The smart cities are implemented
– Are citizens also "smart"?

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Abstract

Objectives: 54+ e-inclusion rate is extremely low in numerous EU countries. According to the Eurostat database only 2-3 EU countries have achieved an exceptionally high rate of digital literacy and e-inclusion of citizens 54+. All the far-reaching digital literacy measures for citizens aimed at adapting to the new digital model of society and economy have not included all those citizens who are no longer on the labor market and, consequently, do not have the access to ICT education and e-skills development process. We have entered the period of the 4th Industrial Revolution which implies digital transformation. Transformation expansion necessarily requires the change of society behavior, that is, the behaviour of its citizens.The efficiency of available electronic services, both commercial (ensuring profitability) and public (providing cheaper and faster public services), is also lower than expected. The viability of investing in the aforementioned services becomes questionable as the businesses and public administration need to maintain new infrastructure to provide digital services and simuntaneously they need to maintain conditions for providing already established old-fashioned non-digital services, which certainly leads to double costs of doing business. It is also important to note that the number of electronic service users who are 54+ years old is extremely low. **Prior work:** Many research results have been published on society networks research, but almost none of them have been conducted as a real scientific experiment that can show the way to successfully transmit the knowledge to 54+ which will enable them to develop e-skills. **Results:** The authors will present the possibilities of carrying out an experiment that will clarify the methods of developing 54+ e-skills in efficient ways. **Value:** The scientific contribution of the experiment is to determine the way to achieve the efficient increase in the rate of e-inclusion and digital literacy of citizens 54+ by using public education infrastructure.

Keywords: e-skills, e-inclusion, education infrastructure, Lifelong Learning, Eurostat.

1. Introduction

The Digital (r)evolution, Smart Cities, Digital Economy, Digital Society but where are Smart Citizens? We have been witnessing the growing rate of digitalisation of each part of economy and society... everything that can be digitalised is going to be digitalised. We might claim that the process could be even faster if we let the developers speed it up, but on the other hand there are members of society that disagree claiming that the changes are happening too fast.

The paradigm of being digitalised is based on the idea of globalisation, of being accessible to anyone in the world, of being accessible at any time of a day/year. But, is it really so?

The authors Cahuhan and Agarwal have published a chapter in the book "Advances in Smart Cities: Smarter People, Governance, and Solutions" [27]. They cited Caragliu et al. and said "that a city is smart 'when investments in human and social capital and

traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance.' "

The sociological and psycological [22], [23], [24], [26], [28] aspect of the "quality of life" are closely related to the motivation to be active and to be interested in taking advantage of the change. This article is focused on citizens 54+ and their digital literacy. Many procjects mentioned in this research have not been widely applied because of the obstacles citizens 54+ are facing, such as fear, lack of motivation, lack of the ability to recognize the benefits etc. So far, no systematic solution to the problem of digital exlusion of 54+ population has been offered.

The DESI (Digital Economy and Society Index) has been established as a measure to evaluate the process of digitalisation in the European Union countries. It consists of five elements: Connectivity, Human Capital, Use of Internet, Integration of Digital Technology and Digital Public Services [16]. The data for calculating DESI are collected and DESI is published https://ec.europa.eu/digital-single-market/en/desi for 2018. The actual positions of the EU states are presented in the next picture.
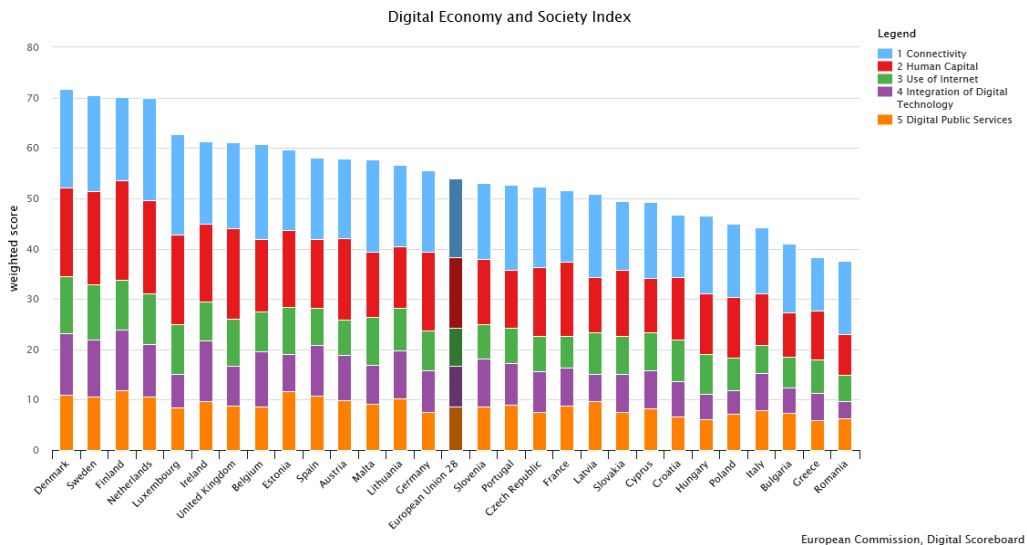

Fig. 1. Digital Economy and Society Index for the EU countries in 2018
Source:https://digital-agenda-data.eu/charts/desi-composite#chart={"indicator":"DESI_SLIDERS","breakdown":{"DESI_1_CONN":5,"DESI_2_HC":5,"DESI_3_UI":3,"DESI_4_IDT":4,"DESI_5_DPS":3},"unit-measure":"pc_DESI_SLIDERS","time-period":"2018"}, downloaded October 7th 2018.

The evolution of DESI components of the EU countries in the period of 2014 – 2018 is presented in Picture 2. Nowadays connectivity is a small problem because it is growing the fastest. Human resources in digital business world is also growing but not so fast as Connectivity.

Use of Internet is growing the slowest of all elements. Digital public services development is in the middle and has continual growth each year. Integration of digital technology was lower in 2014 and in 2018. Use of Internet was also lower.

Obviously, the environment is changing, but is that change fast enough to get the expected effects? Social exclusion may take various forms one of which is the gap between those people with effective access to digital and information technology and those without such access, otherwise known as the "digital divide" [9]. In Europe, the digital divide is primarily age-related [9]. According to the European Commission's 2005 Bench-marking Report, 38% of EU citizens were regular users of the Internet, but only 8% of people over 65 were regular users [9]. Although Article 21 of the European Charter of Fundamental Rights expressly prohibits "Any discrimination based on any ground such as...[inter alia] age" and although Member States have introduced age-discrimination legislation or information campaigns, discrimination remains a challenge to overcome, as the Commission pointed out in its Social Agenda [9].

Another term frequently used in our research is digital literacy. In the light of the rapid and continual development of digital technology, individuals are required to use a growing variety of technical, cognitive, and sociological skills in order to perform tasks and solve problems in digital environments. These skills are referred to in the literature as "digital literacy".[4] In literature this term is used in different context having reference to technical aspects, to cognitive, psychological, or sociological meanings [4].

This article is focused on citizens, as customers or users of digital services and their e-skills, especially, on 54+ citizens and their e-inclusion.
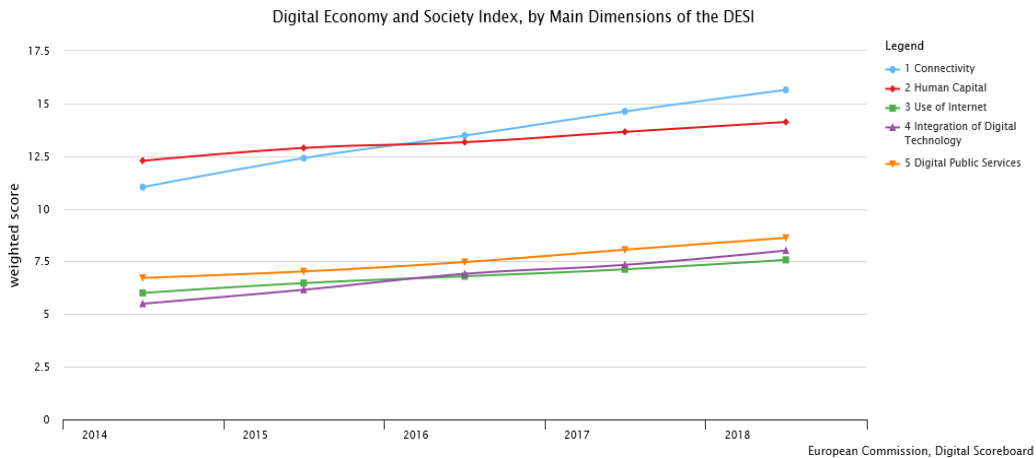

Fig. 2. Comparison of the evolution of DESI components of the EU countries in the period of 2014 - 2018
*Source: https://digital-agenda-data.eu/charts/desi-composite#chart={"indicator":"DESI_SLIDERS","breakdown":{"DESI_1_CONN":5,"DESI_2_HC":5,"DESI_3_UI":3,"DESI_4_IDT":4,"DESI_5_DPS":3},"unit-measure":"pc_DESI_SLIDERS","time-period":"2018"},
downloaded October 7th 2018.*

The justification of the research and the social contribution of this paper is:

- putting stress on insufficient e-skills of 54+
- creating positive and encouraging environment for 54+ to develop e-skills.

The importance of e-inclusion of 54+ is evident taking into account their share in the overal population and the cost and efficiency of e-services and services in a fully digitalised environment.

Raising the e-inclusion is the process that necessary comprises motivation, education and practicing e-skills and promoting Lifelong Learning. The Life Long Learning week promotion is usually organised in the first week of October in Croatia. It focuses on adults education and creative skills development. The author provided lecture ex cathedra about "e-inclusion, the problem or opportunity" in 2017, and also organised a workshop entitled "Digital Economy and Digital Society with a view of improving the quality of life of 54+". Both events were organised and carried out in cooperation with Public Open University Koprivnica, and were presented in three cities in Koprivnica-Križevci County (North-West Croatia).

2. The methodology of the research

During the last two years the authors have been looking for the best practice to establish the positive and encouraging environment for citizens 54+ to develop e-skills, continually and systematically. Continuity means that the program of developing e-skills will be accessible to a potential user during the whole year. The systematic approach refers to using a quality standard for educators as well as for users of that kind of service. The benefits that can be achieved by enhancing the development of e-skills are complex. They consist of economic, social, demographic, psychological and environmental aspects which must be taken into consideration while studying the main topic of the paper.

Another important fact is that there are a lot of barriers that citizens 54+ come across on the path to digital inclusion and digital literacy. The authors will systematically present the results and suggest the wide range of benefits of the 54+ citizens' e-skills development.

First of all, the authors have researched the public ICT and educational infrastructure. The research has been conducted in Croatia by using publicly accessible data of lifelong learning institutions. The emphasis has been put on Public Open Universities (POUs) and primary schools that have necessary ICT infrastructure and equipment. Public libraries have a similar role. Regarding public institutions the number of:
- Public Open Universities in Croatia in February 2018 was 61,
- Public Libraries in Croatia in February 2018 was 179.

Primarily, the POUs have been founded to promote education and educate adults, this was and still is their main mission! Adult education, in the past, was focused on teaching general skills like writing and reading. Nowadays, the process of education must shift its focus from general skills teaching to modern e-skills teaching. This transition has not been accepted by all POU institutions. This conclusion is based on the information

published on their official web sites. The e-skills training is provided only occasionally, mostly for small groups or individuals (one to one), initiated by individuals themselves.

The data on digital literacy courses for citizens have been published on web sites of 23 institution, 22 of them have not published that kind of information; 4 institutions have no accessible official web pages, 10 institution have published information about offering different kinds of computer courses for 50+ and for pensioners, and one institution has a web page under construction and one web page was "not in function".

During the web-page research of Croatian libraries (February 2018) it was found out that 162 of them offered no specific information about providing the ICT skills development course at all, neither did they provide courses for 54+. All in all, 131 libraries had their own web page. One of them was under construction, 46 of them were static and mostly consisted of contact data and official address (location) of the institution, and 84 of them were dynamic offering news and other contents. About 27% of all libraries in Croatia had no official web site at all, and the contact data and address were mentioned on web pages of cities that founded these public institutions. Only 17 libraries have published information about providing ICT skills development for citizens 54+ (some of them even for 65+).

Such kind of access to education and training of e-skills in small groups or individually confirms that there is no leader nor strong motivator which could start enabling that process continually and systematically. The second reason why such kind of raising e-skills for 54+ is not continual nor systematic in Croatia is that developing e-skills by using EU funds (ESF) is accessible just to working population. Others that are not on the labor market any more cannot use this kind of funding. The main indicator of that kind of calls for funding was the number of participants that get a job after education, so 54+, in the meaning of the paper, that are not on the labor market can't use the possibility of learning and practicing e-skills.

Some EU countries have introduced Active Ageing measures that include e-skills development, too, but mostly on the strategic level (strategy plans) and less in practice on the operational level by providing projects in everyday environment.

This paper presents the results of the publicly available document research (articles/reports/strategies) using literature review method by the key words like "digital literacy" and "digital literacy of the elderly". The most important aim while conducting the research was to determine the suggested concept of e-skills development. What kind of aspects did the researcher or reporter use to describe the "digital literacy" especially in elderly ages?

Different kind of approaches to e-skills development has been noticed by analysing the contents. The authors will report about the findings in the next chapter.

3. The research approach

The main purpose of this research is to investigate how many countries have identified the problem of e-inclusion of 54+ population, what kind of problems are addressed and what measures have been taken. The research was based on the literature review of various sources such as Internet articles/reports/strategies as well as Google scholar and Research gate.

There were15 articles covering the topic of e-inclusion of 54+ population identified, 4 from Spain, 3 from the UK, one from China, Mexico, Canada, Finland, the Czech Republic, Australia, Israel, New Zealand and the USA.

Another goal of the research is to investigate whose initiative the survey was conducted on. The results are as follows: there were 8 government initiatives (as well as town in the context of local government), 1 university research, 1 non-government organisation and in 5 articles it can be concluded that the authors initiated and carried out the research themselves.

The problem of e-inclusion of elderly population and digital divide problem has been identified in all the articles, directly or indirectly. The information about benefits found in these articles can be indirectly used for designing further steps in developing the positive social environment to develop and improve e-skills of 54+.

In the United Kingdom, e-inclusion of 54+ population has been researched to discover courses of insufficient e-inclusion and digital skills divide of 54+ population. To develop digital society, it is necessary to invest into resources to achieve goals of digital society. To achieve those goals the national Digital literacy campaign has been conducted "Let's give adults the benefits of digital skills". Adults were the target group and their teachers were school children. School children felt useful improving social and communication skills while the elderly felt that their needs were taken into account and that they were respected. Another positive result was to strengthen the relationship between school and community [5].

The Humanities-498 research group from the University of Almeria created the European project entitled: "Improving Digital Skills of European Citizens Seniors and Disabled: a Work Program. DSSD: Digital Skills for Seniors and Disabled" in collaboration with six other countries: Holland, Hungary, Greece, Italy, the Slovak Republic and Romania [12].

The purpose of the article is to describe the basic ICT skills of elderly individuals from different social involvement centers in Almeria. A transversal, descriptive study was performed using a sample of 322 elderly individuals in Spain. Their socio-demographic characteristics are described and a questionnaire was used to determine their basic ICTS skills. The data from this survey may serve as the basis for the design and experimentation of an educational program, based on a green practice model, with the participation of elderly individuals, renowned experts and leaders in social policy.

The research from China examines elderly 65+ Chinese people learning and using computers and the Internet, focusing on the major barriers encountered and strategies employed to overcome those barriers. A total of 33 interviews were conducted in 2004 in Shanghai. Data analysis was guided by grounded theory. The following are the major findings: (a) lack of technical support is a major barrier to information technology (IT) learning, yet it is difficult to get support from younger people; (b) learning from age peers is an effective way to learn about IT; and (c) short-term computer classes are only the beginning, while computer clubs that may last for years can provide much-needed continuing training [15].

Leopold Abad based his article on the fact that the Spanish population is aging, and is the second oldest country after Japan in its total number of senior citizens. Given this situation and the omnipresence of new technologies in everyday life, the use of Internet and ICT for elderly people is essential. The latest report by IMSERSO shows that only 15.6% of people aged between 65 and 74 connected to the Internet in the 3-month period measured. The data seem to show that there is a generational digital divide to be overcome. The studies that have addressed this issue have focused more on regional and specific aspects of the relationship between age and Internet use intensity, and these studies use age ranges as criteria. Other studies have introduced variables such as seniors' economic situation or educational level. With this in mind, public policies have sought to reduce this generational digital divide through a number of media literacy and e-learning projects but without success due to their poor methodological approach. This paper proposes a number of new methodological approaches to tackle the design of digital literacy programs for elderly people based on criteria such as degree of autonomy and the possibilities of enjoying everyday life, proposing the development of programs based on conceptualism, incrementalism, motivation and absorption processes [1].

Study [8] examined the use that elderly, regular users of computers make of information and computer technology in their daily lives. Opinions from such users were obtained regarding what they want these technologies to offer them in the future. By means of a discussion group and an online questionnaire, our critical case examined a group of mature senior students from the UniversitatOberta de Catalunya (online learning) who have used computers and the Internet in their activities. In general, the participants needed to know the function of the tool beforehand and to have continued support and confidence. In particular, they need the certainty that the future technology will allow them to maintain their independence and autonomy. Elderly people's adoption of IT needs to be treated as more than merely a question of usability. Attitudes, experience of use, and perceived benefits are also key aspects that must be taken into account [8].

Learning and using new technologies by the elderly is seen as a demand for their integration in society and as a factor related to active aging. The goal of this article is to understand the attitudes of the elderly towards information and communication technologies in the context of a training course about the use of a digital platform. It is the result of an empirical study with a sample of 240 elderly people registered in the course Tele-Services for the Elderly that took place in the Centers for the Elderly in the province of Cuenca, Spain. Through a self-administered questionnaire, aspects related to social

activity, knowledge and use of the computer and Internet, expectations on learning and use of computer technology, personal competence, and self-concept were evaluated. The results obtained showed relationships between implication in the activities, experience with computers, and belief in the usefulness of learning new technologies. The participants' involvement in the activities was related to greater contact with information and communication technologies (ICT), which, in turn, generated more positive attitudes toward its learning and utility as well as more self-confidence. The elderly said that they enrolled in different activities to learn and to keep their minds active, and they thought of training as a means of social participation and lifelong learning [6].

In Finland, the qualitative study and the 5-year-long project were conducted addressing the main problem of the aging nation [13]. The aim was to evaluate ICT competences and elderly people's motivation after SATKA- project's computer training in the City of Helsinki. SATKA (Senioritjasyrjäytyneetatk-aikaanhanke) stands for "ICT age for digitally excluded people". The target groups were the Finnish elderly, the immigrant elderly, the pensioners and the unemployed living in Helsinki region. In this project basic IT guidance provided in different social service centers, home care centers and elderly homes without any fee. The salaried IT instructors and the volunteer IT instructors were working in this project in different locations. *The lack of ICT knowledge leads to an increased risk of marginalization of the elderly people in society*. The aim of the project was to support older people to utilize their own strength in old age. The strategy also was to increase social inclusion of digitally excluded people and the elderly able to live at home for as long as possible with the help of assistive equipment. ICT skills are necessary to enable elderly people to cope with the digital world [13].

In this qualitative study the method used was face to face interviews with three elderly participants in the service centre settings regarding their training, Internet and computer usage in daily life. All the participants were involved in SATKA-project as volunteer tutors or participants as learners. The interviews were analyzed through qualitative inductive content analysis. In this study the qualitative thematic interview was used for data collection in SATKA-project [13].

Based on the interviews, the participants developed communication skills e.g. by sending emails, using Skype and acquiring writing skills in MS Word. Being involved in SATKA-project and the activities of the project helped the participants develop skills and make their everyday lives easier. The participants used their ICT skills to communicate with their friends and children. The participants felt good to have ICT competences. The Internet search was interesting and necessary for further learning in old age. The Internet increased social and intergenerational communication [13].

The elderly people need different kinds of skills even in the old age in order to live actively. Learning ICT is an advantage of independent living for the elderly people. In this SATKA-project the elderly people showed a wide range of interest to acquire ICT competences and showed motivation for learning ICT [13].

The lack of digital skills in adult population of Great Britain has been identified as a problem and to solve that problem a project that aims to manage the development of digital skills has been established within the Government of Great Britain [7]. In addition to the physical preconditions such as the introduction of broadband, future technologies, cyber security, and media and telecom, one part of the activity is also focused on innovations and digital skills that, according to their statement, are the key to digitization of infusions and creating new opportunities. 23% of British adults lack the foundation of digital skills, which are about 12.6 million citizens. Based on the above mentioned facts, activities related to digital inclusion are planned. Raising and developing digital skills for the UK economy are challenging for the government, employers, the education sector and local networks.

"Definition of digital skills categories:
• Basic - which everyone should be as a citizen to be a participant in the digital economy
• General (general) - which everyone should be as a worker to contribute to the development of the digital economy in their workplace
• Advanced (advanced) digital skills that need specialists in the development of digital services and economics."

In Australia the project commissioned by Innovation & Business Skills Australia (IBSA) was carried out to confirm and validate, through consultation with experts, existing and new skill sets and competencies fundamental to digital literacy. Digital literacy – the ability to use information and communications technology (ICT) such as computers and the Internet – underpins not only a nation's capacity to provide individuals and groups with equity of access to social opportunity, it is a necessity for participation in the Digital Economy [2].

The study included low-income citizens without higher education, elderly people over 55 who lived in rural and remote areas, originating in Aboriginal or Torres, who have various deformities or damage or cannot speak English. The research envisages the activities of raising the ICT skills of three categories: public sector, economy and citizens. All the citizens are potential consumers of digital services. The idea of raising awareness of the importance of digital literacy lies in the fact that Digital services are primarily directed to: social connectivity, sharing information and digital content, electronic banking, cooperation and communication with government and public administration, online commerce, culture and creativity. The core competencies are personal computer management, word processing, and safe use of communication and Internet search. In addition to the aforementioned competences, a new one "assisting the customer to come up with information"[2].

The Czech Government recognized that the effective use of digital technology becomes an increasingly important factor of success both at the personal and the social level and adopted a new strategy for promoting digital literacy.[17] The basic objective is to enable the citizens of the Czech Republic to use the potential of digital technologies for lifelong personal development, which implies different aspects of ICT impact on individual life: employment, entrepreneurship, social inclusion, family life, public electronic services,

education and training. Various measures are envisaged for each of the area and various surveys will be conducted to collect and process data on required content - depending on the target groups that will participate in lifelong learning programs [17].

Mexico addressed the problem of digital literacy and presented the National Digital Strategy aimed at rising the level of digital literacy. The National Digital Strategy (EDN, by its initials in Spanish), is the action plan that the Government is implementing to encourage the adoption and development of Information and Communication Technologies (ICT) and introduce Mexico into the Information and Knowledge Society. The Strategy sets out the challenges Mexico faces in the digital context and the way it will cope with them through five major objectives: i) Government Transformation; ii) Digital Economy; iii) Transformation of Education; iv) Universal, Effective Health; and v) Civic Innovation and Citizen Participation [11]. This Strategy is focused on regular school system, not particularly for elderly people and therefore cannot be used for the purposes of this research, but it is useful for further steps and making suggestion how to solve problems of lack of digital inclusion of the elderly.

Age UK, a charity institution, conducted a telephone survey during 2018, at approximately 100 local units randomly selected [18]. The question is whether the citizens have an alternative if they want to make a request for rent and taxes, if they cannot use a digital form. Two fifths of local units (41%) in England's housing services and tax services, the two key benefits that elderly people can use, can only be consumed digitally, although as many as 4 million elderly in Britain do not have Internet access and are therefore exposed to the risk of digital exclusion. The results have shown that local self-government units are insisting on the use of Internet applications, despite the fact that elderly people are not using computers [18].

The Program for International Assessment of Adult Competencies provided by Portland State University [14] published the report Digital Inclusion and Digital Literacy in the United States: A Portrait from PIAAC's Survey of Adult Skills in February, 2015. The author has reported about finding during research of "traveling" on pathway of digital literacy, about different levels of acceptance of new technological support of everyday life by different kind of groups (domestic citizens, ethnic groups, different kind of nationalities, gender, ages...). The specific information obtained in this report has been collected by observing the influence of "digital" as well as social and economic outcomes. Motivation seems to be crucial when individuals decide to participate in e-skills development courses.

During the research we have found two examples of raising the level of digital literacy with programs focused on regular school system, not particularly for elderly people: Canada and New Zealand. Those reports were not included in the research. In Canada, the central government and provinces in November 2015 held the conference "Create a federal strategy of Digital Literacy. They concluded that it is necessary to [3]:
• Provide provinces with the curricula created in accordance with the aforementioned strategy,

• Ensure inclusiveness - equal opportunities for all pupils (girls, native youth and youth from poor communities)
• Provide professional training for a new curriculum
• Create opportunities for young people to learn how to innovatively use digital skills.

The government of New Zealand collaborating with public libraries was trying to find the systematical solution to the digital literacy problem through the education system [19]. The key competences and digital literacy, based on the Curriculum in New Zealand are:
• reflection,
• use of languages, symbols and text,
• self-control,
• relationships with others,
• participation and contribution.

4. Active Aging Concept

The problem of demographic change requires the European policy-making to focus on these issues. In 2012, the EU launched promotional activities on active aging with the European Year of Active Aging and Intergenerational Solidarity. The aim was to emphasise the positive contribution of elderly people to society and economy and to improve their independence and strengthen solidarity among generations.

The Active Aging Concept is the process which optimises opportunities for healthy lifestyle, social inclusion and security in order to improve the quality of life. Healthy lifestyle, inclusion and security are the key pillars of life-long learning. Health protection and prevention are the first and necessary prerequisites for a better quality of life. Inclusion or participation in formal and informal work, as well as volunteering activities to meet the needs of the individual, and finally the pillar of security that implies protection, security and dignity of the elderly [20].

An Active Ageing Index (AAI) measure was set for measuring active aging, and was introduced in 2012 through the European Year of Active Aging project under the auspices of the European Commission. The measure encompasses three categories: (1) highlights the importance of an environment where people can live healthily; (2) independence and security of life regardless of aging; (3) the possibility of participation in the labor market and inclusion in the process of creating and linking [21].

AAI is based on 24 indicators grouped into 4 groups (domains): employability, social inclusion, self-sufficiency and active aging capacity. The research involved people 55+. The research found out that there are four groups (homogeneous) in terms of age: 55-59 year-olds; 60-64 year-olds; 65-69 year-olds and 70-74 year-olds. According to the field of active action, they are grouped into (in the same order): volunteer activities; care for children and grandchildren; care for elderly adults; involvement in political activity. The domain of autonomy, health and security of life is proposed (in the same order): physical exercise and activity; access to health services; independence in carrying out activities; financial security, physical security and lifelong learning. The capacity and the provision of an active aging environment (in the same order) envisage: at the age of 55 expected

life expectancy; at the age of 65 the expected health condition; mental health; the use of ICT technology, social inclusion, achievement in education [21].

The results of the survey, conducted in 2014, showed that the AAI index achieved values in the European Union countries, which varies significantly, so that the countries are grouped into three groups depending on the outcome. The highest level of AAI was recorded in Sweden (44.9), Denmark (40.3), Netherlands (40.0), the UK (39.7), Finland (39.0) and Ireland (38.6). The average AAI level was reported in: France (35.8), Luxembourg (35.7), Germany (35.4), Estonia (34.6), the Czech Republic (34.4), Cyprus (34.2) Austria (34.1), Italy (34.0) and Belgium (33.7). Among the results of Italy and Belgium there is also the European average (AAI = 33.9). All other members belong to the third largest group of AAI indices, namely Portugal (33.5), Spain (32.6), Croatia (31.6), Latvia (31.5), Malta (31.5), Bulgaria (29.9), Slovenia (29.8), Romania (29.6), Slovakia (28.5), Hungary (28.3), Poland (28.1) and Greece (27.6) [21].

The importance of social inclusion among the elderly is the reduction of loneliness, which also affects health. Differences in AAI scores among genders are also expected, but despite longevity in women, AAI scores are higher only in three EU countries for women compared to men (Estonia, Latvia and Finland) [21].

Given the aging population, the EU should be prepared to increase the number of growing single households. Extending lifespan and health, need for constant care, active citizenship and political action, gray economy linked to work activities of eldery people, creating social innovations.

In the coming decade, Active Policy Aging should be pursued intensively not only in economic terms, in terms of the pension system, health and nursing, but also in terms of wider social growth.

Eurofound published the report "Measures for social inclusion of the elderly: The case of volunteering in 2010 [10]. The idea to analyse this topics was initiated by the European Commission's predictions that in the EU the number of elderly people aged 65-79 will be about 37,4% until around 2030.

Promoting social inclusion through the reduction of poverty is one of five key areas of the EU 2020 strategy. Solving problems of poverty, lack of basics competencies and giving possibilities to lifelong learning opportunity have to be the goals of each government (at he local, regional or state level). The aforementioned risks of poverty and social exclusion are mostly related to the elderly population in any nation. There are four dimensions for measuring the social exclusion: 1) welfare policies; 2) environmental dimensions; 3) health status and life expectancy; 4) social network, family status and family ties.

The volunteering was recognized as a measure for promotion of social inclusion in old age. In 2004 the analysis of formal and informal voluntary work was conducted in 5 EU countries: Denmark, Germany, Italy, the Netherlands and Poland. Country case study was based on the following topics:

- focus on senior citizens who are exposed to/at risk of social exclusion,
- mainly include elderly people as agents in formal social volunteering,
- if possible focus on measures at community level.

The following aspects were explored: 1) content and target including target groups; 2) recruitment, involvement and participation; 3) promoting factors, obstacles and barriers; 4) results and effectiveness; 5) sustainability and transferability.

The lessons learned and conclusions drawn from best practices are:
- open and welcoming atmosphere to get elderly engaged in voluntary work as active volunteers or users of services should be created,
- the importance of volunteering at the local level and the integration of measures in the community should be recognised,
- people should be persuaded to be active by flexible offer of opportunities,
- voluntary work, independence, self-determination and self-development of the elderly should be considered as important factors of e-inclusion,
- gaining new skills and competences (using computers, improving social competences, being aware of new legislation) should be the key factors for success
- people should be kept motivated,
- sustainability should be achieved by basic support provided by institutions and municipalities and cooperation with stakeholders at local level.

The conclusion of this report is that engaging the elderly in voluntary work activities should be the inevitable part of the model to achieve the initial authors' goal which is to develop supportive and positive environment to motivate the elderly to attend e-skills development courses and to be efficient in being e-included by using e-services.

5. Conclusion

Based on the research of Fox and Lane [5] in the UK and the Xie Bo [15] it can be concluded that it would be very useful to conduct **an experiment** to conclude which lecturers (volunteers), with defined process of knowledge transfer, are better: A) Younger age group - Primary and lower secondary school pupils called "grandchild" and B) Teachers who are members of the age group 54+ called "peer", with the emphasis on the fact that they are retired or not employed. Both lecturers should be tested with the same test. The effect of knowledge transfer to members of the age group 54+ divided into levels of knowledge: beginners (do not have any ICT skills), basic knowledge participants and participants already familiar with additional specialised tools such as photo processing tools, web site design and so on.

It can be concluded [1] that bridging the digital divide for the elderly will not be solved by seeking the best way, but by looking for the optimal way. ICT will contribute to improving the personal and social position of the elderly individuals. Hence, it is necessary to establish minimum competences that are common as well as other skills regarding the needs of the individual. That is the key moment to define the role of motivation. Each e-skill or e-service does not have the same value for all individuals, it is

different for each individual. The process can result in improved quality of life for the individuals – which is the purpose of digital inclusion.

A combination of potential values of a demographic target group can affect:
• the selection motivational methods for inclusion in the literacy program,
• level of acquired knowledge and skills,
• the ability to fulfill the literacy program and the expected impact.

Researchers have concluded that it is crucial to identify the right moment at which ICTs will be implemented [8]. The lifelong involvement promotes choice and optimization mechanisms (life habits), while on the other hand there is a time when the mechanisms of substitution (lost abilities) is activated. New technologies should be useful as a personal development tool, not a substitute for the loss of an ability. In doing so, the introduction of ICT directly affects attitudes[8].

The elderly people have differents needs and expectations regarding ICT. One of the benefits of successful use of ICT is independence. In countries which use high-level electronic services, lack of ICT skills is a major problem for everyday life. The City of Helsinki offers computer instruction through the SATKA project. The assistance is provided through service centers to reduce digital exclusion in society. The project strengthened the ICT skills of the elderly population and Finish immigrants. The elderly are directly involved in the development of this project through expression of interest. ICT skills connect older and younger generations and reduce digital divide, achieve greater digital integration and social connectivity [13].

23% of British adults (12.6 million citizens) lack the basic digital skills. Raising and developing digital skills is planned. It is a challenge for the UK economy, for the government, employers, the education sector and local networks [7].

The idea of raising awareness of digital literacy problem of overall population lies in the fact that all citizens are potential consumers of digital services. Digital services are primarily: social connectivity, sharing information and digital content, electronic banking, cooperation and communication with government and public administration, online commerce, culture and creativity [2].

Most of the attributes mentioned in the competences, values and principles can be applied both to students of regular school programs and to adults. The essence is the same, and the techniques of learning and acquiring skills vary considerably [3], [19].

The aim of active aging concept is to emphasise the positive contribution of the elderly to society and economy and to improve their independence and strengthen solidarity among generations.

There is no doubt that it is necessary to develop and improve e-skills of elderly population. The low rate of e-inclusion and digital literacy is not just the problem in the EU it is a general problem of digital transformation age. As it is presented in this paper

digital literacy has been a challenging research topic over the past ten years, but the rate of digital literacy of the elderly is still low. The authors of this article have collected the input from many sources on visions and approaches and are suggesting the following:

• the digital literacy of the elderly influences economy by the potential growing number e-services users, furthermore, the commercial supplier and public services can lower the cost of providing established old-fashioned non e-digital services,
• the ecological benefits of raising digital literacy of the elderly is related with CO2 footprint linked with production and delivery of printed documents (like brochures, bills, newspaper...) which end up in waste after being used
• the social aspect of benefits that digital literacy ensures are:
> • the reductiona of poverty because by raising e-skills some elderly citizens can get part time jobs and get an income;
> • making things easier to establish social contacts with other people, getting the possibility of avoiding loneliness,
> • welfare
• the most important psychological aspect of the individual benefit that results from getting e-skills is self-confidence. It should be taken into consideration that motivation as an element of psychological process which can have both positive and negative influence on results; if it is strong enough, it will help include individuals in the process of developing e-skills, but if it is low, and determined by other social factors, then it can present the biggest obstacle because, in that case, the elderly refuse to participate in education
• learning in a group and cooperating with peers who help each other as well as the empathy of the lecturer can be really motivating factors for adults, and especially for the elderly members of of e-skills courses
• technical resources that are necessary for the process of systematic raising of e-skills of the elderly are already accessible but currently not used enough. The open universities, libraries and also schools are sufficiently equipped to be used for projects or organised courses for the elderly. Necessary technical resources are computers, laboratories, the Internet access, software and other technical requirements to transfer the content of knowledge and practice e-skills.

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