KEY RESULTS

- TRANSiTION must be a comprehensive training: all digital skills have room for improvement

- Patient Empowerment and Security: the most needed digital skills for health care professionals.

- For patients/caregivers, digital communication skills are key

- Clinical professionals need more digital training than non-clinical professionals

- A self-guided online course is required

- The user experience is as important as the content of the course

- Digital equity is a challenge

- Digital tools need to be agreed by patients and the professionals who care for them

Digital skills in cancer care:
Needs of healthcare professionals and patients/caregivers

This report describes the analysis carried out by TRANSiTION project partners from 17 European countries. It aims to develop a digital literacy training programme based on the training needs and preferences of clinicians, managers and patients/caregivers.

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To find out more:
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📖 Digital health in cancer care: a TRANSiTION

European Plan to Beat Cancer shows a political commitment to spare no effort in the fight against cancer. Within this scenario, digital health is ready to offer solutions. Through the combination of digital technologies and solutions, there exists the potential to significantly enhance the efficiency, accessibility, and quality of healthcare provision.

The successful implementation of digit al health relies on a workforce that is digitally competent. However, there is currently a significant knowledge gap regarding the integration of digital competencies into the curricula of both clinical and non-clinical professionals involved in cancer care.

The **transition from traditional to digital healthcare** requires the provision of structured, accessible, and comprehensive digital training programmes, incorporating specific and clearly defined attributes. This will enable clinical and non-clinical professionals to make optimal use of technology, highlighting the critical need for skills acquisition and continuous professional development.

Why know the needs of healthcare professionals and patients/caregivers?

The European Commission's report "*Digitisation of education and training: a checklist for successful projects and initiatives*" states that the first step in successfully implementing digitisation in education and training is to carry out a user needs assessment.

🔍 Research approach

A **quantitative study was conducted in the form of a survey** with both clinical and non-clinical professionals. A **clinical professional** is any member of a health care organisation who performs a direct current cancer care activity (e.g., oncologists, radiotherapists, oncology nurse...). A **non-clinical professional** is any member of a healthcare organisation who performs administrative, managerial, or academic tasks related to cancer, regardless of their professional category.

A **qualitative study consisting of two design** workshops. A nominal group was conducted, a technique frequently used in the validation of eHealth solution.

- The first workshop took place in Limassol (Cyprus) and involved mostly non-clinical professionals. This workshop was held in collaboration with Cyprus University of Technology (CUT) during the 20th International Conference on Computer Analysis of Images and Patterns.
- The second workshop took place in Madrid (Spain) and most participants were clinical professionals. This workshop was held in collaboration with the European Society for Medical Oncology (ESMO) and The European Oncology Nursing Society (EONS).
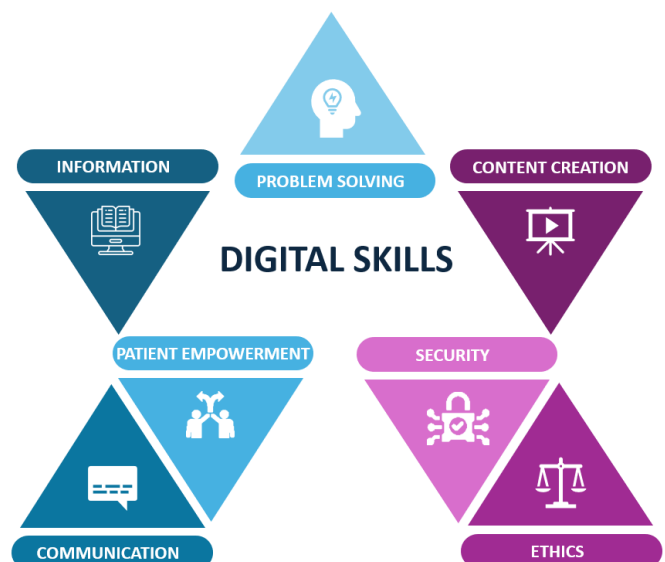
Figure 1. Digital Skills

What digital skills were analysed?

The digital competences were inspired by DigComp 2.2: The Citizens' Digital Competences Framework. The competences related to Ethics and Patient empowerment were highlighted and deepened.

How to prioritise them?

An Importance-Performance Analysis was applied.

Clinical Professionals

Training needs in digital skills

All digital skills have room for improvement for clinical professionals with scores above 5.5 on a scale from 1 "absolutely not necessary at all" to 7 "absolutely necessary". Comparatively, **digital security and digital patient empowerment skills** are perceived as most in need of training.
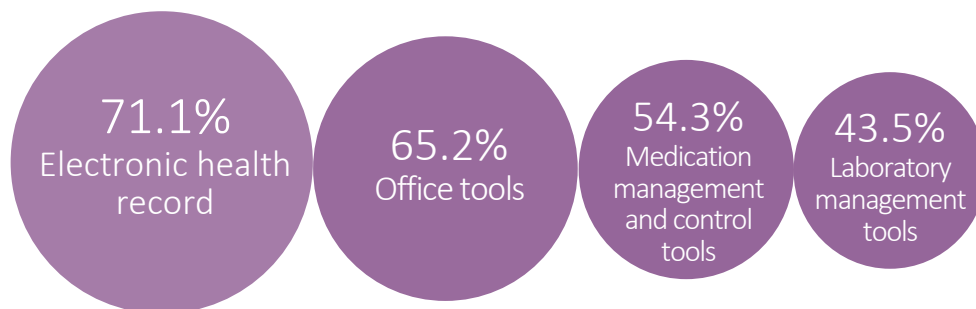
Figure 2. Training needs in digital skills

Skill	Score
Security	6.18
Patient Empowerment	6.16
Problem Solving	6.08
Ethics	6.06
Information	6.02
Content Creation	5.62
Communication	5.57

7 Absolutely necessary

Internet use at workplace and Digital resources

Internet use at work is widespread, both in terms of frequency and intensity of use. Of all clinical professionals, **88.6%** go online every day and **1** in **3** (36.4%) spend more than 5 hours a day online at work. The electronic health record is the most used digital tool. In addition, **75%** have full coverage of wireless access in the workplace.

Figure 3. Digital Tools in professional activity

71.1% Electronic health record

65.2% Office tools

54.3% Medication management and control tools

43.5% Laboratory management tools

Types of Internet connection in the workplace

Optical Fibre: **52.3%**

Satellite: **18.2%**

Tel. line: **15.9%**

Mobile: **6.8%**

Importance-Performance Analysis

⚠️

Importance-Performance Analysis (IPA) was carried out to determine which digital skills should be trained with the highest priority. IPA generates four quadrants in which digital skills are represented. The position of each digital skill in the quadrant depends on its average scores on the importance and performance variables, where "Importance" would reflect the relative value placed on the digital skill, and "Performance" the average self-perceived performance. Each of the quadrants in the graph is associated with a recommendation on actions to be taken with each attribute.

- ▸ "*Concentrate here*" area includes digital skills whose training shows some room for improvement.
- ▸ "*Keep up the good work*" area is reserved for digital skills that do not require training actions as they have high-importance and high-performance scores.
- ▸ "*Low priority*" area includes low-important and low-valued digital skills, and therefore does not need to be given much attention as it does not have a decisive influence on the user's assessment.
- ▸ "*Possible overkill*" area includes those digital skills that are highly valued but are of little importance to users. It may therefore be appropriate not to devote resources to their training.

Gap analysis

Digital problem-solving, communication, and **especially patient empowerment and security skills need the most training** and can be found in the area " CONCENTRATE HERE ". The remaining digital skills are in "KEEPING UP THE GOOD WORK" area, so the performance of professionals is commensurate with the importance attached to them.

Figure 4. Importance-Performance Analysis for clinical professionals

⊕ IMPORTANCE

CONCENTRATE HERE
- ▸ Patient empowerment digital skills
- ▸ Security digital skills
- ▸ Problem-solving digital skills
- ▸ Communication digital skills

KEEP UP THE GOOD WORKING
- ▸ Information digital skills
- ▸ Ethics digital skills
- ▸ Content creation digital skills

PERFORMANCE ⊖

GAP ANALYSIS

⊕ PERFORMANCE

LOW PRIORITY

POSSIBLE OVERKILL

⊖ IMPORTANCE

Non-Clinical Professionals

Training needs in digital skills

For non-clinical professionals, **all digital competences also have room for improvement**, with scores above 5.5 on a scale from 1 "*absolutely not necessary*" to 7 "*absolutely necessary*". Once again, **digital security and digital patient empowerment skills** are perceived as most in need of training.

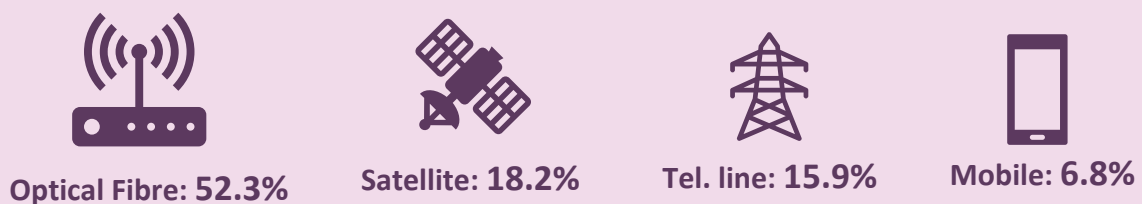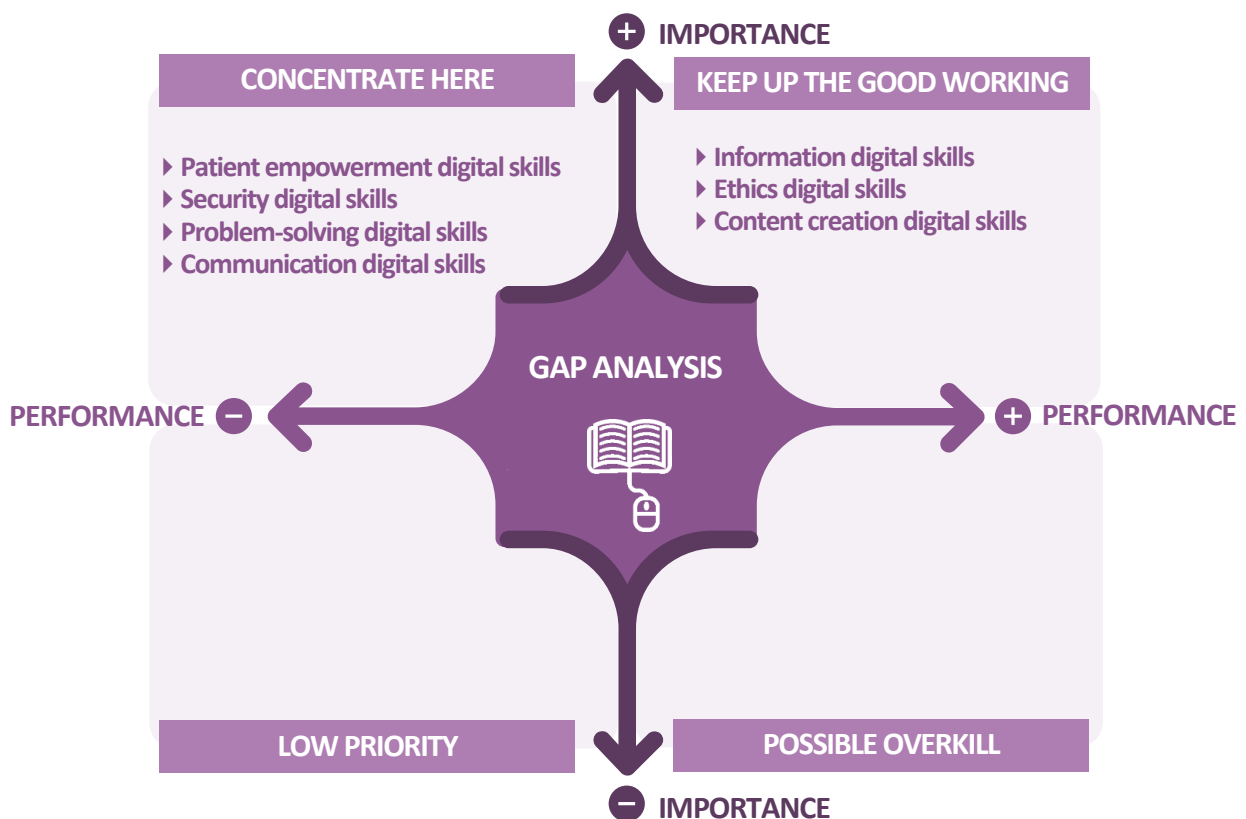**Figure 5.** Training needs in digital skills

Skill	Score
Security	6.01
Patient Empowerment	5.87
Ethics	5.83
Information	5.82
Problem Solving	5.76
Communication	5.40
Content Creation	5.08

7 — Absolutely necessary

Internet use at workplace and Digital resources

In the workplace, non-clinical professionals are the most frequent users of the internet. Specifically, **96.2%** of them use the internet daily, and **75%** of them spend more than 5 hours online each day. In addition, **67.9%** have full coverage of wireless access in the workplace.

Figure 6. Digital Tools in professional activity

71.1% Office tools (e.g., Word, Excel...)

46.4% Electronic Health Record

46.4% Digital signature

46.4% Social Networks
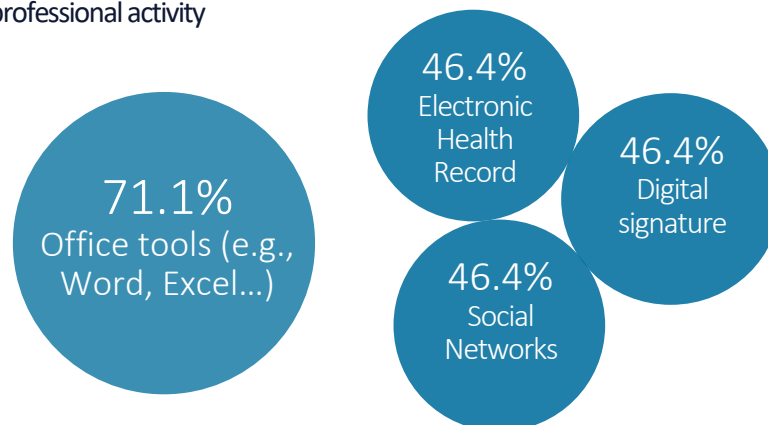
Types of Internet connection in the workplace

Optical Fibre: **71.4%**   Tel. line: **14.3%**   Satellite: **3.6%**   Mobile: **3.6%**

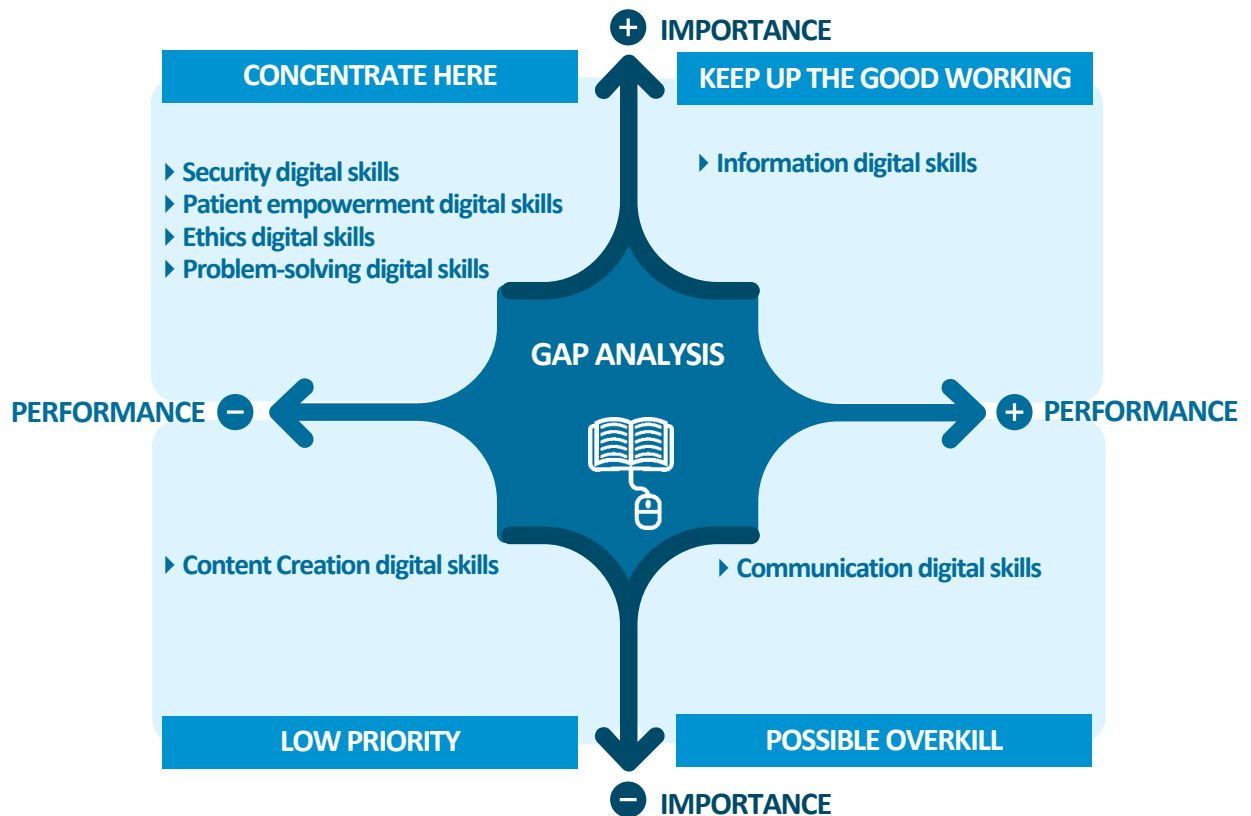# Gap analysis

Digital content creation skills are in the "LOW PRIORITY" area as they are given comparatively low importance. Digital communication skills are in the "POSSIBLE OVERKILL" area, so their training is not a priority. Digital information skills are in the "KEEP UP THE GOOD WORKING"

The rest of the digital skills are in the area "CONCENTRATE HERE". The training programme should prioritise training in these areas. **Especially necessary is training in digital safety skills and patient empowerment.**

Figure 7. Importance-Performance Analysis for non-clinical professionals

+ IMPORTANCE

CONCENTRATE HERE

▸ **Security digital skills**
▸ **Patient empowerment digital skills**
▸ **Ethics digital skills**
▸ **Problem-solving digital skills**

KEEP UP THE GOOD WORKING

▸ **Information digital skills**

PERFORMANCE −

GAP ANALYSIS

+ PERFORMANCE

▸ **Content Creation digital skills**

▸ **Communication digital skills**

LOW PRIORITY

POSSIBLE OVERKILL

− IMPORTANCE

Clinical professionals need more training in digital skills

How many have been trained in digital skills in their lifetime?
▸ Clinical professionals: 57.9%
▸ Non-clinical professionals: 67.9%

How do they perceive their co-workers in terms of their level of digital skills?
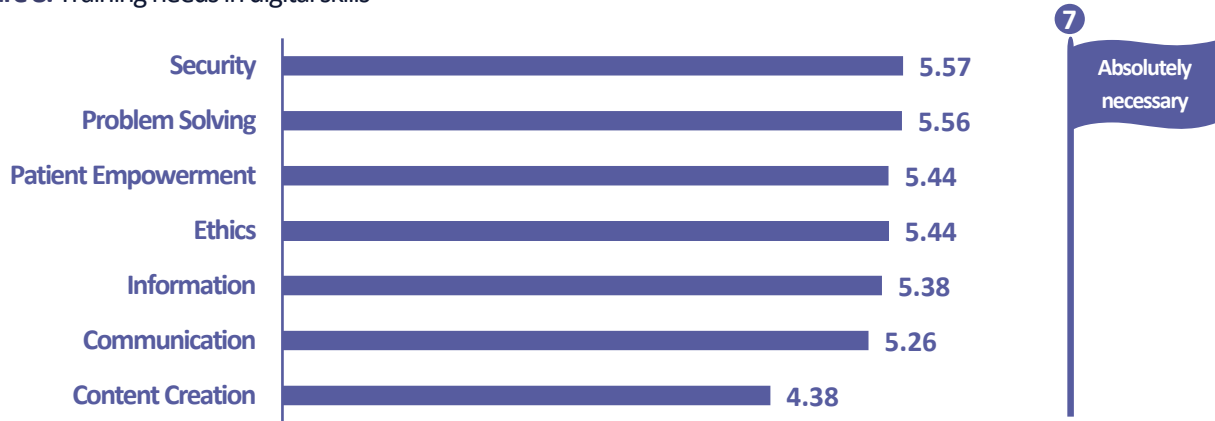
▸ Clinical professionals:
   2.2% no knowledge
   40% basic users
   51.1% medium users
   6.7% advanced users

▸ Non-clinical professionals:
   21.4% basic users
   60.7%; medium users
   10.7% advanced users
   *7.2% Don't Know/Don't Answer

⚕ Patients and Caregivers

Training needs in digital skills

Patients and caregivers indicate that, in their perception, healthcare professionals (clinical and non-clinical) involved in cancer care **need training in all digital skills except for digital content creation skills**.

Figure 8. Training needs in digital skills

Skill	Score
Security	5.57
Problem Solving	5.56
Patient Empowerment	5.44
Ethics	5.44
Information	5.38
Communication	5.26
Content Creation	4.38

7 Absolutely necessary

Internet use at home and Digital tools in cancer care

Of those surveyed, 94.7% go online daily. In addition, almost **1 in 3** (31.6%) **spend more than 5 hours a day online**. More than half of patients/caregivers have fibre-optic Internet at home. The most used digital tools for cancer care are social networks.

Figure 9. Digital Tools in cancer care

52.6%
Social Networks (e.g., WhatsApp, Telegram, X...)

36.8%
Diagnostic information support tools

31.6%
Health promotion Support tools

26.3%
Patient Forum
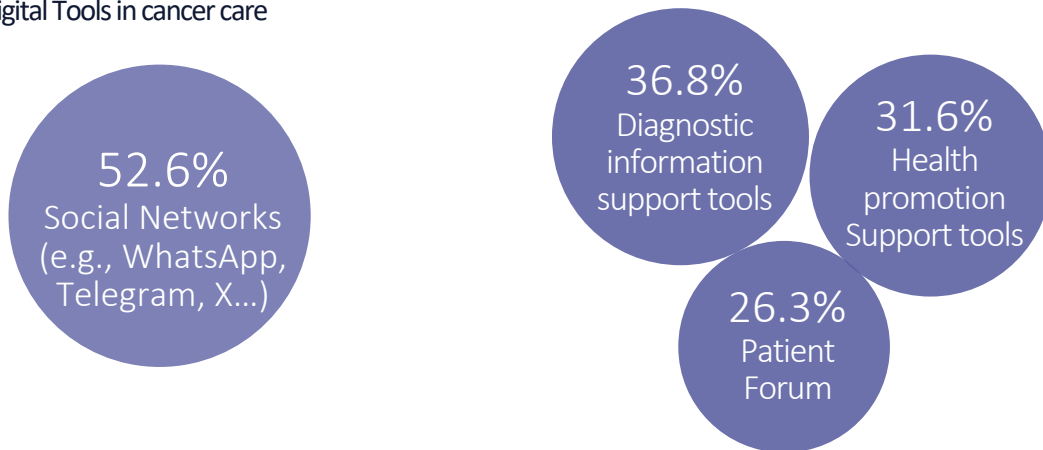
Types of Internet connection at home

Optical Fibre: 57.9%

Mobile: 21.1%

Tel. line: 5.3%

Gap analysis

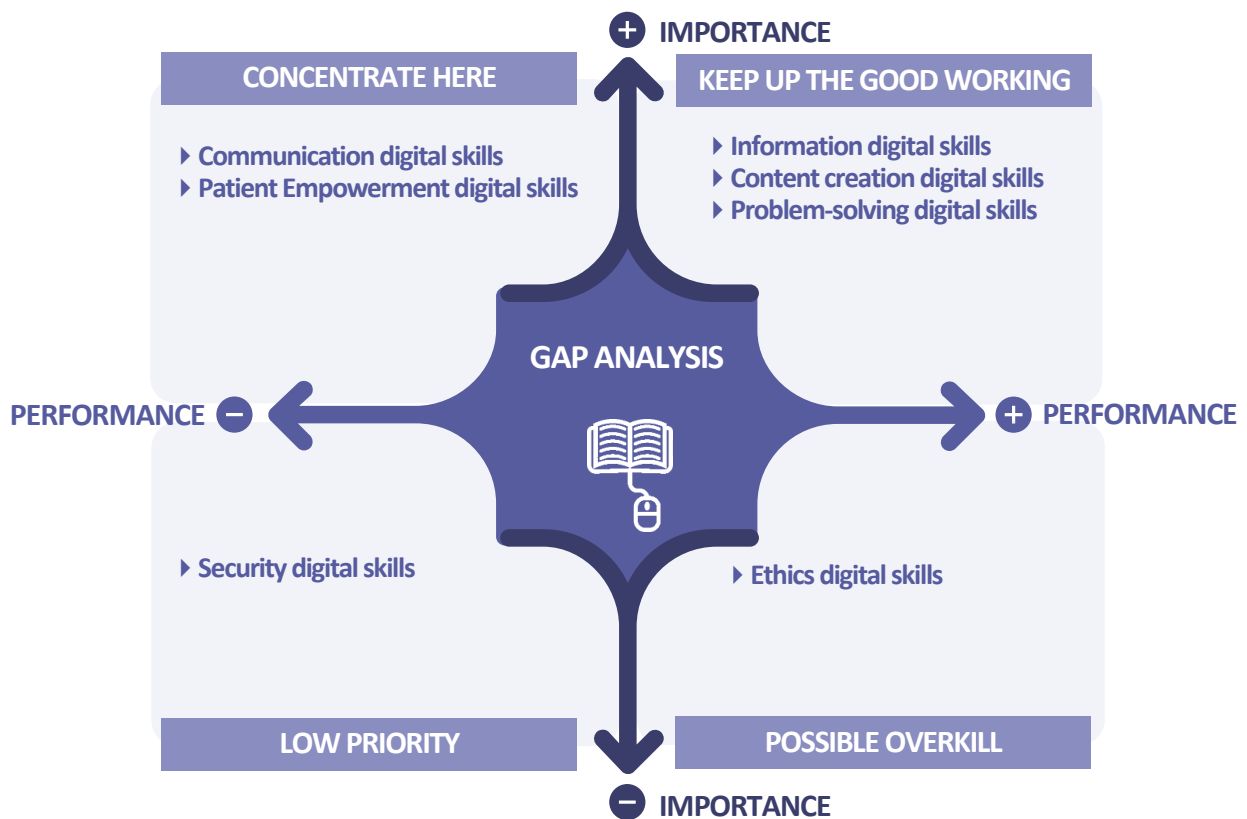The gap analysis has identified that patients and carers **would prioritise training in digital communication and patient empowerment skills in healthcare professionals**. In addition, they would keep up the good work on digital skills in information, content creation and problem-solving.

▸ 52.6% have received training in digital skills

▸ 42.1% consider themselves to be basic users of digital skills, 52.6% as medium users and 5.3% as advanced users

Patients and caregivers place a low importance and perceive a low performance in the digital security skills of healthcare professionals. Finally, ethics digital skills show a higher performance than the importance given, so they are placed in the "POSSIBLE OVERKILL" area.

Figure 10. Importance-Performance Analysis for patients/caregivers

CONCENTRATE HERE
- **Communication digital skills**
- **Patient Empowerment digital skills**

KEEP UP THE GOOD WORKING
- **Information digital skills**
- **Content creation digital skills**
- **Problem-solving digital skills**

GAP ANALYSIS

PERFORMANCE −   + PERFORMANCE

▸ **Security digital skills**

▸ **Ethics digital skills**

LOW PRIORITY

POSSIBLE OVERKILL

+ IMPORTANCE

− IMPORTANCE

! Communication: a patient requirement

While clinical and non-clinical professionals do not rank digital communication skills as the skill most in need of training, patients/carers do. This shows that the needs of healthcare professionals and patients/carers are not aligned
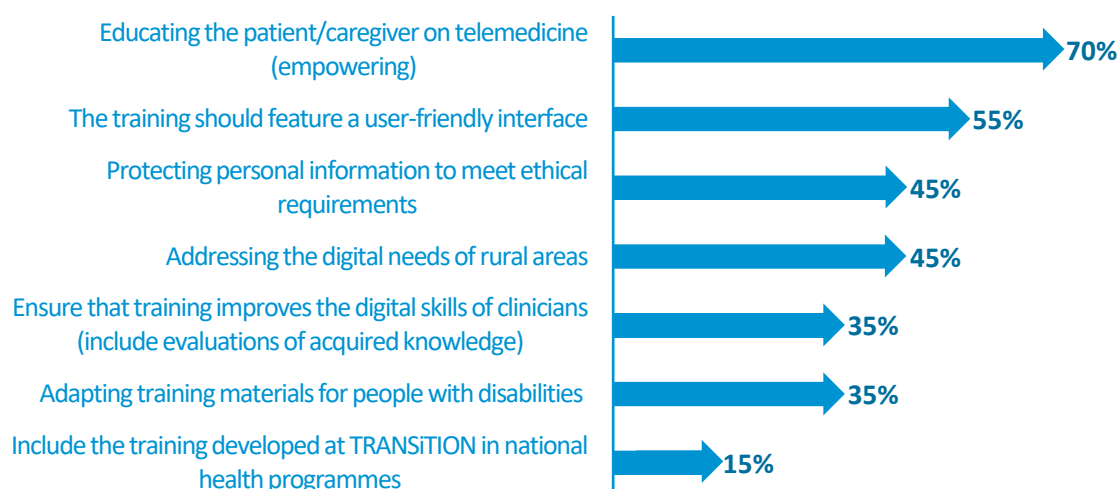
How to ensure digital literacy in cancer care?

The participants in these workshops were given the following task: "*Considering the needs detected, select an ethical, policy, legal and/or technical recommendation, to partners or stakeholders, to ensure digital health literacy in cancer care*".
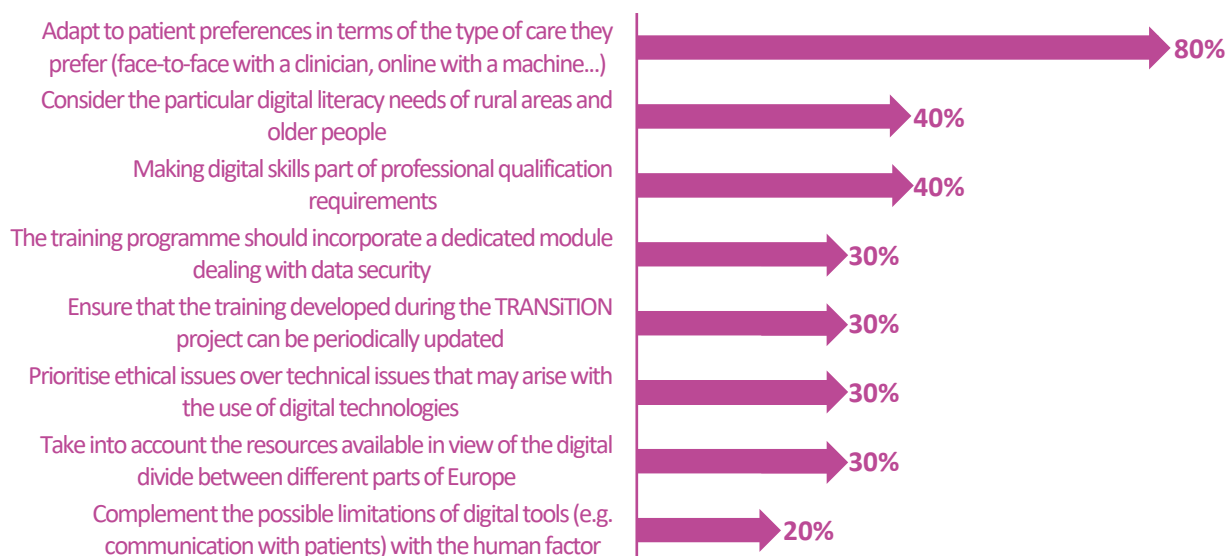
For 70% of the expert group at the Cyprus workshop, the TRANSiTION project should **train in the promotion of telemedicine**, thereby increasing patient empowerment. They also warn of the importance of user experience in creating a **user-friendly interface** for trainees. They also point out the need for **ethical and secure handling of personal information** and the need to address the specific **needs of rural areas** (addressing the digital divide and the inequality of available digital resources).

Figure 11. Cyprus workshop

Recommendation	Percentage
Educating the patient/caregiver on telemedicine (empowering)	70%
The training should feature a user-friendly interface	55%
Protecting personal information to meet ethical requirements	45%
Addressing the digital needs of rural areas	45%
Ensure that training improves the digital skills of clinicians (include evaluations of acquired knowledge)	35%
Adapting training materials for people with disabilities	35%
Include the training developed at TRANSiTION in national health programmes	15%

For 80% of the experts at the Madrid workshop, the TRANSiTION project should provide training that can be **adapted to patients' preferences**. Although European institutions promote the use of digital tools because of their many benefits, it is crucial that patients and healthcare professionals come to a mutual agreement on their application. Digital tools complement traditional care activities, not replace them.

Figure 12. Madrid workshop

Recommendation	Percentage
Adapt to patient preferences in terms of the type of care they prefer (face-to-face with a clinician, online with a machine...)	80%
Consider the particular digital literacy needs of rural areas and older people	40%
Making digital skills part of professional qualification requirements	40%
The training programme should incorporate a dedicated module dealing with data security	30%
Ensure that the training developed during the TRANSiTION project can be periodically updated	30%
Prioritise ethical issues over technical issues that may arise with the use of digital technologies	30%
Take into account the resources available in view of the digital divide between different parts of Europe	30%
Complement the possible limitations of digital tools (e.g. communication with patients) with the human factor	20%

DIGITAL SKILLS IN CANCER CARE: 8 KEY MESSAGE

1. TRANSiTION must be a comprehensive training

Despite the differences found between clinical and non-clinical professionals in terms of prioritising training needs, a lack of knowledge of digital skills is common. Therefore, TRANSiTION training should address all existing digital skills.

2. Patient Empowerment and Security: the most needed digital skills

All digital skills need training, but for both clinical and non-clinical professional's patient empowerment and security is the most pressing need.

3. For patients/caregivers, digital communication skills are key

Patients/caregivers have an interest in the digital communication skills of the healthcare professionals who care for them. Other aspects such as ethics or safety are not of concern to them. Their requirements must be aligned with those of healthcare professionals.

4. Clinical professionals need more digital training

The percentage of clinical professionals who are basic users of digital tools is significantly higher than non-clinical professionals. They have also received less training in digital literacy.

Deliverables 3.1 and 3.2 of the TRANSiTION project provide these key messages. You can find them by clicking here ⚠

5. A self-guided online course is required

Ideally trainees would like to have a hybrid course, but experts discourage it because of the logistical difficulties. Therefore, the best format for both clinical and non-clinical professionals is a self-guided online course.

6. The user experience is as important as the content

The training programme needs to be clear and concise. TRANSiTION must have a user-friendly interface, use simple language, avoid overlapping content and provide interactive material.

7. Digital equity is a challenge

A digital divide between population areas (rural vs. urban) and the age of learners (young vs. old) is warned by data and expert opinion. In addition, the digital resources available vary between countries. For this reason, the TRANSiTION project should take note of this and develop specific action plans.

8. Digital tools need to be agreed by patients and the professionals who care for them

Digital resources and the attitudes of healthcare professionals allow the digital transition to happen now. However, the use of digital solutions must be agreed between the healthcare professional and the patient. It is important to emphasise that digital tools do not replace traditional care activities. They are just another tool to be agreed between the professional and the patient.