A guidebook for socially active people - A new way of measuring and developing of your ICT competences
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**SocialTechno Impresa Sociale srl** SocialTechno Impresa Sociale srl

**Authors:** Wojciech Duranowski, Jerzy Nowak, Wojciech Rustecki

**Design and layout:** Arkadiusz Soldon

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**Editor:** Fundacja TechSoup, ul. Bracka 25, 00-028 Warszawa, www.techsoupeurope.org

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Introduction

We present you our newest publication called “Guidebook for socially active people – a new way of measuring and developing your ICT competences”. Our publication is one of the first publications of this kind in the European Union which addresses the issue of digital skills for the people who are working for the social benefit of others. You can be a social activist working in informal group, community leader, non-governmental organization staff or volunteer – as long as you devote your time for social impact, this is the publication for you.

Currently, the social sector is lagging behind private (business) and public sector in terms of digital skills development of its personnel. One of the reasons is the lack of financial and organizational resources, including assessment procedures and tools for learning pathways which might provide recommendations for further development of digital competences. TechSoup would like to contribute to solving this problem with this publication which is also accompanied by an online self-assessment tool (“ICT4NGO”) with learning recommendations. The publication is an output of the Erasmus Plus project called “ICT4NGO – ICT Competency Assessment Standard for European NGOs” which was conducted between 21 October 2016 and 23 August 2018. Readers will be able to accurately evaluate their current knowledge in five of the most important areas of digital competence related to the NGO sector. After self-evaluation, users are presented with the best available and current information and a digital resources catalogue. This provides them with information on where and how they can improve their skills in the areas identified in the self-evaluation.

We hope you will find this publication useful for yourself, the staff of your organization, volunteers and anyone focussed on social benefit, rather than purely financial gains.

Welcome to “A guidebook for socially active people – a new way of measuring and developing of your ICT competences”.

The current information and links about the ICT4NGO you can find here: http://www.techsoupeurope.org/programmes/ict4ngo/

ICT4NGO Team
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PART 1
Information for the Guidebook users
Brief Introduction to TechSoup’s mission in relation to ICT4NGO standard

Building of digital competences and support to NGOs regarding the digital and technological support have been the core of the TechSoup organization since its humble beginnings in San Francisco Bay Area in the 1980s. The whole idea of building digital capacity of the NGOs started in 1986, when the future founder of TechSoup, Daniel Ben Horin, had a problem with a printer and realized that there is no support network for NGOs and social activists who have problems with technological issues. The whole idea caught on quickly as a unique solution to problems of NGOs, and now TechSoup provides donated and discounted technology offers for nearly every country in the world.

The European ICT competency standard for NGOs, described in the book, directly relates to the mission of TechSoup which is the following: “We imagine a world in which social-change agents from all walks of life can fully access the profound power of technology and connected world – and use it to improve lives”. Basically, ideas from ICT4NGO project are embedded in organizational culture, mission and values of TechSoup.

The role of self-learning and informal education in ICT skills development

Digital skills are obligatory in contemporary economics and it is obvious that formal education and regular computer science studies (CS) cannot match the needs of the labour market. Some experts forecast that the European Union will have a gap of 900,000 ICT skilled workers by 2020. Without introducing effective adult learning, informal and self-learning programmes, it is impossible for the European Union to combat the existing ICT mismatch. Moreover, this gap can only widen as the newly emerging technologies involve a more specialized ICT knowledge. The same situation exists in the United States which also

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1 Andrus Ansip, “Digital skills, jobs and the need to get more Europeans online”, Blog Post EU Commissioners, date: 23.03.2015, source: https://ec.europa.eu/commission/commissioners/2014-2019/ansip/blog/digital-skills-jobs-and-need-get-more-europeans-online_en, retrieved on: 03.04.2018
has many job openings in ICT and the digital economy sector. As Barack Obama mentioned, on average there were 500 000 job openings in technology, but 2/3 of them were not in Silicon Valley, but in all sectors of the economy. In his speech, the former U.S. president stressed the importance of non-formal learning and new innovative methods which enable people to acquire coding skills in a short time, often in less than 1 year. He especially emphasized two types of programmes: coding bootcamps and/or MOOCs.

The coding bootcamps are relatively new innovative programmes of innovative adult learning which enable participants to gain coding skills comparable to a computer science degree in a brief time, sometimes even in 12-weeks time. The coding bootcamps could potentially become a very important part of ICT skills training in the US, especially with financial support of US government which subsidizes this type of adult learning. As for 2016, there were around 60 000 graduates of regular formal computer science higher education, and at the same time 20 000 graduates of coding bootcamps (while in 2013 their number was equal to zero). The numbers show that coding bootcamps are becoming a real phenomenon in the adult learning. While in 2010 they did not exist at all, now they provide 1/3 of ICT and digital experts in the US and with such a fast growth, they may become the leading producer of coding experts in a few years’ time. The boom for new methods of adult education is also strengthened by the success stories of the intensive courses’ graduates who have learned their skills quickly and have been accepted by the Silicon Valley giants. One of such case studies involves Haseeb Qureshi, who, as an unemployed teacher joined the adventure of self-learning and took also part in a 12-week coding bootcamp at App Academy. In a few weeks he landed with a well paid job at one of the most prestigious start-ups in the Valley – Airbnb.

Another important game-changer among ICT skills adult programmes are the MOOCs. They started in 2012 at Stanford University, where the most important MOOC provider in ICT skills – Udacity – started its operations. Firstly, it sought cooperation with major universities, but later
it shifted more towards cooperation with tech giants such as Microsoft, Uber or AT&T. Its short programmes called “nanodegrees” cover all most important issues related to coding, including from-the-scratch training of front-end and back-end developers, mobile application development, virtual reality development, deep learning as well as self-driving cars technology and even a new course on flying cars! The 2012 course equipped 53,000 students with tech nanodegrees and in 2016 Udacity received European Digital Award for the best initiative in Professional Development. Additionally, it provided 10,000 scholarship pathways to nanodegrees for EU citizens as a part of EU scholarships scheme in cooperation with the European Commission⁷.

In comparison with the coding bootcamps, initiatives such as Udacity provide access to similar level of coding experience but at only a fraction of the cost. While a bootcamp costs on average around 10,000 USD, the same nanodegree can be received for about 1200 USD. However, online providers such as Udacity and Coursera can later also become pathways to a regular university degree in Computer Science for a fraction of cost. For example, Udacity partnered Georgia Tech and Coursera partnered Arizona University, where adult learners can continue their studies for MSc degree (equal to regular) at an astonishingly low price of only 7000 USD (Georgia Tech) or 15,000 USD (Arizona University) for the full degree.

These are only two examples of initiatives in adult education which show how education in ICT is changing from formal residential computer science courses towards adult learning and self-learning courses. ICT4NGO is a unique tool which helps adults acquire ICT skills by providing the adult learners from the EU supportive information about how to supplement their knowledge with regards to skills without necessity of taking formal courses. Therefore, our tool is a unique solution responding to the need of NGOs’ self-evaluation in the area of adult ICT education.

Forecasts for next 5-10 years

In the ICT sphere, the level of development is so high that it is claimed that computer science graduates’ knowledge becomes obsolete in the timespan of 5 years. Therefore, it is impossible to create reliable predictions on what will happen with ICT until 2050. However, there is a possibility to foresee the most significant changes which are bound to happen in the next 10 years. These are the following:

1. **Automation and digitization of the labor market** – researchers agree that many jobs will disappear in the following years due to automation and digitization. Jobs which are here to stay will also be changed, and they will require ICT-skills. While many jobs are disappearing, there is also a large number of new jobs which did not exist 5 or 10 years ago. Digital skills are the key to get ready for jumping on the bandwagon of newly created jobs.

2. **Digital Transformation** – to stay competitive on the market, organizations will no only need to undergo digital transformation with regards to operations but also to mental patterns of its management and employees. Also in the NGO sector, there is a strong need for the shift from the traditional brick-and-mortar approach to a complex understanding of many technological/digital aspects of NGO sector including: social media engagement, crowdfunding, online fundraising and digital activism;

3. **Artificial Intelligence, Big Data, Deep/Machine Learning** – these are only few key concepts which are slowly being introduced into our lives. While probably in 10 years they will not change the situation completely, there is a big hope that by 2050 AI will significantly impact our lives. Organizations must be aware of the disruptive powers of these concepts and should study them for the advancement of their operations.

4. **Increase in the importance of lifelong learning** – while formal education will be important in the primary preparation for the labor
market, it is the lifelong learning which will be crucial for adults to keep up with the pace of the changes of technology. Tools such as ICT4NGO and self-evaluation of ICT skills will be necessary to stay tuned in to one’s own career and to supplement the necessary knowledge through self-learning or innovative learning programs such as bootcamps or MOOCs (certainly new innovations in this area are yet to come).

5. **Educational and career recognition of informal learning and self-learning and its integration with formal learning** – one of the most important challenges of current digital skills perspective is integration and recognition of the skills acquired in the self-learning processes and learning online. Digital badges (used for example by DuoLingo), online certificates or cooperation with formal institutions (such as Udacity with employers, or Coursera with universities) belong to the pioneering approaches to this issue. The main challenges are recognition by employers and understanding of the new certification tools for the employers and HR departments. While in the ICT sector it already works, many other sectors are still lagging with understanding of these issues.

We believe that our ICT4NGO tool will be supportive in answering the upcoming issues. The tool will also be updated with the new emerging trends which will surely affect digital skills’ landscape and the labour market.

**Evaluation of the state-of-the-art**

It is well known that the contemporary world requires new competencies for effective operations. As the most recent report “Future of Jobs: Employment, Skills and Workforce Strategy for the 4th Industrial Evolution” of the World Economic Forum states, in the current situation 64% of children who now enter primary schools will work in jobs which do not exist today. A similar situation applies to the adult learners who are now

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*Ibidem

*Ibidem

*Ibidem
on the labour market. The report states that aging countries won’t just need lifelong learning – they will need a wholesale re-training of existing adult learners to fit for the new ICT technologies. Similar conclusions come from numerous reports including “The Future of Learning: New Ways to Learn New Skills for Future Jobs”.

According to the European Commission, in the near future 90% of jobs will require digital skills. Moreover, from 10% to 50% of jobs may disappear due to digitalization and automation. At the same time, definitions and skills needed in many jobs will change completely. It is also important to point out that the jobs which are most likely to disappear first are in the areas of low-skilled workers such as manual, services or office work. McKinsey report states that by 2030 between 75 to 375 million workers will have to change their occupation and strong focus will be on digital skills, creativity and analytical skills.

The same EC infosheet points out that 44% of EU citizens in the age between 16 to 74 years lack basic digital skills. There is a high discrepancy in competence in basic digital skills of population per country. A population most competent digitally is in Luxembourg (86%), Denmark (78%), Netherlands (77%) and the United Kingdom (73%). At the bottom, you can find countries like Bulgaria (26%), Romania (28%), Cyprus (43%) and Italy, Ireland and Poland (44% respectively). Digital training is at the heart of the “New Skills Agenda for Europe” while digital skills are the core of most important EU actions in framework of “Digital Skills and Jobs Coalition”.

The most well-known tools used for comparison of the situation of adult population between member countries are:

- Digital Agenda Key Indicators which measure more than 100 indicators connected to ICT and information society (https://digital-agenda-data.eu/datasets/desi/visualizations)
As it is hard to enumerate all the differences regarding ICT use and skills between the countries’ adult populations, we provide a few examples for comparison:

- 78% of individuals used the internet to submit forms to public authorities in Estonia and 5% respectively in Romania;
- 32,9% of Italians self-evaluate their digital skills as insufficient to change work in 1 year time and respectively 1,85% Bulgarians (but this indicator can be misleading as the Italian economy is much more developed in terms of ICT skills);
- Digital Skills (Information Domain) – UE average is 81% amongst adult learners, while Germany is the highest with 91% of population with above basic skills and Poland is the lowest with 68,1% of population with above basic skills;
- Digital Skills (Communication) – UE average is 73,4% and the highest number of population with skills higher than above is in Iceland – 93,5% and the lowest in France – 61,4%;
- Digital Skills (Problem Solving) – UE average is 66,2% and the highest is Iceland with 83,3% and lowest Bulgaria with just 34,2%;
- Digital Skills (Content Creation) – UE average is 48,7% and at the top is Luxembourg with 69,2% of population with skills above basic skills and the lowest is Romania with just 24,6% skills.

Going through all (about 100) indicators, we can see that the digital divide in the European Union is very high between the countries, and some countries such as – for example –Bulgaria, Romania or Poland fall short in the area of digitalization and digital competences’ development. On the other hand, some countries (e.g. Scandinavian) excel in most of the compared statistics. Self-learning, online learning, innovation in adult learning (such as boot camps) and access to evaluation and recommendation tools such as ICT4NGO can boost the digital skills in the countries where there is lower access to digital competence development tools except formal computer studies programs.

One of the most evident issues with regards is digital skills age gap. A popular term coined by Marc Prensky divides people into two groups:

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8Digital Agenda Key Indicators, source: https://digital-agenda-data.eu, retrieved: 30.03.2018
“Digital Natives” and “Digital Immigrants”. Although this term can be treated as some kind of oversimplification, US reports on NGO digitalization show the digital divide between management and staff in NGOs regarding the digital skills. Generally, it is the younger generation of staff who are more proficient in digital technologies and senior management often lacks broader understanding of the digital shift and transformation within the organization. Thus, the issue of self-evaluation and self-improvement of digital skills amongst NGO staff and management is crucial for the effective operation of the organizations in the digital world.

Description of DigComp

Digital competences are one of the eight so-called key competences in lifelong learning which were adopted by the EU in 2006. As the list of key competences and their description has not been updated for more than 10 years, the European Commission is currently in the process of revising them.

Recently, on 17th January 2018, a working document with recommendations on key competences in lifelong learning was prepared\(^1\). As for the digital skills, the document shows that definition and description of digital skills need revision and updating. **As per recommendation, only 61% of surveyed respondents agreed that current key competences are adequately relating to digital competences and remaining opted for updating**\(^2\). Digital skills according to survey are the the most outdated out of 8 key skills according to survey. It is very important that 2/3 of respondents stated that the definition of digital competences in the key competences framework should be aligned with the European Digital Competence Network (DigComp). They also stressed that more focus should be put on digital media literacy and critical thinking. The document also discusses the question of definitions and finds a very important distinction that while in 2006 terms such as IST (Information, Society, Technology) or ICT (Information, Communication,

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\(^2\) Ibidem, p. 34
Technology) were in use, nowadays in 2018 the most appropriate term is “digital technologies”\(^9\). Also dropping use of words such as “Internet” or “computers” in the definition has been recommended to embrace the whole digital spectrum including apps, mobile devices, cloud solutions etc. A proposal for a Council Recommendation on Key Competences for Life-Long Learning brings a following definition of digital competence:

“Digital competence involves the confident, critical and responsible use of, and engagement with digital competencies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, digital content creation (including programming), safety (including digital well-being and competences related to cyber-security), and problem-solving”.

The most important digital skills framework in the European Union is the European Digital Competence Framework for Citizens (also called DigComp), which was first launched in 2013 and is a reference model for many endeavors in digital skills/competences in the territory of the European Union. Currently, the DigComp 2.0 (2016) and DigComp (2.1) are the most up-to-date and accurate document which should be applied. DigComp conceptual model originates from the idea of key competences of European Union (2006) and gives policy-makers, citizens, organizations and educational institutions framework for evaluation and advancement of digital skills. DigComp 2.0 and Entrecomp (“European entrepreneurship competence framework”) are both pioneer initiatives to put a theoretical model of key competences in the EU into practical application. A typical example of use of DigComp at European level is called a “digital indicator” – it enables to measure the development of digital competences among all EU members\(^9\). It is a typical indicator which can be used as a part of human capital development. It shows not only the basic digital skills. It can also be used to verify how many citizens in any EU country have ever written a computer programme. Such a tool gives a clear comparison between development of digital skills and competences between EU countries.

DigComp 2.0 proposes a following conceptual reference model for the Digital Competence of the Citizens:

1. **Information and data literacy**
   - Browsing, searching and filtering data, information and digital content
   - Evaluating data, information and digital content
   - Managing data, information and digital content

2. **Communication and collaboration**
   - Interacting through digital technologies
   - Sharing through digital technologies
   - Engaging in citizenship through digital technologies
   - Collaborating through digital technologies
   - Netiquette
   - Managing digital identity

3. **Digital content creation**
   - Developing digital content
   - Integrating and re-elaborating digital content
   - Copyright and licenses
   - Programming

4. **Safety**
   - Protecting devices
   - Protecting personal data and privacy
   - Protecting health and well-being
   - Protecting the environment

5. **Problem solving**
   - Solving technical problems
   - Identifying needs and technological responses
   - Creatively using digital competencies
   - Identifying digital competence gaps

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21 Ibidem, p.8
DigComp 2.0 is the basis of numerous tools for assessing one’s own digital competences. The most important and pioneer initiatives are Skillage Test prepared by Telecentre Europe, Ikanos Project and Europass CV\textsuperscript{22}. Especially, the Europass CV is worth mentioning, as it is one of the mainstream job seeking tools in the European Union, and the incorporation of digital skills' self-evaluation tool is a step ahead in the understanding of the needs of the future labor market. The digital test within Europass CV is based on DigComp 2.0 areas of digital skills, however it does not include all 21 competencies. It is worth mentioning that the DigComp 2.0 model has been extended to DigComp 2.1 conceptual framework: three levels of proficiency (fundamental, proficient, advanced) have been developed into 8 proficiency levels for each competence with the showcases of use\textsuperscript{23}. DigComp 2.1 also provides a very inspiring visualization of digital competences with a very helpful infographic “Learning to swim in the digital ocean”. The infographic shows 8 proficiency levels as a swim lesson, where – for example – browsing information (level 1) is compared to putting legs into water, and creation of an application can be compared to a creative design and production of yachts and ships (level 8).

**Description of the ICT4NGO model, definition and aim**

This document, together with the self-evaluation and diagnosis tool, sets out standards of proficiency in self-evaluation of digital skills of participants. They are the standards which ought to be required from NGO professional or volunteer who would like to conduct his/her operations at NGO with the defined level of competency in use of digital skills.

The European ICT competency standard for NGOs (ICT4NGO) explains the key competences and skills framework for NGOs that seek to operate effectively in digitalized world. Volunteers or staff of the NGOs, while taking part in our self-evaluation process, verify their level of ICT skills knowledge and if they do not meet standards, they are given tools and

\textsuperscript{22}Ibidem, p.23

\textsuperscript{23}Stephanie Carretero, Riina Vuorikari, Yves Punie: “DigComp 2.1 – the Digital Competence Framwork for Citizens with eight proficiency levels and examples of use”, JRC for European Commision, 2017
recommendations to develop their skills further. Evidence should be provided during online testing and the result is received right after testing.

As for now, three levels of competence are included into ICT4NGO standard:
- basic,
- intermediate,
- expert.

The areas of the standard are as follows:
- Hardware, Infrastructure & Troubleshooting,
- Processing Data & Information,
- Management, Administration and Finances,
- Communications, Marketing & PR,
- IT Security & Safety.

The novelty of the TechSoup approach relies on the fact that this standard is the first standard in Europe that applies directly to non-governmental organizations (non-profits). Below, you can find a useful review of other existing standards in the European Union and on the global level. Despite similarities, there are also differences which constitute an added value for ICT4NGO standard. One of the main differences is the approach. The ICT4NGO standard is purely practical and aims at the standardization and advancement of knowledge amongst NGOs staff, especially volunteers. With the high probability, one might say that it is the only one standard which applies directly to the NGOs and aims at development of digital skills within social sector.

**Potential users of the ICT4NGO standard**

The standard applies to a broad group of potential users from non-profit sector in Europe and all over the world. The key target groups of Guidebook are the adult workers and volunteers of the NGOs. However, it
is worth emphasizing that ICT4NGO is not limited only to NGO staff, but it is open for all kinds of adult learners who are stakeholders of social sector or work in it. This includes informal activists, hackers, changemakers, local animators, local community leaders, social educators, students, teachers, CSR officers in various business organizations.

While preparing the project, TechSoup has discovered that most of European NGOs do not evaluate the ICT - broader: digital - competences of their employees or volunteers, and therefore they almost completely lack the educational tracks for digital training of the employees. The standard with the proposition of the initial diagnostic tool and adequate recommendations fills this niche. Moreover, it provides an educational, easy-to-use toolbox which can be used effectively for the successful implementation of educational activities.

The standard should exert following impact on the participants, participating organizations, target groups and other relevant stakeholders:

- **for participants** – a better understanding of their ICT and digital skills, competencies and greater awareness of their strengths and weaknesses; by means of a portal containing a self-assessment questionnaire (digital competencies test); after completion of the test, the application generates feedback for the user, i.e. a complete and current set of recommendations in the field of particularly chosen digital competencies and skills.

- **for participating organizations (partners)** – creation of the first, initial methodology and standard for supporting other NGOs and adult Europeans from the NGO sector in the development of their ICT & digital skills and competencies etc. The partners created the localized set of important questions, possible answers (both correct and wrong) and various recommendations containing the diagnostic tools and educational materials for trainers on adult digital competencies. As the digital knowledge and technologies are changing very quickly, the tool needs to be constantly developed and updated with the newest trends in digital skills. Such a tool will also bring a higher awareness of possibilities for ICT skills development as well as a better understanding of the ICT needs among nonprofits.
On the **local level**, at which the project will be realized, we will communicate with our main target audience: the **potential participants of educational activities**. These adults – usually the NGOs’ personnel and activists – will be reached through TechSoup Global Network Partners in Europe. Our partners, based in all European Union countries, will then communicate it to their networks composed of social enterprises, activists and NGOs that benefited directly from their services.

On the **regional level**, we will communicate with our main program stakeholders such as NGOs working in the field of e-inclusion, as well as with the TechSoup partners – the TechSoup Global Network in Europe. This communication will be both external (promotional and informational) and internal (organizational). On the European Union level, all communication will be lead by TechSoup in Europe. A very important part of the dissemination and exploitation plan is an active involvement of the local communities and local NGOs in every partner’s country. The staff of the NGOs and their volunteers will receive a professional feedback about their ICT competencies’ level and will get a motivating chance for a further improvement.

**A detailed description of the ICT4NGO model areas**

Our model of ICT4NGO focuses on five areas which are most crucial for NGOs in improving digital competences and skills of staff. These five areas chosen by us are as follows:

1. Hardware, Infrastructure & Troubleshooting
2. Processing Data & Information
3. Management & Administration, Financial
4. Communications, Marketing & PR
5. IT Security & Safety
What distinguishes our model from the previously mentioned most important competence frameworks is a practical, hands-on approach. Our areas of competences are based on our research and work with thousands of NGOs in Europe and their operational, but as well on the professional development needs of NGO staff. Some of these competences are directly aligned with DigComp 2.0 frameworks, some of them are more job-specific, although we can compare them to European Digital Competences Framework. Below, we present the areas chosen by us with descriptions, real-life appliances in the non-governmental sector and with a comparison to other above mentioned tools as well.

1. Hardware, Infrastructure & Troubleshooting

First group of competences chosen by TechSoup as crucial is “Hardware, Infrastructure & Troubleshooting”, which relates directly to the computer equipment and understanding of technicalities in IT. In fact, this is the competency from which the whole idea of TechSoup began as our founder Daniel Ben-Horin approached a famous computer community, “The WELL”, with the printer problem and requested for a troubleshooting solution. Clear majority of European NGOs are organizations with only a basic computer infrastructure and without sufficient funds for investing
in a new equipment. As our research shows, a typical European NGO spends not more than 1000 EUR for the investments in hardware and software per year, and it should be stressed that it is an average spending, influenced greatly by the larger NGOs, which invest a lot of money in digital infrastructure. Nevertheless, most of the NGOs use old hardware which tends to be unreliable. Most of the NGOs do not have enough funds to hire or outsource computer experts, therefore troubleshooting-knowledge is crucial for smooth operations of the NGOs.

In this part, the ICT4NGO standard offers knowledge on the following issues:

- general and practical knowledge about the construction and functioning of computers (for example RAM/ROM memory, what is output device, IrDA ports etc.);
- troubleshooting solutions (for example: what to do if the computer goes down, how to install drivers for a sound card etc.);
- questions concerning computer science and general knowledge on computers (for example: what does “process” or “computer/machine learning” mean);
- more advanced hardware and software solutions (e.g. how to solve overheating problems, how to grant privileges to users, what are the potential errors);

Hardware, Infrastructure & Troubleshooting provides answers to most of the basic and popular requests directed by NGOs to TechSoup regarding their hardware and infrastructure. Comparing it with DigComp 2.0 framework: it is aligned with the area 5.0 – Problem solving, and especially two of its priorities i.e.:

- 5.1 Solving technical problems;
- 5.2 Identifying needs and technological responses.

Therefore, we can say that this part of ICT4NGO model is adjusted to European Framework of Competences DigComp 2.0 and 2.1.
2. Processing Data & Information

A large part of the work of non-governmental organizations in the social field is the management of cases, which relies on administration of a client’s history and the support provided for them. A proper use and understanding of issues concerning data and information processing are critical for NGOs. Organizations should not only be prepared to manage and administer the data, but also to use in the creative way, browse, search, evaluate and finally make informed decisions based on the accessible data. Currently one of the most important trends are Big Data and AI which operate on the existing data which is accessed and handled by the organization. In the social, health and NGO sectors, Big Data is completely changing the picture of the support and provides opportunities for accurate and efficient intervention that never existed before. However, it is worth pointing out that only those NGOs competent in data storage and creation will be able to benefit from it.

As for the processing data and information, ICT4NGO self-evaluation model focuses on the following most important points:

- Ability to seek, browse and find necessary and reliable data in the digital sphere for the needs of the organization;
- Storing and processing data, including data on clients, donors and employees, which is subject to data protection laws;
- Monitoring and evaluation of gathered data in order to prepare reports and make informed decisions based on data;
- Preparation for the next “big things” e.g. big data management and processing and ultimately – artificial intelligence.

As with other areas of ICT4NGO, those who take part in testing will receive recommendations and guidance for further e-learning with the use of open source materials. This area of the ICT4NGO standard is aligned with DigComp 2.0 area 1.0 Information and Data Literacy and subsequently following areas:

- 1.1 Browsing, searching and filtering data, information and digital content,
• 1.2 Evaluating data, information and digital content,
• 1.3 Managing data, information and digital content.

3. Management, Administration, Finances

This part of the competence evaluation standard is purely practical and deals with one of the most important aspects of running an NGO – management, administration and financial operations. These issues are at the core of everyday activity of the NGOs, their relations with volunteers, employees, cooperation with donors, tax payments etc. Digitization of processes in the NGOs can help them to focus on their main goals i.e. supporting vulnerable groups in development and satisfying their needs. Level of digitalization of NGOs regarding their management and administration processes varies, as some NGOs have already implemented advanced solutions (especially the bigger NGOs), and some of them cannot even use/afford a computer. Therefore, our self-evaluation standard must fit the needs of various organizations with various spectra of operational digitalization.

In this part of our standard, we focus on the most important issues with respect to management, administration and financial operations, i.e:
• what software does the organization use for management of the staff and managerial communication with them and what are the recommendations in this area;
• which software solutions are preferred in the organization (i.e. office solutions, working in the cloud or software as a service);
• what digital tools (if any) does the organization use for taking financial decisions and financial planning of their operational goals;
• how does the organization manage their resources (staff, physical resources, intangible assets) with the use of dedicated software.

An employee or a volunteer who takes the test receives a list of recommendations about how to improve knowledge on the topics covered in this chapter. Focus is put on the most up-to-date tools which can
significantly boost the operation of non-governmental organizations – for example, such tools as cloud-based solutions enabling collaborative and distant work of different teams.

In comparison with DigComp 2.0 and DigComp 2.1 framework, this is a part which does not relate directly to the European Framework as it is purely practical and relates mostly to the management and financial processes in the organization. Whereas DigComp addresses the issue of the key competences, here in this part of our self-evaluation we relate to the specific knowledge of management and financial operations, which is more advanced. We can treat this part as an added value and modification of existing frameworks that suits best the needs of non-governmental organizations.

4. Communications, Marketing & PR

Communication, Marketing & PR is a crucial part of operations in almost every non-governmental organization as the NGOs very often rely on external donors who observe their operations and, based on the NGO’s communication and PR, can make a decision either to support them or not. This is the digital skill which is well-developed amongst NGOs, however, as with the previously mentioned skills, the knowledge is not equally distributed between organizations. Some organizations are skilled in the area of using advanced digital marketing tools, which include crowdfunding, sophisticated email marketing platforms, use of digital influencers etc. However, many smaller organizations still do not have websites or proper social media accounts which are all-important for the communication with donors and potential supporters of their cause.

In the area of Communication, Marketing & PR, our self-evaluation standard tackles the most important issues which are as follows:
- Communication with donors, clients and other stakeholders with the use of social media platforms and other communication channels;
- Knowledge on the use of the most widespread solutions with regard to
digital marketing (for example: e-mail marketing, content marketing, CRM tools, use of the marketing hub solutions which integrate different roles of marketing);
• Use of digital influencers and digital ambassadors who can strengthen our case and promote our activities also as a part of PR activities;
• Modern communication solutions with the clients/donors and other stakeholders

The staff and volunteers who participate in our self-evaluation will receive an individual set of recommendations which will support future educational development with regard to the topics of this chapter. This part of the self-evaluation is partially aligned with DigComp 2.0 and DigComp 2.1 matrix as with regard to the area 2.0 of DigComp which is Communication & collaboration and specifically it addresses sub-areas:
  • 2.1 Interacting through digital technologies;
  • 2.2 Sharing through digital technologies.

Marketing & PR part of this area in ICT4NGO is addressed partially in the area 3.0 of DigComp which is Digital content creation and more specifically:
  • 3.1 Developing digital content;
  • 3.2 Integrating and re-elaborating the digital content.

5. IT Security & Safety

Last but not least, the 5th area of our digital competence self-evaluation standard is IT Security & Safety, which addresses the critical and paramount issue of cybersecurity and potential dangers of operations in the IT field for NGOs. Cybersecurity and cyberthreats belong to the most important dangers of recent times and many EU projects have been dedicated to tackling this problem. As NGOs work mainly with the most vulnerable groups, it is critical to secure the data of clients and prevent hacking of their databases. For many clients (e.g. victims of domestic violence or human trafficking) a breach of IT security can be
life-threatening. As more and more fundraising is conducted by means of internet solutions, it is also very important to ensure that organizations have all possible security measures in place to prevent theft of funds or theft of the identities of their contacts.

Within the IT Security & Safety area, following issues are addressed in the self-evaluation within ICT4NGO:

- safety of operating in the Internet sphere;
- protecting digital identity of the organization, its employees, volunteers, clients and donors;
- protection of hardware and software from potential viruses, malware and other types of dangerous software;
- understanding and use of the most important IT security software and systems for the sake of safety of organizations;
- ethical issues, protection of health and well-being of all stakeholders involved in the particular non-governmental organization – especially the most vulnerable ones which are the clients.

Cybersecurity is one the least understood issues by the non-governmental organizations and there is a strong need for competence development in this field. Everyone who takes our test, will receive recommendations for further online self-training regarding IT Safety and Security with the use of accessible open educational resources.

This part of our ICT4NGO model is fully aligned with DigComp 2.0 and DigComp 2 framework of the European Union and more specifically area 4.0 Safety and its sub-areas:

- 4.1 protecting devices,
- 4.2 protecting personal data and privacy,
- 4.3 protecting health & well-being,
- 4.4 protecting the environment.

It addresses also the area 2.0 of DigComp which is Communication & Collaboration and specifically area 2.6 – Managing of Digital Identity.
Conclusions

The ICT4NGO competency standard is a unique and innovative approach to addressing the digital competence and skills gap within the non-governmental sector which still lags behind business sector and public institutions within this regard.

Therefore, our recommendations for NGOs which will be using the ICT4NGO standard are as follows:

1. Our standard is a framework which covers 5 most important areas of digital functioning of the non-governmental organizations. Each organization should hand-pick the areas which are most crucial for them in terms of organizational needs and apply educational programmes accordingly.

2. The ICT4NGO standard can be supplemented with the use of DigComp 2.0 framework which offers a complementary perspective of the use of the particular competences. Therefore, an employee who is already competent in the ICT4NGO framework can continue her/his educational endeavours further and progress to more advanced levels at DigComp 2.0 (for example: digital app development).

3. As with other digital competence standards, ICT4NGO will in a short period of time require a revision and update because digital competences are those which change the most swiftly. NGOs should not only monitor the updates of the standard but they should also constantly update their knowledge of the digital world with the use of open-source educational data, because soon it will become crucial for the effective operations.

4. New concepts from the digital world are emerging: blockchain payments, big data, Artificial Intelligence, augmented reality, Internet of Things etc. This is an interesting new world for the non-governmental organizations, and opportunities are open as never before. However, the most crucial part is the long-life learning and improvement of competences and knowledge, which is at the core of the Erasmus Plus Adult Education Programme and also the ICT4NGO methodology.

https://www.youtube.com/watch?v=D1R-jKKp3jA
Therefore, we can encourage the students to pursue their educational goals with the words of Steve Jobs – one of the icons of the digital world who, addressing the Stanford University graduates, concluded his speech with the words: “Stay hungry, stay foolish”.

Therefore: be open, innovate and learn – this the core of the standard which we created!

ICT4NGO Team
PART 2
INFORMATION FOR THE EXPERTS
ICT4NGO assessment methodology – an explanation for trainers and experts

The ICT4NGO project applies a methodology of reflexive practice, which means that all areas which constitute the model have been chosen first and foremost on the basis of their usefulness in the practical context for the non-governmental organizations. This is aligned with the mission and values of TechSoup, which, from its beginnings, favoured a “hands-on” approach, focusing on technical and digital aspects of NGOs.

The applied methodology is related to the needs of adult learners and it will include following educational approaches:

- reflection practitioner educational model of Donald Schoen (1983, 1987) which will allow the staff of the NGOs to participate in “the artful doing”, allowing them to improve their practice through advancement in the use of ICT methodologies;
- as the project addresses the social and third sector (NGOs) the model which integrates experience, intuition and education in the learning process of adults will be implemented (Brookfield 1998, Ecclestone, 1996, Mezirov 1990). In this way, the adult learners will be able to identify their development paths and to decide on alternative methods of improvement of their activity with the use of reflection upon practice.

Description of standards other than DigComp

This topic has also been addressed by the European Union ET 2020 Working Group on Digital Skills and Competences. The Working Group discussed – as an input into key competences – several of the most important topics related to digital skills, which included: “coding and computational thinking, teacher skill and training, the gender gap, open educational resources (OER), device provision (such as Bring Your Own Device, BYOD), infrastructure, the use of data in education (learning

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26 Ibidem, p. 93
analytics) and as well digital assessment and aims to touch on upcoming technologies and approaches, such as open badges, blockchain or makerspaces.\(^{26}\)

The Group pointed out the 4 most important emerging digital technologies ("the next big thing") which are:

- data science skills for decision making,
- connectivity and the Internet of Things (IoT),
- Artificial Intelligence & Machine Learning (AI&ML),
- Virtual/Augmented Reality\(^{27}\)

These modern technologies will require even more critical thinking, and ethical questions will arise, therefore digital skills should be not only technical but should also focus on the critical application and understanding of technology.

The ET Working Group pointed out that good practices in digital skills education come often from non-governmental and not-for-profit sector, and example of CoderDojo was mentioned. The CoderDojo grew from a small coding club for kids to a global grassroot movement with more than thousand of clubs called "dojos"\(^ {28}\).

The term which is widely associated with the emerging definitions of digital skills, is "computational thinking" and was also one of the topics of the ET 2020 Working Group on Digital Skills and Competences. As the Group stresses: "Coding/programming certainly supports the teaching of computational thinking, but CT encompasses a wider range of abilities. Computational thinking usually involves the core concepts of abstraction, algorithm, decomposition, debugging and generalization. It can be understood as directly linked to and as a component of digital competences"\(^ {29}\).

Another important key competence framework are OECD Key Competencies, which were published in 2006 and still are the most important reference model for OECD skills with regard to digital skills.

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\(^{26}\) "Coding and Computational Thinking on the Curriculum", ET2020 Working Group, Helsinki 2016

As with EU key competences, OECD also did not review their list of competences for more than 10 years and while for many competences it can be right approach, for the digital competences it is not appropriate approach, as the digital world changes rapidly and also in the process of competence recognition and building, appropriate frameworks should be in place. OECD defines its key competence with regard to technology as follows:

“Technological knowledge has placed new demands on individuals inside and outside the workplace. At the same time, technological advances present individuals with new opportunities to meet demands more effectively in new and different ways. Interactive use of technology requires an awareness of new ways in which individuals can use technologies in their daily lives. Information and communication technology has the potential to transform how the people work together, access information and interact with others. To harness such potential, individuals will need to go beyond the basic technical skills needed to simply use the Internet, send e-mails and so-on. As with other tools, technology can be used interactively if users understand its nature and reflect on its potential”.

The last competence standard to which we would like to relate is so-called P21 framework (Partnership for 21st Century Learning), which is the most important US competence framework used by thousand of teachers, educators and organizations in the United States. Their definition of digital skills is under the definition of “ICT literacy” and consists of:

- Use of technology as a tool to research, organize, evaluate and communicate information;
- Use of digital technologies (computers, PDAs, media players, GPS and etc), communication/networking tools and social networks appropriately to access, manage and integrate, evaluate and create information to successfully function in the knowledge economy;
- Applying a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies.
If we summarize our analysis, we can say that DigComp 2.0 and DigComp 2.1 are currently the most advanced skills and competence frameworks. Moreover, because of their update in 2016 and 2017, we can say that they reflect in proper way the current competence requirements regarding the digital skills.