, as well as the growing interest in the development of medical technologies, requires that the healthcare professionals assist in the promotion of innovation of new healthcare technologies and services as part of their own professional practice.

Historically, the concept of innovation has been reserved for the mercantile subject area, and the concept has been defined on the basis of an economic rationale, eg innovation understood as new products or services that create economic value. But as our society develops and faces important challenges; economic as well as societal, the innovation approaches and techniques have been adapted, to apply to e.g. the health care sector, meaning that the value of innovation is now also defined towards a context, where innovation is not only about increasing economic value, but also efficiency, effectiveness and qualitative value for patients and employees.

Hence, in todays health care sector, there is an increasing demand for staff at all levels, who has a positive mindset towards working with development, innovation and implementation of new technologies and new services in professional practice. A continuing focus on innovation is one of the answers to the public sector's challenges in meeting the growing demand for service in a time of limited resources. This approach is essential for the DISH tools, which enables health care providers to work systematically with the strengthening of innovation and creativity among all staff.

4.3 Knowledge, skills and competences; what is the difference

When defining knowledge, competences and skills it is necessary to define these terms in the scope of the concrete work situation. In the literature the term competence is often defined at a very abstract level as a combination of knowledge, skills and behavior used to perform a certain task.

In the DISH project we have used the European Qualification Framework (EQF) levels as inspiration to describe the different categories of learning that the On-The-Job training can touch upon. In the EQF

the three categories are; knowledge, skills and responsibility / autonomy. For the DISH project we have changed these a bit and call them; knowledge, skills and competences / work behavior, and in a DISH context, we understand the three levels as follows;

- Knowledge is referring to professional and more theoretical knowledge about innovation, the importance of interdisciplinary collaboration and knowledge about digital solutions in the health care sector.
- Skills are referring to the cognitive and practical use of digital solutions – e.i how the different solutions function technically and how to use them in specific work situations. It also refers to the awareness of which other staff groups it would be important to collaborate with.
- Competences / work behaviour is referring to the ability to apply innovative thinking / readiness and combine this with the knowledge and skills about and use of digital solutions, and propose alternative use or improvements of work situations in an interdisciplinary dialogue. Competences are the result of integrative (learning) experiences that include knowledge, skills and the ability to apply it in a certain job context.

4.4 What are triple helix skills competences?

In the DISH project and the DISH tools, we work with the so-called triple helix skills in health, which means that health professionals, in order to exploit the full potential of investments in digital solutions within health care, should posess competences and work behavior that make them better prepared to

- Identify innovation opportunities and enter into user driven innovation processes in a qualified way
- Work with and implement eHealth solutions in their daily work and start collaborating with colleagues in a more multidisciplinary and holistic approach and across health care sectors
- Recognise and better understand the opportunities that digital solutions offer to their daily work.

It is important to work with these triple helix skills in order to support the needed innovation in health care, because today we know that only 20% of an implementation process involving technology deals with the technology itself. The remaining 80% of the implementation process is related to behavior, culture and mindset of those who have to use the technology.

Technology adoption is about human anchoring. Implementation of technology is a change process and the expected achievement is a change in behaviour among the healthcare professionals. The real benefits of a technology can only be harvested when healthcare professionals adopt the technology for the planned Work-flows and even explore an extended use of a new technology. The exploratory behaviour can be encouraged though the tripelehelix collaboration where the company, who is supplying the digital solution is present, together with the management, the administration and representatives from the different types of healtcare professionals. As is the idea in the Preparation Tool.

One can also speak about this as “hardware, software and peopleware”, meaning that in order for a technology to work it of course requires the right hardware and software. However, in order for the technology to be implemented, used and applied in an optimal way in a work situation, staff, who can be referred to as “peopleware” need to understand, accept, be able to manipulate and maybe even explain the technology to others. Without these three “wares” working together, it will not be possible

to use health care technologies to their full potential. Hence not really tangible, the "peopleware", can be translated into the the triple helix skills, and cover the following

- **Digital competences and skills:** skills allowing healthcare professionals to adopt, use and work with new technologies.

- **Innovation readiness or innovation skills:** refers to a skill that allows the healthcare professionals to 1) identify new and improved ways of working in both known and new areas, 2) identify relevant new technologies and digital solutions and 3) identify ways of implementing new technologies in their everyday work.

- **Implementation and change management skills (intersectoral skills):** refers to skills that can help the healthcare professionals to ensure better uptake of new technologies and eHealth solutions in healthcare through collaboration and dialogue.

4.5 What is Skills training, and how does it differ from competence development

The definition of skills' training – for the healthcare professionals – is the process of acquiring and/or improving a set of new or complex skills (digital innovation, eHealth skills) with the purpose of delivering improved service, through participation in hands-on practical exercises in a secure environment, without running the risk of disturbing or harming the patient.
Whereas competence development refers more to the training of the general capacity of an employee to complete a certain job, e.g. the capacity of being a nurse or a medical doctor, skills training is more related to the carrying out of specific tasks. The skills' training is therefore based on practice-related cases, drawn from the daily work of healthcare staff, and is usually more "tailor made" than competence development. As far as digital skills training is concerned, it should be based on the concrete technology, which has either been introduced but is not yet in use, or which should be introduced into the clinical practice in the near future. The staff should be trained in how to use the technology, based on cases from their work. The training can take place in specfically set-up simulation facilities or in the own wards/own areas with on-the-job training, as well as across professional groups and sectors.

4.6 The Activity Model

The activity model, as used here in the DISH on-the-job training tool, was originally developed within a collaboration among the Danish university Colleges, that provide higher education to all kinds of professionals applying social sciences, such as teachers, nurses and pedagogs. Hence, for the university colleges it is important that students develop competencies to handle very concrete job situations with big responsibility after they graduate. This is also the case for health care professionals, who are the main target group for the DISH on-the-job training tool. The activity model has been developed to ensure that students are prepared for this responsibility, and hence are aware of the study and learning expectations that have been put forward to them, and also which learning and teaching activities they will have to participate in, and whether these request individual work and / or group work

The activity model is divided into four categories which take their departure in whether the study activity was initiated by the student or by the lecturer, or whether it is a study activity involving a lecturer or only students. The two 'axes' form a total of four categories of study activity in which the students and the lecturers can establish a dialogue.

- The first category involves activities initiated by a lecturer and engaging both students and lecturers. This can be classroom teaching, lectures, supervisor presentations, team counselling or similar.

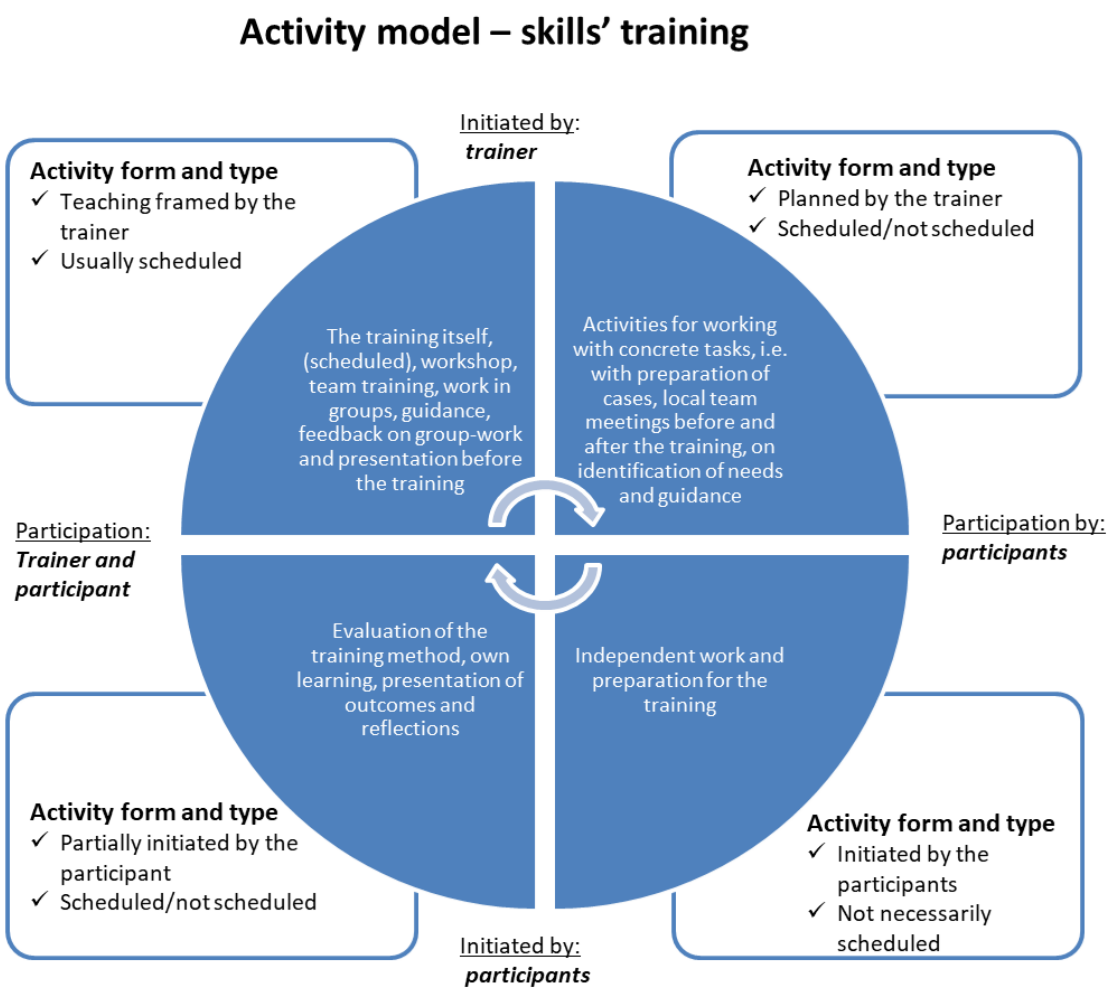
- The second category involves activities initiated by a lecturer, but engaging only students. This can be class or team meetings without supervision, study activity days, internships, study visits or similar.
- The third category involves participation of lecturers and students, initiated by students. This would be forum sessions, presentation of study projects, theme days or similar.
- The fourth and final category is for events initiated by students – with participation of other students. This could be independent study and study preparation, completion of study products or similar.

The activity model is relevant for the DISH project because it can be used in the planning process in order to illustrate the different activities that the skills training cover. It is also a good model to use when the training is introduced to the staff, so that they can get a holistic understanding of the training activities. In short there are three purposes of the activity model:

- The model is used to illustrate the total number of activities that actually constitute an on-the-job training programme.
- The model clearly illustrates that the training includes different types of activities and that these are interlinked.
- The model provides a basis for communication and expectation alignment between trainees and trainers in relation to roles and responsibilities in the different types of activities in the training.

Figure 5: The Activity Model [5]

[5] https://phabsalon.dk/english/full-degree-programmes/leisure-management/study-activity/the-study-activity-model/



4.7 European Frameworks for skills development and transparency

An important objective with the European collaboration in the DISH project, is to create transparence and mutual understanding and acknowledgement of triple helix competences and skills obtained outside the official education system.

The objective with the DISH tools is to ensure that skills training and on-the-job training; 1) is decided upon through a close and systematic dialogue and shared decision making, 2) is developed and executed close to the everyday work of the health professionals in order to create immediate benefit in the work situation as well as creating least economical pressure in the clinic by NOT taking out staff to carry out external training and 3) ends with an assessment of the concrete competences and skills that the health professional has obtained during the training.

A lot of different European frameworks exist in the field of vocational education and training, and the DISH project has gathered inspiration from the following.

4.7.1 EQAVET[6].

EQAVET is a quality assurance reference framework developed to help Member States of the European Union (EU) to promote and monitor continuous improvement of their VET systems based on common European references. The framework should contribute to increased transparency of, and consistency in, VET policy developments between Member States, thereby promoting mutual trust, mobility of

[6] https://www.eqavet.eu/Aligning-with-EQAVET/Work-based-learning/Guidelines

learners and workers, and lifelong learning. The DISH project does not work on memberstate level, but a part of the EQAVET framework also deals with work based learning, and a series of 6 building blocks are proposed, which are the following;

1) *Design*: work with partner organisations to ensure the relevance of learners' training during periods of work-based learning.
2) *Improve*: agree with partner organisations when the quality of training will be monitored and how improvements will be made.
3) *Respond*: continue to be aware of the specific needs of learners throughout their work-based learning.
4) *Communicate*: ensure learners and partner organisations are kept well informed and receive frequent updates on all aspects of training.
5) *Train*: ensure staff are well prepared for their training role which includes quality assurance.
6) *Assess*: work with partner organisations to review the work-based training programme, assess and certify individual learner's achievement, where appropriate

The 6 building blocks are relevant for the DISH project and have been incorporated in the DISH tools in the following way;

- The Preparation Tool will ensure that relevant partners get together in a structured process to design (1), respond to concrete training needs (3), and communicate about the training (4)
- By using the on-the-job training tool the training staff is prepared for providing the training and the health care staff receive training (5)
- By using the assessment and acknowledgement tool the learners are assessed (6) and it is also ensured that feedback is given on the concrete training activities (2)

4.7.2 ECVET[7]

The aim of the European Credit system for Vocational Education and Training (ECVET) is to:

- make it easier for people to get validation and recognition of work-related skills and knowledge acquired in different systems and countries – so that they can count towards vocational qualifications
- make it more attractive to move between different countries and learning environments
- increase the compatibility between the different vocational education and training (VET) systems in place across Europe, and the qualifications they offer
- increase the employability of VET graduates and the confidence of employers that each VET qualification requires specific skills and knowledge.

The ECVET has not been used in the DISH project as it was originally developed, namely as a framework to promote and facilitate transnational mobility, as this is not an objective of the project. The ECVET framework has more served as inspiration for the development of the DISH assessment and acknowledgement tool. The process that the ECVET framework proposes for planning the assessment activities are highly relevant for the DISH project and can contribute to making the skills obtained in the on-the-job training transparent and easily understandable for external stakeholders. The intention is that health care professionals that participate in the DISH on-the-job training, obtain recognition of their obtained competences and skills and to create better opportunities for mobility internally in their organization or to other organisations, where their competences and skills can be recognized in a job seeking process.

[7] https://ec.europa.eu/education/resources-and-tools/the-european-credit-system-for-vocational-education-and-training-ecvet

As to develop the DISH assessment and acknowledgement of skills tool, we have used the following four principles from the ECVET framework;

- Who will assess the learner?
- How will learning outcomes be assessed and in what context (including where)?
- When will the assessment take place?
- What procedures will ensure the quality of assessment

The ECVET framework has also developed an assessment and acknowledgement template which covers knowledge, skills and responsibilities, and this template has been adapted a bit to fit the DISH project and the tool for assessment and acknowledgement of skills. You can find the template in section 9.2.

4.7.3 EQF[8]

The European Qualifications Framework (EQF) is a common Euroepan reference framework which purpose is to make qualifications more readable and understandable ascross different countries and systems.

The core of the EQF is its eight reference levels defined in terms of learning outcomes i.e. knowledge, skills and autonomy / responsibility. Learning outcomes express what individuals know, understand and are able to do at the end of a learning process.

The eight reference levels are the following;

1) Basic general knowledge
2) Basic factual knowledge of a field of work or study
3) Knowledge of facts, principles, processes and general concepts, in a field of work or study
4) Factual and theoretical knowledge in broad contexts within a field of work or study
5) Comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge
6) Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles
7) Highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research.
   Critical awareness of knowledge issues in a field and at the interface between different fields
8) Knowledge at the most advanced frontier of a field of work or study and at the interface between fields

For each reference level, a description of the knowledge, the skills and the level of responsibility and authonomy that the trainee should obtain through the training is described, which has been reproduced in section 9.4.

The EQF and the 8 reference levels have been applied in the DISH process tools in relation to the planning of the on-the-job training as well as the planning and execution of the assessment process. Concretely, a reference to the levels have been incorporated in the tools via the planning template in section 9.2, so that the employees, being responsible for the planning of the training, can decide which reference level the learner needs to reach through te training, and which concrete knowledge, skills and responsibility the on-the-job training the learner should ideally have obtained.

In section 9.4 you will find a complete overview and description of the 8 reference levels and correcponding explanations related to knowledge, skills and competences for each level.

[8] https://www.cedefop.europa.eu/fr/events-and-projects/projects/european-qualifications-framework-eqf

4.7.4 21st Century Skills

As described earlier in this document, the DISH project and the development of the DISH tools, is a response to a lack of skills in the health care sector that reflects the complexity of tasks, workflow and communication need between different staff groups, as well as a high degree of degitalisation. These specific challenges make it relevant to introduce the framework of 21st century skills into the development of the DISH tools

The term *21st Century skills* has been widely adopted internationally and broadly speaking, it refers to the skills and attributes that have been identified as being essential for success in the 21st century, characterised by a rapidly complex and evolving digital society. Skills such as problem solving, team-working, analytical and critical thinking skills are increasingly seen as more important than the traditional academic skills which are primarily content-based, and which are often measured by memory recall in formal examinations. These are the skills that a most often cited as the most relevant ones for the 21st century, and which are relevant to address within the health care sector to support the innovation process and uptake of digital solutions;

1) Critical Thinking and Problem Solving, e.g., effectively analyze and evaluate evidence, arguments, claims and beliefs; solve different kinds of non-familiar problems in both conventional and innovative ways;
2) Communication, e.g., articulate thoughts and ideas effectively using oral and written communication skills in a variety of forms and contexts;
3) Collaboration, e.g., demonstrate ability to work effectively and respectfully with diverse teams;
4) Creativity and Innovation, e.g., use a wide range of idea creation techniques to create new and worthwhile ideas;
5) Information Literacy, e.g., access and evaluate information critically and competently; manage the flow of information from a wide variety of sources.
6) Media Literacy, e.g., understand both how and why media messages are constructed; create media products by understanding and utilizing the most appropriate media creation tools, characteristics and conventions
7) ICT (Information, Communications, and Technology) Literacy, e.g., use technology as a tool to research, organize, evaluate and communicate information.

All these skills are extremely relevant for health care professionals and will therefore be an important part of the On-The-Job training tool, as an integrated part of the learning objectives as well the concrete training activities, which will ensure a close connection to the organizational structure and culture, hence interdisciplinary collaboration and dialogue.

4.8 Teaching and learning theories

The On-The-Job training tool will support the planning and execution of training close to the health professionals everyday work. When developing the tool, we have found inspiration in different teaching and learning theories, which will be presented in the following.

4.8.1 Technology-enhanced learning and simulation

Technology-Enhanced Learning (TEL) environments, such as simulation, are extremely suitable for on-the-job training; especially in the health care sector as they support “tailor made” and personalized learning, provide a safe environment to explore new ways of working such as applying digital solutions, support individual and collaborative working and strongly support the link between formal and informal learning activities. Hence, TEL is therefore extremely relevant for DISH and will be applied as much as possible as a method in the On-The-Job training.

4.8.2 Connectivism[9]

Connectivism is a theoretical framework for understanding learning in a digital age, and is highly relevant for the DISH project as learning should not only happen within an individual, but preferably within and across the the different staff categories and units within the health care sector.

The key principles of Connectivism are summarized below:

1) The integration of cognition and emotions in reasoning is considered important, since thinking and emotions influence each other.
2) Learning is target-oriented, i.e. learning has an end goal - namely the increased ability to "do something". The "whole of learning" is not only gaining skill and understanding but performance is the key element.
3) Learning is a process of connecting specialized nodes or information sources. Learners can substantially improve their learning by connecting into an existing network.
4) Learning may exist in non-human artefacts; it can be supported by a community, a network, a game or a database.
5) Knowing where to find information is more important than knowing information.
6) Connections are needed to facilitate learning.
7) Learning and knowledge rest in diversity of opinions and problem-solution approaches.
8) Learning happens in many different ways, including courses, email, communities, conversations, web search, lists, blogs, playing games, performing simulations
9) Different approaches and personal skills are needed to learn effectively.
10) Organizational and personal learning are integrated tasks. Personal knowledge is comprised of a network, which feeds into organizations and institutions, which in-turn feeds back into the network
11) Learning is a knowledge creation process and not only knowledge consumption

It is worth taking all these aspects into consideration when planning the training and also use them in relation to communication about the skills training so that all parties understand why the skills training needs to be organized in such a flexible way.

4.8.3 Andragogy[10]

Andragogy refers to principles and methods in adult education contrary to pedagogy, which is about children's learning. Andogogy, which has been proposed by Malcolm Knowles is based on a humanistic conception of self-directed and autonomous learners as well as teachers as facilitators of learning. Androgogy works with a set of assumptions and principles that reflect specific aspects of adult learning "on-the-job", as the DISH tool deals with, which therefore makes the theory interesting for DISH.

Knowles defined adult learners as independent and self-directing, i.e. learners that have accumulated a great amount of experience, which is a rich resource for learning. Furthermore, Knowles described adults as persons who value learning that integrates well with the demands of their everyday life and are more interested in immediate, problem-centered learning approaches. Andragogy provides a set of principles to encourage adult learning. These are summarized, as follows:

1) Learning situations are seen as directly relevant to the real-world job context.
2) Learners need to know what they need to learn and why.
3) Training experiences have to be aligned with the learner's own goals.
4) Learning supports the learner's own sense of self, respecting individual differences.
5) Learning situations provide intrinsic motivation.

[9] Georges Siemens and Stephen Downes

[10] Malcolm Knowles

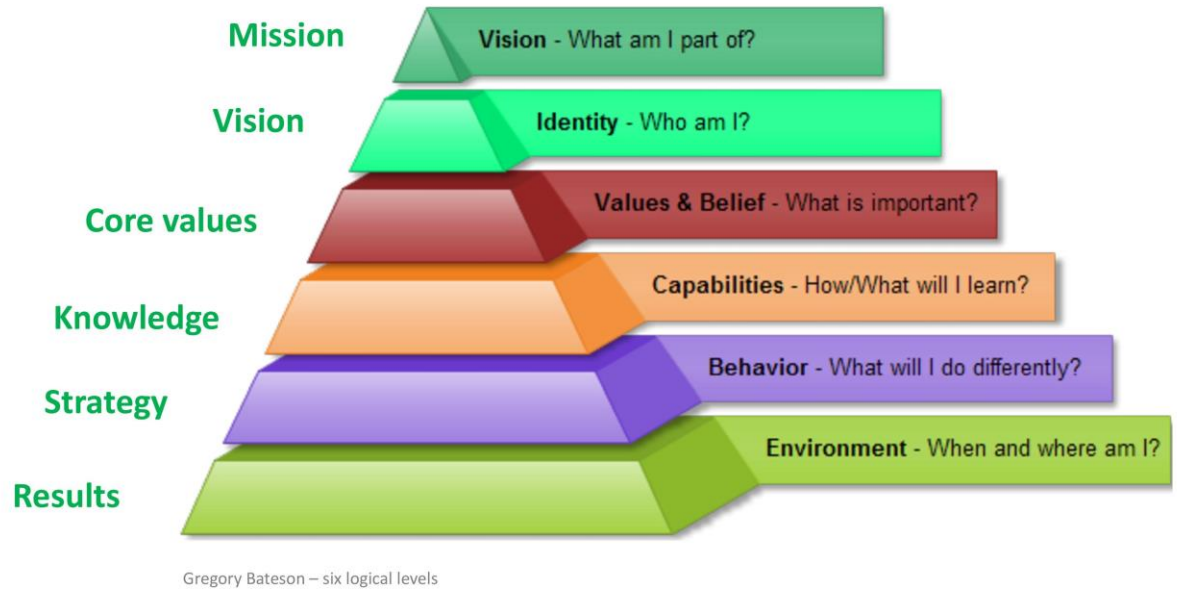
6) Learners are self-directing: they set their own agenda and learning path; assess their learning experience.

Again, these principles are important to consider both when planning and developing the training and when communicating about the training; both towards the management level and towards the staff, who will participate in the training.

4.8.4 Levels of learning [11]

Gregory Batesons theory about levels of learning and logic is based on a theory of communication, because learning is seen, not necessary as an individual process, but something that happens in a process and in interaction with others. This is an important aspect for DISH and can also be closely related to Kotter's theory about creating sustainable change, as Kotter's understanding of creating the urgency and the behavioral change, which is needed, is based on a logical learning process.

Figure 6: Levels of learning and logic



[11] Gregory Bateson: Level of learning

5 Creating a Preparation Team

Within this chapter, the tool for setting up a Preparation Team that defines the “urgency” which is the first step in Kotter’s “Leading change”. The tool is called the “Praparation Tool for Innovation and Digital Skills Adaption”, which is a tool that can be used to set up and guide the cross-cutting planning group that will ensure that an organization is able to absorb and fully utilize a new technology.

The task of the Preparation Team is to identify and plan the handling of urgent tasks in connection with the introduction of a new technology; to identify and communicate the need for competence and training; as well as ensuring that the organization is changed so that an exploratory and innovative attitude is achieved towards the technology that is introduced. The cross-cutting Planning Group will primarily be concerned with the preparation of "peopleware" as explained in Section 4.4, and how to prepare this "ware" to support and facilitate the deployment of digital solutions.

5.1 What is the Preparation Tool for innovation and Digital Skills adaption and what is it’s objective?

The preparation tool is an organisational process tool which can help the health care providers to create a flexible learning and innovation environment when a specific innovation need shows up.

The basic idea of the first DISH tool is that it brings together relevant stakeholders to define and describe concrete implementation challenges, innovation needs and express these into concrete training needs, as well as describing common solutions, based on a shared decision making process. The Praparation Team can ideally be described as an internal “shared decision making team”, which fosters multidisciplinary collaboration, “out of the box” thinking, team learning and the best foundations for *implementation* of innovation.

Based on a shared decision making process the intention with the setting up the Praparation Team is to;

a) create a common understanding and feeling of “urgency” around the specific innovation need and / or implementation of a digital solution,
b) create better room and commun understanding of innovation,
c) support implementation and change management processes and
c) support competence and skills development and capacity building in a team rather than in the individual.

The objective of the Praparation Team is to ensure that all kinds of innovation in the health care sector is supported by competence and skills development, and that this is created in a process, based on shared decision making, where all relevant stakeholders take part. Concretely, the collaboration and dialogue within the Preparation Team should;

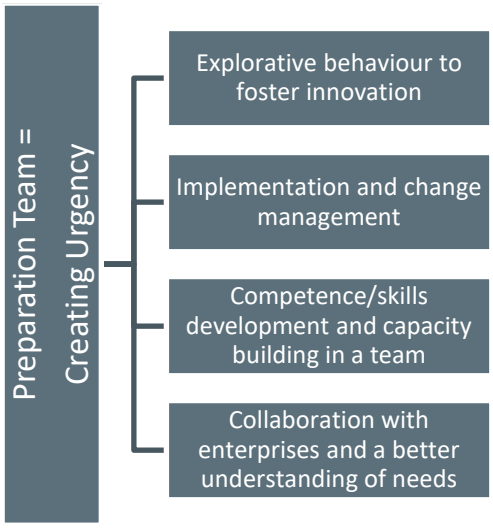
- Stimulate more explorative behaviour among the heath care professionals to foster innovation
- Support implementation and change management processes
- Support competence/skills development and capacity building in a team rather than in the individual
- Enhance collaboration between healthcare professionals and enterprises and a better understanding of needs

The Preparation Team should be seen as an **organizational concept** providing a “framework” for co-creation which fosters multidisciplinary collaboration, innovative attitudes and team learning. A Preparation Team can be established every time a new technology is to be tested or implemented by healthcare operators. In the multidisciplinary framework of the Preparation Tool, “on the job training”

will take place providing conditions for better development and uptake of technologies and digital solutions within the healthcare sector.

A Preparation Team can be given a specific name that suits the local context, structure, collaboration and concrete needs. Within the DISH project it was given different names in the different countries, such as “Technology Innovation Training Team”, “Multiprofessional Planning Group“ or „Digital Transformation Unit”. What is important is that the name gives meaning to the stakeholders that take part and that it is an accepted name within the given organisation.

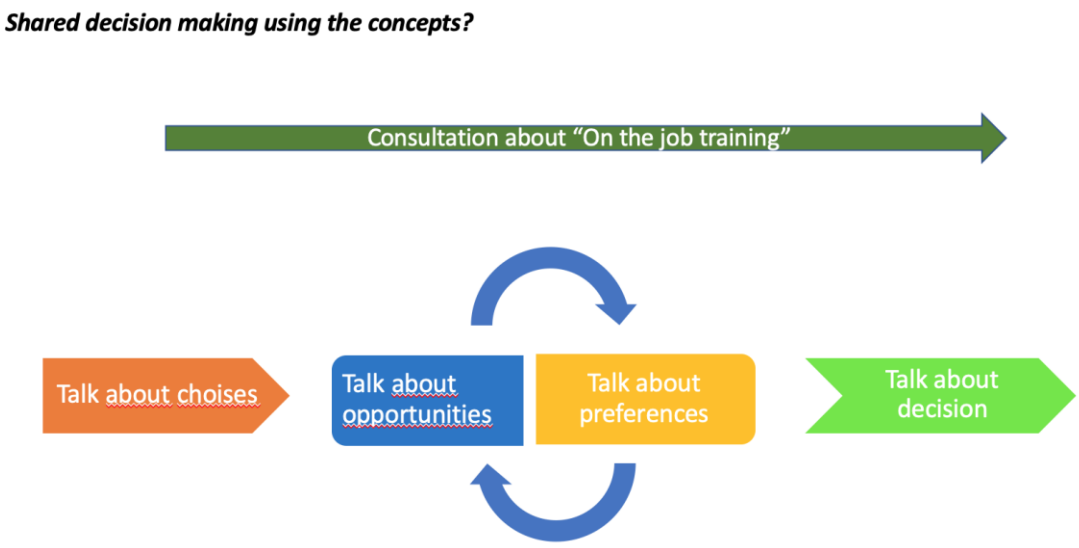
Figure 7: The objectives of the Preparation Team



5.1.1 Shared decision making

The collaboration and dialogue within the Preparation Team should always be based on the shared decision making processes, as we know that common engagement and shared understanding of the “urgency” is one of the most important factors for successful implementation of digital solutions in the health care sector. Building the innovation process and / or uptake of digital solutions on this kind of decision process, makes the best foundation for the creation of the needed “peopleware”.

Figure 8: Shared decision making model creating the urgency



Shared decision making is a fundamental principle within the DISH preparation and process tools, and there are four fundamental factors in this principle;

- The parties shall be actively involved in the decision making process
- The parties shall share knowledger
- The parties shall share their preferences
- The parties shall reach an agreement

There is no definitive solution on how shared decision making shall be practised. There is though an agreement on the fact that shared decision making shall be practised in co-operation and in an open dialogue between parties. The model above illustrates the process of the shared decision making, which consists of three elements:

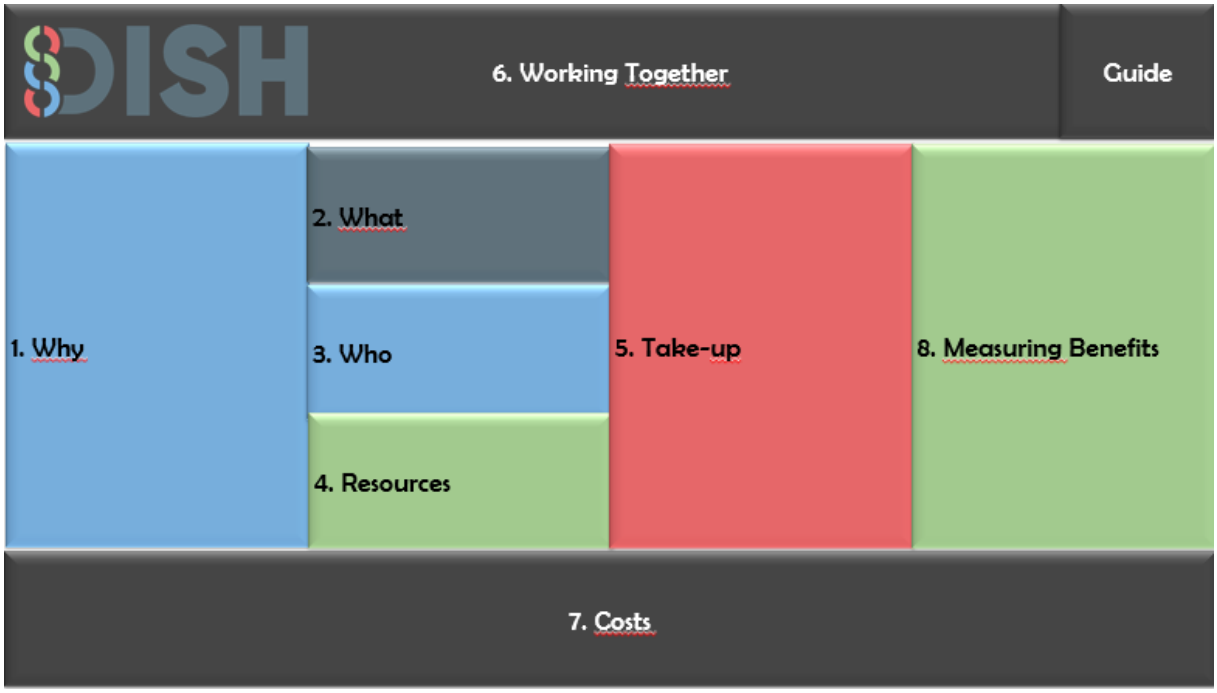
- Talk about choices
- Talk about opportunities and preferences
- Talk about the decision

These three elements should ideally the guiding structure of a number of theme based conversations in the shared decision making process within the Preparation Team. The relevant themes to discuss have been structured into 8 domains, which are explained in the following.

5.2 The structure of the Preparation Tool

The Preparation Tool is organized in 8 domains, which are important to cover in an interdisciplinary dialogue, where all important aspects for the best uptake and implementation of digital solutions are considered. The 8 domains are the following

Figure 9: The 8 domains of the Preparation Team



For each domain a specific expected achievement is defined for the interdisciplinary dialogue and shared decision making process, which is;

Domain	Achievement
1) Why should we do it	That the participants in the Preparation Team have a clear understanding of the value that the Preparation Team has to deliver and how it will provide value for each of the groups that the participants are representing
2) What should we do	That the members of the Preparation Team have a clear idea of the activities they are expected to address.
3) Who should be involved	That there is a clear definition of competences, participants and roles in the Preparation Team
4) What resources will we need	That the participants in the Preparation Team and the staff in the implementing team have been allocated sufficient time and resources to drive a successfull implementation process.
5) How will we get take-up	Technology adoption is about human anchoring. Implementation of technology is a change process and the expected achievement is a change in beavior among the healthcare professionels
6) How will we work together	That it is clear for everybody involved when and how they can contribute
7) What will it cost	That the management level is fully aware of and have set a side the resources needed to run the Preparation Team and the implementation
8) How will we know the benefit?:	A shared understanding of what the organization look like after a successful implementation

The idea is that the setting up of the Preparation Team, the collaboration in the Preparation Team and the decisions that the Preparation Team needs to present, should be based on a shared decision making process, going through all 8 domains. In each of the 8 domains concrete tasks which are important to prepare the organization for the innovation process / uptake of digital solutions. The tasks will be formulated within 2 different tracks, indicating at which level the task is focused, and which organizational level is responsible for the execution of the task. The 2 tracks are the following;

1) Tasks related to the organization and management of change. The objective of this task is to ensure that all relevant organizational and managerial decisions will be dealt with
2) Tasks related to the health care professionals and their collaboration and implementation work in relation to the digital solution. The objective of this track is to ensure that all relevant issues on team level are taken into consideration in order to plan the training and implementation of digital solutions.

You can find all the worksheets for the setting up of a Preparation Team in chapter 8.

The Preparation Tool is very comprenhensive, and the testing phase in the DISH project has shown that it is not possible to consider all the tasks that are proposed in the worksheets. Hence it is important to underline that the tasks mentioned in each of the 8 domains are *inspirational and not obligatory* to carry out. They should all be considered, but the Preparation Team can at any time decide that a certain task is not relevant for their particular implementation process or not appropriate for their particular organisational setting, etc. Hence, a first exercise when starting to work with the Preparation Tool is to chose the relevant tasks that the team shall consider and use as directions.

5.3 Buildring a brigde between the Preparation Team and the on-the-job training

The shared decision making process from the using the Preparation Tool will result in consensus plan for the implementation process, and within each of the 8 domains, the outcome of the discussions will lead to a specific decision and / or activity. In the following is an overview of the outcome of the discussions, the decisions and / or the activities that needs to feed into the following implementation process and the concrete planning of the On-The-Job training.

Domain	Outcome of the discussions / Decisions / Activities
1) Why should we do it	Description of the urgency – which concrete problem / challenge is it that we have to deal with? Communication plan; How do we make it clear for the healthcare professionals that a given digital solution will help them solve a given urgency
2) What should we do	What are the concrete activities that need to be planned in to ensure implementation and application of a certain digital solution Activity plan with deadlines and assigned responsibilities
3) Who should be involved	Overview of who will need training Overview of who will be the trainers
4) What resources will we need	Overview of the Human resources needed. Both in relation to trainees and trainers
5) How will we get take-up	Definition of learning objectives Definition of training content Definition of change management activities to support the on-the-job training
6) How will we work together	Overview of which departments / wards need to communicate and collaborate in order to ensure full implementation and application of the given digital solution, and how this will be done
7) What will it cost	Financial budget
8) How will we know the benefit	Definition of concrete outcome indicators on organizational level Definition of concrete assessment goals on an individual level

5.4 Developing an Activity and Communication Plan

Based on the philosophy of Kotter about “walking the talk”, ensuring that positive messages about the innovation process are communicated, using all opportunities to show to the relevant stakeholders that the change process is moving forward, we have experienced in the testing phase, that it is important to make an activity and communication plan. In this way, the members of the Preparation Team can plan and keep track on why, when and to whom activities and communication is needed during the implementation phase of new digital solutions.

The activity- and communication plan should cover the following;

- Target group for the activities and the communication;
  When implementing new digital solutions the stakeholders are manyfold; e.g. health care staff, technical staff, users, politicians etc. But very often they should not receive the same kind of information and not necessary at the same time

- Who should carry out the activities and the communication;

Who is delivering the communication is very often a critical issue. It is important to ensure that the bearer of the communication experience trust within the group to whom the communication is directed

- When will the activities and the communication be carried out
  It is important to have a clear picture of when the activities and the communication will be carried out.

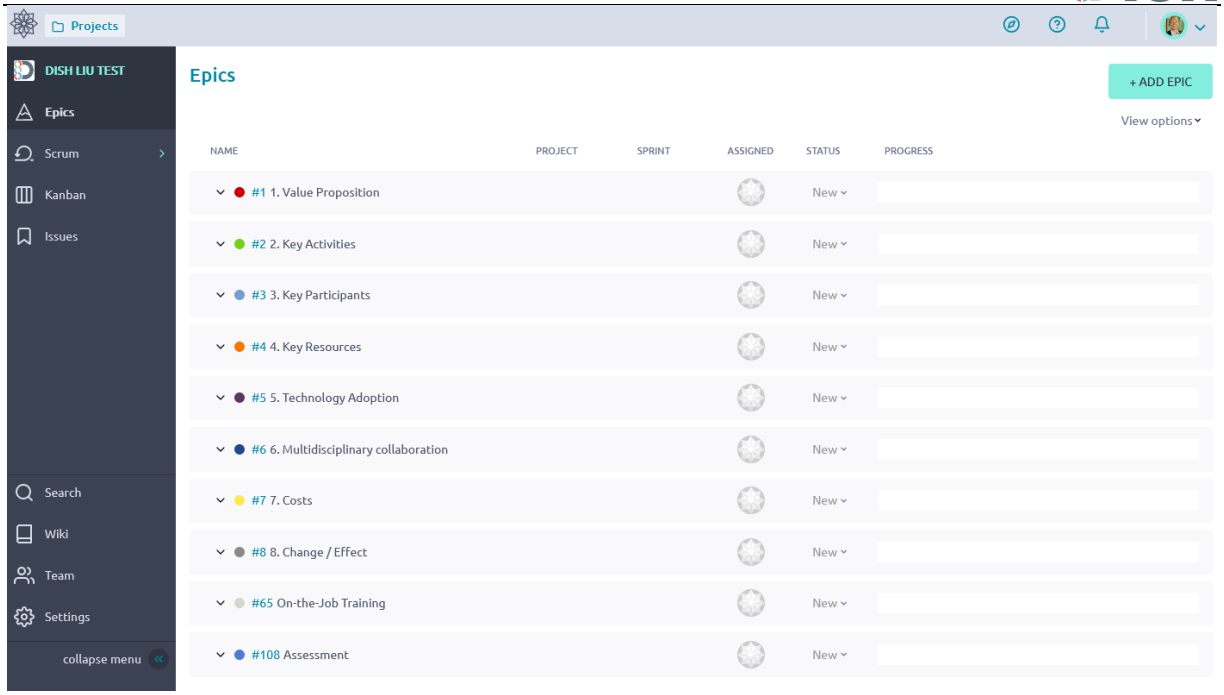
An example of an activity and communication plan could for example be build up from this basis.

Activity and Communication Plan Implementation of automatic door locks							
Task	Week a	Week b	Week c	Week d	Week e	Week f	Who
Information to healthcare staff	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	NN
Information to technical staff	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	NN
Information to politicians	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	NN
Informataion to the patients / citizens / users of the technology	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	NN
Skillstraining	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	NN
Information in the public media	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	Concrete Task	NN
XXX							
XXX							

5.5 Using an online process management tool

For simple projects the above simple activity and communication plan, or another kind of template in Excel-Format, will be enough. However, if projects become complex and a larger team is involved in setting up the Preparation Team and designing the OTJT, it might be useful to use a project management software system (PMS) to set up the Preparation Team, plan the following implementation process and design the training.

Therefore, the three tools have been set up as a template for the free/libre and open-source project management tool Taiga. The templates are provided on the DISH project website and can be uploaded into the Taiga Software.



Overview of the Preparation Team in the Taiga tool

5.5.1 Installation of the DISH-template on the online Taiga platform

Agile project management is a way of working in which - unlike in classic project management - mostly interdisciplinary teams work in short, time-limited cycles (sprints) in order to react flexibly to changes. Through regular coordination (dailies), the teams are always synchronised, can work more productively and achieve interim results more quickly, faster, more up-to-date, more flexible.

Digitalisation and globalisation are not only changing our everyday lives, but also the way we work with training and education. Companies are confronted with rapidly increasing complexity and dynamics. In order not to fall by the wayside, they have to continuously develop - technically, but also in their training and further education structures. This is why the DISH project has developed a framework for the development of courses for on-the job-training and Integration of new digital tools in work processes.

Taiga is a free and open source software agile project management system (PMS). Scrum and Kanban[12] are methods from agile project management and are used for continuous process optimisation. A rethink in the team and in the entire company is required in order to react more flexibly and quickly to new requirements when integrating new tools in times of digital change.

5.5.2 Setting up the system

Setting up the system is very easy. Follow the steps indicated below and you can start using the tools.

Setup of the Taiga Project Management System	
Step 1	Account on Taiga - Create a free account on the Taiga Project Management System: https://www.taiga.io/basicsignup
Step 2	Validate your account - You should receive an email to validate your account
Step 3	Login to the Taiga-System - You can now log in to the Taiga system

[12] https://kanbanize.com/kanban-resources/kanban-software/kanban-vs-scrum-software

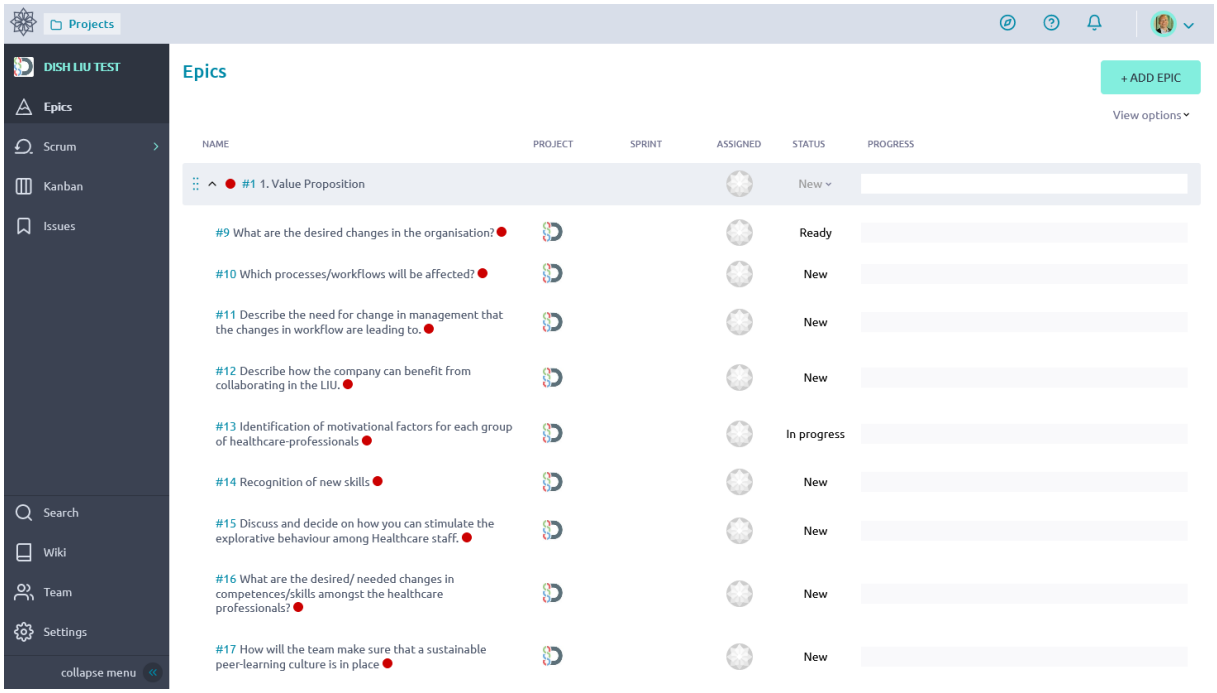
Step 4	Download the DISH-Taiga-Template from the DISH-Website: http://dishproject.eu
Step 5	Start new project in Taiga
Step 6	Choose Import Project from the options
Step 7	Upload the Template downloaded in step 4 (This may take a couple of minutes)

Setup of the Taiga System

5.5.3 Using the system

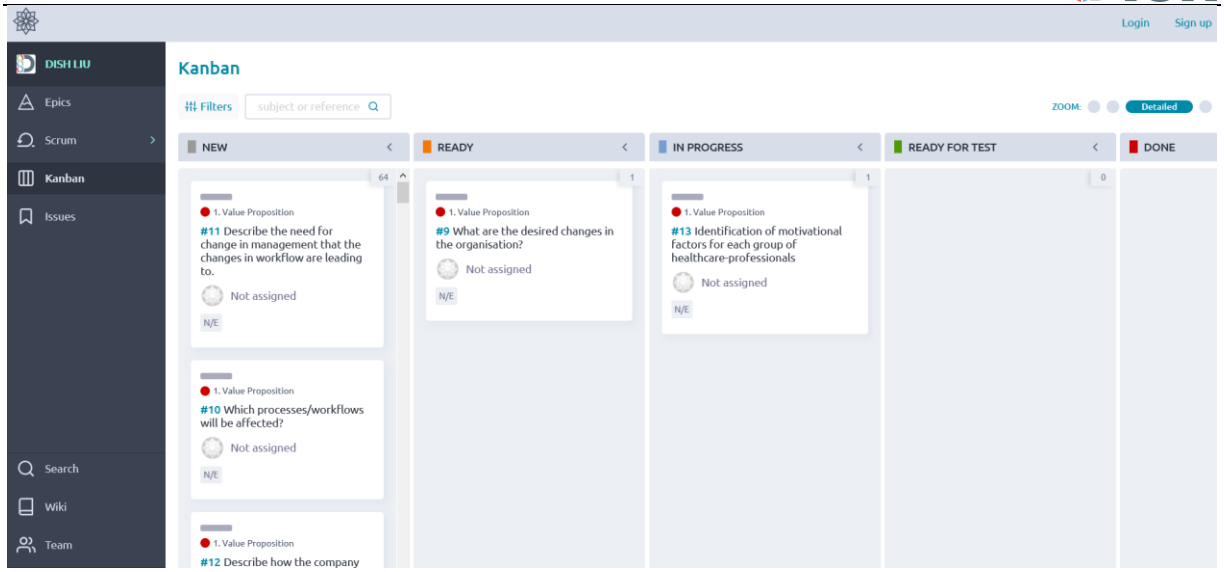
Using the system is straight forward. The 8 domains of the Preparation Tool have been implemented in Taiga as so called "Epics". In agile project management, an epic is the description of a requirement for new software at a high level of abstraction. In our use case, an EPIC corresponds to a topic or a domain.

The tasks In the Preparation Tool are here called "user stories". Each user story corresponds to a task or question in the Preparation Tool. Each user story may be assigned to a specific team member, or all team members can work on the user story. It Is possible to add comments or documents or work on the description. As an organisational level below there are also tasks. As many tasks as necessary can be added to each user story.



View of an EPIC with the associated user stories

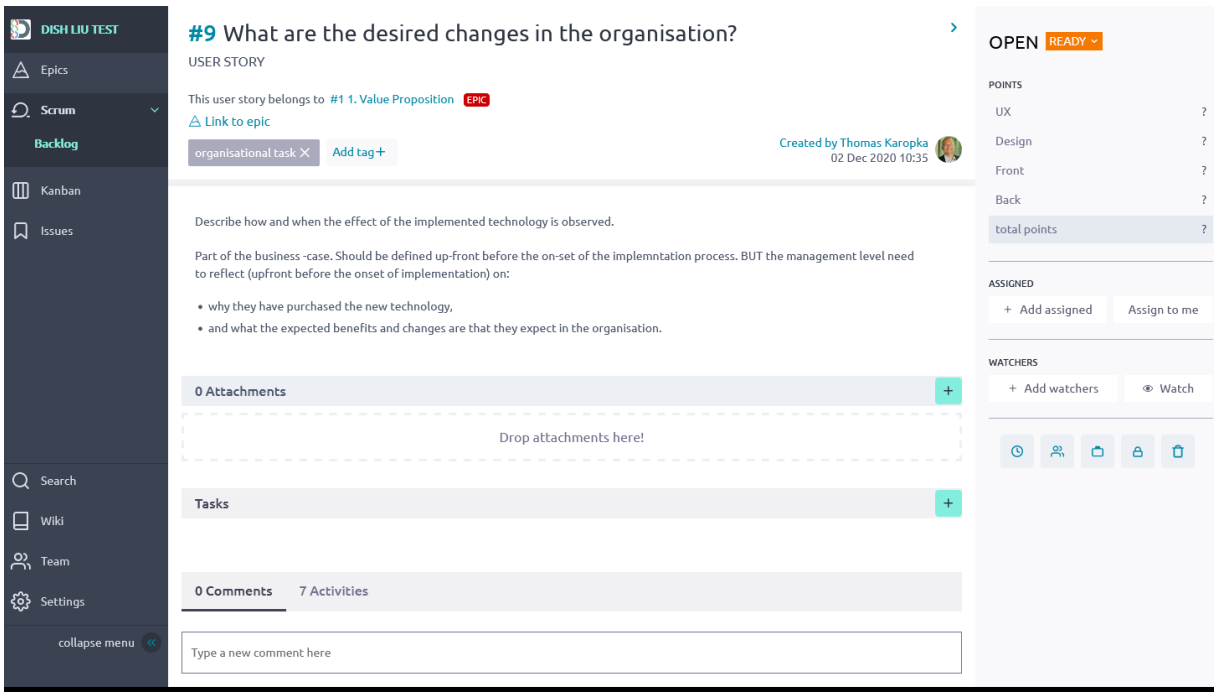
Another way of working with the system is the KANBAN view. Kanban is a method of production process control. In this tool for managing and implementing a Preparation Team, the Kanban method is used to structure the individual user stories. The Kanban module provides a visual overview of the current implementation status. User stories can be dragged and dropped, according to their status within the different columns (new, ready, In progress, ready for test, and done). User stories that are no longer necessary can also be moved to the "archived" state.



Kanban view

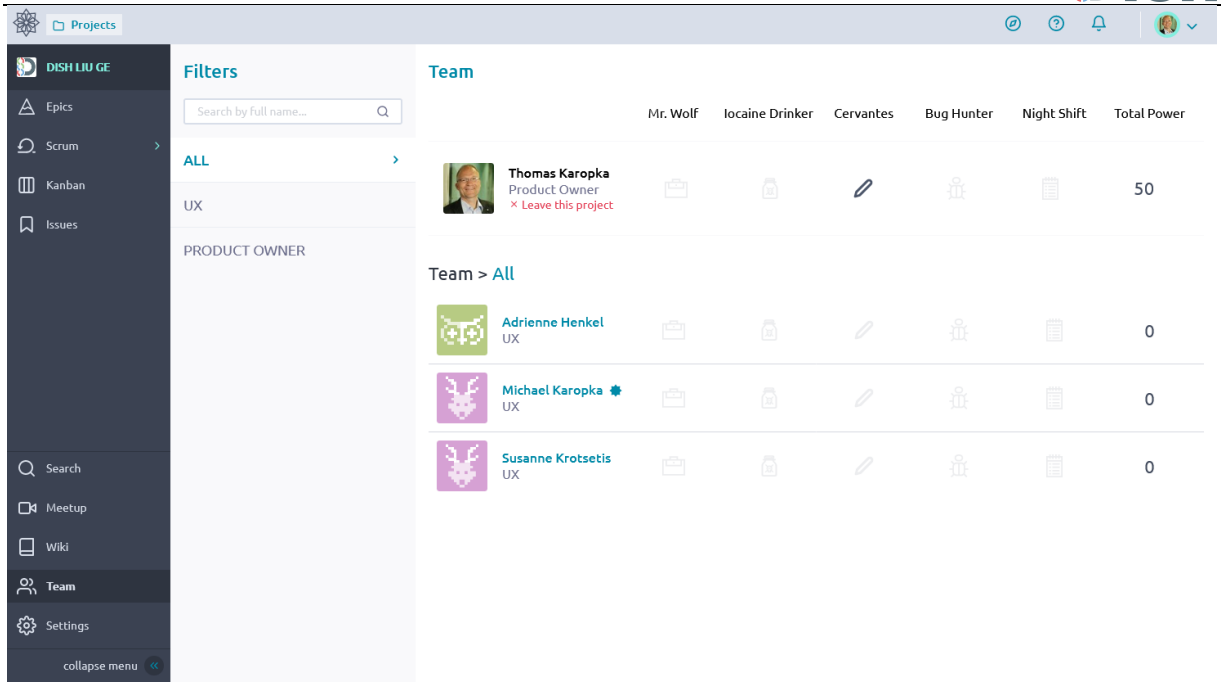
5.5.4 Working on a user story

The above Figure shows the view of a user story. A user story Is a specific task that you are working on or that the project manager can assign to a team member. Below the title of the user story there is a short description of what is expected here. Further below you may add attachments, add a task or a comment.



5.5.5 The team view

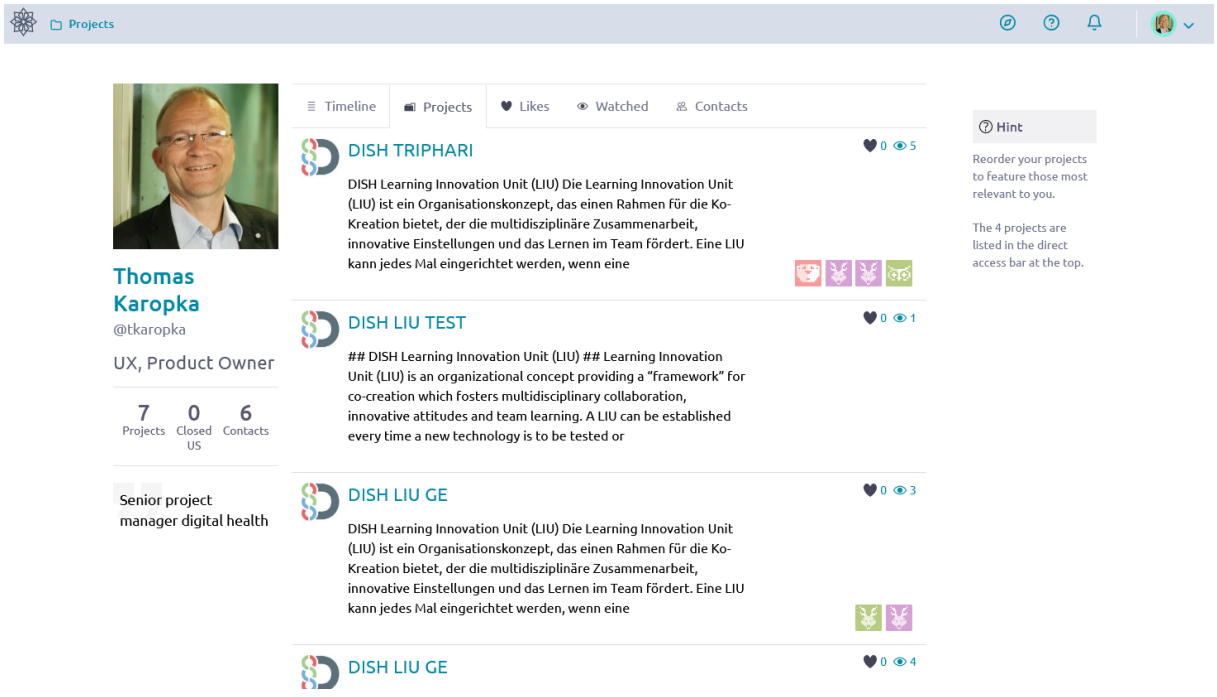
In the team view, team members can be added and managed in relation to their assignments.



Team member view

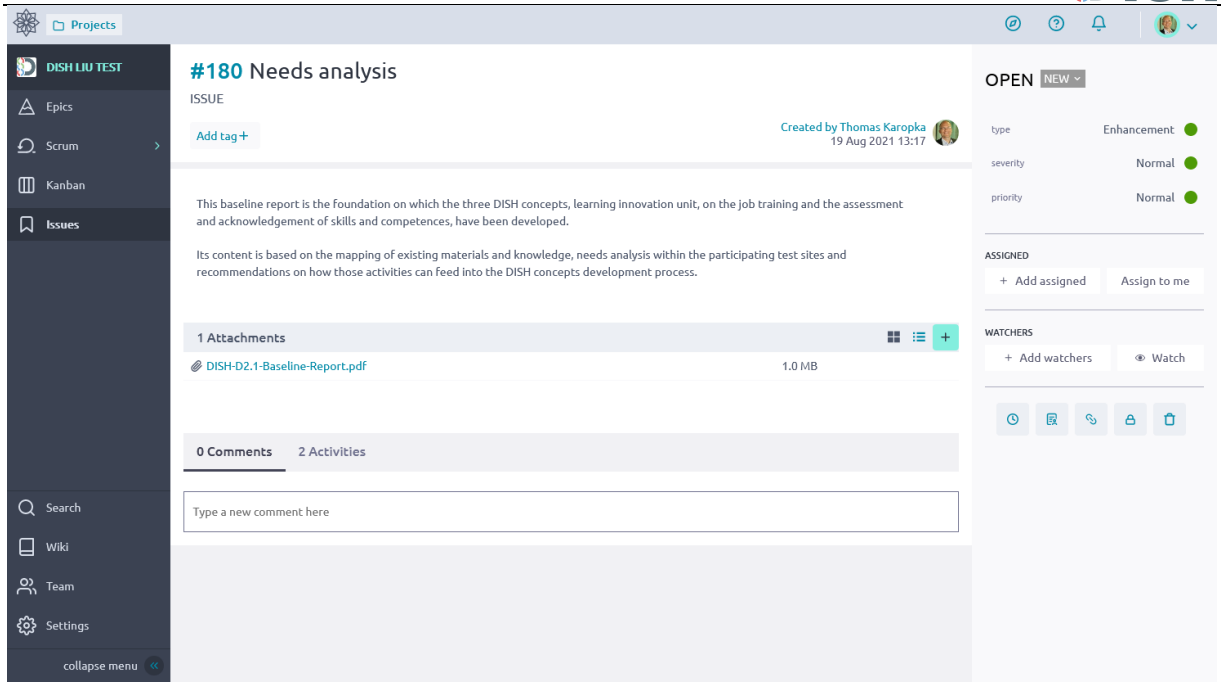
5.5.6 The team member view

In the team member view you can access all your different projects. The timeline gives an overview of all recent activities. You can also "like" or "watch" other projects and manage your contacts.



5.5.7 The issues view

The Issues view Is a very simple yet powerful tool. It allows you to organize any Idea or task according to type, severity and priority. The Issues view Is not used with a predefined template In the DISH tools. However, you are welcome to use the system for any task that Is not In the template or can not be assigned to any of the already existing epics and user stories.



Issues view to organize tasks according to type, severity and priority

6 Providing on the job training

In this chapter the DISH tool for how to plan, develop and deliver the on-the-job training, will be presented.

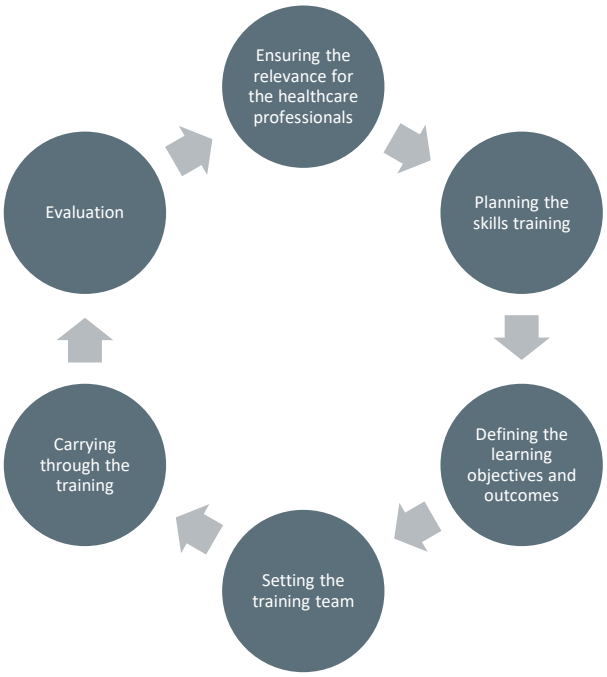
6.1 The objective of the DISH Process Tool for On-The-Job Training

As described in chapter 2, we know from the needs analysis that digital skills training is often neglected within the busy working day. The overall objective of the On-The-Job Training (OTJT) process tool is thus to ensure that full return on investment of digital solutions is ensured by planning, developing and executing "tailormade" digital skills training to the relevant wards and health care professionals when needed as reflected during the discussions in the Preparation Team.

By using the OTJT Process Tool a given innovation unit, ward and department within a health provider is enabled to respond to the "urgency" and training needs that have been reflected in the Preparation Team in a structured and strategic way, based on the shared decisions that were expressed in the Preparation Team.

The tool contains 6 concrete process steps which will be described in the following.

Figure 10: The Ideal Process in the skills training

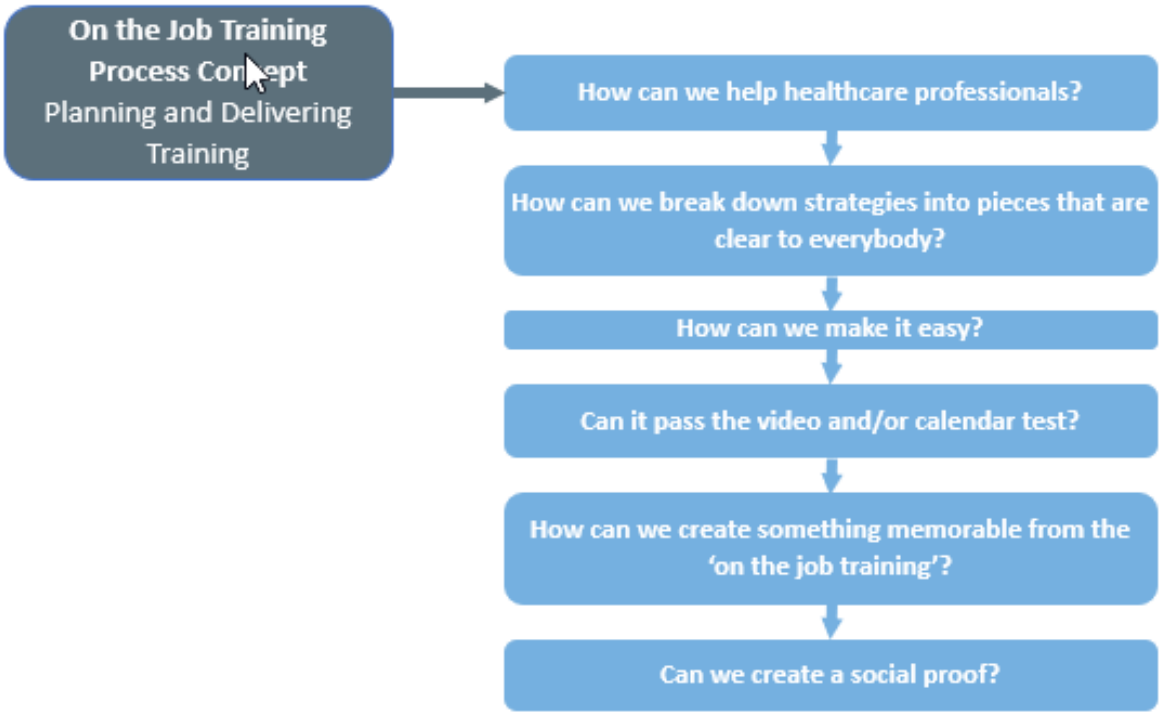


6.2 Making it relevant (and easy) for the healthcare professionals

The overall challenge that the planners of the OTJT is faced with, is to translate the "urgency" and the described training needs expressed in the Preparation Team into a series of very concrete training objectives and outcomes that are close to the healthcare professionals daily work, in order to ensure that training becomes as relevant as possible for the individual healthcare professional. The more relevant and close to the daily work the training is, the higher is the chance that the healthcare professionals will actually use and apply the given digital solution after ended training.

In order to accommodate this challenge, it is recommended to ask a short series of questions that makes it possible to bring the results from the Preparation Team into the planning of the OTJT. These questions are listed in figure 11, and make a direct link back to the principles of connectivisme and andragogy, which were presented and explained in chapter 4.

Figure 11: Bringing the results from the Preparation Team into the OTJT



These questions are important to answer as to ensure that the training is based on the actual field of practice and expressed needs of the healthcare professionals. The training should enable the healthcare professionals to solve concrete challenges and problems, and the training shall take place when the healthcare professional are ready, have acknowledged the "urgency" and will actually use the technology ("on the job"). In this way, the concrete competence and / or skills need is directly linked to the skills training, and there is a greater chance that the training will lead to immediate uptake of the digital solution in question.

The meaning of the 6 questions is as follows;

1) The digital solution and the supporting training should be meaningful for the healthcare professionals and it is important that they can see a concrete benefit for them in their daily work, dealing with a specific need and / or urgency
2) It has to be clear for everyone why the digital solution is important to implement; on an individual level but also on the organizational level to support the interdisciplinary collaboration and communication.
3) "Easiness trumps motivation", hence it has to be easy to use the digital solution and subsequently, the training should be planned in an intuitive way. It is important that the training also focuses on situations when the digital solution does not work and what to do in this case. It is most often in situations where digital solutions do not work that healthcare professionals abandon the use of them.
4) If it can pass the calender or video test should be understood as follows;

a. would it be normal to see the desired behavior related to a digital solution as a concrete task or assignement in a healthprofessional's calender, e.g. "Participating in the admission conference for Mrs. Green"
b. the desired behavior is so specific that you can record it on video and a third party can confirm the behavior by seeing the video.

If this is possible it means that the digital solution and the desired behaviour that the skills training is supposed to foster, is sufficiently specific in order to develop a concrete learning objective and outcome, as well as concrete training activities.

5) Creating something memorable means that the trainees need to take something concrete back home that they can apply directly into their daily work.
6) Creating a social proof means that by participating in the training the trainers become a role model or a champion.

You can use the checklist in section 9.1. to assist you in gathering information to answer the 6 questions listed above.

6.3 Planning and developing the skills training

The design and planning of the skills training should take its starting point in the results, discussions and collaboration within the Preparation Team, and should ideally be based on principles for shared decision making. This is important in order to create common understanding of the challenges, needs and "urgency", as well as the objectives of the skills training. Through dialogue and by focusing on the 8 domains that are mentioned in the Preparation Tool, the management, learners and the teaching team shall reach a decision regading the learning objective, the content, the teaching methods and relevant teaching materials.

The definition of skills' training – for the healthcare professional – is the process of acquiring and/or improving a set of new or complex skills (digital innovation, eHealth skills) with the purpose of delivering improved service, through participation in hands-on practical exercises in a secure environment, without running the risk of disturbing or harming the patient.

Prior to each training session, relevant knowledge from the stakeholders who are relevant to the task is obtained through preparatory meetings. The meetings are planned well in advance of the training and include clarification of issues such as:

1) What is the purpose of using the digital solution?
2) What are the desired changes in health professionals' skills/competencies?
3) Which key workflows will be affected and what will the new workflows look like?
4) What measures need to be taken to ensure that a sustainable peer-learning culture is in place after the training?
5) Where, when and how can health professionals access support on the use of technology after the training?

As we have also introduced the framework of 21st century skills into the DISH tools, some relevant requirements for the OTJT programme are relevant to mention;

1) Training should be process-oriented, i.e. the health professional receives the training in the situation with is as close to their everyday work as possible and is related to the performance of a certain task or job. As we are dealing with the health care sector (and patients) is it important that the training takes place in a secure environment.
2) Activity-based and authentic learning, i.e. solutions that support the effective transfer of knowledge created within the training into the work domain.

3) Recognizing individual and organizational learning motives and constraints and integrating previous knowledge and experiences,
4) Enhancing the learning competence of individuals, groups and organizations by supporting the development of learning strategies,
5) Identifying a relevant assessment method and process that is based on the demonstration principle (e.g. in a simulation environment).

As we are focusing on providing skills training, it is important that the training becomes very practical oriented, and close to daily work challenges.

- Dialogue, practice and experience. Not through theory and studying books.
- Training in multidisciplinary/interdisciplinary teams
- Building knowledge networks around the technologies
- Disruption; learning to think disruptively. What is the essence of the problem/challenges? How can challenges be approached effectively and in the most learning-focused way? Thinking differently to solve challenges

Assessment should be an integrated part of the on-the-job training and the planning of this, should therefore be taken into consideration from the beginning of the planning process. In Chapter 7 you can read about the DISH assessment and acknowledgement tool, which can be used to plan the assessment.

6.4 Defining the Learning Objective

The overall learning objective of the on-the-job training is on a general level that the learners, who are health professionals on different levels, depending on the given digital solution, will gain substantial knowledge, skills and comptences through active participation, about how to:

a) use the digital technologies and solutions in a safe and ethical manner
b) guide colleagues and patients/citizens in the use of the technologies and digital solutions
c) participate in the implementation of new digital solutions
d) organise the use of digital solutions
e) indentify the organisational changes that a new digital technology and solutions will bring to the workplace
f) engage in technological innovation processes

These general learning objectives can be elaborated and made more specific depending on the learning needs that were expressed through the dialogue in the Preparation Team.

The learning objectives have in the following been detailed corresponding to the levels of the ECVET Framework and the EQF.

6.4.1 Knowledge

That the participant acquires knowledge about the digital solution, hereby acquiring knowledge about the purpose and possibilities of using the technology in their own ward, and maybe even across wards/sectors.

6.4.2 Skills

That the participant acquires skills in the use of the digital solutions regarding the concrete tasks and communication.

6.4.3 Competences / work behavior

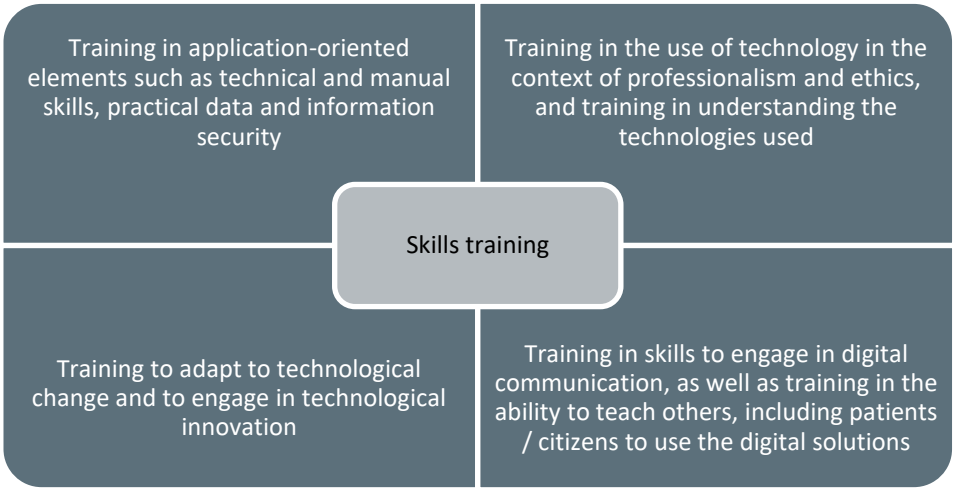
That participants are able to combine knowledge and skills regarding the use of the digital solution in concrete work situations.

6.4.4 Learning levels

In order to ease the planning of the skills training in relation to the knowledge, skills and competences, it can be helpful to see the training in 4 different learning levels, as described in section 4.8.4, that illustrates the increasing complexity, within the skills training;

- **From** Training elements with emphasis on usage, such as technical and manual skills, practical data and information **to**
- Training to be able to use the technology in relation to professionalism and ethics, as well as training in uderstanding the applied technologies **to**
- Training to be able to participate in digital communication, as well as training the skill of teaching others, e.g. colleagues, patients and citizens to use digital tools **to**
- Overall training, which gives the staff the possibility to take part in the development/implementation of new digital technologies, as well as to be able to organize the use of digital tools and see the organizational changes, which a new technology has the potential to bring at the workplace.

Figure 12: 4 Learning Levels in the digital skills training



In section 9.2 you can find a template that can be used to develop the skills training with learning aims, content of the training and suggestions to teaching methods and materials. On page 40, you can see an example of how this template has been used to plan a concrete session.

In section 9.3 you can find a ECVET Learning Objectives and Assessment Frame, which has been adapted from a bit from it's original version to fit the DISH tool and the specific situation of competence and skills development of health care professionals. This document can help you to structure and visualize the individual learning objectives for each learner as well as planning the asessement and introduce the assessment results.

In section 9.4 you find the European Qualification Framework (EQF) that you can use as a reference to describe the levels of qualification that the health care professional is supposed to obtain as part of the on-the-job training.

Figure 13: An Example of a concrete planning of a training session

<table>
<tr><td colspan="3">Aims:
That participants, through active participation in the training, acquire a common professional foundation in using the technology related to their own work areas.
That participants acquire knowledge, skills and competences, so that they can independently act, according to the ward’s needs of using the given technology.
That the participants acquire knowledge about which situations the given technology can contribute with quality in other work-related situations.</td></tr>
<tr><td>Learning aims</td><td>Content elaboration</td><td>Suggestions to teaching methods and materials</td></tr>
<tr><td rowspan="2">• Knowledge about and the qualification in working with the given technology in the daily work.
• Understanding the importance of the professional and ethical assessment of using technology.
• Training in the use of the concrete technology.</td><td rowspan="2">• The involvement of users throughout the day according to the activity model
• Secure and competent use of technology
• Readjustment to technological changes
• Participation in technological innovation
• Reflecting on ethics and critical relationship with technology
• Concrete aims</td><td>• Dialogue-based teaching
• Practical training based on own cases, according to the activity model
• Individual and shared reflections on own practices regarding the knowledge, skills and competences, as well as regarding the training itself</td></tr>
<tr><td>• User manuals
• Regional guides
• Shared Decision Making template
• On-the-job training checklist
• Different technologies</td></tr>
<tr><td colspan="3">Aims:
That participants, through active participation in the training, acquire a shared professional foundation for working with the technologies in relation to supervision of colleagues, citizens and patients.
That participants acquire knowledge, skills and competences, so that participants can independently suggest new ways of using the given digital solutions to the wards’ problem solving process</td></tr>
<tr><td>Learning aims</td><td>Content elaboration</td><td>Suggestions to teaching methods and materials</td></tr>
<tr><td rowspan="2">• Knowledge about and the qualification in working with supervision of other users
• Understanding the importance of the professional and ethical assessment of supervision
• Training in supervision regarding the concrete technology</td><td rowspan="2">• The involvement of users throughout the day according to the activity model
• Secure and competent use of technology
• Supporting colleagues/patients/citizens in the use of technology
• Readjustment to technological changes
• Participation in technological innovation
• Reflecting on ethics and critical relationship with technology
• Concrete aims</td><td>• Dialogue-based teaching
• Practical training based on own cases, according to the activity model
• Individual and shared reflections on own practices regarding the knowledge, skills and competences, as well as regarding the training itself</td></tr>
<tr><td>• User manual
• Regional guide
• Shared Decision Making template
• On-the-job training checklist
• Different technologies</td></tr>
</table>

6.5 Setting the Training Team

To determine the teacher and trainer competences for the digital skills on the job training, we have found inspiration in the European Framework for the Digital Competence of Educators (DigCompEdu)[13] and transformed the 6 areas that this framework point out into the concrete situation converning digital skills training in the health care sector. A trainer should preferably posses the competences within the following 6 areas;

1) Professional insights; a substantial focus on and an understanding of the health care sector, as well as an understanding of the innovation needs within the sector. Preferable a former health care professional that now works as a trainer.
2) Digital resources; a substantial digital understanding so that the trainer can select and prepare the digital solutions for the training situation, and set up clear activities that lead to the expressed learning objective
3) Teaching and Learning; a substantial understanding on how to use digital learning solutions and structures in order to create collaboration and dialogue between the participants that support multi disciplinary collaboration and dialogue within and between the wards.
4) Assessment; a substantial understanding of different assessment tools – both digital and non digital - and how these can be used in an assessment situation, which is relevant to the given digital solution, as well as being able to provide appreciative feedback.
5) Digital tools to empower learners; a substantial understanding of how learners can be engaged activitely in the digital skills training, making sure that everyday situations become an active part of the skills training as well as an active involvement of patients.
6) Facilitating digital expression; a substantial understanding of how to train the learners on how they can express themselves, e.g. through concrete problem solving and to ensure that the learners bring back their learning to their daily work in order to support innovation.

The experiences from the DISH project show, that it is beneficial to set a skills training team in order to embrace all of the 6 competence areas and in order to ensure continuity in the training. The most ideal training team consists of

- A training officer, who has the overall responsibility for the planning and execution of the skills training on a general level.
- Permanent staff from the HRD / Training department to ensure continuous planning, development and adjustment of the training
- 1-2 specialists from practice, who have already received training in the given digital solution and who can function as “cascade trainers”. These can change depending on the given digital solutions.
- “super-users” in concrete technologies, if these exist. These can change depending on the given digital solutions.
- A representative from the IT department, such as the IT systems manager

6.6 Carrying through the training

6.6.1 Learning outcomes

The learning outcome of the training is;

1) That the participants, through active participation in the training, acquire knowledge, skills and competences so that they can subsequently act independently, in relation to the department's needs in relation to a given digital solution.
2) That participants acquire competences to take responsibility for their own and other’s work with the given digital solution in the complex work situations they are a part of.

[13] https://ec.europa.eu/jrc/en/digcompedu

3) That the participants acquire knowledge, skills and competences through active participation in the training, so that the participants can subsequently make independent proposals for new forms of use of the given digital solution for the department's task solutions.
4) That participants share relevant knowledge and reflect together over the possibilities, challenges and dilemmas related to the use of the given digital solution.

These learning outcomes are best achieved through the activity of both trainers and participants before, during and after the training, which is ensured through the use of the activity model in planning, execution and evaluation, which is presented in section 4.6. The model can be used to plan the activities, but can also be used as an instrument to explain and illustrate the different training activities towards the trainees.

It is important that the skills' training is based on practice-related cases, drawn from the daily work of healthcare staff. The training should also be based on the concrete technology, which has either been introduced but is not in use, or which should be introduced into the clinical practice. The staff should be trained in how to use the technology, based on cases from their daily work. The skills training can take place in specifically set-up simulation facilities or in the own wards/own areas with on-the-job training, as well as across professional groups and sectors.

From the evaluation activities in the DISH project, it became clear that for the healthcare professionals who participated in the skills training, it is important that they experience the following learning outcomes;

- the training provides them with digital skills that enable them to use a specific technology,
- the skills that they obtain are easily transferable to their professional work,
- they feel able to support each other in the implementation of the technology,
- they can support each other after the skills training and
- the training can be used to make agreements with relevant colleagues for collaboration in the future.

However, the evaluation also shows that after the training, some participants still find the use of digital solutions and having to support patients/citizens in using the concrete technologies a big challenge, and it is therefore important to include follow up activities shortly after the skills training.

6.6.2 Training Programme

The ideal skills training session should last from 2-6 hours, depending on the case, the complexity of the digital solution and the extent of training needs. To start with, the training will focus on when the digital solution is working and is responsive, and in the second half of the training session, the training is oriented towards troubleshooting and handling the situations when the digital solution is not working (unresponsive). We know from research that it is especially in these situations that health care professionals give up on new technologies and digital solutions, hence this part of the training is extremely important.

The recommended team size is 8-12 participants. This team size gives the opportunity for all participants to participate actively and acquire hands-on skills from hands-on training. We have also seen from the evaluation that thise team size gives the opportunity for the participants to talk and exchange experiences, as well as the training is used to make concrete arrangements for the future collaboration between the health care professionals on how to apply the digital solutions in the daily work

A concrete skills training programme could include the following;

- 2-3 short presentations (10 - 30 min) at the beginning and during the day on e.g. technology development, on the specific digital solution and on behavioural design and workflows.

- concrete work with the digital solution through hands-on exercises
- group work on behavioral changes, organizational culture and multidisciplinary collaboration
- debriefing after each group work
- reflection and evaluation exercises throughout the day on individual level. The evaluation is oriented towards the achievement of concrete knowledge, skills, and competencies based on the technologies in daily use.
- brigding exercises into “real life situations”
- final evaluation for quality assurance purposes

Clinical Practice Training (1-2 hours) includes:

- a short presentation about the specific technology
- practical exercises
- questions and answers
- possible repetition of exercises and
- agreements on later follow-up

6.6.3 Concrete experiences with the OTJT from the DISH project

On-the-job training is used differently in the participating countries and shows the flexibility of the tool. At the beginning of the project, several countries planned the training with physical attendance either at simultation centres, the ward or nursing homes/home care services. However, during the project, the Corona pandemic arose, and some countries had to change the training approach and change it to e-learning programs.

Therefore, training has been conducted in the following ways:

- At training and simulation centres:
  - Practical “hands-on” training or e-learning
- Nursing homes
- Home care service
- Municipalities
- Grocery stores
- E-learning accessible at work
- Hospital wards

Several countries planned training with physical attendance to contain both a theoretical and a practical approach as “hands-on” training in a safe environment, where health care professionals trained needed skills and competencies with fictive patients/citizens and had time to reflect and assess the trained abilities. Some countries combined two training settings, e.g. first at a simulation centre and then training at the ward, e-learning and training at the ward or training with health care professionals and other professionals, e.g. staff from the municipality.

It is essential to address the training in the best way possible to benefit the health care professionals in need of training. Therefore, Preparation Team meetings are important to clarify the resources available to attend training, such as how many hours staff members can participate, location, and expectations for accessing e-learning modules.

You can read more about how the training was carried through in chapter 11, where each country has made a more detailed description about how the OTJT tool was applied.

6.6.4 Preparing the learners

It is important to prepare the participants for the training so that they know exactly what is expected from them and what they can expect from the training. As the skills training needs to be as closely as

possible related to their daily work, it is beneficial that they bring to the training some of the digital tools and practical work remedies that they use in their daily work, such as their smart phones.

An example of a preparation sheet could look like this;

The program for the skills training session in the use of video solution for discharging conferences

You are hereby invited to skills training in the use of video solution for discharging conferences.

Date: 20th of August 2020 8.00-15.00
Location: Læringe- og Forskningshuset, Kresten Philipsensvej 15 F, 6200 Aabenraa.
Parking is possible right outside the building.

Before the skills training, you must be able to tick the following:

- ☐ I will bring my work computer + charger + headseat to the training (for use in teaching)
- ☐ I will bring my smartphone, which must be used to document the day (you are welcome to use your private phone)

Additionally, if you are working at a hospital:

- ☐ I know which Cisco meeting server (CMS) login information, I need to use to log in

The learning objectives are:

- ✓ that the participant through active participation in the training acquires digital skills, in relation to using the concrete digital video solution for discharge.
- ✓ that the participant through active participation in the training acquires digital skills, in the use of the concrete digital video solution for discharge, so he / she can support, guide and guide other users, including e.g. next of kin.

The training includes an increase in learning levels from

Training in application-oriented elements such as technical and manual skills, practical data / information security
to
training in being able to use the technology in the context of professionalism and ethics, as well as training in understanding the technologies used
to
training in skills in relation to being able to participate in digital communication, as well as training in the ability to teach others, e.g. next of kin, to use the digital tools for communication.

6.7 Evaluation and Quality Assurance

Work is systematic and ongoing to ensure and develop the quality of training activities and outcomes. This means:

- systematic activities (before and after each training) in the form of meetings and/or workshops with the clinic/the people involved to ensure and develop the quality of the training
- external and internal stakeholders are involved in meetings and/or workshops to assure and develop the quality of the training, including
  - those responsible for the training regularly and systematically as described in point 5 "Assessment of learning outcomes", ascertain the participants' assessment of the training and adjust the training accordingly.
  - training providers use the knowledge gained through research, evaluation and assessment for quality assurance and development in order to improve and develop both activities and outcomes.

7 Assessing competences and skills

7.1 The aim of the Tool for Assessment

The aim of the DISH Tool for Assessment and Acknowledgement of triple helix skills, is to ensure that assessment and acknowledgement of digital skills becomes an integrated part of On-The-Job Training. By following the process in the Assessment Tool, it is possible to ensure that;

1) An assessment is carried out to asses if the health care professionals obtain the expected knowledge, skills and comptences through their active participation in the OTJT.
2) the learnes who carry through OTJT receive an acknowledgement of their obtained skills, which can support their internal and external job mobility
3) continuing evaluation and assessment of the quality and relevance of the OTJT

The intention of the Assessment Tool is, just like with the Preparation Team Tool and the OTJT Tool, to assist the planners / leaders of innovation and / or the planners of internal training activities through a structured process, where all important factors are considered and planned for.

The focus is on assessment as a process that supports learning and provides evidence that can be used as a basis for formal recognition of competences. The idea here is that health professionals undergo training/education linked to different technologies throughout their working lives and that they should have the opportunity to have their competences, skills and knowledge is recognised so that they can also be used later in their carrier and / or in other contexts.

The planning of a given assessment process should take into account the specific technology or kind of technology, which is at stake in the actual on-the-job training programme. Using video conversations involves other competences than supporting a citizen in using an automatic wash toilet, for example. As different technologies and skills needs have different effects in the actual arrangements they play part in, critical and ethical reflections should reflect this variety.

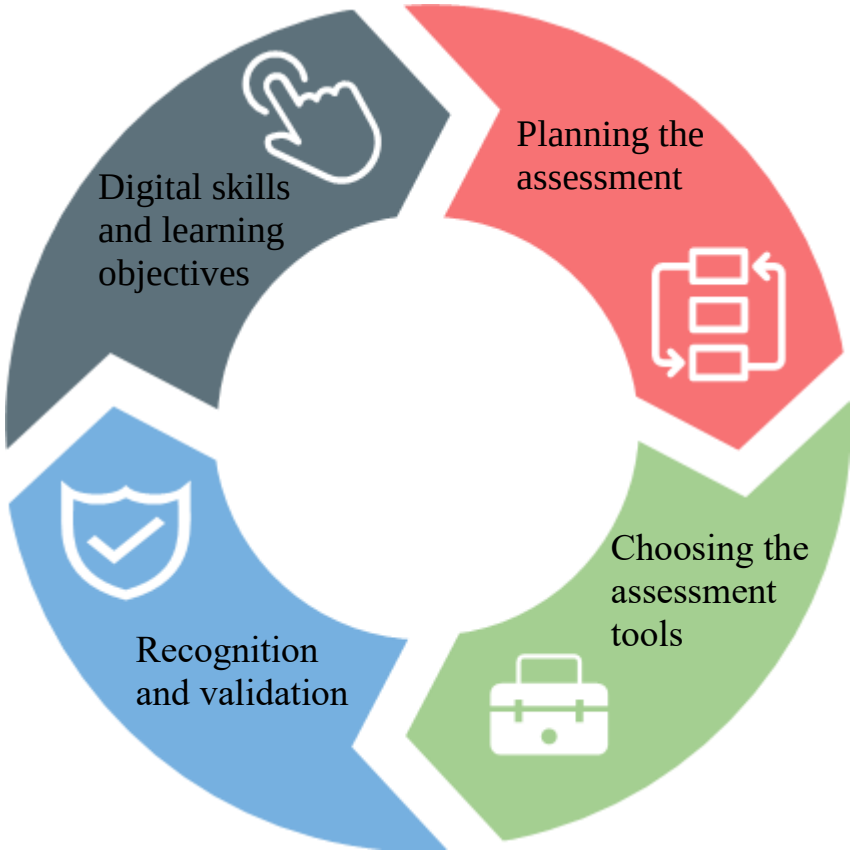
The assessment tool shall therefore be seen in close connection with the ‘Preparation Team’ tool and the ‘On-the-job-training’ tool, which means that assessment of digital competences and skills is approached as an integrated part of organization of, training in and implementation of digital solutions in the health care sector. The actual design of an assessment process should therefore, beside reflecting the content of the training, also take into account the organisational and professional context of the learning and training.

The context of learning and training affects how digital and technological competences and skills can be taught and assessed. In different countries/regions healthcare as well as competence development of healthcare professionals are organised differently. In some settings competence skills development is an integrated part of work-life and technological skills and competences might be highly prioritized. In some settings the development of skills is more regarded as a responsibility of the individual healthcare professional. Accordingly, competence and skills development can be approached as an organisational or individual task, which should be reflected in the design of training as well as assessment.

7.2 The structure of the assessment tool

The Assessment Tool is designed with 4 main activities, and points towards different aspects of an assessment process that should be taken into account when planning and completing assessment of triple helix skills and competences in the health care sector. A graphical presentation of the tool and an explanation of the different activities of the tool is given below.

Figure 14: Assessment tool and its 4 activities



The upper left "corner" deals with the determination of which competences to assess, which is of course closely related to the planning and design of the training, as well as the setting up of concrete learning objectives.

The upper right "corner" addresses the concrete assessment activity. As healthcare work refers to a wide range of professional work, involving various employment groups and which takes place in a variety of organisational and institutional settings, considerations about contextual matters are crucial in designing training and assessment. One example is whether the assessment process takes place as part of daily work, or is something that is going on besides normal workhours.

The lower right "corner" addresses the choices to make in relation to methods and tools available to assess competences and skills. The choice of method assemblage is closely linked to both the understanding and description of the competences and skills to assess, and to the actual context of learning. The DISH tool does not in itself propose one fixed assessment method or tool, as this depends on the digital tool in question, the learning context, the organization in which the learning should be implemented, the culture, the structure and the specific country context. The important issue is to chose the relevant method and tool, to the given situation.

The lower left "corner" is about recognition, validation and certification of competences and skills. This part of the assessment process is important for both management and for the individual health care professional that has gained new skills through the on-the-job training. For management it is important to have an overview of competences and skills within the work force in order to make it easier to match employees with their specific competences and skills with those jobs and positions, where they can do the most good. On the other hand it is important for the individual health care professional to receive

recognition of the competences and skills that are obtained outside the official eduction system, as this recognition can ensure both vertical and horizontal mobility, and e.g. assist them to be promoted, receive additional training and / or improve their opportunities to move to other external positions, should their lifeconditions change.

The tool does not imply a linear assessment process. This is partly due to the assessment process as part of the learning, which is necessary to uphold and sustain, and partly because assessment in principle can be undertaken before, during and after training. The tool thus points towards aspects of the assessment process, which should be taken in consideration when planning the assessment – along with planning the training.

7.3 Digital Skills and Learning Objectives

The use of the assessment tool already starts when planning the actual on-the-job training, as the assessment is closely linked to the digital solution in question as well as the specific learning objectives that are set up for the individual health care professional.

In order to describe the learning objectives a template is available in section 9.3, which can be used to describe in details which are the concrete learning objectives in relation to knowledge, skills and competences, and how these are intended to be assessed. It is also possible in this template to note how the assessment went and which knowledge, skills and comptences the learner actually obtained and that has been demonstrated through the assessment.

It is also important that the assessment process and the method corresponds to the level of qualification that the learning is intended to reach. To seek guidance for this, the European Qualifaction Framework Level has been applied, and a full list of the 8 EQF levels is reproduced in section 9.4. Choosing the right level of qualification will make it easier to chose and plan the most relevant assessment process and tool.

7.4 Planning the Assessment

The competences and skills to be assessed should reflect the “urgency” and the competence and skills needs as described in the Preparation Team, as well as the learning objectives that has been described within the OTJT. The design of the assessment process should take into account the defined competences and skills to be assessed, the learning objectives, the relevant EQF level, the learning context, the learner’s educational level/employment and the specific technology of the on-the-job training.

Assessment is an element in a validation process where non-formal and informal competences are

- identified
- documented
- assessed
- acknowledged and blue-stamped in a certificate

The assessment and acknowledgement addressees *documentation, assessment and acknowledgement* of technological/digital competences, taught as part of the OTJT. The process of assessment thus encompasses how to provide documentation for competences, which can form the basis for an assessment that leads (hopefully) to an acknowledgement of competences and skills, as well as a certificate.

Various methodological approaches are used in assessment and validation work, e.g. interviews, surveys, tests, self-evaluation (like the competence wheel), group evaluation, portfolios, debate/discussion, etc. Some assessment tools are on-line, some are not; some involve an external evaluator or assessor, some are based on self-evaluation. The ideal assessment makes use, according to literature on assessment and validation, of various methods that supplement each other and provides different opportunities for the person to demonstrate competences and skills. No matter which methodological approaches and tool is involved, literature on validation points to the importance of ownership to the process for the person whose competences and skills are assessed. It is therefore important that the assessment is planned for already before the learner starts the OTJT, and that the learner is envolved in the decision of how to assess and with which methods, so that the assessment becomes a natural and clear part of the training.

In section 10.1 you can find a check list with relevant questions that can help you to plan the assessment.

We are also in section 10.2 included a list of questions that originates from the ECEVET Framework which can be used as a quide to plan and execute the assessment of the learner, when this person participate in the on-the-job training. These questions are originally developed for mobility activities of trainers, travelling to other countries to receive training. This is not the objective with the assessment of skills training, so all questions about home and host organization have been deleted in this list.

The template in section 9.3 can be used to describe the assessment process and the assessment tools that has been chosen for the skills training.

7.5 Choosing the Assessment Tool

Choice of tool(s) to assess and provide documentation for skills and competences, should reflect the aim of the training, the learning situation, the employment category and the specific technology in focus. On-line assessment tools are developed in different countries. They are usually based on self-evaluation of digital competences and they often cover a variety of sub-competences. Some are accessible only in the local language.

Requirements of assessment tools/approach:

- Closely linked to concrete on-the-job training courses
- At least partly digital (e.g. involve the use of technology. An example could be to use a phone to make a video that demonstrate the use of a technology. Another example could be to use an on-line assessment tool)
- Makes sense for the trainee/person
- Makes sense for the actual employee category
- Provides a valid foundation for assessment
- Transparency
- Encouraged but voluntary
- Mode-neutral (be accessed from phone, Ipad, computer, 'paper-version')

In the following are presented a number of assessment tools that we find especially relevant for the DISH tool. In section 10.4 is a list of links to different assessment tools in the languages of the DISH project, being Danish, English, German, Norwegian, Polish, Spanish.

7.5.1 Portfolio as the basis of the assessment process

The basis of the assessment process is a mode-neutral portfolio, created by the student (it can be a folder on their computer). The portfolio relates not only to one specific on-the-job training and the

corresponding assessment, it is dynamic and encompasses documentation and certifications from various trainings, and thus builds up over time.

Learnes are required, in a portfolio format, to reflect on their circumstances (role, etc.) and organisational and personal values and beliefs towards the implementation of technology and make a plan for their own learning.

For every training session, the student adds documentation and certification of their learning to the portfolio. When she or he has completed a training session, she writes up another action plan, which has two functions. Firstly, it is a plan for continued learning. Secondly, the plan will help motivate to ongoing reflections on the use of technology in their workplace and to introduce innovative practices.

In section 10.3 you can find a template to use when planning the portfolio assessment.

This kind of assessment is beneficial to use in a longer process, where the learner works with several technologies and digital tools, and were the learning is a bit more complex. The portfolio assessment is not recommended for short and separate OTJT sessions.

7.5.2 Self-assessment or teacher/group assessment

The choice of assessment tool implies choosing whether assessment should take place individually or within a peer-group. Assessment can be approached as an interrelated part of the learning process, and should preferably take place in a peer group and closely related to the training. If this is not an option, digital skills can be assessed by means of on-line assessment tools.

See the list in section 10.5 with links to national assessment tools.

7.5.3 In situ-assessment

The in-situ tool is developed within the framework of DISH and is used to assess the participants' knowledge, skills and competences, as an integrated and qualitative part of the a specific skills training situation. Hence, it needs to be adjusted to the actual learning situation. The tool can be used on its own or as a supplement to an on-line tool.

The tool works with a list of reflective questions (see figure 15 as a suggestion) which are integrated into the training activities along the programme. In this way, the participants get a chance to take a break and reflect and talk with their colleagues about what they have learned and how it can be used.

The mentioned reflective questions are suggestions. Adding, removing or changing the questions will be possible when relevant in the local training situation and the actual formulation of learning outcomes.

A web 2.0 Platform can be used for documentation: for example Padle' or some kind of Learning Management System.

Mobile phones are used to produce documentation, through the use of the It's Learning app and thus access the in-situ assessment

Figure 15: Reflective and acknowledging exercises and questions in an in-situ assessment situation


Describe in your own words what the goal of the training is and how the training relates to the individual action plan
Go together in pairs and make a 2 minute video, in which each of you demonstrates how the technology works
Upload 3 images that demonstrate the power of the technology; Discuss its strengths in pairs or groups
Go together in pairs and interview each other about the challenges you see, for example in terms of implementation. Upload the interviews
Go together in groups and reflect on what this technology means for the patient / citizen. (Write down your reflections in key words and take a picture of it and upload it)
Go together in pairs and reflect on how technology will affect your workflows. (Write down your reflections in key words and take a picture of it and upload it)
Discuss ethical/critical issues regarding the technology and summarize the discussion in 10 sentences
Reflect on how the training has affected your own technological / digital competencies and how it may changes your own individual action plan
Go together in pairs or groups and discuss how the technology could possibly be improved or whether there are alternative technologies that could be used for the same purpose.

7.6 Recognition and Validation

In the DISH Assessment Tool recognition and validation, are two different things that operate on two different levels.

Recognition is understood as an organizational process where the learner receives an internal recognition and eventually a diploma, as an official proof of learning and acquisition of competences and skills. Recognition of skills and competences is based on the documentation provided in the assessment process.

Validation is understood as more formal level, where real competences are assessed and validated by an official institution, whichis assigned by e.g. ministries to do this, and this is organised differently from country to country. In some countries educational institutions have the legitimate right to validate competences against formal learning criteria and in other countries this task is assigned to independent bodies.

In Denmark and Norway, for example, documented competences are measured against the national qualification frameworks and validated in educational institutions. There are also examples of hospital based validation systems, i.e. Clinical ladder Programs. In Spain, at regional level, the Valencian School of Health Studies is a public institution that validates all activities of continuous training (courses, seminars, conferences, etc.) addressed to healthcare professionals. This validation has recognition throughout the National Health System.

The learner should keep all certificates and documentation in order to go through a validation process – after training or later in her/his career. Validation usually takes place if you want to change career/start education - and not in relation to every single training.

Certification has to make sure that the learner has a certificate which can be used as documentation in a validation process. Therefore the assessment process should result in a certificate that displays the following information:

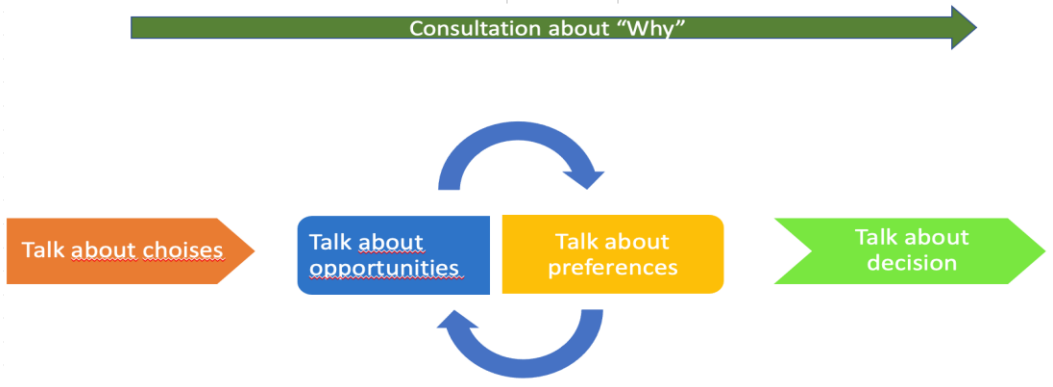
- Title of training / date(s) of training
- Who offers the training / training institution
- Overall aim of the training
- Expected learning outcome
- Description of the training
- Description of the assessment process
- Participants name /id
- Signature from training institution

In section 10.4 you can find a template showing how you can make a certificate for the staff that has been participating in the Preparation Team and in the on-the-job training.

8 Work Sheets Preparation Tool

8.1 Domain 1: Why Should we do it

Domain 1 **Why should we do it?**		
Summerised content:		**Expected achievements of this domain:**
Why should healthcare professionals spend their valuable time on creating a LIU? *Description of how we engage the participants in the LIU, and how the LIU contributes to a successful implementation process*		That the participants in the LIU have a clear understanding of the value that the LIU has to deliver and how it will provide value for each of the groups that the participants are representing.
Organisation		
Task		***Task explained***
What are the desired changes in the organisation?		Part of the business-case. Should be defined up-front before the on-set of the implementation process. BUT the management level need to reflect (upfront before the onset of implementation) on why they have purchased the new technology, and what the expected benefits and changes are that they expect in the organisation.
Which processes/workflows will be affected? *If any*		Should be defined up-front before the on-set of the implementation process
Which change in management does the change in processes lead to? *If any*		Should be defined up-front as it is part of the basis for decision
How can the enterprise benefit from collaborating in the LIU? *That is - what will the the technology manufacturer or supplier get from it?*		How do staff reflections concerning the functionalities of a technology, or reflections on adjacent needs, flow to the enterprise, and why is that important?
Identification of motivational factors for each group of healthcare-professionals		How can you enhance engagement for the different professional groups?, and how can their roles in the "new" workflows be made attractive?
Recognition of new skills		How can on the job training and use of new technology be converted into an attractive competence for those doing the training? This might be different for different professional groups. Nurse level and upwards might be motivated by CET/CPD points.
Healthcare professional / Team		
Task		**Task explained**
How can we stimulate the explorative behaviour among Healthcare staff?		Which values should be enhanced for staff to explore new features of a technology or to explore the use of the technology in new workflows
What are the desired/ needed changes in competences/skills amongst the healthcare professionals?		Desribe when the espected benefits will be harvested
How will the team make sure that a sustainable peer-learning culture is in place		It is important that you identify a peer learning or superuser system that will allow new staff to be introduced to the technology after the end of the implementation process. The peer learning should not be vulnerable to frequent substitution of key staff.
Shared Decission Making		
Opportunity to be heard		Opportunity to contribute



8.2 Domain 2: What should we do?

Domain 2 **What should we do?**	
Summerised content:	**Expected achievements of this domain:**
Identifying the activities that the LIU is going to address, and ensuring there is a mandate	The members of the LIU have a clear idea of the activities they are expected to address.

Organisation ***Task***	***Task explained***
Which problem is the solution going to solve?	Usually defined in the business case, often referred to as the needs analysis. **BUT** LIU should keep focus on the **GOLDEN WHY**. Why are we implementing this technology? And how are we continually making sure that the technology provides us with the benefits/value that are expected?
Exploring the solution, new functionalities/ opportunities?	How do all the functionalities of the technology work? Does that provide opportunities beyond those first envisoned?
Analysis of IT infrastructure, clarification of process, and adaption of IT and equipment	The IT infrastructure has to be prepared for the new solution.
Adaption of solution	Company may have to adapt solution to the specific organisation and/or workflows that it will be interjected in
Change of workflows	What are the central workflows affected? What do the new workflows look like (approval by team)
Identification and update of affected instructions and processes	All the instructions affected by the change of workflow and the new technology have to be updated.
New organization	What does the organisation look like after the change of workflows?
Confirmation of managerial comittment to the technology implementation	Is it a priority? Does it contribute to executing the strategy? Does it have an allocated budget? Is it planned in the annual cycle? Is there administrative and political ownership?
Alignment of managers expectations and agreement of role in change management	It is important that the managers very clearly know where the organisation is heading and lead accordingly. The managers have to accept a reduction in effectivity, they have to consult the key participants in the LIU, and they have to be aware about the resources needed for the given change project.
Development of an implementation plan - incl. On the job training	The entire period of the change project should be included in the plan in detail incl roles, responsibilities etc.
Test 1 and test 2 before implementing	Plan the tests and evaluation as part of the implementation plan
Monitoring after 2 months of implementation	Is everything as expected, if not what differs? How should it be handled? Plan the monitoring as part of the implementationplan

Healthcare professionels/ Team **Task**	**Task explained**
"Demystification"	What is the new technology about, what is going to happen, and what will our organisation and our workflows look like after implementation? The Healthcare staff must be made aware that a change will happen, and that the change is important and relevant. **CHANGE COMMUNICATION** is important. **Story Telling** can also be a tool for conveying information about the benefits and disadvantages related to the technology.
On-boarding of Healthcare professionals	Throughout the implementation period, focus should be on pragmatists. It is important that this group find that the implementation of the new technology is a good idea/beneficial. The focus should not be enthusiasts, neither on conformists.
Team learning (until new technology has been fully adapted)	Continuity - How is peer learning implemented and what are the mechanisms? (aiming at maintaining the level of knowledge in the team after the on the job training) Health professionals are changing jobs/functions. Organisation of peer leaning should not be based on a few superusers.
Identification of Superusers and/ or Embasadors	The use of super-users and/ or ambassadors depend on the implementation plan and training strategy. Sustainability should be central.
Identification of opponents	It is important that opponents understand the opportunities in a new technology. Motivational interview can be used as a technique: https://sharepoint.washington.edu/uwpsychiatry/SPIRIT/resources/Documents/Care%20Manager%20Resources/What%20is%20Motivational%20Interviewing-Handout.pdf
Learning from other teams (that successfully have implemented the technologies/ eHealth solutions)	Either by visit or virtual meetings. Perhaps ambassador groups can be identified and given mandate to visit other teams?
Training needs assessment	IT skills in healthcare professionals varies a lot! The management team should also undergo the training.

Shared Decission Making	
Opportunity to be heard	Opportunity to contribute

8.3 Domain 3: Who should be involved

Domain 3 **Who should be involved?**	
Summerised content:	**Expected achievements of this domain:**
Who are leading/facilitating the LIU? What are the competences needed in The LIU? Which staff groups are present? Who are representing each staff group? Who will be present from the company? Who are the end users? and how are they involved?	Clear definition of competences, participants and roles in the LIU

Organisation ***Task***	***Task explained***
Who are the most important partners?	Recommended: 1 Leader driving the process 1 admin/organizational/IT 1 representative from healthcare professionals (1 from each professional group) 1 company representative 1 enduser representative (not always relevant)
What are their roles in the LIU?	Describe role for each participant
Which activities are they expected to undertake?	Describe activity for each participant
What kind of resources do they need to bring into the LIU? (qualifications and time)	Describe qualification and timeallocation for each participant
IT-Help desk/technology provider's support	Describe the collaboration between the IT helpdesk and the company. Describe the service-desk available for Healthcare professionals during implementation. Predict moments of extraordinary loads - and make sure that resources are available to deliver throughout a peak period.

Healthcare professional / Team **Task**	**Task explained**
Super-users	Some recommend superusers. **If possible**, there should be superusers representing all types of healthcare professionals in the team. They should also represent, day, evening and night shifts. The profile should never be the technology enthusiast - but rather a person who is: a) in the middle group with respect to digital readiness, b) has strong professional competences, c) has good relations to collegues and managers.
Ambassadors	Some recommend ambassadors- who could have tasks such as enhancing the knowledge about the technology in the teams, but also spread the news to other teams in the same health-care unit. Or visit other units/teams where the technology already is fully implemented.
The roles of healthcare staff in the implementing team during and after implementation.	What is my new role if the technolgy is going to take over my work/ some of the tasks I used to do?
How does the technology affect the relation between the healthcare professional and the patient/citizen?	LIU should provide change communication about this issue, and follow up and develop concrete storries
The interests of the end user should be ever present	The healthcare professionals will often associate to end users and if needed speak for them.

Shared Decission Making	
Opportunity to be heard	Opportunity to contribute

8.4 Domain 4: What resources will we need?

Domain 4 **What resources will we need?**	
Summerised content:	**Expected achievements in this domain:**
Identification of the time and resources needed for the work in the LIU and in the implementing team	That the participants in the LIU and the staff in the implementing team have been allocated sufficient time and resources to drive a successfull implementation process.

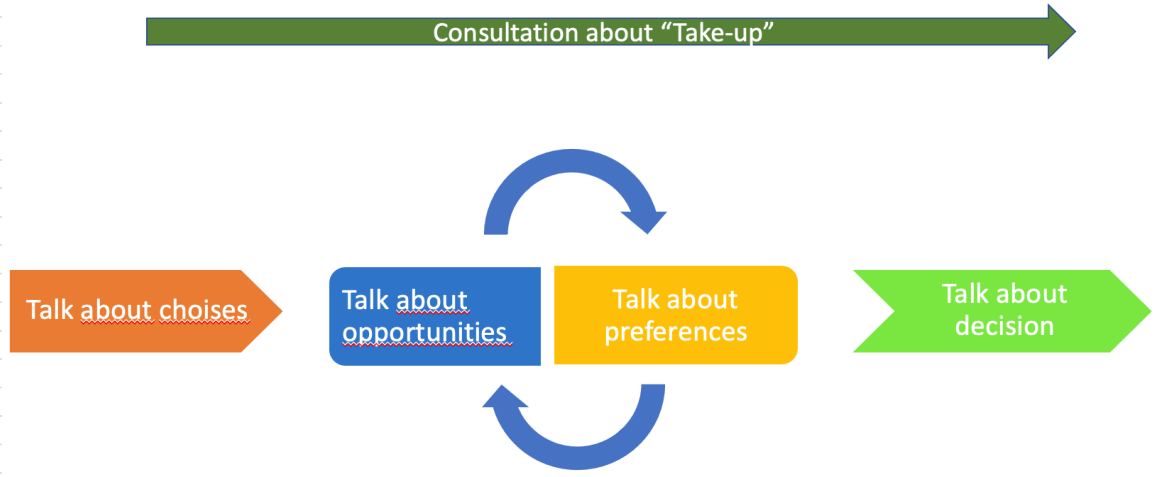
Organisation ***Task***	***Task explained***
How many resources are needed over time for each of the activities and each participants.	Budget derived from implementation plan
Specify the ecpected number of hours needed per participant	Budget derived from implementation plan
Logistic needs	Budget and booking of meeting facilities etc.
Are there resources put aside for a continued focus on realization of benefits ?(after end of implementation phase)	Budgeted hours
IT-helpdesk/technology support	Has budget been set aside for the help-desk to respond throughout peak periods?

Healthcare professional / Team **Task**	**Task explained**
Prepare adequate change communication concerning time, costs and loss of effeciency.	Are involved healthcare professionals aware that managers are expecting a loss of efficiency in production during the implementation, that budget has been set aside for training and participating in the implementation process.

Shared Decission Making	
Opportunity to be heard	Opportunity to contribute

8.5 Domain 5: How will we get take-up?

Domain 5 **How will we get take-up?**	
Summerised content:	**Expected achievements in this domain:**
How does the benefit of the techology reach the participant groups and what are the mechanisms of adoption	Technology adoption is about human anchoring. Implementation of technology is a change process and the expected achievement is a change in beavior among the healthcare professionels.
Organisation	
Task	***Task explained***
How will the team be encouraged to keep a continued focus on realization of benefits? And how is the proposal of the application/functions communicated to managagement level.	How is this task organised, who will be involved, how often will they meet, what is the expected result? And how are findings taken up by the organisation?
Can a full list of related processes be identified?	The full list could also include other processes where it might be relevant to introduce the new technology.
How will the team make sure that a sustainable peer learning culture is in place?	It is important that you identify a peer learning or superuser system that will allow new staff to be introduced to the technology after the end of the implementation process. The peer learning should not be vulnerable to rotations or frequent substitution of key staff.
Healthcare professional / Team	
Task	**Task explained**
Setting up a system that captures new exploratory ideas and thinking in relation to the technology.	Exploratory ideas concerning the use of technology should flow to the Superusers, who in turn will contribute by follow up meetings focusing on realization of benefits
Shared Decission Making	
Opportunity to be heard	Opportunity to contribute



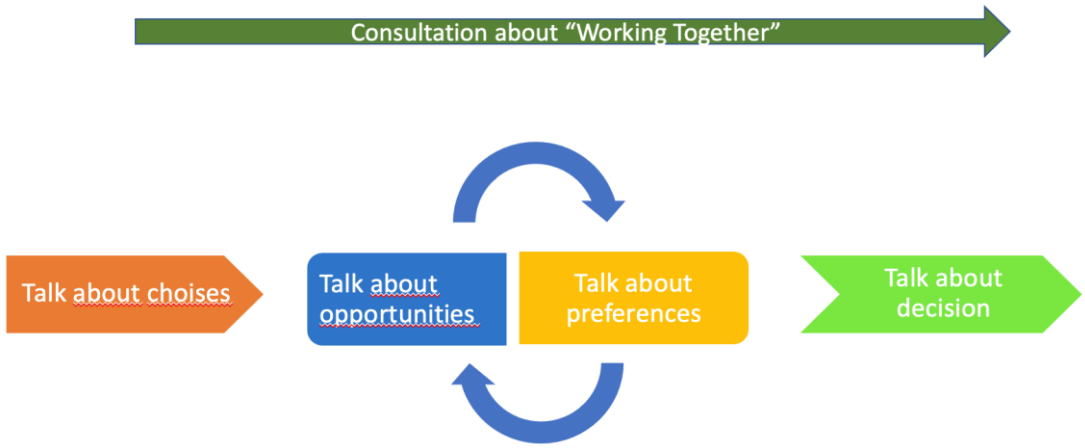
8.6 Domain 6: How will we work together

Domain 6 **How will we work together?**	
Summerised content:	**Expected achievements in this domain:**
How the participants can explore new opportunities / Share exploratory ideas / contribute	That it is clear for everybody involved when and how they can contribute.

Organisation ***Task***	***Task explained***
How does the multidiciplinary team collaborate?	Rules for meetings (agendas, minutes etc.)
How and who are in charge of running the shared decision making processes that involve the team of healthcare professionals?	Develop procedures and plans for Shared decision making processes in each of the domains.
How does the communication flow between the multidiciplinary participants?	Rules for communication, focal points for specific topics etc.

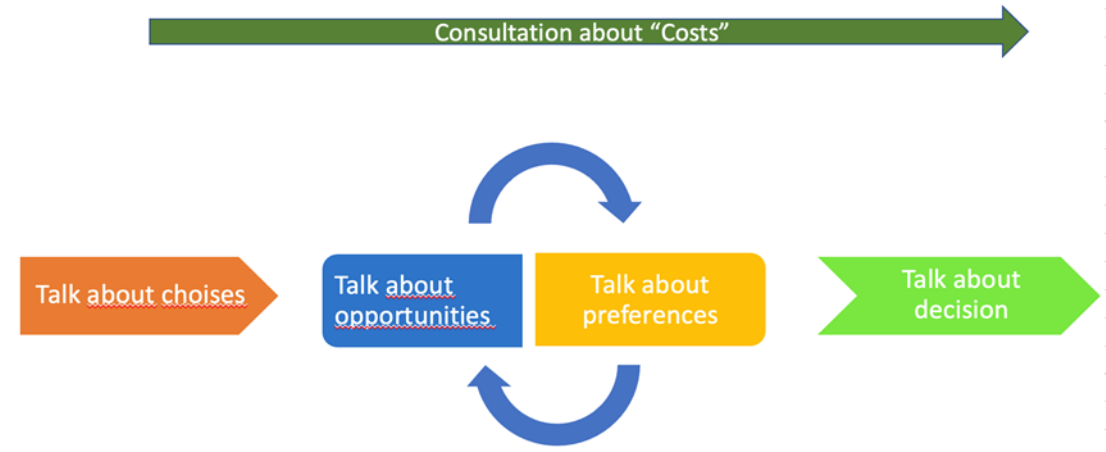
Healthcare professional / Team **Task**	**Task explained**
Prepare adequate change communication concerning multidicliplanary collaboration	Are involved healthcare professionals aware that managers are expecting them to spend time participating in multidiciplinary collaboration?

Shared Decission Making	
Opportunity to be heard	Opportunity to contribute



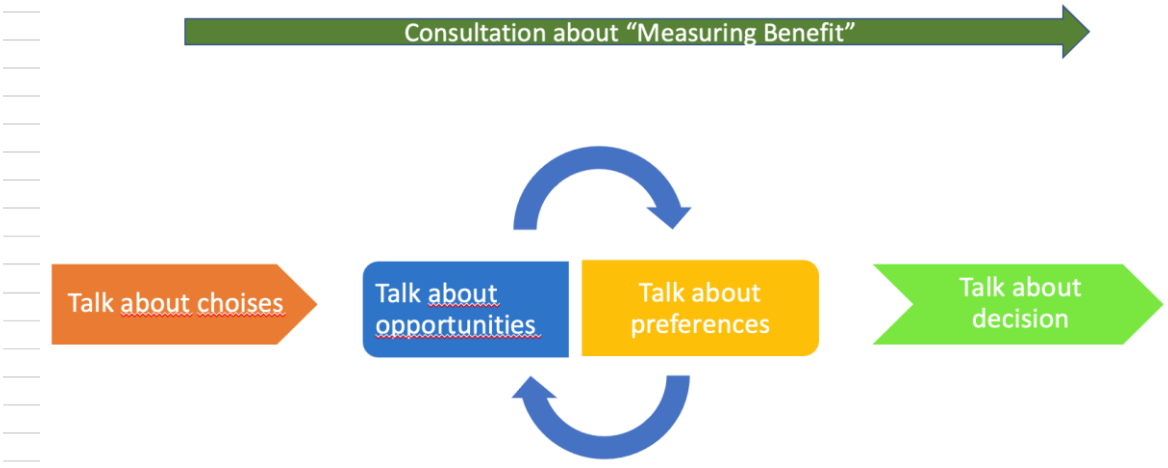
8.7 Domain 7: What will it cost?

Domain 7 **What will it cost?**	
Summerised content:	**Expected achievements in this domain:**
What are the important costs that you have to make to deliver the benefit. There should be a differentiation between the cost of running the LIU and the cost of implementation, including training	That the management level is fully aware of and have set a side the resources needed to run the LIU and the implementation
Organisation	
Task	***Task explained***
Detailed budget including all costs	A frame budget will usually be part of the approval of implementation. The frame must be applied in a detailed budget.
Healthcare professional / Team	
Task	**Task explained**
Shared Decission Making	
Opportunity to be heard	Opportunity to contribute



8.8 Domain 8: How will we know the benefit?

Domain 8 **How will we know the benefit?**	
Summerised content:	**Expected achievements in this domain:**
How and whenare the benefits observed	A shared understanding of what the organization look like after a successful implementation
Organisation	
Task	***Task explained***
What are the benefits	Desribe the espected benefits after successful introduction of of the new technology.
How are the benefits harvested	Desribe how the espected benefits will be harvested
When are the benefits harvested	Desribe when the espected benefits will be harvested
Healthcare professional / Team	
Task	**Task explained**
Has the LIU increased the technology uptake readiness amongst the healthcare professionals	Identify, design and set up adequate monitoring system based upon milestones that the LIU is able to atribute to its own existence/work as related to the objective of each of the domains.
Has the LIU increased the explorative behaviour amongst the healthcare professionals?	Set up adequate monitoring system
Has the increased explorative behaviour lead to realisation of more benefits?	Set up adequate monitoring system
Has the LIU increased the the flow of needs from the healthcare staff to the enterprise?	Set up adequate monitoring system
What are the aquired skills in relation to the implementation of the given technology?	Development of the skills of the healthcare professionals should be percieved of as part of the realised benefits
Shared Decission Making	
Opportunity to be heard	Opportunity to contribute



9 Work Sheets On-The-Job Training Tool

9.1 Checklist for planning the training

Topics:	Questions to be answered:	
How can we help the healthcare professionals, in relation to using technology in Health Care? ***How can we break down strategies into pieces that are clear to everybody?***	- What is the technology in question? - Is there a purpose? (The HC professionals shall be able to see the purpose) - What is the urgency? - Is it of value to the health care professionals? - Is it of value to the patient? - Is there an advantage in using it? - Is management involved? - Is the individual nurse involved? - Is it available? - Is there a reward for using the technology → e.g. a national certificate or a bonus/ higher salary? - Can we advertise for the technology? For instance, if patients live far away, they have the opportunity to have e.g. video-consultation - What is the behaviour we want the healthcare staff to display? - What is the barrier holding healthcare staff from using the technology? - What is the solution to remove the barrier(s)?	
How can we make it easy? (Easiness trumps motivation)	- Can everybody see the value? - Does it seem practical to use in the daily work? - How are the competencies in relation to the need? - <u>Is the organization around feedback in place for instance:</u> - Is there a short description/information about the technology? - Is there a person in charge to solve the problems and to follow-up? - Are the support issues solved? - Is the cooperation between the nurses/Health Professional and the IT/computer professionals in place? - Honest value → sit down with people who have to use it - Do we have the capacity? - Do we need additional resources in the start-up phase? - Is the information and knowledge level in place? - How can we make first time use a success? - How can we assure involvement from the beginning? - Have we make it flexible?	

Can it pass the video- and /or calendar test?	- How do we involve staff in describing how the use of technology can be specific enough to pass the calendar and video test?	
How can we create something memorable from the "on the job training"	- How should the training end? - What should the participant take …from the training? - Is there a tight "follow-up" schedule?	
Can we create a social proof – " We do as the others do"	- Is there a participant involved that has impact in the organization? (e.g. a role model) - Have we involved key nurses/champions in every shift? - What is the value for the nurses? - What is the value for the patient and for the hospitals?	

9.2 Template Learning objectives and Assessment Frame

Name of the learner:		
Name of Hospital:		
Name of the Unit:		
Reference to the qualification:		
Area of work tasks:	EQF-level:	National level:
Description of the Unit:		
Organisation and content of the training:		

Learning Objectives		
Knowledge	Skills	Competence / work behavior
He/she should be able to:	He/she should be able to:	He/she should be able to:
Assessment method / process:		

Asessment results		
Knowledge	Skills	Competence / work behavior
He/she is able to:	He/she is able to:	He/she is able to:
Additional information: <describe the reference to syllabi or general training plans of the basic vocational education the work placement should fit in>		
Developed by: <author, organisation>		

9.3 Planning of the on-the-job training

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9.4 European Qualification Framework Levels

	Knowledge	**Skills**	**Responsibility and autonomy**
	In the context of EQF, knowledge is described as theoretical and/or factual.	**In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).**	**In the context of the EQF responsibility and autonomy is described as the ability of the learner to apply knowledge and skills autonomously and with responsibility**
Level 1 The learning outcomes relevant to Level 1 are	Basic general knowledge	Basic skills required to carry out simple tasks	Work or study under direct supervision in a structured context
Level 2 The learning outcomes relevant to Level 2 are	Basic factual knowledge of a field of work or study	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	Work or study under supervision with some autonomy
Level 3 The learning outcomes relevant to Level 3 are	Knowledge of facts, principles, processes and general tools, in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	Take responsibility for completion of tasks in work or study; adapt own behaviour to circumstances in solving problems
Level 4 The learning outcomes relevant to Level 4 are	Factual and theoretical knowledge in broad contexts within a field of work or study	A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change; supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities

	Knowledge	**Skills**	**Responsibility and autonomy**
	In the context of EQF, knowledge is described as theoretical and/or factual.	**In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).**	**In the context of the EQF responsibility and autonomy is described as the ability of the learner to apply knowledge and skills autonomously and with responsibility**
Level 5 The learning outcomes relevant to Level 5 are	Comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	Exercise management and supervision in contexts of work or study activities where there is unpredictable change; review and develop performance of self and others
Level 6 The learning outcomes relevant to Level 6 are	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups
Level 7 The learning outcomes relevant to Level 7 are	Highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research Critical awareness of knowledge issues in a field and at the interface between different fields	Specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
Level 8	Knowledge at the most advanced frontier of a field of work or study	The most advanced and specialised skills and techniques, including	Demonstrate substantial authority, innovation, autonomy, scholarly and

	Knowledge	**Skills**	**Responsibility and autonomy**
	In the context of EQF, knowledge is described as theoretical and/or factual.	**In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).**	**In the context of the EQF responsibility and autonomy is described as the ability of the learner to apply knowledge and skills autonomously and with responsibility**
The learning outcomes relevant to Level 8 are	and at the interface between fields	synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

10 Work Sheets Asessment and acknowledgement Tool

10.1 Check-list for planning the assessment

TEACHER/TRAINER
During planning of the training (before training)

- Describe competences to be assessed (according to the training aims)
- Discuss with potential learners/staff/managers which assessment approach will fit in the learning context
- Assess if the training aims and thus assessment would differ for different employment categories. Adapt the assessment process to the professional profile.
- Choice of methodology: in situ or on-line assessment tools
- In case of in situ: Define reflective questions
- Construct a questionnaire (use the In-situ questions as inspiration)
- Choose a platform
- Establishment of validation and certification

TEACHER/TRAINER
During the training

- Introduce the assessment process
- Make room for reflection and adaption/tasks during training

TEACHER/TRAINER
After the training

- Assess the documents produced through the assessment process
- Issue certificates on training and assessment
- Evaluation of training

STUDENT/TRAINEE
Before training

- Create a portfolio/folder and an individual action plan

STUDENT/TRAINEE
During training

- Go through the reflective questions / tasks

STUDENT/TRAINEE
After training

- Evaluation, feed-back and suggestions/alterations
- Upload assessment documents to the portfolio
- Upload certificate to portfolio

10.2 ECEVET Assessment Topics

The ECEVET framework proposes the following questions.
You can see the original list of questions on this website: https://www.ecvet-toolkit.eu/sites/default/files/Assessment%20Topics%20-%20Guidelines%20%28I2c1c-Tool%29_Nov2013_0.pdf

1. Who will assess the learner?
    a. Do the assessors require a specific profile (that is, a particular training, qualification, or experience)?
    b. Is it possible to identify a specific person or a group of persons to assess the learner?

2. How will learning outcomes be assessed and in what context (including where)?

Assessment procedures, methods, tools

    a. Are certain procedures, methods, tools and so on required?
    b. Which assessment method(s) is (are) appropriate (for example, self-assessment, feedback meetings/discussions, written assignments, skills demonstrations, work samples, presentation, or simulated conversation)?
    c. Which assessment tools can be used?
    d. Is the assessment: Doable (not too ambitious, nor too time-consuming), practical, and appropriate (for example, taking into account constraints such as time and resources available or the language skills of learners and assessors) for the mobility period.
    e. Clearly related to, and appropriate for, the agreed learning outcomes (not too complex and not too simple)?

Assessment criteria: Are the assessment criteria specified and clear?

    f. Do the partners have a common understanding of the level of performance?
    g. Are the assessment criteria and indicators clearly related to the agreed learning outcomes?
    h. Where will the assessment take place (for example, in the classroom, in a laboratory, or in the workplace)?
    i. Are the necessary conditions and resources available in the host organisation (such as a certain environment, specific machines, materials and so on)?

3. When will the assessment take place?
    a. what type of assessment is appropriate (for example, formative assessment during the whole stay abroad or summative assessment at the end of the stay abroad)?
    b. Is assessment integrated into the mobility period with the aim of having a balance between learning time and assessment time?

4. What procedures will ensure the quality of assessment?
    a. What quality assurance procedures are planned to ensure that the learner enjoys fair treatment and that the result of the assessment is valid and reliable?
    b. Is there a suitable balance between standardisation and individualisation?

10.3 TEMPLATE PORTFOLIO

NAME
PROFESSION
DATE
HOW ARE TECHNOLOGIES USED IN MY UNIT
WHAT VALUES DO TECHNOLOGY HAVE FOR MY UNIT/ORGANISATION
WHAT VALUES DO TECHNOLOGY HAVE FOR ME
WHAT IS MY ROLE IN IMPLEMENTATION OF NEW TECHNOLOGY

WHAT DO I NEED AND WANT TO LEARN REGARDING TECHNOLOGY AND HOW DO I ACCOMPLISH THIS

TRAINING
DATE
INSERT DOCUMENTATION/CERTIFICATE

WHAT DO I NEED AND WANT TO LEARN REGARDING TECHNOLOGY AND HOW DO I ACCOMPLISH THIS

TRAINING
DATE
INSERT DOCUMENTATION/CERTIFICATE

WHAT DO I NEED AND WANT TO LEARN REGARDING TECHNOLOGY AND HOW DO I ACCOMPLISH THIS

TRAINING
DATE
INSERT DOCUMENTATION/CERTIFICATE

WHAT DO I NEED AND WANT TO LEARN REGARDING TECHNOLOGY AND HOW DO I ACCOMPLISH THIS

10.4 TEMPLATE CERTIFICATE

THIS IS TO CERTIFY THAT

_____

NAME

HAS ACCOMPLISHED

_____

TITLE OF TRAINING

ISSUED BY

_____

TRAINING INSTITUTION

DESCRIPTION OF TRAINING IN TERMS OF OVERALL AIM AND EXPECTED LEARNING OUTCOME

DESCRIPTION OF ASSESSMENT PROCESS

_____

DATE & SIGNATURE

11 Practical experiences from the DISH project

11.1 Denmark

11.1.1 How do we plan the training?

The Preparation Team is a questionnaire to use in pre-meetings in the training preparation phase. It describes a model on gathering the right group of people to initiate the right focus in the test site regarding the technology to be trained.

Contact regarding OTJT can be established on-demand from a ward that wants to introduce a new tool in the treatment or care, e.g. the webinar using Cisco Webex Meeting (CWM). Contact can also be from our side to the wards based on a top-level hospital decision or a regional top-level (political) decision. Both ways, we always introduce the Preparation Tool followed by the OTJT Tool and the Assessment Tool.

To adapt the DISH Tools to e.g. a Danish setting, we amended the wording to a Danish understanding. This writing describes guidelines for the three tools of the DISH project adapted to the Danish health care setting.

Before the first meeting in the Preparation Team, there is some correspondence with the management, e.g. head nurses or clinical development nurses, to ensure all relevant representatives can be part of the Preparation Team meetings. As a result, participants at the Preparation Team meetings mainly are head nurses, clinical development nurses, different health care professionals and IT system experts (system administrators from IT companies). Hence, we have several meetings focusing on clarification of the handpicked questions from the Preparation Tool. Therefore, before the OTJT begins, each test site had one Preparation Team meeting and around 1 to 3 preparation meetings, each lasting approximately 1-2 hours.

11.1.2 How do we do the training?

The OTJT is either at the Learning and Research Centre in the simulation facilities or "on-site" at the ward. The participants are solely health care professionals either from the hospital or from one out of four municipalities within the region. Depending on the needs and learning goal (see Annex 1) appointed at the Preparation Team, training lasts between 1-2 hours or 4-6 hours.

The training has been easy to implement because the focus is on "hands-on-training" and the learners are generally positive and express that they prefer this kind of training.

Training at the simulation facilities at the Learning – and Research centre:

Short training (1-2 hours):
Suppose the training needs to add skills to an existing technology or ensure all staff members are equally capable of using all the needed features. In that case, training is staged between 1 to 2 hours and contains the following elements:

1. Short introduction about the technology
2. Hands-on training based on realistic cases of daily workflow
3. Questions and answers
4. If necessary, repetition of hands-on training
5. Make arrangements to follow-up (30-60-90-365 days)

Long training (4-6 hours):

When the Preparation Team clarifies a need for change in daily workflow in collaboration with the technology, training requires an expanded period with exercises and reflection about barriers and promotors by using the new technology.

A training program placed at the simulation facility mainly is planned to introduce the training and the learning goals, followed by cases representing real-life patients. These cases represent realistic situations of daily workflow.

Furthermore, a workbook is conducted to support re-thinking the staffs' workflow. The intention is to sharpen the participants' thoughts about the barriers to overcome and highlight the technology's benefits.

These training sessions last between 4 to 6 hours, containing 2-3 short presentations (10-30 minutes) either as an introduction or during the day. The themes of these presentations could be a historical overview of the technological development, the specific technology trained, behavioral design or thoughts about workflow when technology is implemented in the health care sector. Then, there are hands-on training and group sessions focusing on the workbook regarding behavioral design and workflow change (see complete workbook in Annex 3)

Figure 1: Headlines from the workbook:

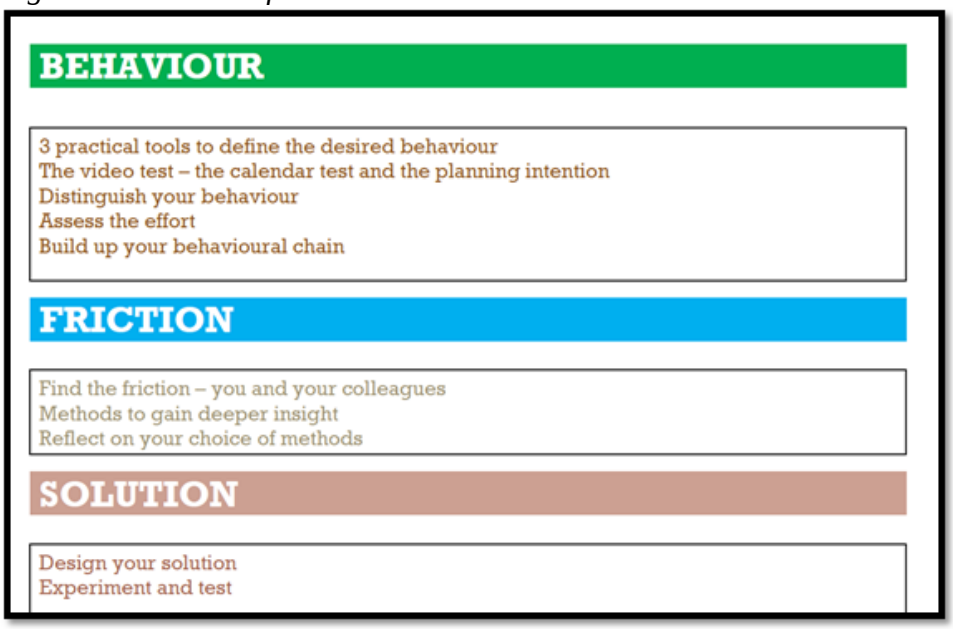
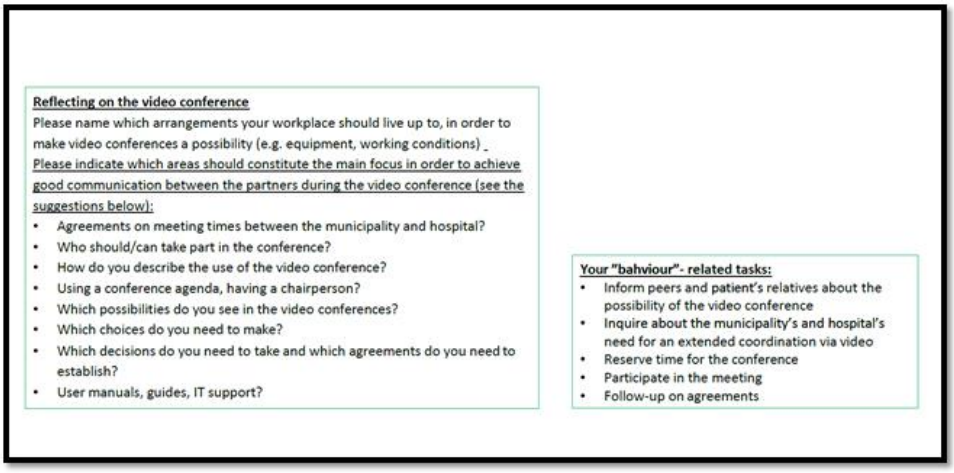


Figure 2: Example on reflection exercize on how to make it possible to use the technology:



Training "on-site" at the ward:

Training at the ward has different purposes:

a. In continuation to the previous training at the Learning – and Research Centre. Here, the primary intention is to follow up on previous training and fulfil the present needs of the staff members when they start up with the new technology. It is spontaneous, and staff members can ask questions to the trainers over a defined time. Most trainers are represented at the ward for 1-2 hours over five days.
b. Training is planned at the ward over a period of time. Management divides all staff members into group sessions to attend the training in front of the technology (where they will use it). This arrangement is beneficial when training is short and ensures a high number of participants because they don't have to leave the ward and can help each other to care for patients

11.1.3 How do we reflect upon the training?

The long training sessions are well-designed in the Learning Management System app (LMS) ("Its learning"). Here, both the assignments and reflections from the Assessment tool are accessible for the group sessions. For reflection we used the in-situ assessment tool translated into Danish, e.g.:

- *In pairs, make a 2-minute video where you demonstrate the use of the technology*
- *Upload 3 pictures that demonstrate the strengths of the technology discuss those in groups/pairs*
- *In pairs, interview each other about the challenges that you see – for example, regarding implementation."*

Participants receive a diploma when they have finished the given assignments

Additionally, the participants can also find the program, the cases and the presentations on Its Learning.

11.1.4 How do we evaluate the training?

How the participant evaluates the training depends on the training. For those, who participate at the long training, the evaluation template is integrated in the app It´s Learning. Participants at the short training sessions receive a paper version including five questions regarding evaluation of the training and feedback to what extent the training increased their digital skills.

Furthermore, to assess the training, we arrange Follow-up meetings 30-60-90-360 days after the training. The meetings are based on the Preparation Tool and include the same participants as the first Preparation Team meeting. At these meetings, we discuss several issues like the learning goals, the extent to which the technology is used and how the Learning – and Research Centre can assist future training and implementation plans.

The idea of the Follow-up meetings is descended from the principles of the improvement model of Southern Denmark (Syddanske Forbedringsmodel).

11.2 England

In the UK we had an intention to plan, train, reflect & evaluate - our intentions are summarised below in sections 1.7.1 - 1.7.4. It is important to note that our intentions did not go to plan as a result of Covid-19.

As a result of the Covid-19 pandemic the skills and experience of the Preparation Team members were diverted elsewhere within the NHS in late March 2020. At the same time there was a national hold placed on all non-covid training, as a result of this the Digital Health Activation Team (DHAT) resource

was redeployed to support the digitalisation of community services. The need for Health & Care Professionals (HCPs) to keep up to date with continued professional development was also placed on hold as HCPs focused all of their efforts on meeting the challenges of the pandemic.

Through reflection and evaluation, the Preparation Team members adopted an agile approach to the delivery of OTJT and we worked to refine and reshape our offer in an attempt to respond to the situation that we found ourselves in.

Unfortunately, Covid-19 and its impact on the NHS continues, despite this there are a number of positives and opportunities that we can be thankful for; the pandemic accelerated the use of digital technologies within the NHS as video consultations were introduced to facilitate remote care provision. This in turn had a positive impact on the workforce who quickly adapted to remote working and using digital tools to carry out their day-to-day tasks. Patients become more accepting of digital as an enabler in the provision of their care as they engaged in video or telephone consultations with their GP, text message correspondence and online consultations. Such digital tools proved to be incredibly useful and convenient for the clinical work force and for patients accessing services, after many years digital had finally arrived in the NHS!

The Preparation Team members also made the most of remote meets held online, this provided a platform for more effective, accessible communication amongst Preparation Team members, it also enabled the adoption of a more agile approach to the project management of the DISH project as members were able to meet more frequently to reflect and evaluation on the OTJT offer.

We now focus on the future and how we might replicate our OTJT, either in Liverpool post pandemic or in other parts of the UK.

11.2.1 How do we plan the training?

In the UK we have been focusing on one Preparation Team that is made up of the following stakeholders; Liverpool Clinical Commissioning Group (LCCG), Edge Hill University, Organisation for the Review of Care & Health Apps (ORCHA) & Digital Health Activation Team (DHAT).

The plan was to deploy the ORCHA library of reviewed health and care apps in general practice. An informative and reflective workbook was created by Edge Hill University working with ORCHA and the Preparation Team to educate healthcare professionals on ORCHA, with the intention that they would work through the workbook and complete a reflective exercise to submit back to Edge Hill University for feedback. Completion of the workbook would also count towards their continuing professional development.

The workbook had the following learning outcomes:

- Demonstrate an understanding of how ORCHA, and digital health and care products (such as apps), can be used to promote health and wellbeing, to support condition prevention, and to facilitate independence and self-care in service users with long term conditions.
- Reflect upon the scope of digital health tools (such as Apps) within health and social care settings.
- Identify the potential benefits, limitations and barriers, in the use of digital health products in relation to person centered care.
- Identify potential risks to service users in relation to digital health products.
- Reflect on the role of the health care worker in supporting the service user/carer in engaging with digital health tools.

- Demonstrate an understanding of person-centered care and assessment in relation to the use of digital health products.

A description of Preparation Team membership organisations can be found below:

Liverpool CCG is a clinically lead NHS body responsible for the planning & buying of most NHS services for the people of Liverpool. Preparation Team members include representatives from the Digital Care & Innovation Team and the Chief Clinical Information Officer.

Edge Hill University is one of the largest providers of health and social care education in the North West of England, and home to the new Edge Hill University Medical School. Approximately 4,000 professionals are trained and educated every year in its Faculty of Health, Social Care and Medicine, both as undergraduates and as highly experienced postgraduate practitioners.

Our technology partner and Preparation Team member was the Organisation for the Review of Care& Health Apps, **ORCHA**. ORCHA provides an objective and independent assessment of health and care Apps, to support health & care professionals and patients.

Liverpool CCG commission the services of the **Digital Health Activation Team** (DHAT), the aim of the team is to reduce health inequalities across Liverpool by educating people and healthcare practitioners about simple, everyday digital tools that are available to support good health. The team are experienced in the promotion of digital health tools in Primary Care.

The Preparation Team members met regularly, bringing together their skills and expertise to develop the On The Job Training (OTJT) offer.

11.2.2 How do we do the training?

The online self driven approach to training was chosen to maximise the uptake of the training offer – there are over 80 GP practices located throughout the city of Liverpool, the nature of the workbook would allow for training to be completed in a convenient and flexible manner by a range of Primary Care HCP's - GP's, Practice Nurses, Community Nurses even non-clinical administrative staff could access the training resource to improve their knowledge of health & care Apps. Although introduced and supported by the DHAT the training is self-lead through the informative & reflective workbook.

As it stands the workbook that provides the training takes the form of an interactive learning resources hosted on the learning platform managed by the DHAT. This state was delayed somewhat as a result of Covid-19 and the redeployment of a number of Preparation Team members. Therefore, in Spring 2020 the workbook was less interactive than hoped and took the form of an MS Word document, although not ideal this still provided an informative and supporting training resource. At the time all non-Covid training had been put on hold, we were conscious of this but also conscious of the benefits that Apps could offer at this time, therefore the document was e-mailed to a group of Clinical Leads at Liverpool CCG, to test the water, uptake, however limited – health & care professionals were simply too busy to put the time into completing the workbook. Any time originally put aside towards their continuing professional development was frozen to deal with the pandemic, so this incentive to complete the training had been lost.

When the Covid-19 pandemic eased slightly in Summer 2021, the DHAT converted the workbook from a Word document onto an interactive learning platform as another push to encourage engagement. A

link to this workbook was sent to ORCHA Pro Account users who were already engaged with ORCHA, with plans for it to be emailed wider.

Again it was hard to engage with a workforce that was fatigued, demotivated and simply didn't have an appetite to take on additional training above that that was essential for the provision of basic NHS services and the Covid-19 response. The Primary Care workforce were now responsible for delivering the biggest vaccination programme that the NHS had ever seen, a task that was resource intensive and a priority above all else.

11.2.3 How do we reflect upon the training?

Although no training has been completed as of yet processes have been put in place to allow Preparation Team members meet regularly to review the uptake and effectiveness of the training using intelligence gathered by the DHAT and activity data from ORCHA and Edge Hill University.

Access & completion of the online workbook can be captured by the DHAT learning platform and the reflective learning platform managed by Edge Hill University. ORCHA are able to provide quantitative data to demonstrate an increase in app uptake.

There is the opportunity to collect feedback from participants via interview and online surveys.

11.2.4 How do we evaluate the training?

Regular meetings of Preparation Team members provide a forum to evaluate the training offer, as with the approach to reflection information from the DHAT, ORCHA, Edge Hill University and online surveys can support the evaluation of the training offer.

We are however hopeful for the future and will be able to use this training resource and the processes that we have defined and put in place going forward as the pressures of Covid-19 ease and the benefits of Digital technology are embraced by Primary Care.

11.3 Germany

11.3.1 How do we plan the training?

Due to the Covid 19 pandemic, all Preparation Team meetings took place digitally as videoconferences. Subject of the Preparation Team, based on a top-level hospital decision to optimise the quality of care, was the development of a training tool (theoretical principles, work instructions and treatment recommendations) and implementation of a digital recorded and documented Sepsis Score (qSOFA) which is to be carried out by staff in inpatient health care (nurses and physicians) on all wards and the emergency department.

The Preparation Team was composed of medical staff (nurses and physicians), nursing manger, nursing development, IT services, the department for quality and risk management and patient safety, the revenue and care complex measures score management as well as the department of digital transformation of the educational institution of the University Hospital.

For a better understanding and introduction of the DISH tools, all relevant documents were translated into German and introduced to the lead of the Preparation Team and the nursing directorate. Before the start of the On The Job Training (OTJT) there were approximately 5 Preparation Team meetings which lasted on average 2-3 hours and subsequently with various work items for the individual Preparation Team participants. Part of these meetings was the toolion of the OTJT process,

considering the points mentioned in the DISH tool that were relevant for the project implementation. The selection of important points and aspects in the OTJT, based on aspects of the dialogue within Preparation Team, was made together with the different professional groups, so that the needs of the different participants of the OTJT (nurses-physicians) could also be considered with regard to the/their training. Aspects, important for the stakeholder, such as the time and financial scope of the OTJT, could also be fully integrated. Thus, the setting up of the Preparation Team within the test site showed the flexibility of the tool to be able to act corresponding to the requirements of various projects.

11.3.2 How do we do the training?

Due to the ongoing pandemic situation and the large number of staff to be trained, it was decided to offer the possibility of a digital training through e-learning. These learning unit can be completed voluntarily and end with a question quiz in which the learners can test their acquired knowledge in a playful way (duration approx. 20-30 minutes). Another aspect of teaching and implementation is the publication of the digital application of the sepsis score on the company's intranet as flow charts and standardised operational procedures (SOP). As a possible third part of the training, the instruction directly on site, i.e. on individual wards with staff in small groups is scheduled. Outside the test site, wards can contact designated persons in the company to be trained directly on site.

Individual members of the wards and the large group of practice supervisors were trained for 1-2 hours in a detailed theoretical training and randomly accompanied members of the selected wards at their workplace in practice (duration approx. 1 hour). The feedback from these theoretical and practical trainings in smaller groups is used in the production of the e-learning unit.

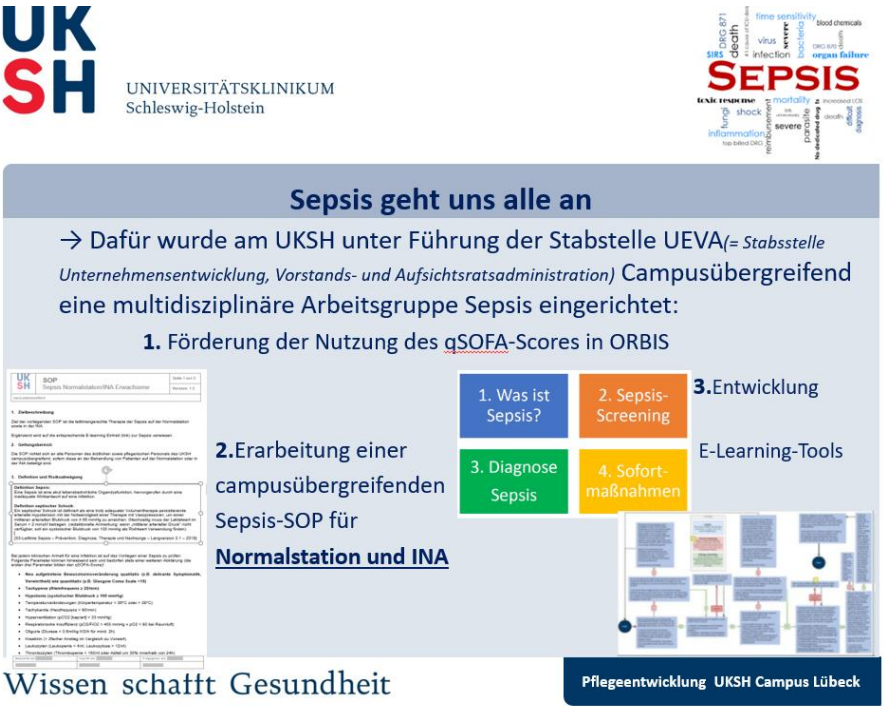
Theoretical training in groups (2-30) contains the following elements:
1) Background knowledge about the clinical picture of sepsis
2) Explanation of the rationale behind the process of optimising care (early detection and treatment of sepsis) in a university hospital.
3) Origin and presentation of the qSOFA
4) Presentation of the recording and implementation of the score in the digital hospital information system- introduction of new technology
5) Classification of the results
6) Resulting action
7) Case study
8) Questions and answers

The theoretical training is held in seminar rooms of the hospital or in the common rooms of the ward, supported by a presentation and a hand out for the participants. The training time is completed in consultation with the ward manager, if possible, during otherwise before or after the shift. Either way the training is counted as working time. The training for the practice supervisors takes place as part of a full-day continuing education programme.

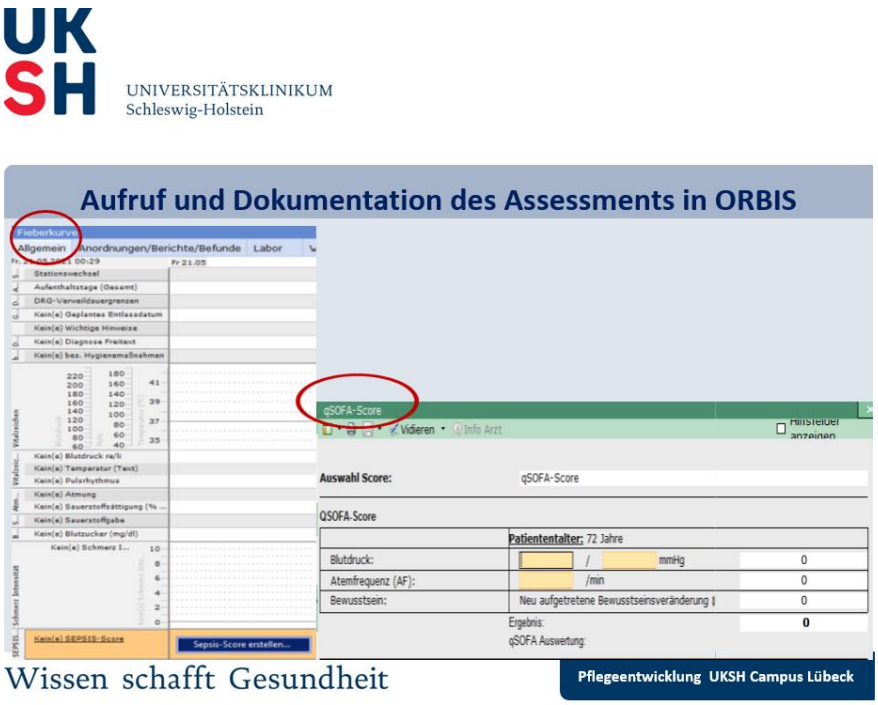
Training on-site at the ward (1-2 participants) contains the following elements:
1) Recording of the required parameters in practice (on patients)
2) Transfer of the parameter results into the digital patient file
3) Reflection on further options for action
4) Reflection on existing barriers to the new technology in practice/workflow

The training in practice takes place during working hours in the current shift as part of the daily care. In this way, problems/obstacles that prevent the implementation of the process/technical application can be identified and reported directly (for example to the IT department) on site.

Example of presentations presenting flow charts, SOP and the e-learning unit



Example of how to digitally document the sepsis score



11.3.3 How do we reflect upon the training?

A few Preparation Team members answered the evaluation of the tool online. Due to the lack of a nationally valid extensive questionnaire, we developed for the training with the ward members (nurses) an assessment to evaluate the training in the areas of:

- Digital competencies,
- technology affinity and
- Technology knowledge
- Increase in knowledge of the digital application through the training

For the group training of the practice supervisors, we use the assessment tool questions translated into German. The evaluation of the training units is subject to co-determination of the staff council and the personnel department within the company and is voluntary. Training sessions at the ward were reflected and discussed on site with the participants. The training units are included in the duty roster and in the training programme of the practice supervisors. If the e-learning unit is carried out, this is also entered in the individual training directory of the participants.

11.3.4 How do we evaluate the training?

Both questionnaires for OTJT participants will be made available in paper form. Participation is voluntary and anonymous. The answers will be evaluated and clustered in the different domains.
Based on the answers containing the tendencies regarding the quality of the training, the increase in digital skills, application security as well as the indication of available training content or training content not covered in training, this information will be incorporated into the e-learning unit and the next training rounds.

After the training on the wards, a follow-up is planned after 7-30-180 days in order to evaluate barriers and obstacles in the implementation process in a timely manner and to correct them if necessary.
Feedback and results of these follow ups will be given to all Preparation Team participants and hence, under the leadership of the Preparation Team (department for quality and risk management and patient safety), will serve for a sustainable implementation of the optimisation of the quality process and as a basis for the next Preparation Team at the company.

11.4 Norway

Participants in the Preparation Team were project managers, unit managers and municipal managers in health care services. In Vaksdal municipality unit manager from the technical department joined part of the planning in the Preparation Team.

The Preparation Team in Vaksdal municipality in action

The questions in Preparation Team were helpful, when planning the implementation, to remember all the elements and issues we needed to consider.

We followed the recipe from “On The job training”, and had special focus at the most important elements (Fig A).

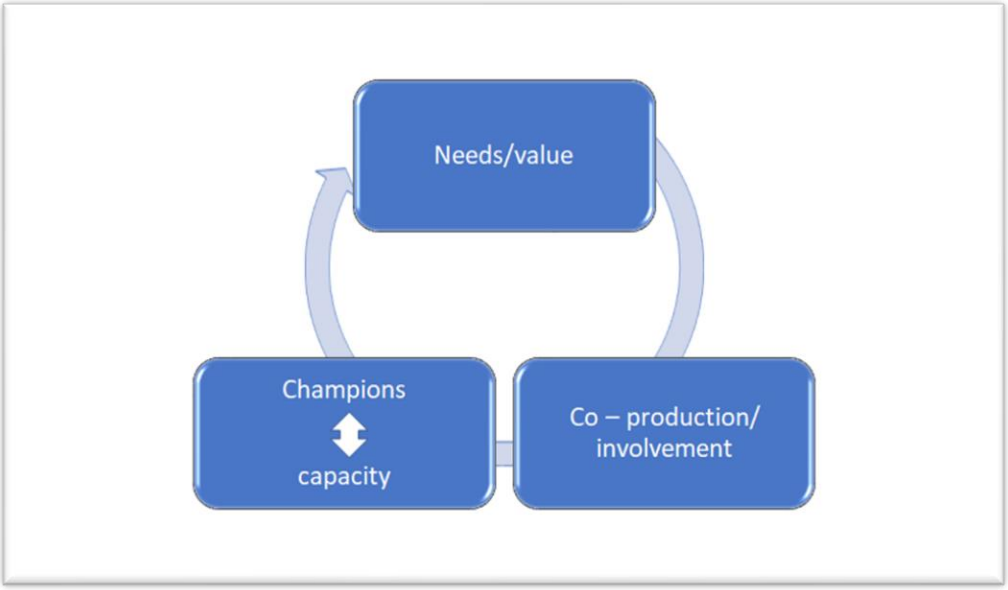


Fig A: Recipe for “On the job training”

We identified and involved stakeholders who had to co-operate for a successful implementation. Selected staff who needed to be trained, and identify personnel suited as champions at the workplaces. For example, Bjornafjorden municipality consider other staff than nurses to fulfilled this role, because nurses already have many tasks in the nursing home. To be a champion for technology you don't need a special authorization.

Values/needs were identified for the particular implementation. These values were used as a basis to provide target information to involved stakeholders.

The Preparation Team made action - and communication plans, where it was important making timeline and set time for courses and time for practice afterwards. These plans were good guidelines for project manager to follow up the different part of the implementation.

The supplier hasn't participated in the Preparation Team, and municipalities had separate meetings with them.

Installers from supplier in action

The answers from LIU and documents prepared by the LIU units were used in these meetings, when training arranged by the supplier were planned. Implementation plan from supplier were incorporated with LIU units plans. If the supplier should participate more it would increase the cost of the implementation.

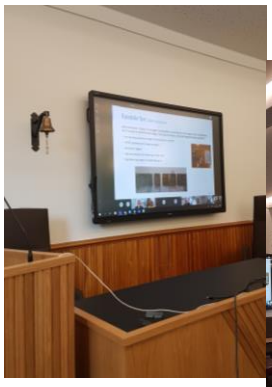
It was important that practical preparation was done in time before training. For example, installations in the nursing home had to be finish before the training of the staff could start. The system had to be ready for use. At this time, it was strict rules due to the pandemic in Norway, and everybody entering the nursing home had to wear masks even if they shouldn't have contact with patients.

11.4.1 How do we do the training?

Due to the pandemic we had to be creative on how to do the training. Digital meeting became the main rule, and staff and teachers were situated different places. Champions and other important staff received instruction through lectures. They had to pass their knowledge on to other staff afterwards. Different methods for passing knowledge were; small lectures at workplace, one to one instruction, testing and practicing the technology in a safe environment at the office, shoulder to shoulder in practical work.

Example 1: E-locks

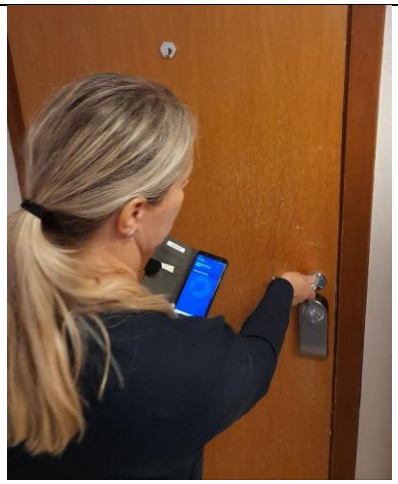
Course for champions and technical staff were held in the municipal council hall. We needed a large room to be able to keep distance. Instruction had to be done digital from a teacher located in Denmark.

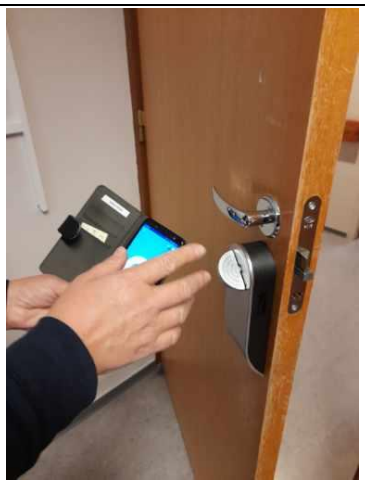


In addition, to instruction, technical staff needed practical training. A specialist from a locksmith came for one day. The locksmith showed in practice how to do the installation, and supervised the technical staff when they practiced instalment.

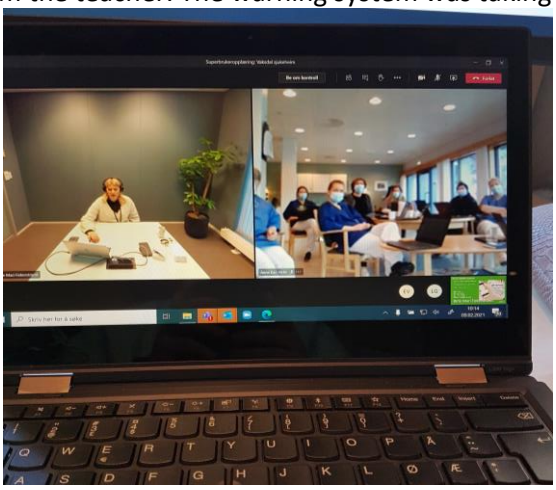
After the digital course, held by supplier, one E- lock was installed in the home care office. In this way staff could practise in a safe environment before they started using it.

Locksmith from supplier





Example 2: Warning system
Lecture from the supplier needed to be held as a workshop on web for champions and leaders at the nursing home. PC and needed equipment had to be available for the staff, and they tested the system according to instruction from the teacher. The warning system was taking in use the same day.

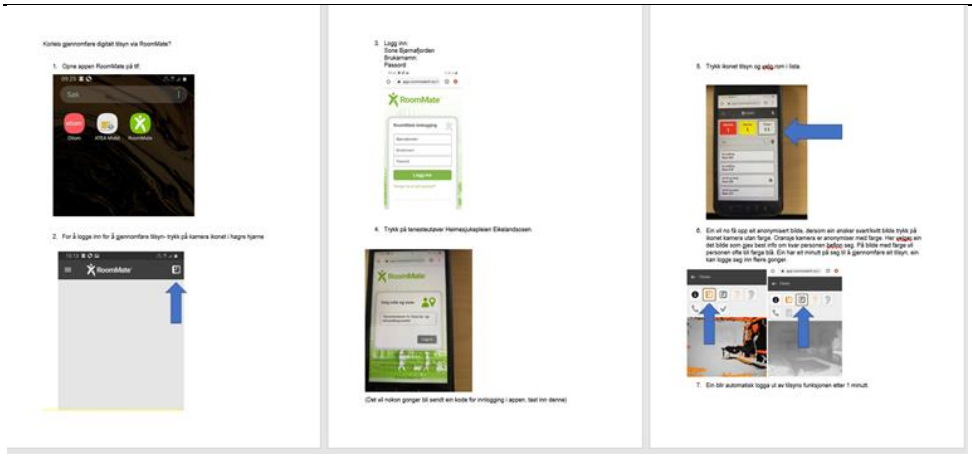


Project manager participate from home office

11.4.2 How do we reflect upon the training?

Supplier didn't use form for evaluation after their courses. Therefore, project manager in municipalities follow up after training. Once a week or more, as long as needed, project managers were in contact with workplaces. Formal meetings were held together with champions, where staff could reflect on different issues around the new technology. Also, informal meetings occurred. Project managers and champions used information from those meetings, to adjust manuals or give more practice if needed.

The supplier provides support, on IT portal or telephone, for municipalities. Here staff/champions, if necessary, can receive help and guidance.
Many manuals and recipes were prepared for the staff. Manuals and instructions material were provided by the supplier, but most of them were made by project manager or champions. It`s important that the manuals are easy to understand with pictures, and step by step instructions.

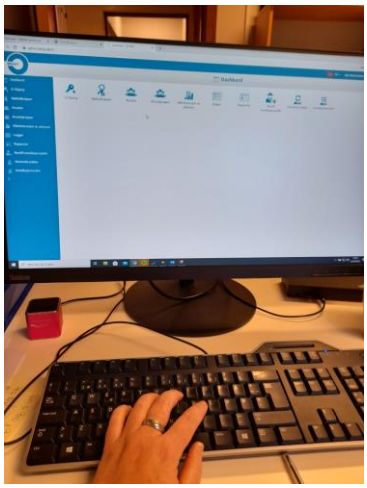


Manual for part of Warning system

11.4.3 How do we evaluate the training?

Project managers arranged meetings with the Preparation Team (or part of the unit), where training was evaluated. Particular, it was important to see if the technology was used as intended. In those meetings further plans were made, for how new employees and summer substitutes are given practice in the technology.

In some of the IT platforms it`s possible to see whether the technology has been used or not. This task was monitored by unit managers.

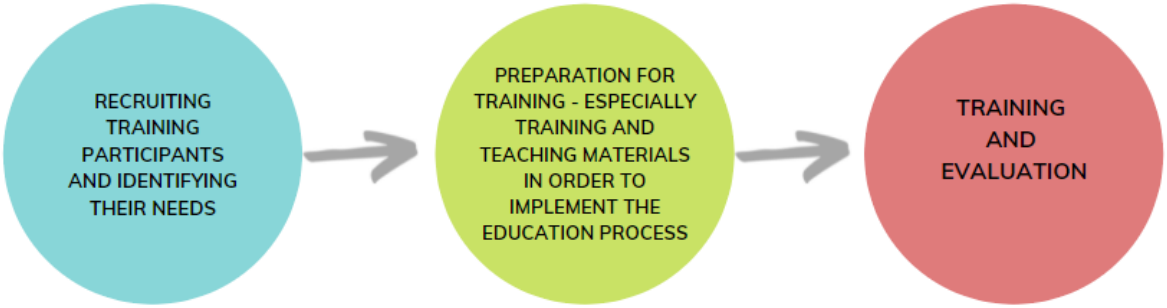


IT portal for E- locks

11.5 Poland

11.5.1 How do we plan the training?ass

The planning of trainings during COVID-19 was a challenge, especially in case of trainings dedicated to medical staffs. The biggest problems related to the consequences of the ongoing pandemic, some people were not interested in participating in a training in a stationary mode. Healthcare facilities functioned with great uncertainty as they were not sure to what extent they would be able to operate even in the near future due to the risk of suspending the activities of some departments / units. Therefore, most the trainings were conducted online. We have introduced a diagram of the preparation procedure for training, which is basically defined in the graphic below:



The LIU was composed of mainly medical staff consisting of:

- directors of public and non-public medical entities,
- Heads of departments and managers of hospitals and clinics,
- dental facilities,
- doctors,
- dentists,
- nurses,
- midwives,
- physiotherapists,
- registration employees,
- dental technicians,
- administrative staff,
- owners of medical or dental offices
- Medical secretaries

Thanks' to the in-depth interview with the training places we were able to establish and define the exiting lack of competences among Healthcare staff Members. The training planning started right after we recognized and confirmed the needs. This step introduced the "owner of the problem": the person in the hospital who recognizes the need for increasing competencies because she observes some underperformance. Once we have confirmed the need, the situation was translated into templates starting with Test Site Initiation, then LIU and the training plan. We learned that using templates properly requires a collaborative effort. Then we look after the competent training provider, who can prepare and deliver the training designed to address the problem and work with them to describe the training program. Like Germany, all DISH concepts relevant documents were translated into Polish and introduced to the trainers, coordinators of the LIU and the persons responsible to define the problem. We have adopted a training personalization method divided into modules to structure the training program. The need was identified and the training responded to it by filling the missing competence gaps. Each participant was provided with materials that enable to repeat and recall the acquired knowledge.

11.5.2 How do we do the training?

All the logistic details were agreed with both sides: beneficiaries and hospital staff – in all cases, it was the online formula, although there was also a plan to have an on-site event). We established the procedure for obtaining certificates as well as for completing questionnaires.
The online training was hosted by trainers or by us. We were fully involved in the preparation and execution in both cases, including on-the-flow management. We helped in the filling out the necessary documentation as well as in the process of collecting questionnaires. The training program was clearly laid out by the trainer before training but also in the initial introductory module. Due to the prevailing situation, participants could not afford to conduct training in a sequence for 9 hours, so we divided it

into 3 modules lasting 3 hours each. This allowed for a better assimilation of knowledge, but also, due to the specificity of the profession to perform the Staff duties (for example the possibility of taking care of patients during the day). The training was theoretical and practical, it included tasks that were solved during the session by the trainer. This made it possible to create a certain procedure for using this knowledge and observing such a step-by-step procedure. This provided also a possibility of a open discussion. Each introduced module was assisted by exercises and solution propositions. This enabled to provide a clear and understandable solution to the problem.

11.5.3 How do we reflect upon the training?

We encouraged participants to reflect on the training internally and after the program. This was allowed thanks to the questionnaire. Moreover, during each of the module we asked the LIU Members about comments and lacking topics that were not brought up in the certain module, in order to provide it later in the training. This allowed to refine the presentation. Yet, mainly during the procedure, we maintained in contact with "the problem owner" and planed to have a reflective discussion after the training program is finished. The same dialogue was planned with trainers. We were able to acquire feedback and confirm that efficient operation of the healthcare system is and will be largely determined by the digital competences of employees.

11.5.4 How do we evaluate the training?

Based on the DISH concept, we have developed the evaluation template, which aims to collect feedback after the training from participants. Each participant was asked to fill the questionnaire before he/she received the certificate. We translated those questionees into Polish so the participants have no problem with answering the questionees. Those survey/ questionnaires created the opportunity to collect feedback from participants. The LIU members, answered the evaluation of the concept online.

11.6 Spain

All test sites in Spain share the same Preparation Team and the same trainees but will be trained in three different technological innovations: online training platform (Moodle), prescription of digital resources and Type II Diabetes Mellitus dashboard.

The Preparation Team is confirmed by the head of planning of La Fe Hospital, the nurses of the clinical simulation area, a nurse from the home hospitalization unit, the IT systems staff and the experts in the different technologies.

Due to the Covid-19 pandemic, the initial approach of the test sites that were planned in Spain with the DISH tools had to be remodelled. In our case, the new hospital operation and the different restrictions posed meant that the OTJT phase had to be rethought and had to evolve further over time.

In this document, we show how DISH tools are flexible and how we adapted/adjusted the OTJT tool to our situation in the Spanish use case.

11.6.1 How do we plan the training?

The OTJT phase was planned in meetings held at the Preparation Team. All decisions from the Preparation Process were introduced to the OTJT tool in a simplified form. The manager and the technology experts and the nurses, and other health professionals contributed to the decision-making regarding the different aspects of the training; in this way, we involved all stakeholders in the process (managers, teachers and trainees).

The IT team collaborated by controlling the necessary requirements for the different methodologies proposed for the OTJT.

During planning, we defined the needs of the healthcare personnel, the training required, the objectives of this training, how it was to be provided and its evaluation. In addition, the questions of the different topics of the OTJT Checklist (ANNEX 2) were raised and answered to study if everything was ready to start with the training and make the necessary adjustments to it.

Initially, prior to the pandemic, the training was to be conducted face-to-face, and only the Type II Diabetes Mellitus (IIDM) dashboard technology had been initiated. The training was going to be conducted by a SAS dashboard expert in hospital computer rooms. Sessions would be arranged for groups of between 15 and 20 healthcare professionals in which they would be given a theoretical part and a practical part of the use of the DMII Dashboard, which is expected to be implemented in the hospital in the short term.

Thanks to the Preparation Team that was established (and biweekly/monthly meetings), we were able to adapt to the difficulties arising from Covid-19. We managed to restructure the OTJT of the innovation we had already planned (IIDM) and include two more technological innovations (online training and digital prescription). This would not have been possible without the existence of the Preparation Team and the cooperation of all its members.

Although training in the IIDM dashboard was raised prior to the onset of the pandemic, primary care physicians and hospital endocrinologists expressed to us that, after Covid-19, the need for training and implementation of the IIDM dashboard was crucial; the follow-up of patients suffering from this disease had become complex and had gotten out of control during the most complicated months of the pandemic (patients were unable to attend their follow-up visits and only indispensable laboratory visits/tests were performed, or they were afraid because of Covid-19 and did not attend, etc.).

Therefore, we structured the new training around Type II Diabetes Mellitus. A single online course was planned with different modules (Table 1) covering the three technological innovations. This program is aimed at both nurses and physicians, whether in primary care or speciality care. To plan the new training, we again followed the tool checklist. The most relevant adjustments made to the OTJT tool in our case concerned the adaptation of the training to an online approach.

Table 1 Online course modules on diabetes mellitus type II (Spanish use case)

Module 1: INTRODUCTION TO THE COURSE (DISH FRAMEWORK)
Module 2: DIABETES: A CHALLENGE FOR HEALTH SYSTEMS
Module 3: UPDATE AND CARE PATHWAY in DIABETES MELLITUS TYPE II
Module 4: PRESCRIBING DIGITAL RESOURCES in DIABETES MELLITUS TYPE II
Module 5: DASHBOARD IN DIABETES MELLITUS TYPE II

We followed the template in the tool documentation to create examples of what the training sessions would look like depending on the online course module. An example is shown in the following table for the training sessions of modules 3 and 4:

Table 2 Example of training session planning for modules 3 and 4 of the online course (Spanish use case)

Aims		
To improve the care of patients with type II DM in the València La Fe Health Department by using a dashboard designed for the clinical management of type II DM.		
Learning aims	**Content elaboration**	**Suggestions to teaching methods and materials**

• To update the information on the care pathway for IIDM in the Dept. Vcia La Fe based on the latest available evidence • To introduce healthcare professionals to the safe use of the clinical management dashboard of IIDM and the information accessible through it • To describe the indicators, graphs and tables of the different blocks of information that make up the IIDM dashboard • To present the most frequent and useful cases and suggestions for use of the dashboard in relation to the care process of IIDM	• Provide the context and preamble for training in technological innovation • Elaborate taking into account the end-users' point of view • Use of technological innovation in a safe environment • Ability to follow their own schedule, having the teaching team at their disposal • Opportunity to practice during working hours • Provide information in a straightforward and easy-to-understand manner	• Online training platform for training materials and assessment (Moodle) • SAS Viya platform for dashboard practical training • Teaching based on video tutorials • Practical training based on own cases • Access to teachers through the platform's direct messaging system. • Connection with other trainees through the platform's forum
		• User manuals (Dashboard) • Guides (ADA) • Short videos in the form of information pills • Reminders with questions on each topic to better assimilate information

11.6.2 How do we do the training?

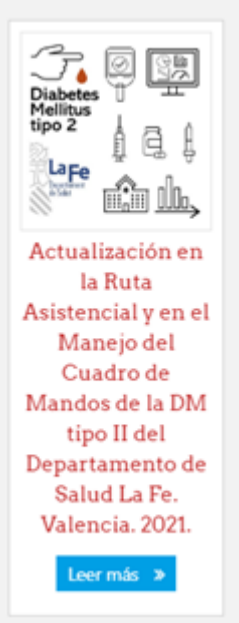


Figure 1Course cover page on the hospital's website.

The training is done through the Moodle platform of the Clinical Simulation Area of La Fe Hospital. The course is prepared to be completed in 30 hours, including watching the videos, reading the documentation, doing the exercises and performing the evaluation.

The methodology followed for the start of the training consisted of the following:

- Potential course participants (nurses and doctors from the hospital and health centers attached to the La Fe Health Department) were enrolled in the Moodle platform.
- They were given access to the IIDM dashboard (both the real one where they see their own patients and the test environment).
- With an email / through their superiors they were invited to participate in the course with the necessary credentials to access both platforms.

From the moment they enter the platform, they have direct messaging with the teachers, as well as the use of the forum.

The structure of the course is as follows:

- Presentation of the course, explanation of how Moodle works, presentation of the forum and announcements sections.

- **Initial test: "Where do we start from".** This test will not be graded, but will serve as a reference for both students and teachers to know the initial level of skills.
- **Module 1: Introduction to the course**. Objectives, methodology, the Erasmus+ DISH project.
  Material: 2 videos.
  Evaluation: No.
  Reminder: No.
- **Module 2. Diabetes: A challenge for health systems.** This is the first theory module; it explains the epidemiological context and impact of Diabetes in Health Systems.
  Material: 1 video.
  Evaluation: No.
  Reminder: Yes. The trainee will not be able to move on to the next module without completing the refresher quiz.
- **Module 3: Care Pathway in Type II DM.** Introduction. Bases and Strategic Lines. Bibliographic Sources of Interest.
  Material: 1 introductory video.
  Evaluation: No.
  Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
    - **Section 3.2. Screening Criteria.**
      Material: 1 video, 1 pdf.
      Evaluation: No.
      Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
    - **Section 3.3. Diagnostic Criteria for Prediabetes and Type II Diabetes.**
      Materials: 1 video, 1 pdf.
      Assessment: No.
      Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
    - **Section 3.4. Assessment of the Patient with Type II Diabetes Mellitus.**
      Material: 1 video, 1 pdf.
      Assessment: No.
      Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
    - **Section 3.5. Pharmacological, Non-Pharmacological and Self-Care Treatment.**
      Material: 1 video, 1 pdf.
      Assessment: No.
      Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
    - **Section 3.7. Follow-up Plan.**
      Material: 1 video, 1 pdf.
      Evaluation: No.
      Reminder: Yes. The trainee will not be able to move on to the next module without completing the refresher quiz.

- **Module 4. Digital Resources.** The Health System and ICTs.
  Material: 1 video.
  Evaluation: No.
  Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
    - **Section 4.1. Internet and Health.**
      Material: 2 videos.
      Evaluation: No.

Remember: Yes, 2. The trainee will not be able to move on to the next section without completing the refresher quiz.

- **Section 4.2. Telemedicine Services and Products.**
  Material: 1 video.
  Assessment: No.
  Reminder: Yes, 2. The trainee will not be able to move on to the next module without completing the refresher quiz.

- **Module 5: Dashboard in Diabetes Mellitus Type II.** What is a dashboard? Log-in in SAS Viya, first-steps.
  Material: 1 video, 1 pdf.
  Evaluation: No.
  Remember: No.
  - **Section 5.1. Home page**
    Material: 1 video, 1 pdf.
    Evaluation: No.
    Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
  - **Section 5.2. Alerts**
    Material: 1 video, 1 pdf.
    Evaluation: No.
    Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
  - **Section 5.3. General demographic indicators tab**
    Material: 1 video, 1 pdf.
    Evaluation: No.
    Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
  - **Section 5.4. List of unscreened patients**
    Material: 1 video, 1 pdf.
    Evaluation: No.
    Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
  - **Section 5.5. List of patients without measurements or tests**
    Material: 1 video, 1 pdf.
    Evaluation: No.
    Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
  - **Section 5.6. Tab List of patients with poor glycemic control**
    Material: 1 video, 1 pdf.
    Evaluation: No.
    Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
  - **Section 5.7. List of Patients with Poor Metabolic Control**
    Material: 1 video, 1 pdf.
    Evaluation: No.
    Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.
  - **Section 5.8. List of patients with complications**
    Material: 1 video, 1 pdf.
    Evaluation: No.

Reminder: Yes. The trainee will not be able to move on to the next section without completing the refresher quiz.

- **Warehouse: Supplementary Material.**
  Material: 4 pdfs.
  Evaluation: No.
  Reminder: No.
  The trainee can always consult this section.
- **Links of Interest.**
  Material: 3 links to pdfs.
  Evaluation: No.
  Reminder: No.
  The trainee can always consult this section.
- **Satisfaction Survey.**
  Material: None.
  Evaluation: No.
  Reminder: No.
  The trainee will need to have completed all modules to take this satisfaction survey. Its completion is mandatory in order to access the final test.
- **Evaluation. Final Questionnaire.**
  Material: None.
  Evaluation: Yes.
  Reminder: No.
  The trainee will need to have completed all modules and the satisfaction survey in order to access this test. Its completion is mandatory in order to obtain the certificate of completion of the course.
  They will have two attempts to obtain a score of 7 or higher. A lower grade will not allow them to obtain the certificate.
- **Certificate.**
  Material: None.
  Evaluation: Yes.
  Reminder: No.
  The trainee will need to have completed all modules, the satisfaction survey and obtained a score of 7 or higher in order to get this certificate.

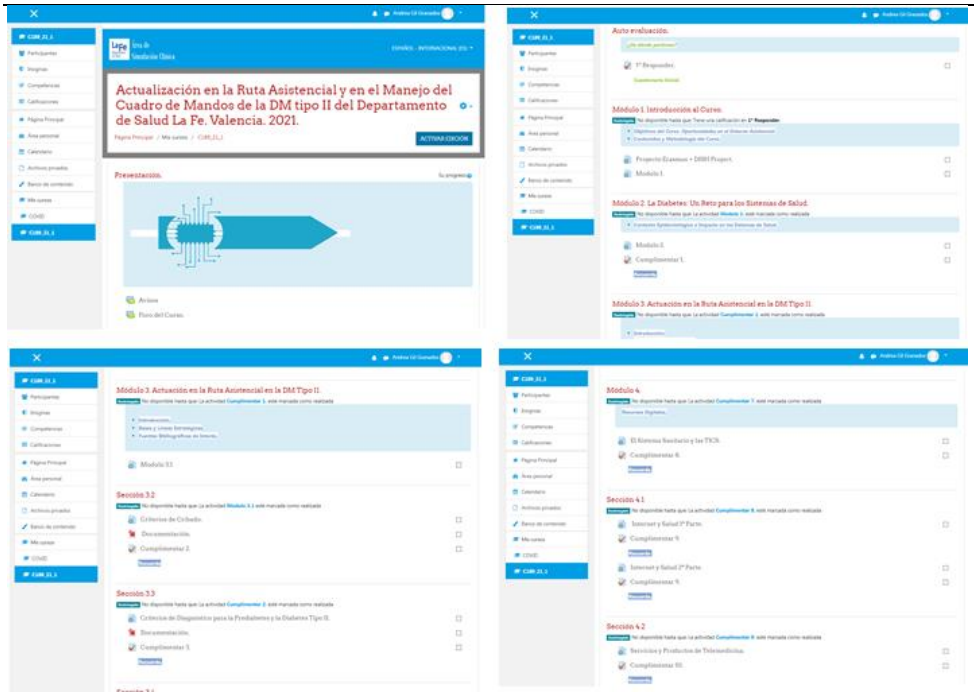


Figure 2 Screenshots of the Moodle platform of the online course of the Spanish use case.

11.6.3 How do we reflect upon the training?

During the course, questions will be posed in the forum about this learning methodology, so that participants can reflect on it and have an open discussion with teachers and students.

In addition, we will try to contact several participants at random to ask them to record a short video about their experience, or to send us photos of them taking the course. In this way, together with the satisfaction survey, we will be able to know if we have been able to successfully apply the DISH tools.

In the La Fe Health Department, this is the first online course offered in which a review of the pathology care pathway is combined with the use of a tool (dashboard) that allows better management of this. The idea of the Preparation Team participants is that this course will be updated over time, so that both the pathway and the dashboard will be of maximum help to healthcare professionals. Therefore, in the future (after the experience gathered with DISH) every few months this course will be opened and closed, encouraging new workers and all those who want to refresh their knowledge to enroll the programme.

In the same way that this course has focused on the imperative need to retake control over Diabetes Mellitus Type II management, other care pathways and dashboards on other pathologies are being developed, so that in the long term each pathology will have a course that healthcare professionals will be able to attend.

Once the restrictions due to the pandemic are lifted/flexible, it will be possible to incorporate the offer of tutorials or face-to-face practical lessons to the course.

11.6.4 How do we evaluate the training?

In the case of Spanish use, the Preparation Team agreed to have a dual evaluation:

On the one hand, the skills acquired by the participants throughout the training are evaluated. We use an initial test as a baseline and a final test to see their initial skills and compare them with the ones they have once the course modules are completed. In addition, although the "Remember" sections are

not scored for the trainees, we can analyze the results obtained for each section, so that we can see what their strengths and weaknesses are and where the course should be further strengthened.

On the other hand, we evaluate the learner satisfaction, and with this, we try to indirectly measure the success of the implementation of the DISH tools. With questions about whether they have obtained the skills and competencies they expected, whether the level of knowledge with which the topics have been treated has been adequate, whether the teaching methodology of this course has been adequate, etc.

All participants who obtain a 7 or higher in the final evaluation will receive an official certificate from the Escola Valenciana d'Estudis de la Salut (EVES), worth 5.8 ECTS credits.

Due to the lessons and experiences gathered from other DISH use cases, we will try to follow up on the use of the technologies once the training is over. We consider that this information can be relevant and very interesting for future training with this methodology.