Training Blueprint for the
Digital Transformation
TBDTHC Of Health and Care

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INTELLECTUAL OUTPUT 2

Digital & Soft Skills of tomorrow's health professionals

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INTRODUCTION AND PURPOSE OF INTERVIEWS

Digital technologies in the Health and Care sector will inexorably lead to further developments. The risk is that it will make us eager to upgrade before we even have realized their potential benefits and the reason, is the lack of solutions to understand their setup, the possible effects on health professionals work, the changes apported to interactions with colleagues, patients, etc. What is needed is not just a technical (or technological) knowledge transfer, but also a deeper understanding of how some key competences need to be upgraded to help health professionals to fully benefit from the ever-evolving digital era.

Starting from the conclusion of WP1, we can affirm that health care professionals have different levels of familiarity with the use of technology.

Health care professionals identify some *STRONG POINTS*:
- Digital technologies in the daily work are opportunities
- Technology effectiveness and accurateness
- Technology increase interconnections and eliminate duplication of efforts

Health care professionals identify some *WEAK POINTS*:
- General practitioners are sceptic towards the use of digital technologies
- Resistance to the use of something new "to change"

Health care professionals give some *RECOMMENDATIONS*:
- Initiation and implementation of the use of the digital technologies process have to involve all levels of actors.
- It is necessary first a strong endorsement of political decision-makers and of managers in public administration entities
- It is important to involve professionals during the implementation process so their willingness to accept increases
- It is important to involve users and during Technology Readiness Level (TRL) 1 – 9.

With a view that the strengths must be strengthened, the weaknesses must be overcome and the recommendations must be pursued, we report below some tips emerged by the analysis of the data collected by the IO2's interviews:

- Viewing technologies as opportunities in the daily work means possessing a positive emotional involvement regarding the work and values of the job as well as the relationships and the positive acceptance of the news. **Positive attitude** (Abilities: Enthusiasm, Respect, Social intelligence) **should be trained**.
  How?
  - ✓ Self-reflection
    - ▪ Identify areas to change ...
    - ▪ Check yourself ...
    - ▪ Practice positive self-talk ...
  - ✓ Attitudes
    - ▪ Comply with the wishes of (someone) in order to keep them content. ...
    - ▪ Follow a healthy lifestyle ...
    - ▪ Surround yourself with positive people ...
- The resistance to the new must be overcome through the ability to innovate and think outside the box. An open mind is certainly more capable of introducing innovative elements into one's work.

Critical thinking (Abilities: Creativity, Flexibility, Innovation, Problem solving) **should be trained**. To have an open mind means to be willing to consider or receive new and different ideas. It means being flexible and adaptive to new experiences and ideas. Cultivating an open mind is another valuable outcome of critical thinking and reasoning. Now more than ever we live in a world that is constantly changing (digital and organizational innovation). **Open mindedness should be trained**.

How?

- ✓ Fight the urge to react in anger when you hear differing opinions. ...
- ✓ Avoid closing yourself off. ...
- ✓ Place yourself out of your comfort zone. ...
- ✓ Stay social and make new friends. ...
- ✓ Don't be afraid to ask questions. ...

- The intensity of involvement grows with the level of participation of stakeholders and, by that, communication transforms into involvement. Involvement is used to wide participation in decision-making processes and for accepting of changes. **Communication** (Abilities: Negotiation, Persuasion, Presentation, Public speaking, Write reports and proposals) **should be trained.**

  In addition, **Empathy** (Vision, Intuition, Presence, Creativity) **should be trained** because helps to communicate ideas in a way that makes sense to others, and helps to understand communication of others.

  How?

  - ✓ Make communication a priority …
  - ✓ Simplify and stay on message …
  - ✓ Engage your listeners or readers …
  - ✓ Take time to respond …
  - ✓ Make sure you are understood …
  - ✓ Develop your listening skills, too …
  - ✓ Body language is important …
  - ✓ Maintain eye contact …
  - ✓ Respect your audience …

This is where this report comes into play, identifying core skills needed to facilitate the adoption of digital solutions in the Health and Care sector (IO2). Equally important, is the set of soft skills that enable Health professionals to operate in a competent and efficient manner to deliver prime Health Care services, without overlooking the current digital revolution that is affecting the Health Care system.

With this premise, the report's purpose is to provide a map to better identify the soft skills of Health professionals working in a digital based/supported environment.

To that end, *Coges*, *FH Kufstein* and *Smart Homes* set up a coordination unit that provided a questionnaire (to be used by each partner) that delivers results useful to identify the soft skills needed to facilitate the adoption of digital solutions in the Health and Care sector. Interviews have been delivered by specialized training organizations, health professionals and technology providers.

DESCRIPTION OF RESPONDENTS

1) Health professionals (managers, doctors, nurses, pharmacists, etc.). Requirements: good communication skills (with patients, multidisciplinary teams, across actors of the same health processes), data analysis

competence, computer literacy, medical devices compatibility, data protection programs, mobile applications, cloud storage, internet research, and the ability to read, understand and forward information using a smart device. *Number of responders: 17.*

2) Training providers. Requirements: the digitalisation of the health system requires project management skills, as well as communication skills (again, the data exchange behind digital technology requires more and more capacity to interact with different actors of the health value chain), but also computer literacy, information security, and the use of clinical software. *Number of responders: 5.*

3) Technology providers. Requirements: skills in data protection, information security, ethics, software engineering and database development; additionally, a proper and close interaction with end-users is essential. *Number of responders: 10.*

DATA COLLECTION METHODOLOGY

32 interviews were completely carried out, targeting the following:

- Health professionals: 17 (53%)
- Training providers: 5 (16%)
- Technology providers: 10 (31%)

It is important to note that all the responders have already gained digital experiences and most of them belong to the organizations that are promoting the good practices.

The interview scheme consisted in 3 sections:

1. Description of the digital innovation used daily by the interviewee and the soft skill associated with the use of it
2. Listing of any soft skill needed when Health professionals have to put specific digital skills/competences into practice
3. Selection of the most relevant soft skills necessary when a digital innovation is introduced to the daily practice

The questionnaire has been divided in three sections: the first two included open-ended questions, while the third one is based on the Likert scale system. The first section aimed at investigating what are the daily digital innovations used by respondents and the soft skills related to them and it included a total of two open-ended questions.
The second section, divided into 6 parts, studied the soft skills related to the six dimensions (Functional, Critical use, Creative production, Participation, Development and Self-actualising) and consisted of 19 open-ended questions. Finally, the third section addressed the perceived level of importance – perceived by professionals in the Health and Care sector - of different sets of soft skills needed to carry out their work. It featured 16 items evaluated through a 5-point Likert scale from 1 ("not important") to 5 ("Very important"). The open-ended questions were designed to detect moods, opinions, attitudes without including them in the researcher's pre-defined (and therefore potentially incorrect) vision.

Regarding the analysis, each open-ended question was read and analysed by a small study group to limit as much as possible the subjectivity inherent in the classification. Moreover, a taxonomy of answers was subsequently constructed.

In order to make the data comparable to the next section, the study group tried - whenever possible - to use the same soft skills analysed in the third section as class of answers, paying particular attention to not influence the meaning of the answers given by respondents.

For each class of answers, it has been established the frequency index, as well as for the items present in the third section. The outcome of the analysis is thoroughly reported below.

RESULTS CATEGORIES

The results, divided into three sections, are presented below.

Each section is schematized through explanatory charts and they are all oriented to compose the soft skills profile with respect to the 3 types of respondents.

Section 1 – Soft skills associated with the use of daily innovation

As explained above, in this section the interviewees were asked to shortly describe a digital innovation used in the daily practice and what are the necessary soft skills he/she has to implement when using a digital innovation.

All responders gave a brief description of digital innovation and associated soft skills. Health professionals, training providers and technology providers, identified the "communication" and "positive attitude" as the soft skills that are most needed. In addition, technology providers recognized the "critical thinking" as a soft skill required in using digital innovation (see figure 1.).
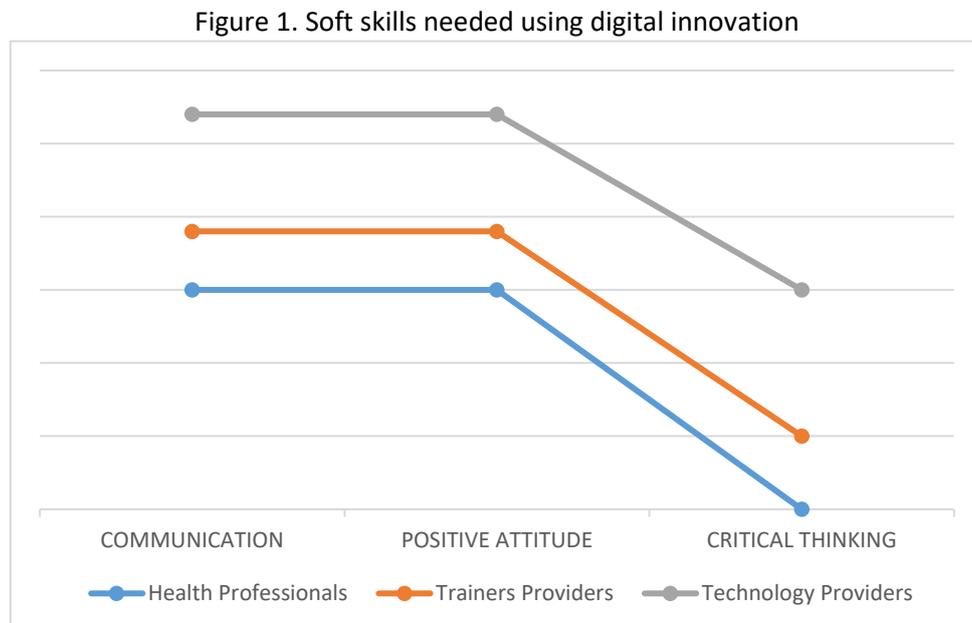
Figure 1. Soft skills needed using digital innovation

Table 1. Definitions emerged from the interviewees' descriptions

SOFT SKILL	DESCRIPTION	SPECIFIC ABILITIES
COMMUNICATION	Knowing how to communicate with others is as important in life as in the professional environment. The positive relational attitude towards colleagues, patients and innovators is appreciated. The ability to know how to communicate content, methods and procedures is also highly appreciated.	Negotiation Persuasion Presentation Public speaking Write reports and proposals
POSITIVE ATTITUDE	Friendly attitude with others and efficient stress management.	Enthusiasm Respect Social intelligence
CRITICAL THINKING	It is not a matter of being critical, but of possessing the ability to analyze a situation in its facets and make an informed decision. Whether working with data, providing training, proposing the use of an app to a patient, one must be able to understand problems, analyze them critically and find solutions.	Creativity Flexibility Innovation Problem solving

Section 2 - Soft skills associated per competence areas

In this section, the interviewees were asked to name for each area of competence, any necessary soft skill when health professionals have to put digital skills/competences into practice.

Specifically, from the open-ended questions, soft skills have been recovered and subsequently grouped into categories. For each of these categories the frequency rate was analyzed.

Response rate, in relation to the different categories of interviewees, have highlighted that technology providers consider "open mindedness" as a significant soft-skill when it comes to applying digital skills/competences. Next to this priority, health professionals also detected the "curiosity" as another relevant soft-skill. Lastly, training providers identified the "empathy" as the most needed soft-skill in using digital innovation. In general, in addition to the above-mentioned categories of soft-skills needed, "communication" and "positive attitude" are perceived as necessaries.

Furthermore, the high rate of the "no answer" response, showed that technology providers considered the questionnaire as particularly difficult to complete (see Figure 2, 3, 4).

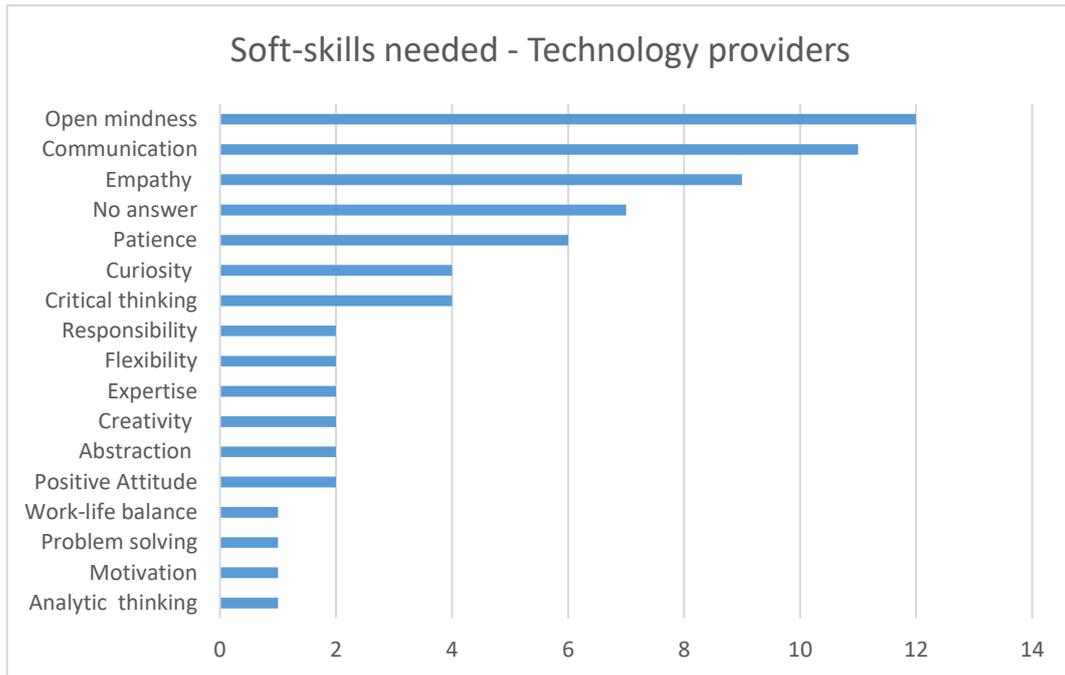Figure 2. Soft-skills needed for Technology providers

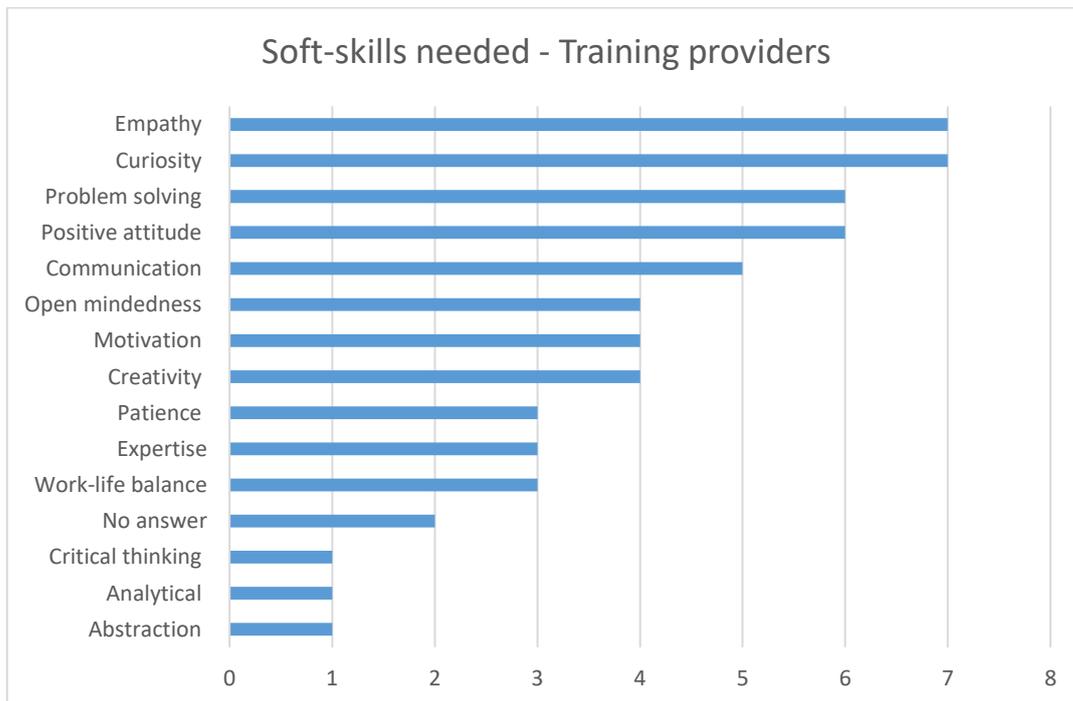Figure 3. Soft-skills needed for Training providers

Figure 4. Soft-skills needed for Health professionals

Soft-skills needed - Health professionals

The correlation between the different categories of soft-skills and the areas of competence was also analyzed. This particular analysis showed that "open mindedness" and "curiosity" are considered relevant soft-skills needed specifically in the area of Functional Skills (ICT proficiency) and Critical Use (Information data and media literacies). "Open mindedness" is also considered important when it comes to the area of competence related to Creative Production (Digital creation, problem solving and innovation). Moreover, interviewees indicated the "communication" as the most necessary soft skill in all the six areas of competence, along with "empathy" and the already mentioned "open mindedness" (see figures 5, 6, 7, 8, 9, 10).

In this case, the "no answer" responses are concentrated in the Development and Self-Actualising areas of responsibility.

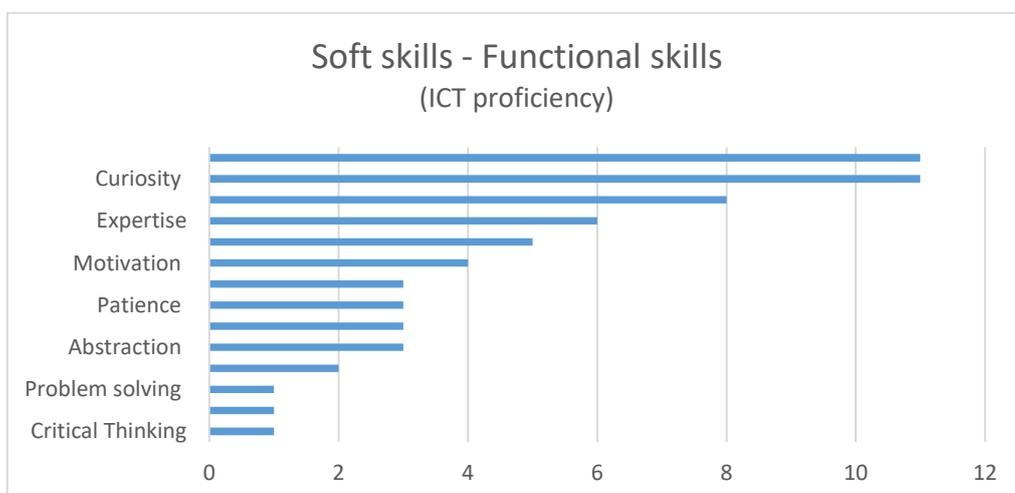Figure 5. Soft-skills needed in the Functional Skills area of competence

Soft skills - Functional skills
(ICT proficiency)

Figure 6. Soft-skills needed in the Critical Use area of competence

Soft skills-Critical use
(Information, data and media literacies)

Curiosity, Open mindedness, Patience, Positive attitude, Communication, Flexibility, Problem solving, Perseverance/Determination, Motivation, Empathy, Creativity, Analytical thinking, Responsibility, Persuasion
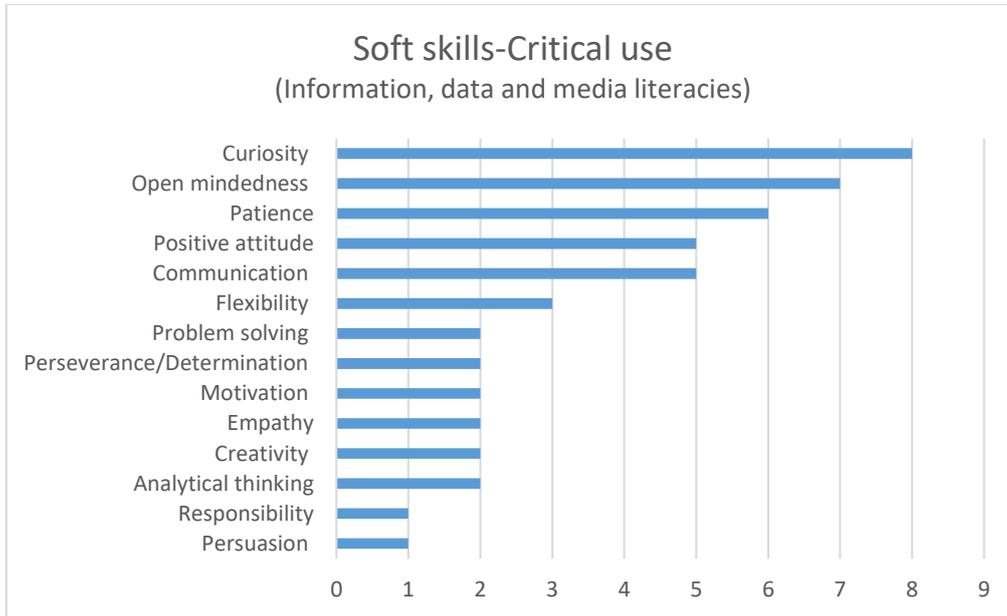
Figure 7. Soft-skills needed in the Creative Production area of competence

Soft skills - Creative Production
(Digital creation, problem solving and innovation)

Critical thinking, Open mindedness, Empathy, Communication, Patience, Perseverance/Determination, Flexibility
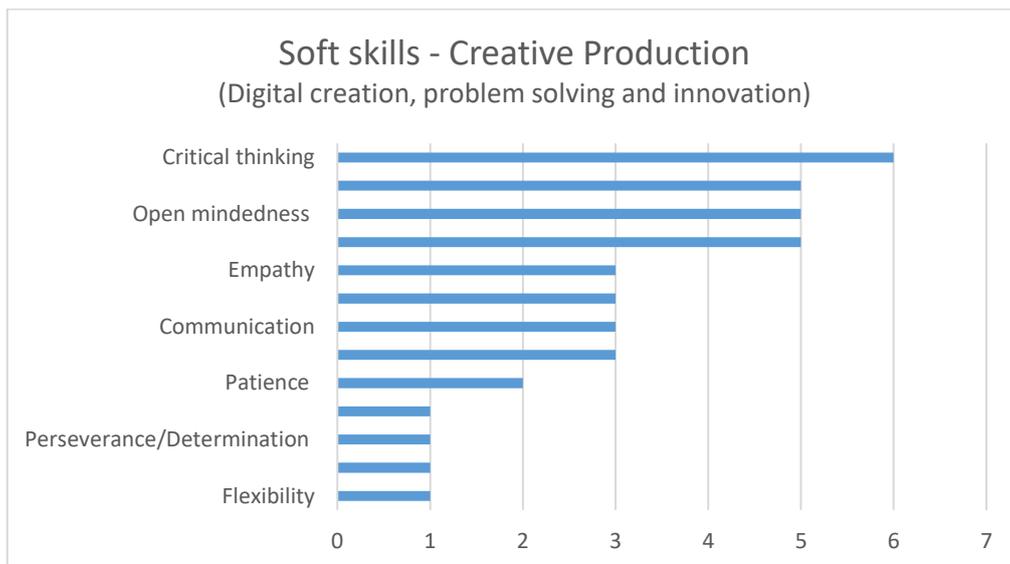
Figure 8. Soft-skills needed in the Participation area of competence

Soft skills - Participation
(Digital communication, collaboration and participation)

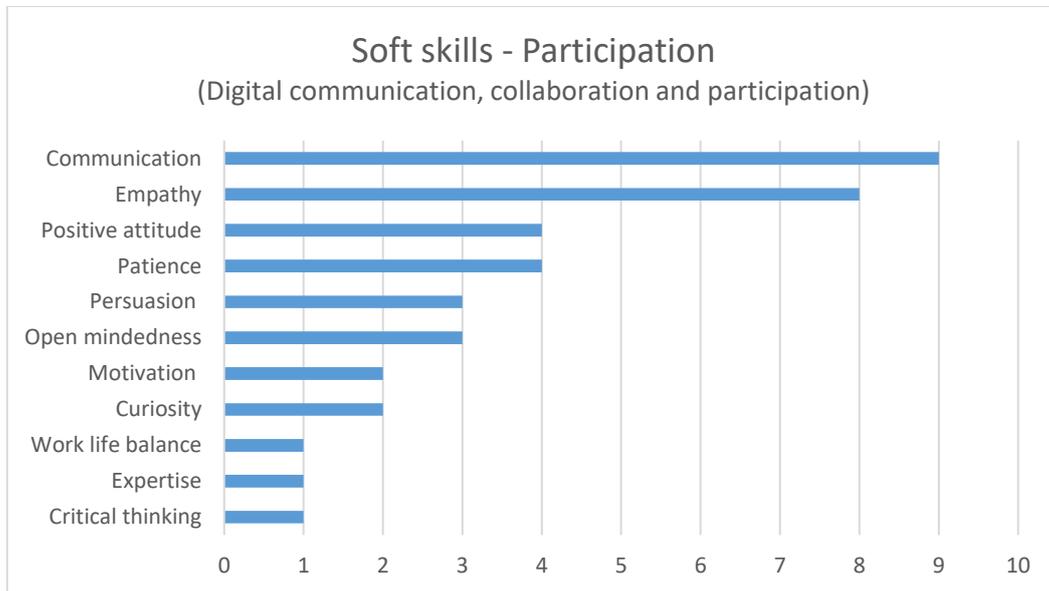| Skill	Value
Communication	9
Empathy	8
Positive attitude	4
Patience	4
Persuasion	3
Open mindedness	3
Motivation	2
Curiosity	2
Work life balance	1
Expertise	1
Critical thinking	1

Figure 9. Soft-skills needed in the Development area of competence

Soft skills - Development
(Digital learning and development)

Skill	Value
Patience	7
Empathy	5
Critical thinking	5
No answer	4
Curiosity	4
Communication	4
Open mindedness	3
Problem solving	2
Creativity	2
Work-life balance	1
Positive attitude	1
Perseveration/determination	1
Analythical thinking	1
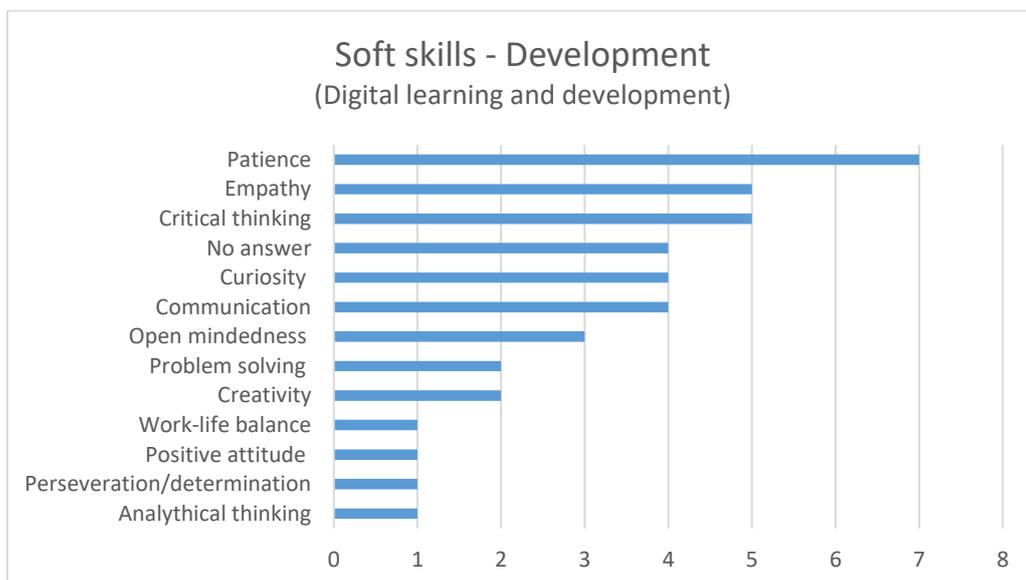
Figure 10. Soft-skills needed in the Self-actualising area of competence

Figure caption (chart title): Soft skills - Self- Actualising
(Digital identity and wellbeing)
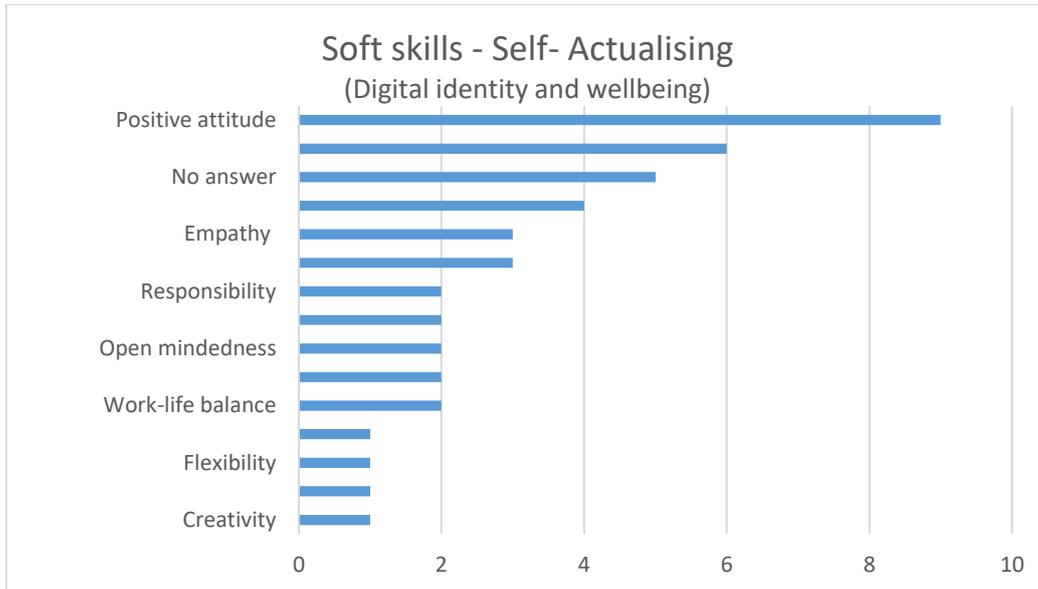
Finally, this section of the questionnaire examined the soft-skills considered as transversely relevant in the various areas of competence by the different interviewees.

From the overall analysis of the data reported in this section, it clearly emerged that the soft skills considered as the most important from responders are: "open mindedness", "curiosity", "communication" and "empathy" (see Figure 11).

Figure 11. Transversely Soft-skills Needed

Figure caption (chart title): Transversely Soft-skills Needed
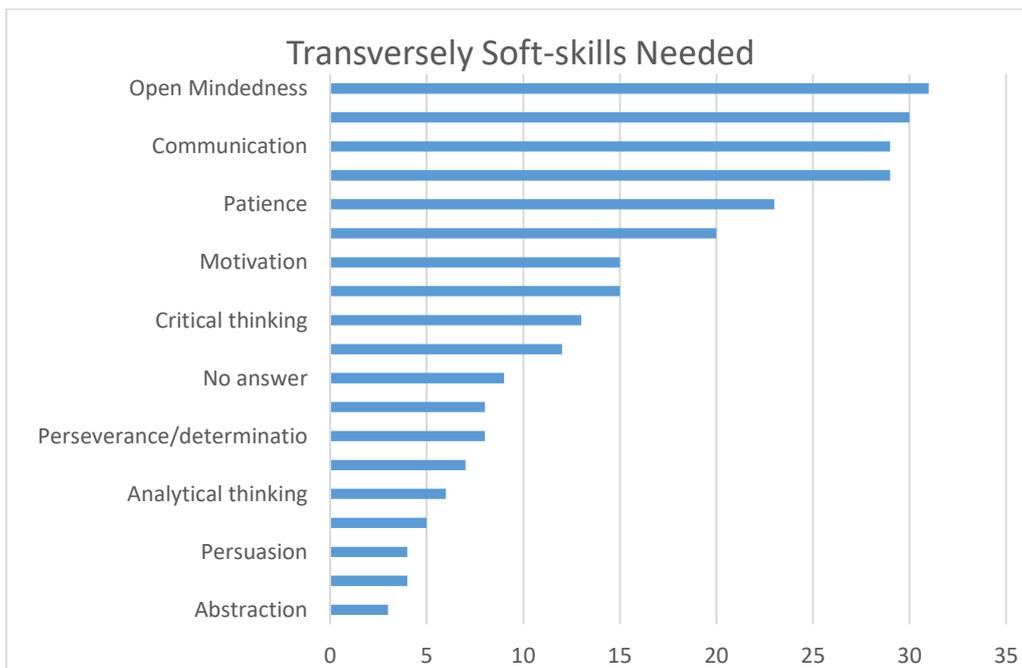
Section 3 – Selection of the main soft skills required in using innovation in the Health sector

The results presented below, are categorised in relation to the type of responders.

The most selected soft skill was "communication" and "Critical thinking" followed. Generally, both Technology and Training providers strongly believe in the necessity of soft skills development, in order to efficiently deal with the innovation introduction. On the other hand, Health professionals seemed to believe substantially less in the need to possess soft skills to deal with the innovation introduction. (see Figure 12.)

Figure 12. Major skills needed using digital innovation
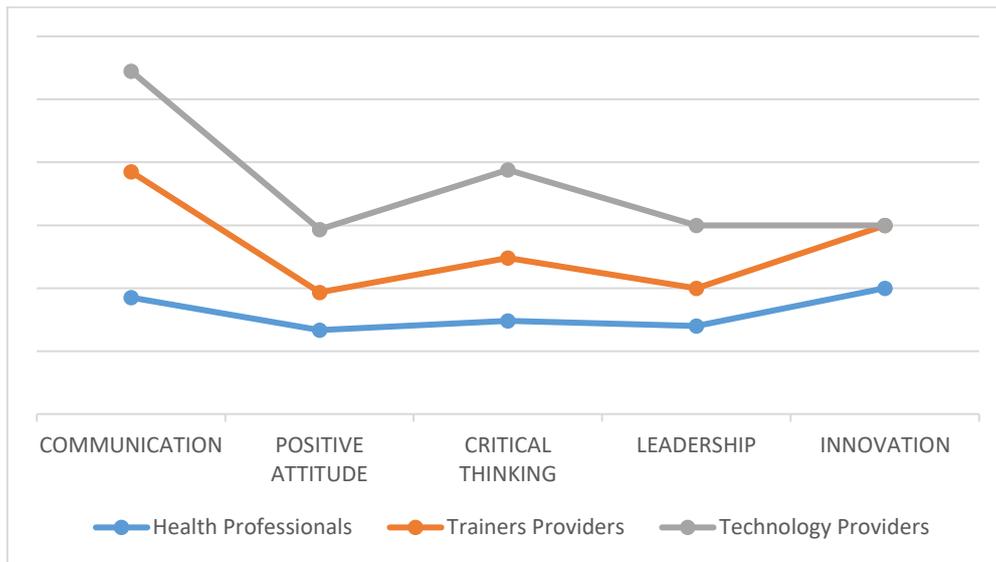
After the analysis of the different skills taken individually and combining the choices of the responders, it emerged that:

- In the "communication" field, 50% of respondents considered the ability of "active listening" something to be strengthened.
- In the context of "critical thinking", 35% of respondents considered "innovation" the skill that needs to be reinforced.

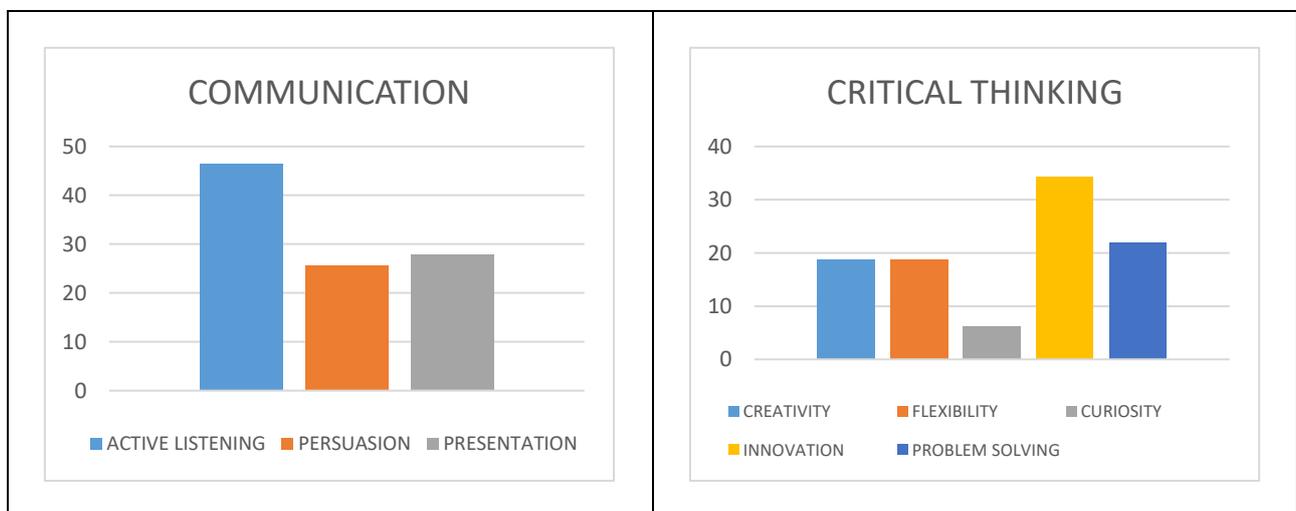Figure 13. Specific skills to be strengthened (a)

Table 2. Definitions of ability selected (a)

SOFT SKILL	ABILITY	DESCRIPTION
COMMUNICATION	ACTIVE LISTENING	It is the ability to evaluate requests and questions and to formulate adequate and convincing answers.
CRITICAL THINKING	INNOVATION	It is about the ability to innovate and think outside the box. An open mind is certainly more capable of introducing innovative elements into one's work.

Analysing the other skills, in the area of "leadership" the three skills "Decision making", "Conflict resolution" and "Team management", resulted almost equally important. Otherwise, when the field of the "positive attitude" was analysed, it clearly showed that it is fundamental to be "enthusiastic people". Instead, if we examine the area of "innovation", as for leadership, the three skills "Innovative thinking", "Process innovation" and "Inclusion of new tools", emerged as almost equally important.

Figure 13 Specific skills to be strengthened (b)
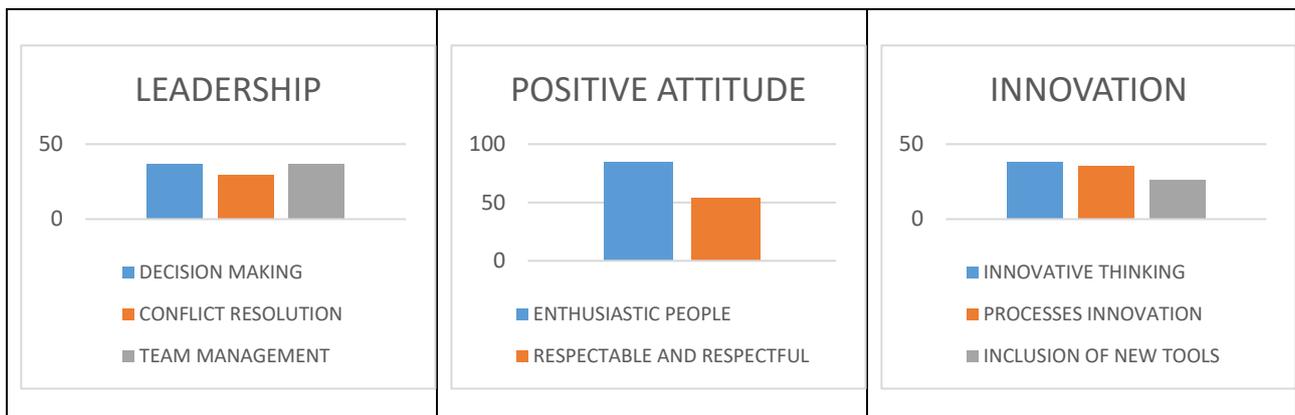
Table 3. Definitions of ability selected (b)

SOFT SKILL	ABILITY	DESCRIPTION
POSITIVE ATTITUDE	ENTHUSIASTIC PEOPLE	It is a matter of possessing a positive emotional involvement regarding the work and values of the job as well as the relationships and the positive acceptance of the news.

Research in this field showed how digital transformation is above all a matter of people's development, change of management within organizations and implementation of new (digital) technologies. This can be achieved through the training of people that operate in those organizations. The human factor and the so-called soft skills, are essential when it comes to technologies for effectively introducing digital transformation. From problem solving to critical thinking, from flexibility to the teamwork, from the ability to communicate effectively and empathically to being open minded. The need is a digital culture that coherently integrates technological knowledge and soft skills. Digital transformation projects often risk failing, due to acts of mismanagement: at times a separate digital strategy is developed rather than integrating a digital strategy into the company's overall strategy and human resource management. In other cases, the focus is only on pilot projects, following technological trends of the moment without making a real cost/benefit analysis and planning a real change in the organization and its people.

From the analysis of the data collected by the interviews, it has become very clear that digital skills/competences can only be effectively put in practice in the Health and Care sector, if the following essential soft skills are trained:

- ✓ Communication
- ✓ Open mindedness
- ✓ Positive attitude
- ✓ Critical thinking
- ✓ Empathy

The "Leadership" area that emerged in the third section is divided into three competences (conflict resolution, decision making, team management) which, to be effective, requires the possession of abilities such as: social intelligence, problem solving, negotiation, persuasion, creativity and flexibility. These competences are part of the categories of soft-skills listed above and therefore considered fundamental at a transversal level by all respondents.

Finally, it can be concluded that in the phase of assessment, training and selection of personnel, the categories of soft-skills that have emerged can be taken into consideration, evaluated and developed.

Moreover, the results suggest to continue the research in this field, emphasizing once again how soft skills are considered relevant to perform the work effectively. A subsequent study could focus on investigating how professionals (Health professionals, technology providers, training providers) in the Health and Care sector believe they own the soft-skills they consider relevant, how school, training and professional paths helped them with the development of these specific abilities and what is the gap between the perception of having the competences and the levels they deem necessary to be able to effectively carry out their work.

Figure 14. Soft skills profile - Essential soft skills to be trained

INTERVIEW "HOW TO CREATE THE PROFILE OF SOFT SKILLS IN THE HEALTH SYSTEM"

DRAFT: 24 JULY 2019

Training Blueprint for the Digital Transformation Of Health and Care

Name and surname _____

Organization _____

Health professional (Health System) ☐

Trainer (Training Provider Organization) ☐

Innovator (Technology Provider Organization) ☐

Introduction

This interview is targeted to:

1. Training Providers
2. Health Professionals
3. Technology Providers

The healthcare world is always looking for specialized professionals, therefore endowed with specific competences with respect to the above roles. This is not enough. Soft skills are also sought for, personal attributes and interpersonal skills, which complete the different healthcare roles, adding competences and transversal skills, in managing relationships and problems, also in light of the introduction of technological innovations.

What are the Soft skills?

Soft skills concern personal attributes and interpersonal skills, which are increasingly essential in the workplace. To the specific skills, the hard skills, are also added the quality of the person's character and attitudes, which refer, in a transversal way, to the ability to face their own work activity both vertically and horizontally, therefore both in the approach with the new challenges that can be presented in one's work (for example technological ones), in relation to colleagues and in carrying out work activities.

"Soft skills are character traits, attitudes, and behaviours—rather than technical aptitude or knowledge. Soft skills are the intangible, nontechnical, personality-specific skills that determine one's strengths as a leader, facilitator, mediator, and negotiator."[1]

The researcher performing the interview should be able to introduce it as well as provide a couple of examples of soft skills for Healthcare workforce and differentiate them from hard skills.
Hard skills [having the know how to install software applications]

Soft skills

- People skills [communication skills]

- Personal attributes [stress, resistance, empathy]

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[1] Robles 2012

SECTION 1

Please, shortly describe a digital innovation used in your daily practice or you are familiar with.

_____
_____
_____
_____

What soft skills do you need when you use this digital innovation?

_____
_____
_____
_____

2 cases attached as examples of telehealth application and should be used only when there are no scenarios that the interviewee can think of

SECTION 2

During the last decade, there are many efforts to define the digital skills and competences needed by the healthcare workforce. Among others, DIGICOMP framework[2] was published by Publications Office of the European Union targeting at citizens and adapted for healthcare workforce by EU project CARER+[3] . HITCOMP tool[4] created as a result of the Healthcare Workforce Collaboration Group between EU and US in 2014 listing digital competences for different healthcare workforce roles.

A "Health and Care Digital Capabilities Framework"[5] was developed by NHS, aiming to define the digital needs of the future healthcare workforce. Another suggestion is made by Brunner et al (2018) "eHealth Capabilities Framework" aiming to guide curriculum design.

Please for each of the following competences' areas try to name any soft skill needed when healthcare professionals have to apply these digital skills/competences in practice. Please note that might not apply to all digital competences listed.

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[2]DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of us https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-21-digital-competence-framework-citizens-eight-proficiency-levels-and-examples-use

[3] CARER+ Digital Competences Framework https://www.carerplus.eu/developing-training/wiki/digital-competence-framework)

[4] HITCOMP tool http://hitcomp.org

[5] Health and Care Digital Capabilities Framework https://www.hee.nhs.uk/sites/default/files/documents/Digital%20Literacy%20Capability%20Framework%202018.pdf

ICT proficiency (Functional skills)

1. What are the soft skills needed when you have to choose devices, applications, software and systems relevant to different tasks for your daily practice?
2. What are the soft skills that can help you to understand the characteristics of (mobile) devices or applications?
3. Can you name soft skills required to operate basic (mobile) devices or applications?

Information, data and media literacies (Critical use)

1. What might be the soft skills needed in relation to knowledge about the necessity, the operating mode and the risks of the used (mobile) devices or applications?
2. Can you relate any soft skills with the willingness of health care professionals to use (mobile) devices or applications in the daily work?
3. Are there any soft skills needed in order to understand and evaluate the impact of the (mobile) devices or applications?
4. What might be the soft skills needed when you process sensitive data, from acquiring them to include and retrieve them?

Digital creation, problem solving and innovation (Creative production)

1. Can you list soft skills in order to proactively take steps towards the invention or further development of (mobile) devices or applications?
2. What soft skills needed when you use digital evidence to solve problems and answer questions?

Digital communication, collaboration and participation (Participation)

1. Please list soft skills needed to inform patients/health professionals about the necessity, the operating mode and the risks of the used (mobile) devices or applications.
2. What are the soft skills you might need to participate, facilitate and communicate effectively in digital media and spaces (e.g. text-based forums, online video and audio, and social media)?

Digital learning and development (Development)

1. What might be the soft skills needed when you identify and use digital learning resources or to participate in learning dialogues via digital media (e.g. access, media, platform and pedagogy)?
2. Are there any soft skills help to understand the educational value of different media for teaching, learning and assessment, and/or different educational approaches and their application in digitally-rich settings?

Digital identity and wellbeing (Self-actualising)

1. Can you relate any soft skills with the use (mobile) devices or applications in a flexible, patient-oriented way?
2. What soft skills should you have in order to avoid losing orientation when operating (mobile) devices or applications?
3. Are there any soft skills needed when you develop and project a positive digital identity or identities and to manage digital reputation (personal or organisational) across a range of platforms?
4. What are the soft skills needed when you look after personal health, safety, relationships and work-life balance in digital settings?
5. What are the soft skills needed to use digital tools in pursuit of personal goals (e.g. health and fitness) and to participate in social and community activities?
6. Can you name any soft skills might needed to act with concern for the human and natural environment when using digital tools?

SECTION 3

Instruction to fill in the section 3:

1) Please have also in mind that all the statements below relate to soft skills needed when you have to use a digital innovation such as the one you described before.

2) Mark the 10 "capabilities/ characteristics" more related relating to your point of view

3) Referring to the 10 "capabilities/ characteristics" selected, mark - from 1 (not important) to 5 (very important) - how important "capabilities/ characteristics" are for a health professional.

	Statements[6] (to be answered in relation to the use of digital innovations in healthcare)	More relevant (max 10)	1 Not important	2	3	4	5 Very important
1	Evaluate requests and questions and develop appropriate and convincing answers						
2	Provide motivations that direct the choice of one's interlocutor						
3	Frame a theme and present it in an adequate matter to the context and providing the essential elements clearly						
4	Adopt creative solutions to problems						
5	Adapt thinking and working methods to contingent needs						
6	Deepen topics, check how others have solved similar problems ...						
7	Innovate and think outside the box						
8	Identify creative and immediate solutions to problems						
9	Make decisions, strategic or executive						
10	Clear vision of objectives, timing and "who does what"						
11	Positive attitude, emotional involvement with respect to work and company values						
12	Respect towards colleagues and users						
13	Ability to avoid direct conflict and manage the relationship by showing oneself open, available and positive						
14	Curiosity, openness to the "new"						
15	Make processes efficient						
16	Support the inclusion of new tools in the work						

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[6] Feasibility Study On Health Workforce Skills Assessment-OECD, 2018; Deloitte's 2017 Human Capital Trends report.

	Please, add at least 1 "capability/ characteristic" that you feel are essential from your point of view and that are not mentioned above. Mark - from 1 (Not important) to 5 (very important)					
1						
2						
3						
4						

Bibliography

CARER+ Digital Competences Framework
https://www.carerplus.eu/developing-training/wiki/digital-competence-framework)

DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of us

https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-21-digital-competence-framework-citizens-eight-proficiency-levels-and-examples-use

Feasibility Study On Health Workforce Skills Assessment-OECD, 2018; Deloitte's 2017 Human Capital Trends report

HITCOMP tool
http://hitcomp.org

Health and Care Digital Capabilities Framework
https://www.hee.nhs.uk/sites/default/files/documents/Digital%20Literacy%20Capability%20Framework%202018.pdf