Лого на Европейската програма
Socrates Grundtvig Programme

TELL ME A (DIGITAL) STORY:

MEMORY LINE PROJECT

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BULGARIA

The publishing of this book has been supported by the European Commission Socrates Grundtvig Programme, project number 230212-CP-1-2006-1-IT-GRUNDTVIG-G1. The Memory Line: an Intergenerational course of Learning and Communication

Introduction

This book presents the main results of the research activities done in the Socrates Grundtvig Project "The Memory Line: an intergenerational course of learning and communication". The project, financed by the European Commission, has been promoted and managed by Erre Effe srl, an Italian company specialized in various types of research and training activities in the social and cultural fields, and has involved the following partners: Comune di Pescia, (Italy), the University of Milan-Bicocca (Italy), the Adult Education Centre of Kuusankoski (Finland), the CNV Kunstenbond - Christian National Trade Union for Artists of Netherlands - of Rotterdam (Netherlands), the Anup - National Association of Popular Universities - of Bucharest (Romania) and the St. Ciryl and Metodius University of Veliko Turnovo (Bulgaria). The Swiss Federation for Adult Learning, with its Italian section of Lugano, has also been involved with the role of the so-called "silent partner".

The project aimed at training groups of elderly and young citizens, resident in the project partner countries, to collect records (stories, songs, poems, experiences, etc.) and to save them in a digital form, mainly by using a workshop-based method of work also known as "digital storytelling". Once digitalized, these stories can be easily conserved and disseminated in order to create a model of cooperation and inter-regional and intergenerational learning (among European regions) based on memory and communication, and to promote innovative experiences within the area of lifelong training.

All the work of records gathering and of digital storytelling has been conducted in the intergenerational ateliers that have been organized in each project partner countries: in Pescia, in Kuusankoski, in Rotterdam, in Bucharest and in Lugano. These ateliers have given birth to many products, including digital puppet shows, theatrical performances, publications, blogs and so on, that can also be found in the website of the project (www.memoryline.org). In parallel with this activities, the two University involved in the project (Milano-Bicocca and Veliko Turnovo) have not only assisted in the realization of the ateliers, but have furthermore conducted a thorough analysis of some of the most important research themes that were strictly related to the project itself. The main question concerned the in-depth study of the areas of intergenerational communication and memory in the knowledge society, with all a

series of interrelated problems that inform the contributions collected in this book: the digital and intergenerational divide, the role of memories in the life of local communities, the relationships of elderly and youngster with technologies, the potentiality of new media and of digital storytelling, the transition from analogical to digital societies and so on.

Research activities mainly involved two different phases: desktop and field analysis. The field work was conducted with a series of focus groups and interviews with people involved in the intergenerational ateliers; this not only allowed to gather a series of first hand evidences directly from the voices of people who were actively involved in the project, but also enabled a sort of ongoing monitoring and auto-evaluation of the project itself.

All the results of the research activities are collected in this publication, which is divided in two parts: the first one is dedicated to some theoretical reflections revolving around some of the most relevant themes that represent the general framework of reference in which the Memory Line Project is situated; the second part is more specifically dedicated to a presentation of the empirical results of the desktop and field analysis.

I. Theoretical PART

The Doomed and the Saved. The Hidden Side of Globalization and Information Capitalism: the Digital and Inter-Generational Divide

Paolo Ferri

1. The global challenge of the digital divide

We are aware that the more developed forms of capitalism are moving towards a new form of social configuration, the "information society" or the "access society" (Castells, 1996, 1997, 2000; Rifkin, 1995, 2000). This change is based on digital communication as the "key technology" of the new century. G8 countries in the past twenty years have had continuous economic and social growth, despite the Gulf war, September 11 and the "new economy" crash in 2001. This evidence is surely true for the G8 countries and perhaps for the OECD ones, but is it also true for the remaining 5/6ths of humanity? What about the effects and consequences of this mega change (Ferri, 2004) up until now on this percentage of the population of the world? As Primo Levi said, it is a part of the world, which represents the line up of the "doomed" and is certainly not that of the "saved", even if it is obviously impossible to give a complete answer to the pressing questions posed here. The problem of the *Digital Divide* is a worldwide issue and unfortunately not well known about in Italy (Zocchi, 2003; Tarallo, 2003).

Through the analysis of Arjun Appadurai's ideas we can evoke the "divergent globalization" concept (Appadurai, 1996), and at the same time Manuel Castells warns us about: *"The problem of the internal differentiation of what was once the "third world", in the newly industrialized countries (the Pacific Rim area), relatively self-sustaining (China, India) and decomposing societies (Africa, Sub-Saharan, fourth world) have a lot to do with the different degrees of integration or adaptation of these societies for the processes of the information economy"* (Castells, 1999, 44).

At the same time the phenomenon of mass migration from countries in "rapid decomposition" towards rich countries is correlated to the development of the information economy, just as the topics of the intercultural integration, internal security of developed countries and even of international terrorism is. For example, the January 9, 2002 issue of the "Corriere della Sera" published an insightful article

written by the ex US President, Bill Clinton. The article began: *"This new century poses an important question: is the era of interdependence (or we could say of digital globalization) for mankind good or evil? The answer depends on several factors: on the fact that we rich nations today diffuse the advantages and reduce the tribulations of the world; from the fact that the poor nations make the necessary changes for progress to take place; from the fact that we all are able to develop a high enough level of conscience to understand what our reciprocal obligations and responsibilities are"*. Clinton's reasoning centers the question of the relationship among the international crisis, globalization, security and "access" as the benefits of the digital revolution, which the attack on the Twin Towers September 11 dramatically showed us.

A few lines later, Clinton writes: *"The terrorist attacks on September 11 were a manifestation of globalization and interdependence as much as the explosion of the economic growth was. We cannot insist on having all the advantages without also seeing the other side of the story. It is very important therefore, to consider the war against terror in the broadest context of the question of how to manage our worldwide interdependence"*.

The question which we should ask ourselves therefore is the following: how is it possible to use the new technologies to decrease and not increase the divide between rich and poor countries? How is it possible therefore, to give to the 5/6ths of humanity access to the huge quantity of information, communication and opportunities for emancipation, which global content providing has circulated inside the "2nd flow economy". And these global questions are challenging also for the second topic where we try to point out in this essay: how we can manage the intergenerational divide.

In the fortress of the west, in fact, the end of the mass media era and the dawn of the digital media era, create great opportunities for economic, cultural and civil growth which are available to the social organization and the political choices; but what happens outside our cities which are more and more cabled? And what happens inside the fortress to the people with socio-economic disadvantages or to the elderly who we will define "digital immigrants"?

2. The digital revolution as a globalization factor

Let us try to analyze the question from a global point of view. Information Communication Technology constitutes the *condition sine qua non* and the backbone of globalization[1]. That the development of *Information Communication Technology* is a central factor in establishing globalization is shown, years ago, from the data made available by ONU and published in their 2001 report dedicated to the Digital Divide, entitled *Making New Technologies Work for Human Development* (AA. VV., 2001). And the data we present are still effective for now except for some regions of India and China:

a. First, it is essential to consider technological growth, in particular in regards to the speed and quantity of exchanged data: a greater quantity of information could be sent on a single optic fiber cable in 2001 than on the entire Internet network in one month in 1997.

b. Second, the transmission cost of a Gigabit (a billion bit) of information from Boston to Los Angeles went from $150 in 1970 to $.12 cents today (AA. VV., 2001). This growth will certainly continue and there are some empirical laws that describe this phenomenon; Moore's law forecasts the doubling of computer power every 18-24 months, while Gilder's law forecasts, thanks to fiber optic technologies, the doubling of the transmission capacities of the telecommunication networks every six months. And these laws are realistic also today in 2008.

c. Third, Internet diffusion: in 1995 there were 16 million users, growing to about 400 million in 2000. In 2005, according to the research of Forrester and Gartner, we reached over a billion users; and in 2008 we are at the unbelievable figure of 1.5 billion users as show in chart 1. 1.5 billion is the number of people present in the developed and affluent nations; they will rapidly become a *connected society*. (In March, 2008 there were more than 1,407,000,000 Internet users worldwide. Considering the estimated world population at 6,676,000,000, about one in six people today use Internet. www.internetworldstats.com/stats.htm)

[1] Most scholars agree on considering the ICT revolution as a fundamental element of globalization, Castell says: *"the complete economic globalization can advance only thanks to new information and communication technologies"* (Castells, 1996, 147). In the same way Beck: *"(…) it is necessary to distinguish the many globalization dimensions: every list [of them] should include, without pretenses of being complete, the dimensions of the technologies of information, ecology and economy of the organization of work, culture and civil society"* (Beck, 1998, 19).

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	Population (2008 Est.)	Internet Users Dec/31, 2000	Internet Usage, Latest Data	% Population (Penetration)	Usage (% of World Pop.)	Usage Growth 2000-2008 %
Africa	955,206,348	4,514,400	51,065,630	5.3	3.5	1,031.2
Asia	3,776,181,949	114,304,000	578,538,257	15.3	39.5	406.1
Europe	800,401,065	105,096,093	384,633,765	48.1	26.3	266.0
Middle East	197,090,443	3,284,800	41,939,200	21.3	2.9	1,176.8
North America	337,167,248	108,096,800	248,241,969	73.6	17.0	129.6
Latin America/ Caribbean	576,091,673	18,068,919	139,009,209	24.1	9.5	669.3
Oceania / Australia	33,981,562	7,620,480	20,204,331	59.5	1.4	165.1
WORLD TOTAL	6,676,120,288	360,985,492	1,463,632,361	21.9	100	305.5

(Source World Internet Statistics, http://www.internetworldstats.com/stats.htm, 24 August 2008).

Chart 1 World Internet Users and Population Stats

d. Fourth, as Noam Chomsky (1998) showed, the volume of financial transactions reached and exceeded about $200 billion a day: the kinds of transactions have changed: while 30 years ago 90% of the trade was tied to volume “real” economy (commerce, long term investments), today the trade is short term (often lasting less than a day) of currency and interest rates. A conspicuous volume of the shares of financial operations is often speculative which takes place integrally in a “molecular” immaterial manner.

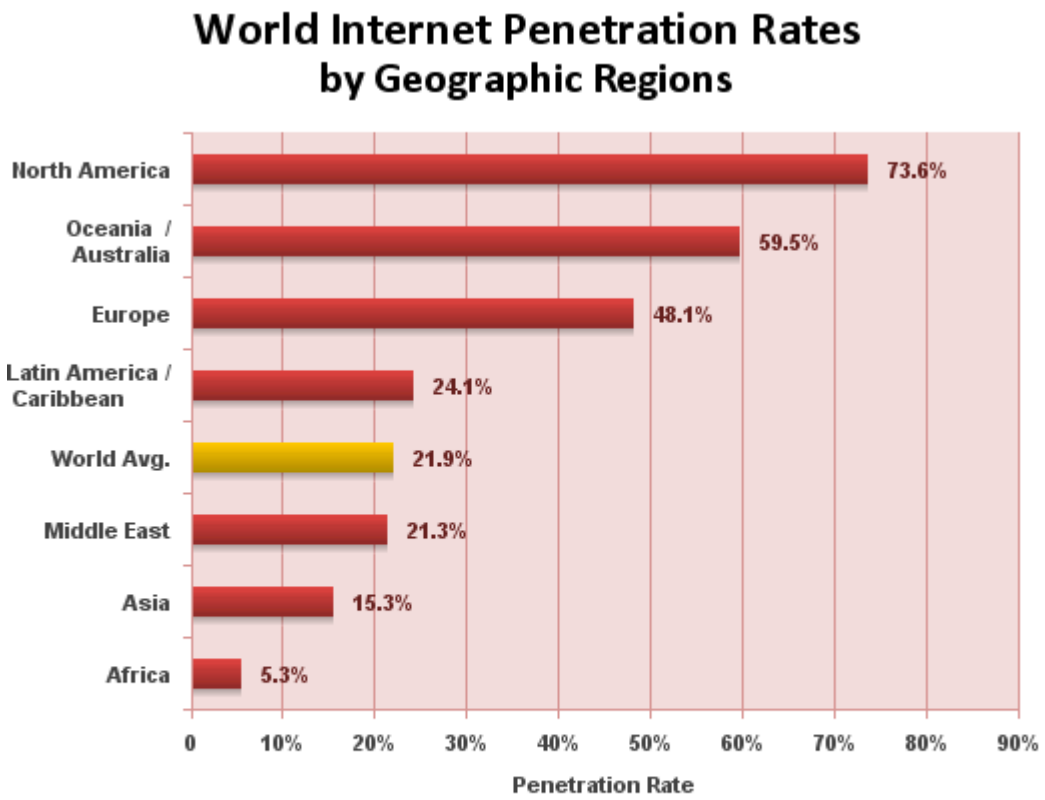


Chart 2 World Internet Penetration Rates by Geographical regions

Now, the new information economy, the new cultural capitalism, is based, on one hand, on this increased ability to elaborate and exchange data and information. On the other hand, it is based on the exponential growth of hi tech companies with respect to companies with a medium or low technological impact and of the correlated passage of a material exchange economy to an "experience economy" (Rifkin, 2000), and therefore to the exchange of services with a highly symbolic, cultural and informational contents.

The ONU data corroborated by recent Forrester, Gartner and IWS statistics show that the new technologies were a growth factor of the economic and productive inequality between the rich and poor nations. In chart 1 we can also see the unequal diffusion of the use of Internet throughout the world. More than 1.3 billion users of Internet live in the OECD countries or in parts of China and India that are exponentially growing.

The figure very eloquently comments and clearly shows the asymmetry in the possibilities of access to the contents of the system of global *content providing;* if the

capacity to quickly exchange a huge quantity of data is the principal factor behind the birth of new economic and social configurations which we have analyzed here above.

These figures already show the enormous inequality between rich and poor nations, between democratic nations and "scoundrel nations". Furthermore, if the figures we present are read through a form of *lateral thinking*, it clearly shows how, for example, the regions that are the origin of today's international terrorism are clearly those which are more backwards and where new technologies are less diffused. Societies which are more open are therefore exposed to greater risks, on one hand, while societies closed to development are open to fundamentalism. Democracies or infocracies against totalitarianisms, hierocracies and autocracies: is this the future scenario?

It is not possible to determine, but this setting is further confirmed by an ONU data report which presents a "worldwide classification" of the most developed societies and takes into consideration four parameters:

- the degree of technological innovation and the development attained in the ICT area
- the diffusion of innovation in the high tech sector
- the diffusion of innovation in traditional sectors (telephone and energy sectors)
- the relative parameters that are defined by ONU as "human advancement and training" which corresponds to the level of well-being and education of a nation

Here it is also easy to observe how all the areas of the world "in decline", using a colorful expression of Castells, belong to "marginalized" countries or they are not even present in the classification, a sign that the necessary data is not available in order to be put into this table (Castells, 1996).

3. The economy of exclusion

This difference which characterizes the globalized economy, the *digital divide*, represents the main obstacle needed to overcome, in order to transform the network age into an opportunity for everyone.

Until today, the globalization era has meant a concentration of access in economically developed countries, the oligopoly of the production of software and hardware by a few companies (with the exception of some productive distributive communities like

the one which created the Linux Open Source Operating System) up until the "imposition" of some Microsoft standards and protocols (see the EU Anti-trust case against Microsoft http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/318&guiLanguage=de).

Up until now, hi-tech globalization has paradoxically created more closure than opening on the part of the underdeveloped societies and also inside the developed countries (economics and intergenerational divide), while has served as an economic and democratic multiplier for the "happy few" connected people in the developed West. It has therefore generated a further block and a restriction of communication and information spaces, other than survival.

An example in this regards is the iconoclasm and violence against the culture and information of the past Taliban regime in Afghanistan or the Iranian regime today. The confirmation of the information economy and the network society in excluded countries has further favored the affirmation of violent animosity against the West. It has also favored the affirmation of a "resistance identity" (Castells, 1997; Rikfin, 2000, chapter 10) which increases the real and imaginary antagonism towards western nations. They are, in fact, a source of oppression, both from the economic and cultural front. Thus, "digital globalization" has favored and not contrasted the most violent impact of the religious or ethnic fundamentalisms. Does this reaction also affect the digital "immigrant" in the developed county, in terms of reaction to the use and dissemination of the digital tool inside the classroom and the institutions not directly connected with the business world?

4. New access politics?

As Clinton said in the article after September 11 in 2001, "*We have to create more opportunities for those who have been left behind from progress (…) to convince new partners that the wealthy world has to accept its own obligation to promote more economic opportunities and to contribute to reduce poverty*"; and we may add to reduce the socio-economic and intergenerational divide in developed countries.

This possibility exists, as some indications in the ONU report show, and also in the recent scholarly literature (Papert, 1996; Aptech, 2001; Cheung, 2000; Mehra, Merkel and Bishop, 2004) we can answer positively, though cautiously. Through appropriate international policies, the use of two intrinsic characteristics of the digital media is favored: their molecular media characteristic and the fact that they are particularly

capable of creating a collaborative type of network economy. Regarding the first point, or the characteristic which distinguishes *digital media* from *mass media*, is the difference which Pierre Lévy identifies between the *molar media* and the *molecular media*. The first is based, as we have seen, on a communicative one to many structure, and it is addressed to the individuals to the masses, each one the same as the other; the second one is based on a many to many model of interactive bidirectional communication. In this sense, the network can come about; it can be an effective instrument of actions aimed at the local development of underdeveloped countries. As Pierre Lévy affirms, *"The minimum ability to navigate in cyberspace is probably acquired in less time than the time it takes to learn how to read. Like literacy, navigating in cyberspace will be associated with other social economic and cultural benefits, with respect to the simple right to citizenship"* (Lévy, 1994, 76). Furthermore, the big difference between molar and molecular media is constituted by the necessary cost scale and investments (financial, technological, human resource). While to install, for example, a television network, the necessary investments are quite considerable, the molecular media economy, above all if implemented through open systems like Linux and other *open source* software, can be managed at the local level with relatively reduced costs. Therefore, it is possible to create activities which favor the birth of a network of small manufacturers and of local training institutions which create a small network of "personal or molecular entrepreneurs" (Bonomi, 1997).

The necessary cooperation of OECD countries could then be a "qualifying" intervention, according to the logic of Amartya Sen, Nobel Prize winner for economics, (Sen, 1999) whose logic we completely agree with. According to Sen, development is inseparably tied to freedom; in this perspective, the attention should be concentrated on all the measures which can increase the autonomous ability of the southern part of the world to grow and develop.

And the Amartya Sen issues, as we will show afterwards, are also effective against the generational divide inside the developed Country, for example setting up contexts where youth digital native and older "digital immigrants" can learn from each other's experiences and share digitally their memories as we propose in our research project (see the chapter of Pozzali and Pieri in this volume). Coming back to a global perspective we have many examples of this kind of international cooperation.

For example, through the policies, like the promotion of the “molecular” diffusion of the digital technologies which can broaden the possibilities of individual undertakings (the reasoning developed by Sen on microcredit is analogous), the training, like the creation of an environmental context favorable to the extension of the market, without which neither development nor liberty can exist (Sen, 1999, 19-21). A concrete example from the ONU report shows how it is possible to use the new technologies supporting what we explained. In India they are developing a series of experiments of this type to create a graphic interface which can allow illiterate people to navigate in cyberspace. It bypasses the problem of literacy that in third world countries is crucial, which can be solved thanks to these technologies. To overcome the barriers of the text based interfaces, several scholars of the Indian Institute of Science and Engineering of the Ancore Software design company in Bangalore designed a *touch-screen* application for Internet which costs less than $200 and is based on the Linux open source operating system. The first versions of the Simputer (http://www.simputer.org/simputer/about/) make it possible to access Internet and email in the local languages, through functions activated by a touch screen and also micro-banking applications. Future versions of the system use vocal recognition and software for the text trans-codification of the spoken word for illiterate users. Another more recent concrete example is the OLPC project founded by Nicholas Negroponte, with Charles Kane, Jim Gettys, Seymour Papert, Alan Kay, and Antonio Battro. The One Laptop Per Child Association, Inc. (OLPC) is an American non-profit organization set up to oversee the creation of a cheap, affordable educational device for use in the third world (see chart 3).

Chart 3 The OLPC device

Its current focus is on the development, production and dissemination of the XO-1 software and OLPC device to promote children's education in developing nations. One Laptop Per Child is a 501(c)(3) organization registered in Delaware, USA. OLPC is funded by a number of sponsor organizations, including AMD, Bright Star Corporation, eBay, Google, Marvell, News Corporation, SES, Nortel Networks, and Red Hat. Each company has donated two million dollars.

The goal of the foundation is to provide children around the world with new opportunities to explore, experiment, and express themselves. For this reason OLPC has designed a cheap laptop, OS educational software, manufacturing base, and distribution system to provide children outside of the first-world with otherwise unavailable technological learning opportunities. The OLPC Organization gives children the OLPC and sets up training session to make access to Internet easy for children in disadvantaged countries. OLPC lists five core principles:

a. Child ownership
b. Low ages. Both hardware and software are designed for elementary school children ages 6-12
c. Saturation
d. Connection
e. Free and open source

These examples show how the connection between technologies and liberties, education and civil rights is concrete. This is because one of the biggest advantages of the new communication technologies is the huge contribution of information and training per time and cost unit with respect to the analogical media.

The access to the benefits of the information economy can mean not only inclusion but also cultural, religious and political opportunity. If concrete international policies are brought about, it can mean greater democratization of the social development processes and greater respect for reciprocal diversities.

Also from this point of view the services of the new economy of digital *content providing* can become a lever to knock down the digital divide which they created. It is a possibility, a choice; however, it is necessary to affirm that this choice is risky.

It is the choice which implicates a policy that continues to favor radical free trade at the global level, which does not define fair rules for the subdivision of natural resources, like the information and technological ones. This approach will only widen the divide, and not only the digital one between all the North and South of the world.

The choice is in our hands and it is a crucial one, as our fathers in the NCP Protocol affirmed, the ancestor of Internet in 1968: "*if the network remains confined to a privileged elite population, the network will only exasperate the differences between intellectual opportunities. Instead, if the idea of the network should remain, like we hoped when we designed it, an aid for education, and if all minds should react positively, then the benefit for mankind will certainly be immense*" (Licklider and Taylor, 1968).

5. *Internal digital divide and the intergenerational digital divide*

The digital divide is not only a macro economy and social North South issue, but it is also an issue, as we pointed out before, a big and mostly unrecognized problem, inside the developed countries. We know at least two other forms of "internal digital divide"; the divide between the center (megalopolis, towns and well connected cities) and the peripheral areas (countryside, mountains, disadvantaged areas and ghettos) that is well designed in Castells and Himanen works (Castells, 1996, 1999, 2000, 2001; Castells and Himanen, 2002) and the second and less known form of divide that was focused on first by Seymour Papert in his work *Connected Family* (Papert, 1006). Papert's prophetical essay can help us outline the key points of the generational digital divide problem. What does Papert mean with the word connected or

disconnected family? Let's hear Papert's voice: *"I use that term "connected family" as the name of a book, playing on two meanings of connected, of course. Talking about the fact that we connect through the Internet, but also about whether we connect or don't connect inside the family"* (Papert, 1999). Papert goes on to point out that there's a widespread fear, more or less justified, about the possibility that computers inside the home and classroom are going to disconnect the family and the schools itself. The almost justified fear is that digital technology can create a deep generational gap between the young digital kids and their "Gutenberg" teachers and parents. *"Already the television was a conversation killer in the home. This can be more so"* (Papert, 1999). The following steps of Papert's way of describing the way of handling and trying to solve this "new" – in 1996 it was new - problem is trying to analyze how the presence of computers and the digital networks inside society, families, and classrooms can strengthen rather than weaken the connection between kids and adults. In Papert's, almost optimistic view, computers and digital networks can help to overcome the intergenerational divide if parents and teachers are going to connect with children, playing the digital play with them. As it happens in Mamamedia (www.mamamedia.com) the large community[2] (5,4 million young subscribers) that Papert founded together with Idit Harel Caperton (the today CEO of the project) in 1995. MaMaMedia.com is a pioneer Internet dot-com that focuses on promoting digital literacy and creative learning skills for children and their parents. Basing itself on the educational principles of constructivism, the site's goal is to allow children and their parents and teachers to access a vast selection of "playful learning" activities and projects. In applying Papert's constructivist theories, the site seeks to allow children worldwide the opportunity to grow creatively at their own pace, starting from a young age. For example, children using the site can create, save, and share their own animations, cartoons, stories, digital art and games with dynamic tools provided on the website, thereby creating a global exercise in experiential education. Papert believes that overcoming the inhibition and the fears parents and teachers have, often solicited by vendors of software which promise better results for their children, they can participate in the digital learning experiences of the kids, be more sympathetic and learn from the kids to better handle technology, sharing with children

[2] In partnerships with leading Internet content providers, including AOL, StarMedia, EarthLink, Disney's GO Network, Time Warner's Road Runner, Netscape's Netcenter KidZone, and Microsoft's WebTV.

their experience, memories and knowledge in a language that the toddlers understand better. Papert has, in fact, the aim to encourage Gutenberg native to think about the technology in a new and friendlier way for their kids.

6. *Are they different? The diffusion of digital technology in young and very young children*

What Papert understood first in 1996 in *The Connected Family* is the fact that "digital natives" show a passionate and growing enthusiasm for computers and digital technology and this enthusiasm scares teachers, parents and scholars. Papert's 1996 statement today is a matter of fact also confirmed by a large amount of recent social, psychological and pedagogical research. We can quote the recent OECD New Millennium Learner report (Pedrò, 2008), which clearly points out Papert's previous intuition. *"The speed at which technology penetrates children's and young people's lives mimics the rate of adoption at the home level, which runs very fast. According to the last PISA survey (2006), 86% of pupils aged 15 frequently*[3] *use a computer at home. As a matter of fact, in 21 out of the 30 OECD countries the actual percentage is higher than the mean, and in five countries it is higher than 95%. Based on the growth experienced in these rates since the previous PISA survey in 2003, it can be projected that by 2009 the frequent use of a computer at home will become a universal feature of young people aged 15 in most OECD countries"*[4] (Pedrò, 2008). These kinds of data are coherent also with media preferences of the youth. In a UK recent research that is based on a questionnaire which asks the youth to express their preference in using six media, one-third of children aged 8 to 17 chose the Internet as their only choice if they could not have any other, surpassing TV, telephone and radio (BBC Monitoring International Reports, 2002). According to the OECD New Millennium Survey we can find serious evidence about the fact that very young children (0-6) also experience a great deal of exposure to computers. As quoted in the research of Calvert, Ridout, Woolard, Barr, and Strouse (2004), in the US there is a constant linear increase in the use of computer and digital devices in children aged 6 months to 6 years. Children start to handle computers modeling their parent's way of using them at the age of 2.5 years; and they start with an autonomous and quite

3. Defined in PISA as daily or a few times a week.

4 In fact, the presence of children in the home may be a primary reason for the adoption of computer technology in the household. As Drotner pointed out as early as in 2000, access to digital technologies is greater in homes with children than in those without (Drotner, 2000).

finalized use of software and devices – such as simple video games or painting tools - at the age of 3.5. Obviously the socio-economic context is very relevant "already in 2006 children in the United States under the age of 6 almost universally lived in homes with television (98%), with a vast majority having computers (80%) and nearly half having videogame consoles as well (Rideout and Hammel, 2006, quoted in Pedrò, 2008). These data are also coherent with the results of the University of Milan-Bicocca "Children and Computers" qualitative research (Mantovani and Ferri, 2006; 2008) and they clearly show that "digital native" or, speaking in terms of the OECD report, New Millennium learners are very different from us, "Gutenberg native", for the simple fact that the they handle information and communication digital devices in a very natural way, when we have learned to use them as a second language. Using ICT tools for them is as natural as for us, when we were children, opening an illustrated book. And what about digital immigrants? Marc Prensky, famous consultant in new technology and author of "Don't bother me Mom - I'm learning!" (Prensky, 2006) synthesizes the phenomenon in this way: *"Today's students – K through college – represent the first generations to grow up with this new technology. They have spent their entire lives surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age. Today's average college grads have spent less than 5,000 hours of their lives reading, but over 10,000 hours playing video games (not to mention 20,000 hours watching TV). Computer games, email, the Internet, cell phones and instant messaging are integral parts of their lives"* (Prensky, 2001).

7. *Note the difference: the digital native way of thinking*

   Following Wim Veen, the Netherlander scholar who wrote "Homo Zappiens" (Veen and Vrakking, 2006) we can note that the way the digital native learns is in some way different from the way we, Gutenberg native, think and learn.

   We can summarize the difference between digital native and Gutenberg Native in the following chart (modified from Veen and Vrakking, 2006).

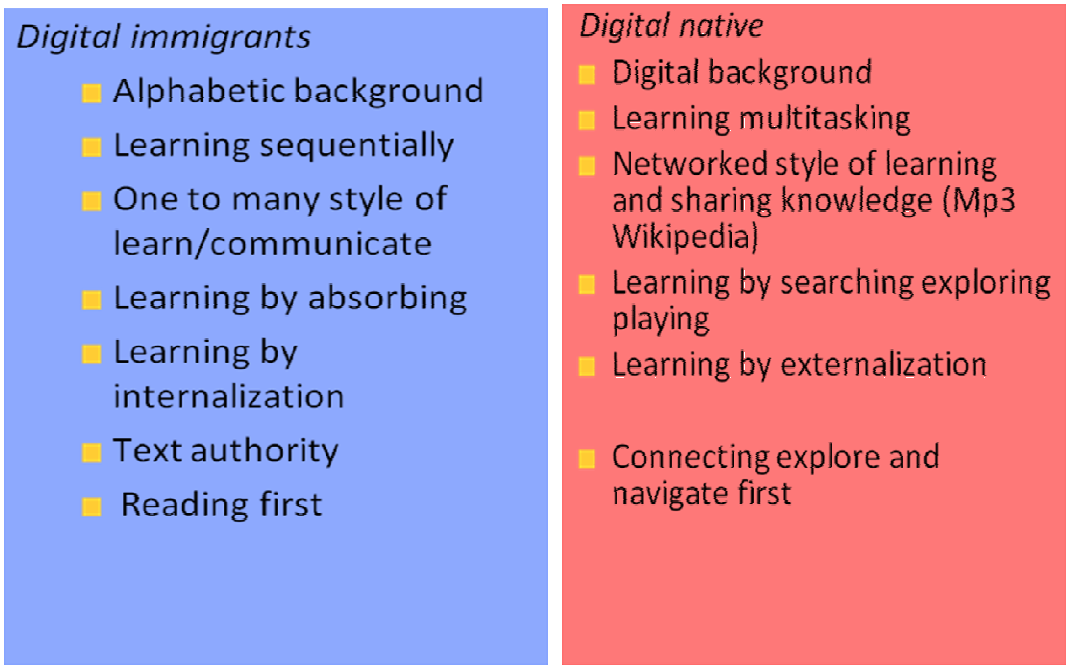


Chart 4 Digital immigrants and native communicating and learning skills

In other words, what we can underline is the fact that the learning skills of digital native have evolved a new form of learning, which is very unusual for us digital immigrants. In the Digital background instead of internalizing knowledge, "put memory first" and reflection we can see the growing importance of social and communication skills. Moreover, we can assist in the important trend in the process of externalizing knowledge. Scholars in education have stressed this social activity of learning even before technology became predominant in the lives of young learners; and this kind of skill is now really insisted on with the astonishing growth of digital devices for communication and learning (Ferri, 2008). The other very important difference between digital native and digital immigrants is the nature of the code they use to communicate and learn with. Our digital immigrant way of learning and communicating was mostly devoted to the alphabetic code and the book, as McLuhan pointed out in the sixties, was the king, and text had monumental authority. Now out of the Guttenberg Galaxy things are changing. The digital native lives, at least in developed countries, in a "multi-screen" society. When they are infants and toddler they see their parents using ICTs and also they begin to use ICTs very early, as we have already pointed out. They get in touch with this new socio-technological environment in the first days of their lives; and this really changes their way of seeing, learning, and constructing their internal and social world. They are used to a

multimodal approach to communications and learning. They experiment knowledge in a digital multimedia way, and in contrast with our Gutenberg native experience which is mostly alphabetical, their brain frame is audio visual, graphic, iconic and "also" alphabetic. Their brain frame (De Kerchove, 1991) is digitally augmented, also digitally deprived and is focused on these attitudes (Veen and Vrakking, 2006):

- high speed
- multi tasking
- non linear approaches
- iconic skills first
- connected
- collaborative and creative
- learning by searching and playing
- learning by externalizing

Lots of parents and teacher understand the need for a mega change in schools and education systems, but very few especially in Italy, Southern Europe understand what to do practically; in England and in Northern Europe it is different: *"In the Netherlands, a variety of innovative schools have started recently to work along new lines. In addition, parents who no longer accept traditional schools have started schools that are based on the ideas and ideals of the Sudbury Valley School in the USA and the Summer Hill School in the UK. When comparing these educational experiments it is interesting to see that all of them have adopted four major organizational, pedagogical and curricular changes"* (Veen, 2007). These experiments are based, according to Veen experience, on a new organization of scholastic curricula, based on longer lessons and training time (4 hours periods), interdisciplinary themes, new set up of the scholastic building (Ferri, 2008) with working areas for 1 to 100 students and continuous individual learning paths (all inside a digital augmented classroom).

The Veen statements are also confirmed by the research project "Children and Computers" carried out by the University of Milan-Bicocca and led by Susanna Mantovani and myself (Mantovani and Ferri, 2006; 2008). The goals of the research are to explore the ways in which preschool children (3-6 year olds) approach the use of new technologies in educational environments, both at home and at school, by

observing their first spontaneous approaches to computers, the changes in their constant use of this tool, their cognitive strategies and relational modalities. Our research aims are:

1. to observe the ways in which preschool children (3-6 year olds) approach computers both at home and at school. In particular we will focus on the spontaneous ways in which children approach the tool as well as on those mediated by adults/other children;
2. to identify children's behavior while they interact with new technologies in different educational environments such as:
    a. at home, where the computer is both a working tool for adults and an everyday tool for the family;
    b. in educational environments outside the home, where the computer will be introduced as the teacher's working tool, and if necessary, as an exploratory tool for the child or group of children (individual or shared exploration);
    c. in educational environments outside the home, where computers are already used as pedagogical tools (observations will be targeted at the identification of children's behavior when they use both computers and the Young Explorer multimedia workstations);
3. to learn the knowing, exploring and learning strategies activated during the children's interaction with these tools (for example, by recording a dialogue between a child and an adult or between different children in front of a computer, and introducing challenges which alter the interaction and thus prompt reactions in the single child, in the interaction between children, etc.);
4. to call in parents and teachers to discuss the observational data (video recordings and observations) regarding both the environments where the observation took place and many others in order to prompt comparisons, comments and interpretations;
5. to develop support pathways for parents and educators. The findings we get after a five year project are very interesting and confirm that the differences between "native" and immigrants are huge (Mantovani and Ferri, 2006; 2008). Directly observing the children handling technology and exploring their potential, we particularly note these emerging phenomena: the toddlers use technology in a cooperative way.

The core method of this research follows the approach taken by Tobin, Wu and Davidson in the seminal study "Preschool in three cultures" (1989) and combines the use of video as a 'stimuli' to provoke discussions and sharing among adults with some qualitative research tools, such as narrative interviews and focus groups. We have done videotapes with 3-6 children and computers (at home and in preschool) and we have used them not "primarily" as data, but as tools to stimulate a multi-vocal dialogue (Bove, 2004). Three municipal preschools have been involved in our research and others will be involved in the future (*Scuola Comunale Clericetti, Milan; Scuola Andersen, Vimercate, Scuola Costa, Milan; these schools are also part of the "Bambino autore project", www.bambinoautore.org).* So far, videotapes have been discussed with teachers and the discussion will be extended to parents in the second phase of our research (Bers, New and Boudreau, 2004).

We assume that the way in which children explore and use computers (individually, with other children or with adults) is strictly linked to the adults' ideas and beliefs, and to their educational models and representations. In our study the voices of parents and teachers will therefore enrich our interpretations and extend the repertoire of possible educational practice with technologies. We also assume that by studying the way in which children approach computers we will promote higher awareness of how children can be considered as "mediators" of a broader collaborative experience of learning based on the use of digital technologies.

We will also conduct some micro-experiments using our previous findings as the starting point for creating settings of "semi-experimental observations"; this will help us create educational settings for cooperative learning and e-learning with children. The results of our research add interesting "field evidence" to our comprehension of the digital native way of constructing the world. The data of our research on Italian children and the others researches we have quoted allow us to hypnotize that the use of ICT changes the cognitive skills of children and young people in many ways. According to our Italian research data:

a. The use of digital devices stresses a multitasking use of media. Our research parents and teachers' focus group results prove that they strongly agree with this idea. Their children use a multitasking approach in gaming, playing and learning. Sometimes they feel this difference with fear, they are not able to act this way.

b. Cooperative learning is the way children adopt also when they are very young, 3-6 year olds, in approaching computers and ICT. As our observation testifies, they very rarely stay alone when they are using a computer al school.
c. Learning by doing ICT and learning with ICT is strongly preferred by the children we observed, emphasizing the need for meta-reflection on practical experience led by teachers.
d. On-line communication, especially instant messaging, messaging etc. has a very widespread pattern of use of ICT (mobile phone Instant messaging) also in the 6-10 year old age group. In Italy the use of the mobile phone is a tool used by particularly all children, both to communicate with peers (mostly with text, SMS) and with parents (voice communication). In Italy parents use mobile phones with children not only to communicate but also as control/care tool. Mobile phones, in Italy have become a mediated tool for parental care. In school the mobile phone is forbidden and teachers are very concerned about the children's use of such a technological tool. In the same way they are very concerned about video game and video User Generated Content.
e. The children at home, as testified from our observation, learn from parents using a modeling style; at school this style is very rarely adopted by the teachers.
f. In Italy immigrant children are particularly fond of ICT (Skype at the Internet café, e-mail etc.)because they are useful for them to keep in touch with relatives. They can help with their integration in school because they have excellent skills to share with peers and teachers.
g. In our view children often dislike educational software because these software are far worse designed and low budget than video game and commercial web sites on the Internet.

Other hints that have come up from our qualitative research are the following:

In Italy the digital native (Prensky, 2001) phenomenon begins relatively late. It starts with children born after 1993, not earlier. This is probably because of the gap with the US and Northern Europe in the spread of computers at home and in schools. The first serious government plan for new media introduction in schools began in 1996 PSTD (Plan for the development of instructional technology).

In Italy the use of ICT is a domestic phenomenon, the use in school is rare and only a few days per month. In fact, there's a big divide between the family and social appropriation of ICT and the primary and secondary schools use.

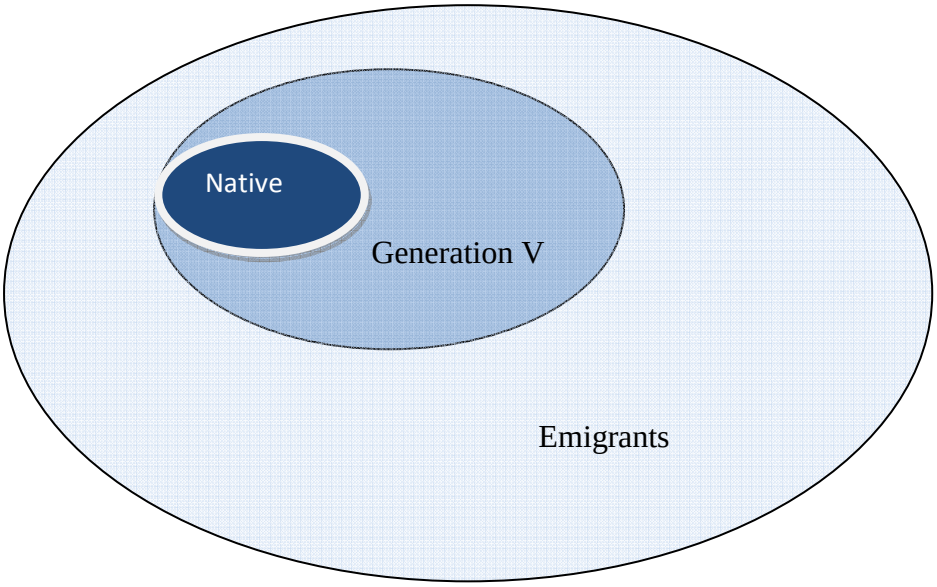
To conceptualize this phenomenon we can speak of "multiple intelligence" at work for digital natives (Gardner, 1993) through multimedia devices: the digital kids show a variety of way of constructing and reframing the world, with strong emphasis on video, graphical and musical intelligence (Caron and Caronia, 2007). We don't know if this means the end of the alphabetic world, but we can say that the digital natives are moving from an "only alphabetic" paradigm in learning and teaching (Bolter and Grusin, 1999). And are the adults aware of this problem? Are they really aware of the challenge of the "natives" to our cultural heritage and traditions? Are they conscious of the huge relevance of the generational divide problem? Let's analyze this last problem.

8. What does generational digital divide mean?

To better understand the generational divide it is necessary to understand better what digital immigrants feel and think about the technology of the digital immigrants. "*The importance of the distinction is this: As Digital Immigrants learn – like all immigrants, some better than others – to adapt to their environment, they always retain to some degree, their "accent," that is, their foot in the past"* (Prensky, 2001). The "digital immigrant accent" can be detected in many ways; for example, turning to the Internet for information second rather than first, or in reading the manual for a program rather than assuming that the program itself will teach us to use it. Most of the digital immigrants had to learn this second language to maintain their job in the age of the "digital revolution" (1996-2000). They learn, except for a small amount of advanced knowledge workers, to use ICT for making money and to better organize their work They do not consider first ICT a communitary and identitary medium. Today's elders, inside a Gutemberg Mass society, were "socialized" differently from their kids; and are now in the process of learning a new language. And a language learned later in life goes into a different part of the brain. "*There are hundreds of examples of the digital immigrant accent. They include printing out your email (or having your secretary print it out for you – an even "thicker" accent); needing to print out a document written on the computer in order to edit it (rather than, just editing on the screen); and bringing people physically into your office to see an*

interesting web site (rather than just sending them the URL). I am sure you can think of one or two examples of your own without much difficulty. My own favorite example is: 'Did you get my email?'" (Prensky, 2001).

Form Gartner Research analysis (www.gartner.com) an interesting new paradigm in studying this phenomenon emerges, which we can synthesize in the following chart:



In the same way we can split the population of OECD countries into:

1. Native
2. Generation V
3. Pure Emigrant

We have already spoken about the first group. The third group, the pure immigrants, is made up of people mostly over fifty years old who grew up without digital technology and adopted it later. A digital native might refer to their new "camera"; a digital immigrant might refer to their new "digital camera". This kind of immigrant has an instrumental or low use of the net, and the computer is difficult; except for the "silver surfer" (see the chapter by Pieri in this volume) who may understand properly the new frame of communications. But not all the immigrants are the same, especially the so called V generation. The Virtual generation is a generation of digital immigrant who can do something to manage the generational divide. They are immigrants who have understood the relevance of the problem. They are the baby boomers or younger immigrants who in their general behavior, attitudes and interests start to blend together in an online environment. The idea of Generation X (and later Generation Y) was conceived as a way of understanding new generations that appeared not to have

connections to the culture icons of the baby boomers. However, as more baby boomers (who are living longer) and the younger generations go online and participate/communicate in a flat virtual environment, the generational distinctions break down. Generation V hops across segments at various times of life for various reasons and is likely to act like several generations at any given time. *"For Generation V, the virtual environment provides many aspects of a level playing field, where age, gender, class and income of individuals are less important and less rewarded than competence, motivation and effort"*, said Adam Sarner, principal analyst at Gartner. We are generation V members; what does that make the rest; what can we do to overcome the digital generational divide inside our home or classroom or society? How can those of us who were not born into the digital generation handle the problem?

6 Conclusion: don't break the memory line!

You can find some answers to these questions, inside the chapters of this book that may give the generation V hints and instruments to overcome the generational divide through the experience we had during the Memory Line UE research project. We and our international partner worked with the aim to contribute to outline better the different dimensions of the digital generational divide problem. The goal of our qualitative action research project, as will be shown in the following chapter from a theoretical, methodological and experimental point of view, is to construct a bridge between digital native and digital immigrants. In more detail: the Memory Line project aims to train groups of elderly and young citizens, living in the project's partner countries, to collect records (stories, songs, poems, experiences, etc.) in order to ensure their conservation and dissemination. We aim to create a model of cooperation and inter-regional and intergenerational learning based on memory and communication, and to promote innovative experiences within the area of lifelong training. The main research issues are:

- How can the relationship between memory, knowledge and communication be affected by the passage from an analogical civilization to a digital civilization?
- How can this be translated into practice?

There are two intertwined topics in the project:

- Intergenerational digital divide: how do old and young people relate to new digital technologies? Are there relevant differences? Why? How can we "bridge the generational gap?"
- How can digital ICTs help to keep and hand down memories between generations? Is the "digitalization" of our culture leading to a general "loss of memory", or to the decrease in personal mnemonic abilities?

We have tried to accomplish these tasks in our research, working directly in the atelier of each country involved in the project, where we collected and shared the memories of younger people and elders in presence, and on the web (http://www.memoryline.org/). After the field phase we analyzed the data and sketched our theoretical framework and possible solutions to save the "memory line" from the generational digital storm. If we have succeeded or not, is up to the readers of the study.

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Social memory, (digital) storytelling and local communities

Andrea Pozzali

"… the art of storytelling is coming to an end. Less and less frequently do we encounter people with the ability to tell a tale properly. More and more often there is embarrassment all around when the wish to hear a story is expressed. It is as if something that seemed inalienable to us, the securest among our possessions, were taken from us: the ability to exchange experiences".

Walter Benjamin, *The Storyteller*

1. Introduction

Contrary to what Walter Benjamin (1968) wrote in his essay on the work of Nikolai Leskov, cited in the epigraph of the present paper, it seems that we are currently witnessing a sort of "renaissance" of the art of storytelling. This has been favoured by the development of new digital media technologies and by the wide spread success of the Internet, that taken together have allowed for the diffusion of the practice of digital storytelling, *"…a workshop-based process by which 'ordinary people' create their own short autobiographical films that can be streamed on the web or broadcasted on television"* (Burgess, 2006, 207). The roots of this practice can be traced back to the activities of the Center for Digital Storytelling (www.storycenter.org), founded in 1994 in Berkeley, California, by a group of media artists, designers, and practitioners who aimed to explore how personal stories and storytelling could relate with the emergence of a new set of digital media tools; subsequently, this type of narrative technique has been diffused worldwide: another notable example is provided by the work of Daniel Meadows, also involved in the BBC 'Capture Wales' program (see www.bbc.co.uk/capturewales). The success of these types of activities has recently led the Center for Digital Storytelling, in collaboration with The Museum of the Person International Network (an international network of virtual museums of life stories, located in Brazil, Canada, the USA and Portugal) to launch Listen! – International Day for Sharing Life Stories, an international celebration of life stories that took place on May 16th 2008 and involved people from all over the world (http://internationaldayblog. storycenter.org/).

From a social scientist perspective, this overspread interest in digital storytelling can represent the starting point for a series of reflections that link together research on the

diffusion and use of digital information and communication technologies which are at the basis of the development of the so-called Information Society (cfr. Castells, 1996), with extensive analysis on the theme of social and collective memory and its relationship with the rise and reinforcement of the sense of local identity. In the present paper, I will try to briefly sketch an overview of how these general themes – social memory, (digital) storytelling and local communities – can be addressed together in an attempt to understand how shared memories can be created and transmitted with the help of modern ICTs, and how this can represent a way to reinforce the sense of belonging to a given community.

The paper is organised as follows: in paragraph 2 I will briefly address the issue of the relationships between individual and social memory, trying to show how it is not possible to clearly separate the two – as a certain line of research has tried in the past – as the process of memory is fluid and ever changing, in which individual and social elements are strictly intertwined. In the third paragraph the relevance of social memory in building a sense of shared identity and of community belonging is discussed, taking into account how this can also be related to some specific aspects of the historical phase we are currently living in, characterised by a rate of intense change that increases the need to find stable reference elements; the rise of a renewed sense of local identity can be seen then as a response to profound psychological needs, as individuals may find it more and more difficult to adapt to social turmoil. Finally, in the last paragraph I will discuss some practical examples and experiences that show how modern ICTs, which usually are taken to represent the classical example of those disembedding mechanisms that separate the self from space and time (cfr. Giddens, 1990, on the disembeddedness as a key feature of modernity), thus contributing to raise the sense of alienation, can on the other side also constitute a useful tool to preserve traditional memory and help a community to maintain a sense of its own deep roots.

2. Individual and social memory

The study of memory represents a broad field of inquiry, that with time has seen the convergence of many different disciplines and critical perspectives. During the course of history, memory has been investigated in many ways; by philosophy, sociology, history, psychology, anthropology, literary criticism, and etc. Recently, contributions

coming from the field of neuroscience have contributed to shedding more light on the mechanisms of remembering and forgetting which take place in the human mind, helping us to gain a deeper understanding of the neural basis of mnemonic faculties (Paller and Wagner, 2002; Rugg and Wilding, 2000).

Obviously, it is not possible here, due to space constraints, to enter into a detailed discussion of all the relevant literature that has been cumulated on memory studies. What I would like to do instead is to focus on the relationships that can be established between memory at the level of individuals and the rise of forms of shared memory at the level of groups. This is a heavily debated topic which is particularly germane for our work on digital storytelling as a way of building a sense of belonging to a given community.

Studying this relationship brings us to the necessity of examining how the traditional psychological approach to the problem of memory has been progressively giving way to other approaches, which are more focused on the contextual and social factors that can affect the way in which individuals remember and forget. This redefinition of disciplinary boundaries, in which fields like history, sociology and anthropology have progressively claimed a role of their own in the study of memory, has been particularly strong in the last twenty years, as a result also of more general cultural tendencies which have marked the end of the last century. Among these, we can, for example, include the success of postmodernism, with its strong criticism of the notion of a presence of a linear relation between history and truth, that has in turn raised the attention on how local memories and traditions can help to build more realistic accounts of the past (Olick and Robbins, 1998, 108).

Another strong push in this direction has been provided by the sociology of knowledge, in particular by those studies that, starting from the seminal contribution of Berger and Luckmann (1966), have analysed the way in which local bodies of knowledge can cumulate and be transmitted through generations. Recently, the interest in "local expertise" has revived also in the sociology of science, thanks to those authors who have debated at length on the role – and on the limits - of expert knowledge as a guide to political decisions in matters which involve a high level of scientific and technological complexity (see Collins and Evans, 2002 and the debate this paper has promoted in journals such as *Social Studies of Science*, *Public Understanding of Science* and *Science, Technology & Human Values*). Even if these studies were more concerned about local knowledge – as opposed to the official,

certified knowledge held by experts – than on the issue of memory, there is no doubt that this approach can also be seen as another patent manifestation for the rise of interests in local communities as active actors of our times. Moreover, local memories can be seen as an integral part of the body of traditional knowledge that is transmitted through generations, and that can be opposed to expert knowledge that "comes from above", irrespective of the specific features of local communities.

All this wave of interest concerning the role of local memories has contributed in the end to raise the awareness in the fact that memory, far from being *"a unitary faculty of the individual, single mind"*, *or "an objective, reliable, measurable and predictable cognitive system"* (Brockmeier, 2002, 5), must be in reality understood as a process, profoundly imbued with specific cultural and social factors. This kind of shift of paradigm has also raised more than one attack against the traditional way in which psychology, and even experimental psychology, has framed the approach to the study of memory. The following quote by Bloch (1996, 216) can be taken as a significant example: *"The problem with psychologists' approach to memory in the real world comes from their failure to grasp the full complexity of the engagement of the mind in culture and history, and, in particular, their failure to understand that culture and history are not just something created by people but that they are, to a certain extent, that which creates persons"*.

To be honest, it must be recognised that this traditional contraposition of psychology on one hand and other social sciences such as sociology, anthropology, ethnology on the other side seems to be quite outdated. Indeed, recent developments in the field of cognitive psychology started to explicitly recognise that it is not possible to study the individual mind as an isolated entity, but instead that the mind itself must be considered as a "social organ", that creates and elaborates its responses to a series of stimuli that come from the surrounding environmental and cultural context (cfr. Viale, Andler and Hirschfeld, 2006).

As long as research on social memory process is specifically concerned, different experiments in the field of cognitive psychology have begun to show how story-recall performances can be influenced by the specific context in which the story telling takes place. This holds in particular for autobiographical memories. The same act of remembering quite often means telling to other people something about our lives, or something we know. In these cases, what we tell (and therefore what we recall) can change according to whom this act of telling is addressed (Weldon and Bellinger,

1997). Depending on the characteristics of listeners, people selectively recall certain parts of their stories and hide some others; in the long run, this selection process can have an impact not only on the way personal stories are told to others, but also on the way in which they are stored in memories, as there is a double self-reinforcing mechanism between the processes of memory storing and of memory retrieval (Marsh and Tversky, 2004; Adams, Smith, Pasupathi and Vitolo, 2002).

It must be recognised that this specific interest toward the social dimension of memory cannot be considered completely new in psychology, as long as deep traces of it can be found even in the work of pioneers such as Bartlett (1932). Strong criticisms on the possibilities of limiting the study of memory to the artificial context of the laboratory have in more than one occasion been also raised by Ulric Neisser (1982; 1988), always credited to be one of the founders of cognitive psychology. Neisser divided psychological research on memory into two broad categories: high road studies, that use experimental settings in order to discover the basic mental mechanisms that allow people to remember, and low road studies, aiming to understand the specific characteristics that memory can assume in everyday life. Even if high road studies have allowed to collect a considerable amount of valuable empirical data, their results can be effectively interpreted only if taken together with evidence coming from more "ecological" settings, as the ones considered by low road studies. Altogether, it seems that a certain consideration of the relevance of contextual and social factors cannot therefore be considered as something completely "new" for cognitive sciences; what is new is the fact that this interest nowadays seems to be spread among the vast majority of researchers, and not confined to a few authors.

On the other side of the balance, it is easy to find in the literature on social memory a clear recognition of the fact that only individuals have the ability to remember. Maurice Halbwachs is often credited to be the first to have introduced the term "social memory" into modern circulation with his book *Social Frameworks of Memory*, published in 1925[1]. Moving in a framework that owes many debts to Durkheim's theory of society, *"Halbwachs developed his concept of collective memory not only beyond philosophy but against psychology, though the very idea of a social memory appropriates psychological terminology. (…) He argues that it is impossible for*

[1] Another theory on social memory was developed at the same time by the art historian Aby Warburg, whose interests were more focused on the process by which a certain "mnemonic energy" can find its own objectivation, leading to the development of specific cultural forms and to the production of works of art.

individuals to remember in any coherent and persistent fashion outside of their group contexts: "There is [thus] no point," he argues, "in seeking where… [memories] are preserved in my brain or in some nook of my mind to which I alone have access: for they are recalled by me externally, and the groups of which I am a part at any time give me the means to reconstruct them…" (Halbwachs 1992, p. 38)" (Olick and Robbins, 1998, 109). Notwithstanding this strong anti-psychological stance, still *"Halbwachs reminds that it is only individuals who remember, even if they do much of this remembering together"* (Olick and Robbins, 1998, 111), and this awareness of the fact that it's not possible to abstract away from the specific characteristics of individuals seems today to be quite unanimously shared within the community of researchers (cfr. also Fentress and Wickham, 1992).

The need to take into account the complex relationship between individual and social memory has led to the development of careful taxonomies, that have tried to grasp the different facets of memory and the differences that can be established between local memories and official history. Once again, Halbwachs has pioneered this type of analysis, with his distinction between autobiographical memory, historical memory, history, and collective memory. *"Autobiographical memory is memory of those events that we ourselves experience, while historical memory is memory that reaches us only through historical records. History is the remembered past to which we no longer have an "organic" relation - the past that is no longer an important part of our lives - while collective memory is the active past that forms our identities. Memory inevitably gives way to history as we lose touch with our pasts"* (Olick and Robbins, 1998, 111). In this framework, history is opposed to collective memory, just like the static is opposed to the dynamic: when history is fixed in textbooks or in other codification mechanisms, it no longer has a real, lively relevance for us, it can no more represent an element that has a real resonance in our daily lives. On the contrary, there is a profound connection between autobiographical memory and collective memory, as the first can be considered in a certain way the constitutive element of the second. Halbwachs meant also to underline the dynamic and problematic process that is at the basis of the construction of a shared memory, that cannot be considered as something given "once and for all", but is always subjected to discussions and renegotiations between the members of the community.

It is this ongoing process of collective remembering and forgetting that really allow people *"…to acquire their memories. It is (…) in society that they recall, recognize,*

and localize their memories" (Halbwachs 1992, 38). As it is true that memory always depends on cultural vehicles for expression, so the culture and context we are embedded in exert a strong influence on the way we can construct and share our memories with other people, thus also building a sense of community, or put in a different way, a "shared memory", a common frame of reference with which it is possible to look at the past. This complex relationship between individual and collective memory becomes even closer, as we have already seen, when individual memories are shared and transmitted under the specific form of stories of individual lives: *"The process of constructing a life story is heavily mediated by social construction; for example, it usually occurs in a social setting that shapes the stories told. (…) Halbwachs was the first to theorize that individual memory is socially mediated and structured. For him, the idea of an individual memory totally separate from social memory was "an abstraction almost devoid of meaning" (Connerton 1989:37). (…) Individual, said Halbwachs, acquire, localize, and recall memories in the associational contexts of various groups, from kin affiliation to nations and transational groupings. There is no neutral ground; every person has affiliation bias that "colors the form and content of remembering at all ages and across generations" (Ross 1991:1971)"* (Cattel and Climo, 2002, 23).

It is precisely this complex interlacement of individual mnemonic mechanisms with social processes of interaction that can in the end create a shared sense of belonging to a given community; this also explains the great interest that social scientists show in intensifying the analysis of these topics, as long as *"…people are individual subjects, but social memory helps explain how people become linked to groups"* (Degnen, 2005, 735). Memory then becomes a constitutive part of the sense of identity, both at the individual and at the social level.

3. Memory and identity

In the philosophical tradition, starting from the work of John Locke in the XVII century, memory has quite often been associated with personal identity (cfr. Locke, 1975). With the development of new technologies to analyse the functioning of human minds and with the associated growth of a whole new field of inquiry, that of cognitive neurosciences, the issue of the relationship between memory and identity

has been the object of a strong renewed interest (see the volume edited by Noonan, 1993, for a good synthesis of the main points of this debate).

The growing body of research on memory has produced a great amount of evidence, but it must be underlined that still a unifying paradigm, able to take into consideration in a single framework all the different points of view, is missing. Different models and different categorization typologies have been proposed in order to grasp the functioning of memory, but there is no unanimous consensus in the community of research. As it is not possible here to discuss in detail all this body of literature, there are a few points that can be considered quite consolidated.

The first distinction one has to take into consideration when talking about memory is the well known differentiation between short-term memory and long-term memory. William James was the first to have introduced this dichotomy. In his *Principles of Psychology* (1890/1950) he talked about a primary and a secondary memory. Following James, the existence of two different kinds of memory, where the discriminating factor is linked to the time of persistence in the human mind, has been a common point of reference in the psychological literature. Only in recent times this differentiation has been somehow questioned, by some authors that have proposed more refined temporal differentiation; Schwartz and Reisberg (1991), for example, considered four types of memory. In other contributions, the distinction between short and long-term memory is somehow surpassed by a more sophisticated frame of reference, where the attention is put on the existence of different systems of memory, each one with its own plurality of sub-systems (Schacter and Tulving, 1994).

Leaving aside these developments, it must be underlined that there is a kind of general consensus concerning the fact that even if linked between each other short-term and long-term memory work in different ways and with different effects. Short-term memory is a kind of operating memory, where information that is useful for the accomplishment of a given, immediate task, is retrieved and stored. This type of memory has a limited capacity, as it can only keep a fixed amount of information (Miller, 1956); for this reason, it functions as a sort of buffer, where information is loaded only when necessary and is deleted once the task has been done, in order to allow for new information to be retrieved and for a new task to be performed. Long-term memory, on the other hand, can be considered as the central archive in which all information is stored. This is the memory that is usually believed to be in strict linkage with the sense of personal identity and with self-consciousness in general.

Long-term memory can in turn be divided into different sub-types; it is precisely at this point – how many different types of long-term memories should be considered – that differences between authors arise, as many different typologies can be considered. The most common classification considers four types of long-term memories (Brewer, 1986; Tulving, 1986):

- Autobiographical memory: this type of memory recalls in general terms, events and facts related to our lives.
- Episodic memory: also this type of memory recalls facts and events of our lives, but not in general terms. Instead, in this type of memory information is retrieved in a specific way. The memory of the fact that we have been to college is an autobiographical memory, while the memory of a specific event we may have shared with our classmates represents an episodic memory.
- Semantic memory: this is the memory linked to the use of language and to the storage of notions, ideas, categories and concepts that enables us to accumulate a given declarative knowledge concerning art, science, philosophy, history, technology and so on.
- Procedural memory: this is the memory that enables us to recall how to practically perform a given task. This type of memory is different from the others, as long as it is not declarative and explicit, but implicit. It cannot be articulated or constitute the object of a narration, as long as it has an embodied nature: it can only be shown. The existence of this type of memory explains the reason why sometimes we have to perform a task in order to recall how it has to be done (Anderson, 1983). Procedural memory is stored in the physical body as well as in the brain: *"Ballet dancers' muscles and pianists' fingers have learnt to do their job just as much as their brains"* (Edelman, 1992, 105)[2].

In a certain sense, the same role that long-term memory plays as long as the individual sense of identity is concerned, is played by social memory when we take into consideration the sense of identity of a given community. Obviously, when talking about social memory, it makes no sense to talk about a short-term and a long-term

[2] Procedural memory has got also some other peculiar characteristics that make it quite different from declarative memory. Among other things, it is less subject to decay, as it is demonstrated by the fact that amnesic subjects, that manifest significant losses in their declarative memory, still remain able to perform some assigned tasks, even of a complex type like the puzzle known as "the tower of Hanoi" (Cohen, 1984).

memory: there is no such thing such a operative, short-term memory at the social level. In any case, different types of "long-term social memory" can be considered. We have already seen that Halbwachs used to differentiate between autobiographical memory, historical memory, history, and collective memory, but this type of taxonomy does not explicitly separate between the individual and the social level of analysis and this, as was previously discussed, can engender some confusions. A more refined classification of different forms of social memory has been proposed by Assmann (1995), who *"…distinguishes among four modes of memory in an effort to capture the range of memory problematics: 1. mimetic memory - the transmission of practical knowledge from the past; 2. material memory - the history contained in objects; 3. communicative memory - the residues of the past in language and communication, including the very ability to communicate in language; and 4. cultural memory - the transmission of meanings from the past, that is, explicit historical reference and consciousness"* (Olick and Robbins, 1998, 111-112).

What is interesting in this classification is the fact that it explicitly recognizes the fact that - in parallel to what we have seen for individual memory – it is not possible, in considering social memory, to limit ourselves only to those forms of memory that have a declarative and explicit character. Mimetic and material memories, as embodied in physical bodies, objects and artefacts, represent an important part of the overall cultural legacy that can be transmitted from one generation to another, and that constitutes the tangible element of social identity.

Understanding the way in which social memory and identity are linked is not an easy task. In general, it is quite evident that personal identities are an attribute of individual beings but, as Olick and Robbins clearly state, *"...even the most individualistic persons (…) situate their personal identities within social and cultural frameworks, where memory play a similarly significant role in constituting the identity of groups. Everyone is socialized in "mnemonic communities", where we learn to remember much that we did not experience as individuals"* (Olick and Robbins 1998, 123). It is precisely in this way that "sociobiographic memories" are built, that can *"cross time and space, linking individuals within generations (cohorts) and across genera-tions and tying individual identities to social identities"* (Cattel and Climo, 2002, 35). Put in still another way, social memory can be considered as *"the means by which information is transmitted among individuals and groups and from one generation to another"* (Crumley, 2002, 39).

This role, that social memory can play in the shaping up of a common social identity, can take place on at least two different levels. At the "macro" level, social memory represents one of the building blocks of national or supra-national identities (Eder and Spohn, 2005), and it can have a relationship of complementarity or of contraposition with "official" history: this happens, for example, when a given nation, or a part of it, does not recognize itself in the historical narration of the past that is contained in textbooks and other official documents. At the "micro" level, social memory is the means that al-lows the survival of local traditions and of the local body of knowledge. In any case, notwithstanding the specific level we are considering, social memory is one of the main forces that can keep a community well connected, as it becomes particularly clear in those instances where a social, shared memory is – for one reason or another – lacking. The effects of such an absence can bear dire consequences for the survival of communities, in the same way that a loss of memory at the level of individual is usually associated with the loss of the sense of personal identity and self-awareness.

"So, while collective memory is a chimera, we do create shared memory to establish our self-identity in juxtaposition to the identities of others, but shared memory also creates family ties and friendships. The sharing of memory brings about not only self-knowledge but also mutual understanding and trust between people. Memories are the cords that bind individuals together as neighbors, communities, and even larger groups. Conversely, mutual exclusive or conflicting memories can create mistrust and divisions between people" (Archibald, 2002, 78).

As a way to build a sense of belonging to a community and to reinforce personal and social identity, the relevance of social memory is reinforced in those historical phases in which some external factors can, in a way or in an-other, be perceived as potentially threatening the community itself. The period we are currently living in, characterised by a profound wave of overall changes at the political, social and technological level, represents exactly one of those phases: it is no coincidence then that the theme of social memory is becoming more and more important, as this can represent a sort of shelter where individuals may find a way to *"…slow down in a world of high-speed communication, information overload, and epistemological unease"* (Olick and Robbins, 1998, 120). Pierre Nora, a French historian who has devoted a considerable effort to keep traces of local memories in his seven-volume *Les lieux de mémoire*, speaks in similar terms of the period we are living in as a

"crisis of memory", provoked by the fact that modern technologies increase the speed of life and make people forget about the traditions of their recent past. The interest in memory is then seen by Nora as a paradox, typical of the postmodern condition: in his own words, *"[w]e speak so much of memory because there is so little of it left"* (Nora, quoted in Olick and Robbins, 1998, 121).

4. *Digital storytelling as a way of reinforcing the sense of community: some experiences and critical remarks.*

Even if modern digital technologies are often credited to be one of the causes of the postmodern condition of disorientation, as they represent a sort of disembedding mechanism that separate the self from contingencies of space and time (Giddens, 1990), these same technologies also hold a great potential to preserve social memories. It is quite evident that it is not possible to separate the analysis of memory from that of the mechanisms and means for memory storage and communication. New technologies for saving and transmitting data and information are not neutral, as they bring about deep social changes in the overall systems of social memories. The invention of printing marked one of these phases of profound reassessment, and the present phase, with the advent of the computer and the boom of the Internet, can be considered as another one.

What must be underlined is the fact that these technologies, if compared to written texts, can represent an irreplaceable means of preserving those types of memory that do not have an explicit and declarative character, and still represent, as we have seen, an important part of the overall memory, both at the individual and social level. A digital narration can convey a much greater amount of information that a textual one[3]; not only is it possible to give the listener at least a general hints of the emotions that the storyteller is passing through, but also gestures, body postures, and so on can be saved and transmitted. In more formal terms, digital technologies embrace a greater potential to codify all those kinds of "tacit knowledge" that would otherwise be completely lost as long as they cannot be transferred with words (Polanyi, 1958; 1966). It is no coincidence that one of the fields in which the workshops organized in

[3] Obviously, what is said here for digital narrations holds in the same way for analogical visual narrations, but here the relevant difference is linked to the different costs involved (digital technologies are on average far cheaper) and on the perishableness of the support (analogical supports are much more fragile and require a considerable maintenance effort).

the Memory Line project took place concerned the preservation of local traditional in handicrafts, since the know how that is at the basis of these professions cannot be completely saved if put into a text, but can be (at least in part) captured in a visual narration.

Another way in which digital technologies can help to preserve social memory is linked to the possibility of documenting how places change over time. The importance of places and more generally of the visual factor for memory, is something that has been recognized since classical times. The "art of memory", developed in Ancient Rome and still diffused during the Renaissance (Yates, 1966), was based precisely on the ability to attach specific pieces of memory to a given place. The reliance on these kinds of visual mechanism was obviously more diffused in the "oral culture" (Ong, 1982), and has progressively vanished as printing became more diffused (this also confirms how the discourse of memory is deeply intertwined with the one concerning technologies, as said before).

It is well known that memory is somehow linked to all five senses, in one way or in another[4]. Still, the visual element seems to be one of the most powerful ways to gain access to our memory: *"Place is the crucible of memory, (…) The places where things happened are stimuli to memory, and there in those places, memories will pour out with irresistible force. An individual will feel this sometimes overwhelming power in a place, and so will a family, even a community or a nation"* (Archibald, 2002, 68). As Gaston Bachelard (1957, 19) wrote *"non seulement nos souvenirs, mais nos oublis sont 'logés'. Notre inconscient est 'logé'. Notre âme est une demeure. Et en nous souvenant des 'maisons', des chambres, nous apprenons à demeurer en nous-mêmes"*.

But what happens if the places of our memory, the places we were used to living in, undergo radical changes as the one we can witness in many of our cities, as a consequence of great urban transformation plans? As we have already seen, the "crisis of memory" gets more and more intense as the rate of change of the social and environmental context grows. The radical transformation of a town district, for example, can represent a dramatic loss of local and traditional memories, and this in turn can have a negative impact on the social cohesion of the community. This type of

[4] It is not necessary here to remember the famous passage of Proust's *Du côté de chez Swann*, where an entire series of memory come to the mind of the Narrator when he rediscovers the taste of a *madeleine*.

changes are not limited to the architecture of a town, but can also have relevant consequences at the social level: as old inhabitants die, or have to move elsewhere as a consequence of gentrification processes, the memory of the place risks being completely lost.

An interesting example of how digital technologies can help in these cases comes from the Spanish experience of the *22@Barcelona* project. This initiative, that represents a great project of urban transformation for the city of Barcelona, aims to transform two hundred hectares of industrial land in the district of Poblenou into an innovative cluster, offering modern spaces for the strategic concentration of intensive knowledge-based activities. The public investment for the infrastructure plan amounts to 180 million Euros. The project is not limited to the development of an ambitious plan of urban renewal, but it also aims to find solutions to the challenges posed by the knowledge-based society and to develop a new model for the city of tomorrow.

Within this general framework, one of the most interesting aspects of *22@Barcelona* is represented by the multimedia project Virtual Memory of the Elder, that addresses two significant problems in the development of an inclusive knowledge-based society: the intergenerational digital divide and the preservation of local memories and traditions (http://www.memoriavirtual.org/). In the project, students and elderly people work together to recover the historical memory of the Sant Martí district. The narration of the district past are collected by youngsters who interview and talk with the elders, and then put and saved in a digital format which makes them also available also to a greater community. This way, not only is it possible to recover the district's historical memory, that otherwise would be lost as a consequence of the radical transformation of the zone, but the elderly are also given the opportunity to learn more about new technologies, thus reinforcing the bonds between different generations and creating an important opportunity for the development of a new sense of community.

Digital technologies and digital storytelling can also help from the start to create a sense of community, in those cases where people coming from different locations gather together to give birth to a new district. An example of how this can be done is represented by the case of the Kelvin Grove Urban Village, a master-planned community in Brisbane that has been developed thanks to a strong partnership between the Queensland University of Technology and the Queensland Government's Department of Housing (www.kgurbanvillage.com.au). The village is located in a

place that has a rich history of its own, but was not used as a residential location before. For this reason, the sense of community in this case *"… needs to be creatively nurtured, allowing residents to build on the rich history of the area and feel a sense of ownership with their new environment. Even though few people have lived on the site that is the KGUV, many people associate strongly with the location. Since early 2004, the wider community has engaged in sharing stories of Kelvin Grove's physical past (1825-2005) through photographs, public artwork, a collated institutional history, a published book, oral history collections, digital stories and a 'living archive' website, as part of the Sharing Stories history project"* (Klaebe and Foth, 2006, 2).

What is interesting in the Sharing Stories project is that in this case, given the peculiar characteristics of the initiative and of the Village, digital storytelling is not used only as a way of retelling the past, but also for collecting materials and personal experiences concerning the present, everyday life in the village, and to help people express their views concerning their desired future developments, both for what concerns their individual life and the future of the community. This way, the sense of community that can be created, as long as people learn to share their different life experiences, really becomes the active ground on which a new community can develop and prosper.

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The Elderly and ICT

Michelle Pieri and Davide Diamantini

1. Introduction

The European Union is paying special attention to the possible positive advantages in the use of the modern Information Communication Technologies (ICT) in general, but it is particularly sensitive to the use of ICTs for elders. In Europe, as European commissioner for the information and media society, Viviane Reding, underlines, demographic ageing represents a challenge for the job market and health and rehabilitation organizations, but at the same time it offers an economic and social opportunity. ICTs offer new products and more accessible products and services which answer to the needs of the elderly.

In 2007 the European Commission adopted an action plan called "*Ageing well in the Information Society"* to meet the challenges posed by the ageing European population (http://ec.europa.eu/information_society/activities/einclusion/policy/ageing/launch/index_en.htm). This action plan is accompanied by a new European Community research program which has increased the investments for research on information and communication technologies by more than one billion Euros; it is destined to help elderly European citizens to remain active and independent longer. It has three main goals: to improve the quality of life of elderly Europeans and their participation in society, to offer new opportunities for European companies and to create more personalized and efficient social and health services.

Most of the elderly are not able yet to take advantage of what the digital era offers, only 10% of them use Internet. In fact, the use of Internet would allow elders to have free or very economic communications; like for example, instant messaging, and services like online banking which could answer to some of their real needs. Many old people, frustrated with problems of eyesight, hearing or mobility, do not feel like venturing out into the vast world of the information society. ICTs can help the most elderly improve the quality of their life, to stay in good health and to live autonomously longer. In fact, innovative ICT solutions are emerging which should contribute to giving a solution to memory, eyesight, hearing and mobility problems

which are more present as people grow older. Furthermore, ICTs give seniors a way to stay active in their work and their community. We should not forget that the experience and professionalism accumulated by elders during their lives are not something to get rid of as quickly as possible only because they are not directly linked to the ICTs; but on the contrary, they are an important strengths in the "*knowledge society*" (htpp://eurlex.europa.eu/LexUriServ/site/it/com/2007/com2007_0332it01.pdf). For these reasons the action plan approved by the European Commission regarding seniors and ICT has the following objectives:

- to overcome the technical and regulatory barriers which block the development of the market, through a valuation of the market and the promotion of the exchange of good practices among member States
- to awaken public opinion and create common consent by means of collaboration of subjects interested in the 2007 action plan, and to set up an Internet portal on good practices
- to accelerate the adoption of the technologies through, for example, pilot projects and European incentives which reward intelligent domotic applications and others which favor people's autonomy
- to reinforce research and innovation thanks to the immediate support of a joint public/private research program for the elder categories in the domotic sector, which intends to favor the development of innovative products, services and systems based on ICTs for the service of an ever longer living European population.

The document *"Ageing well in the Information Society"*, though underlining the strong potential market both in terms of assets and potential savings tied to the promotion of the ICTs for the elderly, does not hide the fact that there are numerous obstacles which are: access, accessibility and ease of use, interoperability and modularity between instruments and services. As seen, only 10% of seniors over 65 regularly use Internet, with respect to the average 47% of UE citizens under the age of 25 who use Internet. Therefore, there is a huge generational digital divide, which will tend to naturally disappear with the turnover of the generations; but on this it is possible and positive to start investing now. The use of technologies helping the elderly has already been predicted for many years, just think of gerontechnology. With the term gerontechnology, an interdisciplinary academic and professional

environment is identified which combines gerontology and technology, and proposes to offer a high quality environment for the elderly. Gerontotechnology aims to reduce the illnesses of the elderly, while increasing vitality; this includes health, the home, mobility, communications, free time and work. In 1977 the *International Society for Gerontechnology* was founded in Munich. This International Society was based on the idea that the ageing of the population would create, as has happened, millions of elderly who need assistance to support their independence. The *International Society for Gerontechnology* intends to favor cooperation among researchers, developers and the elderly in order to design and construct the future of elders together (Taipale and Pieper, 2007). It is commonly thought that seniors are not predisposed to using information technologies for their diminished learning ability, for the diffidence typical of their mature age, and for the unrelenting evolution of technology itself. However, in the literature there are various studies which show how seniors are not hostile in a preconceived way towards ICTs (e.g.: http://eurlex.europa.eu/LexUriServ/site/it/com/2007/com2007_0332it01.pdf and http: europa.eu/scadplus/leg/it/cha/cl11328.htm).

ICTs can play a key role in offering innovative solutions, not only for solving typical problems of the elderly, such as disability and illness; but also in favoring a new vision of elders as an active part of society, considering and taking advantage of the resources and contributions which they can give to the community itself. Gerontechnology is principally focalized on assistance to the person, trying to relieve the difficulty of going out; though there are really many other services which can be interesting for the over 65, such as access to information, entertainment and education. Using ICTs for communicating, for giving information and accessing services online in order to contact other people or the family undoubtedly contributes to increasing the quality of living of the elderly population, above all from the point of view of their capacity and freedom of action and relationship.

The results of many researches in the gerontechnology sector show that ICT in most applications can be used for elders in different contexts and for multiple uses. At least three environments of use can be foreseen:

- active use for communication: free time, contacts with friends and relatives who are far away (less expensive and more varied than by telephone), contacts with banks, shops, airline and train tickets, reservations for the theatre or doctor’s visits, checking the news, online courses...

- use for improving the quality of living: the domotic environment
- passive use for health service at home (more precisely, the telemedicine and teleassistance domain).

2. Health

The research relative to innovative technologies for useful applications for the elderly has always been considered necessary for solving problems tied to disabilities and ailments typical of this age group. One should not forget that technologies developed ad hoc for the elderly can also be used to help the disabled, in that some health problems which the elderly have, like mobility, hearing and eyesight disabilities are the same in both groups, even if they are to a greater degree in certain categories of the disabled.

The ICTs can be used to make independent living easier for the elderly. “ICT enabled independent living for elderly”, or AAL/Ambient Assisted Living, is neither pure eHealth, nor pure eInclusion; ICT independent living takes advantage of both areas, but looks more specifically from a viewpoint of the elderly. The aim of AAL is the well-being person living independent in his/her environment, being mobile and connected. Seen from their needs, the main demand pull sectors for AAL are personal health and care, housing and social interaction.

The AAL researches regard the study and use of advanced devices, systems and applications in the home which use avant-garde technologies from the sectors of telecommunications, domotics, information, nanotechnology and microsystems. Using these new technologies will help the elderly and disabled to live well at home, improving their autonomy, making daily activities easier, guaranteeing good conditions of security and monitoring and looking after people who are ill.

The term e-Health, according to the definition of the European Commission (Europe’s Information Society, Information & Communication Technologies for Health), describes the application of information and communication technologies for the numerous services of healthcare; from the doctor to the hospital manager, through its nurses, specialists of data management, administrators of social security and of course, the patients themselves (http://ec.europa.eu/information_society/activities/health/index-en.htm).

Electronic health includes a vast range of necessary applications for government and the management of its healthcare system, for the organization of assistance activity and resources for the citizen/patient. Included in the definition are:

- healthcare information systems
- electronic medical records of patients
- telemedicine services
- health portals
- ICT systems for the support of prevention, diagnosis, treatment, monitoring of health and promotion of healthy lifestyles (Bergamaschi, 2004).

At the international level, the European Commission began a study on the economic impact of e-Health, developing a methodology for the economic evaluation of e-Health applications for ten projects involving Germany, Sweden, Romania, France, the Czech Republic, Belgium, Denmark, the United Kingdom and Spain. If the approach, the context and the implementation are adequate, the results show that the benefits of the investment in e-Health improve quality and increase productivity; at the same time they give more capacity for work and allow for better accessibility. The authors of the study conclude that if development and implementation stages are effectively realized, the value of these benefits will increase each year and very significantly surpass the investment costs. This way e-Health can increasingly contribute to satisfying citizens in their needs and desires for their health.

Viviane Reding observes that the development of e-Health must be combined with appropriate changes in the processes and organizations, and must be guided by people who are competent in the field. Furthermore, she hopes that the results of the project are useful for all those who are responsible for health in Europe, and that they will encourage those who are hesitant to invest in e-Health. We have to remember that no technology, no matter how modern or advanced, can ever substitute the hand or the participatory attention and human warmth under the eyes of a nurse or doctor. This is a fundamental point which must never be neglected when topics are faced, such as those relative to how technologies can be used to offer patients better assistance. ICTs are an instrument which cannot and must not substitute human contact. Even more, ICTs must not be used by younger users to assist the elderly totally “at a distance”, but rather the development of the technologies must foresee the participation of the elderly, to consent an appropriate and effective use, without accepting external impositions.

In various cases ICT, if used with full knowledge of all the facts involved, can give better service, contribute to reassuring the patient and the family and improve the quality of life in situations of pathologies which require continual assistance and an assiduous and constant presence. As seen, ICT can offer valid assistance to the elderly, also in situations of normal life, on the condition that the possibility for interpersonal contact is preserved.

The efforts of thousands of researchers in the world are going in this direction: on one hand there is an ever growing awareness of the necessity for the empowerment of the subject; on the other hand, as seen, undeniably, the elderly also represent a marketing target, due to the growth of the number of people who grow old in good health. To conclude, the progressive ageing of the population can be seen positively and constructively, and ICT can help the elderly, also since the age group immediately next to the over 65 age group is much more prepared than in the past in the use of information technologies. Furthermore, neuroscience has shown that it is not true that with the advancement of age, the health of our brain and our mental functions only deteriorate. On the contrary, the mind reinforces with age because the mature brain is able to take advantage better of its ability to recognize models; that is, it is able to integrate thought and experience by using better emotions, empathy and intuition. Furthermore, an active mental life can continue until an advanced age and stimulate various growth processes in the brain, protecting it from decline. It will take a creative organizational and cultural effort; but it could be the over sixties age group, who often have positions of great responsibility at the decisional level, who will promote this change.

Principal Italian cities have services and programs devised for meeting the needs of seniors who live alone. The aim is to help people stay in their homes for as long as possible, increasing their level of independence and security.

The most diffused services at the moment are telephone emergency services and teleassistance. Generally, they are based on fairly small devices which the user keeps nearby or hanging from the neck. These devices are connected to the home phone line, and when they are activated they connect the person to a call center for assistance, to a doctor (services are usually active 24/7), or to the mobile phone of a relative. Many Italian cities offer this service. Monthly fees are between 20 to 40 Euros a month. In some cities the service is free of charge for people with low incomes.

In Florence the service *Telecare*, costs 40 Euros monthly for the basic module, is based on the management of remote connections between peripheral terminals installed at the home of the user and one Operational Center. It is aimed to collaborate with the network of public and private health services, to allow frail people, very elderly people with limited physical and/or sensorial autonomy or people who are socially isolated to stay in their own homes in conditions of independence, security and serenity. The operational center (Firenze Telecare http://www.comunce.firenze.it/servizi_pubblici/salute/presentazione_telecare.htm) can monitor the conditions of health of the users connected to the service through telephone contact and/or videoconference, (calls for "control of condition" and/or "prescriptions" to remind the user to take a medicine), both can be activated autonomously or by the employees of the operational center. *Telecare* manages the emergency notifications sent by the users to the operational center, through the alarm button with the possible activation of the various emergency teams. This system can also offer psychological support to the user through conversation in videoconference with operators of the center and/or third level subjects delegated to solving specific requests, or giving out information, orientation and connection to the service network.

There is an active telephone emergency service in Turin (http://www.consorziopiemontemergenza.it/set4.htm) for the elderly who are in poor health and with very low incomes (equal to or lower than the minimum poverty level), but also for people with more than 74% disability or with serious illnesses certified by their physician. Priority is given to people living alone. This allows them to count on help in case of an emergency or a sudden illness, but it also serves as a telephone friend for companionship and assistance. A terminal connected to a small device is installed on the telephone in the home of the user, to be always kept nearby. This device can communicate 24/7 to an operational center which can send help immediately.

There is also a system of teleassistance in Rome, "No longer alone" (*http://www.2.comune.roma.it//dipsociale/Downloads/Schede_estate_anziani/scheda%20teleassistenza.pdf*), similar to the system in Florence; thanks to which thousands of elders have daily help and concrete support.

In Rome there is also "SilverNet" (http://onecare.cup2000.it/category/territorio/comun-di-roma), a monitoring network which gives users a "health watch", a special

wristband which monitors various physiological and mobility aspects, and gives the alarm in case of abnormal parameters.

There are projects which are aimed to increase computer knowledge/competences of the elderly. In this sector, an example is *"Senior On Line" (SOL)* in Bologna (http://www.comune.bologna.it/conoscere/pdf/SOL.PDF). In the project environment, which led to the realization of a portal dedicated to seniors, an Internet packet was created which offers all the necessary services to easily and enjoyably navigate in Internet, even for those without any previous experience using the computer. Furthermore, through a pilot product, distributed for free to a sampling of seniors, users could interact with each other in a forum, chat and email.

Since 2004, the city of Genova activated a summer program for seniors, offering an integrated plan for the social and health aspects of the elderly who are very frail and in need of particular control when the temperature becomes very high; involving other health services, also services of contact and social solidarity. The project continued even after the end of the emergency, becoming in fact, a permanent service.

Its articulation foresees the activation of "social guardians" for monitoring users and services such as companionship, friendly support, help with errands, control, support at home through the development of contact services, *"social help"*, for domestic tasks and the use of specific telephone and telematic means of communication for situations of home emergency. A toll free number is also a reference point for all citizens for information on a network of health services and for the activation of support for the elderly. The users involved in the program have been identified by the doctors of general medicine of the over 75 year old residents in the city, who have clinical functional risk factors and social frailty.

3. Education

The cultural wealth of people who leave their job environment is enormous and is often lost when they retire. What many of these people are still able to offer, their learning and experience, is an asset which not only is reason for satisfaction and vitality for many seniors, but it can also be very useful support for those people who do not have these competences. Some interesting applications which are beginning to find acknowledgement on the market, focus their attention on the contribution that the elderly can make to the community. These applications lead to the revaluation of the

elder from the individual and also from the social point of view. It is an intervention which prospects a recovery of a definitive social role; not only of the waste and loss, but also of the possibilities and resources.

E-learning activities, where seniors who are connected online offer their specific competences to people who request them, or offer information technology consultancies to other seniors in a sort of virtual community, can also be seen as new forms of work. In this sense let us remember the very successful experiments diffused in Argentina at the beginning of 2000; during which in various areas of that huge territory, seniors were trained to use computers and also teach its use to others, delegating to them the creation of a computer culture.

Another interesting initiative is J:COM, a Japanese company, which since May, 2006 has activated a service called "Elder Marketing" (http://www.jcom.co.jp/library/ir/en/newspdf/00005628.pdf). This service is offered by elders, especially hired by this company in order to promote TLC services offered by J:COM to potential elderly clients. The population of elders in Japan is now very relevant: 40% of the people are over fifty years old.

4. Socialization and entertainment

Generally, at retirement the home assumes greater importance for people since the work world loses its importance, and therefore the home becomes an inevitable reference point in order to maintain good quality of living. The importance of the home is intensified above all with ageing when problems of mobility increase and the daily activities are concentrated almost exclusively around the home.

Reducing one's living space can create problems, above all regarding socialization and the awareness of no longer having an active role in society. These are the first problems to be faced since they can be forewarnings of debilitating diseases like depression, which can consequently lead people to stop looking after themselves, to lose weight, to become weaker or to become sick and need hospitalization.

When trying to solve these problems of the elderly, one should avoid increasing social costs, but instead define new areas of business in the field of telecommunications; technological interventions possible should be taken into consideration using existent ICT technologies as well as the many innovations from the field.

In the field of health and prevention, not only services like those described in the previous paragraph regarding health are needed, but also solutions which can improve the social picture in general and maintain a social network which can establish reference points with relatives and also with other seniors. The technologies which support such a social network have a physical telecommunications network. The terminals which supply access can be supplied with audio, video, connectivity and appropriate authentication techniques, already existent and used in the field of telephone fees; so well developed that relatives can involve the senior in their life without needing to go anywhere, and at the same time control and reassure the senior even from a distance.

Furthermore, through this network the senior could share with other seniors the typical problems of this age group; and therefore mutually find other ways of sharing and finding solutions to problems, possibilities of activities and entertainment.

ICTs open the road to new prospects of integration, of participation and access; if developed for domestic use they should make the access to city and health services easier, along with important information about the territory, and improve social contacts with their relatives and other seniors. Therefore, it is fundamental to plan and design new devices and services which facilitate not only daily activities but also communications of the elderly. Particular attention should be given to the importance of favoring social relationships and to offer information on current services offered by institutions and the territory. This implies the development of new forms of relationships; on one hand, among the elderly; on the other hand, among citizens and institutions. The emphasis is placed on the reciprocal solution to the problems; sharing of information, mutual support and compassion.

For example, the realization of a secure network can create a peer-to-peer monitoring network with the principal objective of facilitating communication and mutual assistance among seniors. A network in which people, such as seniors, their relatives and caregivers, cooperate for the well-being of others; and where each component looks after the health of the other components in different ways. Social contacts are favored through secure networks which are composed of authorized and authenticated people through verification.

In relationships of mutual assistance, the senior can find an “active” role; one which offers help and psychological support or a passive one; one which receives help and social assistance. Therefore, the network also has the objective of returning seniors to

society, restoring their energy and helping them to become involved externally with a positive effect on their sense of self-sufficiency and self-respect.

It is very important to identify the seniors who are in danger or in delicate health conditions; monitoring and managing critical situations in the domestic environment in cases of loss of consciousness, falls, presence of smoke and break-ins in order to increase security and health in the elderly. This is possible by determining the geographical localization of the senior, instruments which are easy to use; to communicate and make a “rapid” evaluation of the social and medical needs, along with the search for appropriate assistance. A peer-to-peer system allows every unit of the system to communicate and offer services to the other units which are inside the network.

No node/server is critical for the functionality of the whole system and the service functions without the control or authorization of external entities. This makes the system technically robust and adapted for incrementing the number of users. Each participant of the community can look after the health of the other participants in different ways, explicitly controlling their presence and reminding them to take their medicines. Furthermore, the system can elaborate statistics and process sensors and other relative data on the interaction of the user; obviously respecting the rights and needs of privacy, while recognizing the possible dangerous situations which can be proactively presented to selected users, such as, caretakers, relatives or professionals.

Another important aspect is clearly the promotion of inter and intra generational exchanges; to take advantage of human and social capital in order to keep alive the memory line of knowledge, exchange of information, social support and personal empowerment; while avoiding forms of isolation. In this vision the secure community can be a medium for realizing a new type of low cost service addressed to the needs of the elderly.

Developing a user community is a paradigm which is being diffused through the use of Internet. Considering the target made by seniors, it is necessary to conceive and design innovative modules, in particular regarding access modality and security. About security it is necessary constitute a secure community of authenticated people who allow seniors to stay in touch with friends, relatives and services. Secure access must be guaranteed through authentication; for example, controlled by telephone operators using current procedures, such as identification of the SIM, used to guarantee the access of the user on the telephone. This appears to be safer than

standard procedures of authentication on the Internet. Other than recreational activities, the secure network can offer support and assistance to connected people who can request assistance through the network. The network must have a proactive role with hardware/software modules that monitor and investigate the situations which are the most risky. Concerning access modality, it is important to have easy access to the services, especially in the case of this typology of user. Major consideration should be given to the definition of the specifics of usability, to be defined according to the needs and characteristics of the user. This implicates a series of user tests to indicate their needs and to verify if the device is able to satisfy them. An in depth study must be made on the variety of devices already available on the market and on those being experimented on; such as, for example, mobile phones, objects for daily use in which computational and communicative chips can be inserted, interactive digital TVs, projectors and webcams and interactive modalities.

Another interesting and curious ICT application for seniors is arriving from the United States: the Virtual Game. The Virtual Game is also present in Italy but not for an elderly audience. *"Amid rousing applause and cheers, seniors in a retirement complex in the Washington suburbs have hopped onto the videogame craze, belatedly but with a vengeance, swinging their arms in a virtual game of bowling. While video games are aimed more usually at younger audiences, Nintendo's Wii, the mega-popular, new generation home console, has become all the rage in 3,000-resident Riderwood, one of the largest retirement communities in the United States, located in a Washington suburb. Its popularity is largely due to a wireless handheld controller that requires players to replicate athletic movement, albeit minimal, but easily within the capabilities of more elderly players. Erickson Retirement Communities, which runs the complex, has installed 25 Wii machines around Riderwood to encourage social interaction and exercising among the seniors. "I love it," said Elaine Fowler, 82, a fiercely competitive player who gets around in a motorized wheelchair. "I'm here since day one. I feel really good when I get a strike and a spare." Every week, some 20 retirees gather to play one of Wii's sports games, in which players holding a wireless controller swing their arms to simulate a volleyball return, a virtual boxing punch, or a baseball bat swing. At a recent battle for bowling supremacy, opposing teams gathered around two screens set up side by side as team members took turns "rolling" the bowling ball down a virtual lane to knock down as many pins as possible"*. ("Virtual Games Has Become a Great Hit Among US Elders"

http://www.medindia.net/news/Virtual-Games-Has-Become-a-Great-Hit-Among-US-Elders-32227-1.htm).

5. Conclusions

Overall, the current organization of services for elders still has some shortcomings, both for the lack of services and for the modalities of what is available, which is still prevalently oriented towards institutionalization. The design of social and health interventions often only views the financial aspect first, then the technological aspect and finally the elder is considered; instead the elder should be considered first. It is therefore useless to develop devices and advanced architectures if they are not conceived considering the needs and characteristics of the end users, and these users should be kept involved and tested during the design period. With the collaboration of the end user, starting at the initial phases of the definition of the service, it is possible to identify all the advantages and problems of a new potential service.

We want to conclude our chapter by introducing a study and leaving its results as food for thought. In research investigating the relationship between ageing and the transformation of daily life through technology, Eggermont and colleagues (2006) developed a three phase methodology. Initially they conducted an investigation which outlined some possible scenarios for the future. Following, these scenarios were "translated" into theatrical scenarios and recited in front of audiences composed of seniors. Afterwards, together with experts from various fields, they were asked to express their opinion on the scenarios and to give suggestions for improvement. In synthesis, it was seen that the elders expressed a positive opinion on the fact that ICT can improve the quality of their lives; for example, improving their social relationships, helping with their loneliness, sustaining their physical condition in order to live independently and helping them with their free time to learn and to work. Nevertheless, the elderly emphatically asked to maintain communications unmediated (face to face) and non technological alternatives. What they really wanted was to speak to their doctor in person, go to the bank, do their shopping, take a course, see friends and people of their community, enjoy nature; and their home environment must remain warm and cozy, not just cold and technological. Therefore, the elders were open to technological advancements, which they recognized the potential advantages of, but not at all costs. The most important requirements, other than that of

unconditionally maintaining human contact, were the right to autonomously make decisions; practical accessibility of technologies (too often developed without taking into consideration their physiological limitations: eyesight, hearing and movement); economic accessibility and data privacy, especially data regarding their health. The experts, other than recommending maintaining interpersonal communication, proposed: ICT training courses for seniors at reduced rates; the possibility to sell low cost second hand PCs that are considered obsolete by professionals through a network of specialized stores; the usefulness of inserting positive stories of seniors using their computers in a TV series appreciated by this age group; informal group meetings between acquaintances to promote the use of the computer; special courses for pairs of grandparents and grandchildren; recommendations for designers of technological applications to imagine themselves as a senior...

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Digital Natives vs. Digital Immigrants: Exploring the Internet Generation

Michelle Pieri

1. Introduction

Understanding people according the aggregated characteristics of those born in the same period became popular with the emergence of the Baby Boom generation (Eubanks, 2006). *"In addition to coincidence of birth, a generation is also defined by common tastes, attitudes, and experience.…Those times encompass a myriad of circumstances – economic, social, sociological, and, of course, demographic"* (Zemke et al., 2000). The researches made by scholars like Neil Howe and William Strauss (2003) and Diana and Jim Oblinger (2005) established what they viewed as a repeating pattern of generational types. Diana and Jim Oblinger (2005), for example, focalised on the characteristics of past and current generations, underlining the attributes, the likes and the dislikes (table 1).

Table 1. Past and present generations (Oblinger and Oblinger, 2005)

	Matures	**Baby Boomers**	**Generation X**	**Net Generation**
Birth Dates	1900-1946	1946-1964	1964-1982	1982-…
Attributes	Command and control Self sacrifice	Optimistic Workaholic	Independent Sceptical	Hopeful Determined
Likes	Respect for authority Family Community involvement	Responsibility Work ethics Can-do-attitude	Freedom Multitasking Work-life balance	Public activism Latest technology Parents
Dislikes	Waste Technology	Laziness Turning 50	Red tape Hype	Anything slow Negativity

In the opinion of Howe and Strauss (2003) there are seven traits that are particular of latest generation. These traits are: special, sheltered, confident, team-oriented, achieving, pressured and conventional.

Obviously it is fascinating, but ultimately ineffective to try to predict individual behaviour by understanding the trends within a group. There is no doubt that you can

bring many examples of people who clearly don't fit with the descriptive trends found in literature about their generation. However, when trends within a group are clearly established in research and literature, it is wise to understand those trends in order to inform policy and decision-makers in an organization or to help people from different generations understand each other better, and obviously, to set up the basis for common intergenerational work, like what was done in the Memory Line Project.

The main goal of this chapter is to inspect, through a careful and extended analysis of literature, the latest generation, the one made up of those who were born and grew up in the Net Age. Our aim is to give a 360 degrees description of this generation. This generation is "unique"; it is different from the others generations because it is the only one which was born and grew up with the Net and ICT.

2. The Internet Generation

Neil Howe and William Strauss, the authors of *Millennials Rising: The Next Great Generation* (2000) and *Millennials Go To College: Strategies for a New Generation on Campus* (2003), Diana and Jim Oblinger, the authors of *Educating the Net generation* (2005) and Jean Twenge, the author of *Generation me* (2006), are some of the most significant voices regarding the generation of people who make up today's students in elementary, secondary and post-secondary educational institutions. Those individuals have been diversely labelled: iGeneration, Generation Y, native speakers, digital natives (the opposite to digital immigrants), and obviously, Howe and Strauss's own Millennial Generation; Diana and Jim Oblinger use Net Generation or Net Gens, and Twenge uses Generation Me. Several scholars describe this generation; and opinions about it vary as widely as the labels, but, in fact, there are a number of general themes that can be found in recent literature regarding the latest generation. Many of these themes, though originating from different sources and perspectives, are complementary; and even those in conflict with one another, have common foundations (Eubanks, 2006).

In this chapter we will refer to those people as Net Gens, but regardless of the name, the most common definition of this generation is those born from approximately 1980 through 2000 (Howe and Strauss, 2003; Sutherland and Thompson, 2001). Only Twenge (2006) also includes those born in the 1970s. In general, the Net Gens are considered the children of the Baby Boomers, and as has been said before, the main

feature that distinguishes this generation from previous ones is the fact of being born and raised with ICT and the network. Like Diana and Jim Oblinger (2005) underline *"As long as they've been alive, the world has been a connected place, and more than any preceding generation they have seized on the potential of networked media"* Concerning the Net Gens, Prensky (2004, page 2) said that "*their online life is a whole lot bigger than just the Internet. This online life has become an entire strategy for how to live, survive and thrive in the 21st century where cyberspace is a part of everyday life"*.

Being brought up in an era of media saturation and unlimited access to digital technologies has meant that the Net Gens have a different way of thinking, communicating and learning than previous generations (Oblinger and Oblinger, 2005; Prensky, 2006; Tapscott, 1998). This generation is unique in learning style because it is the first one to be born and raised with digital technologies and information. Not only Net Gens are accustomed to the use of technology, but they are also saturated. As is clear from research conducted by Bonamici and colleagues (2005), the Net Gens, when they reach 21 years of age, on average have spent:

- 10,000 hours playing videogames
- 200,000 hours writing e-mail
- 20,000 hours watching TV
- 10,000 hours using mobile phone
- less than 5,000 hours reading books.

Members of the Net Generation have never known life without ICT and the Net. Participating in online communities, showing others what they can do or voicing their opinions on line has been part of their everyday life since their childhood (Oblinger and Oblinger, 2005, McMillan and Morrison, 2006). Today's teens live in a world enveloped by communications technologies; the Internet and cell phones have become a central force that fuels the rhythm of daily life. (Pew report, 2005). Net Gens are power communicators and information seekers (Pew report, 2005). When teenagers are asked what they want from the Internet, the most common response is to get "*new information*". Close behind, at about 75 %, is to "*learn more*" or "*to learn better*" (Oblinger and Oblinger, 2005). The use of the Internet to learn is not limited to school work. Net Gens are often informal learners, seeking information on a variety of topics, such as personal health (Oblinger and Oblinger 2005). In fact, Net Gens deal with information differently compared to previous cohorts: "*they develop hypertext*

minds, they leap around" (Oblinger and Oblinger, 2005). A linear thought process is much less common than "bricolage", or the ability to integrate or piece information together from multiple sources (Oblinger and Oblinger, 2005). Computers and technology are used for social interaction: Net Gens use technology extensively to network and socialize. In their personal lives, buddy lists, virtual communities and social networks are heavily used (Oblinger and Oblinger, 2005). When students were polled about what they actually do with their computers, some form of social interaction always tops the list, like for example, conversation, collaboration and playing games (Oblinger and Oblinger, 2005). Net Gens are emotionally open and use the Internet as a social technology to reveal their feelings, to express their views, to meet new people, and to experience different cultures. Many of the online exchanges by Net Gens reveal a great deal of personal information, not just facts but emotions. From Oblingers's studies emerged that physical and virtual are seamless: "personal" does not always mean "in person" to the Net Generation, because online conversations may be as meaningful as one that is face-to-face. The Net Generation exhibits a tendency to work in teams or with peers and will move seamlessly between physical and virtual interactions. It is not uncommon to find students working together and still sending IMs, even though they are a few feet away. Their communities and social networks are physical, virtual, and hybrid. They have hypertext minds: they can integrate the virtual and physical, they learn better through discovery than by being told; they are able to shift their attention rapidly from one task to another, and may choose not to pay attention to things that don't interest them, and they are able to respond quickly and expect rapid responses in return (Oblinger and Oblinger, 2005). Net Gens are intuitive visual communicators: they are more visually literate than previous generations; many express themselves using images (Oblinger and Oblinger, 2005). They are able to weave together images, text, and sound in a natural way. Their ability to move between the real and the virtual is instantaneous, expanding their literacy well beyond text (Oblinger and Oblinger, 2005). Because of the availability of visual media, their text literacy may be less well developed than previous cohorts (Oblinger and Oblinger, 2005).

ICT and the Net play a very important role in the life of Net Gens, as underlined by Eubanks (2006); they use ICT and the Net to do several relevant tasks like, for example:

- Communication: to communicate Net Gens use: email, instant messaging, chat, cell phone, social networking, discussion boards and groups and blogs
- Sharing: to share Net Gens use blogs, webcams, camera phones, photo sharing sites
- Buying and selling (for example: eBay, buying exams, finding a job, a university, an online course, a boyfriend or girlfriend)
- Exchanging (for example: music, movies and humour)
- Creating (gaming with avatars, modding)
- Meeting (3D chat rooms, wikis, live meetings, as for example: www.meetup.com)
- Collecting (mp3, video)
- Coordinating (projects, workgroups, Massive Multiplayer Online Role Playing Games)
- Gaming (computer, video, online gaming with large numbers of participants)
- Learning (online research to learn about topics of interest to them)
- Searching (information, products, people, connections, phone numbers, maps, images)
- Analyzing (volunteering to be part of massive projects analyzing data e.g. SETI – Search For Extraterrestrial Intelligence)
- Programming (for computers e.g. Flash.) Share freely
- Socializing (online social behaviour with group norms).

Next we will describe in more detail the Net Gens, following the common theme identified by Eubanks (2006) in the literature on the subject: Specialness, Feeling about themselves, Relating to the other generations and Technology.

2.1 Specialness

From the analysis of the literature emerged that one of the most common and relevant themes present in the literature about the Net Generation is that they have been told since birth that they are each unique and special; and that they embrace this specialness completely. While different scholars interpret this generational characteristic in different ways, there is no doubt that this is the defining trait of the cohort, and forms the foundation for many of the other characteristics, strengths and weaknesses that authors give to this group. Howe and Strauss (2003) emphasize the

emergence of the pro-child culture among Baby Boomer adults as the catalyst for this characteristic; and Twenge (2006) supports this idea, to a degree. Twenge (2006) argues that one of the primary contributors to this culture of the individual is the institutionalized emphasis on self-esteem that starts in the 1970s. Net Gens were born in an era marked by the widespread use of birth-control and abortion to limit the number of unwanted children, resulting in a very pro-child culture in which "wanted" children were much more the norm (Sutherland and Thompson, 2001). Parents became parents because they wanted children, or increasingly only one child, not because childbearing was foisted upon them. This era saw cultural adoption of the pro-child ethic in movies and books. Institutions did the same as well with the adoption of official self-esteem curricula in schools and churches (Twenge, 2006). And families, even as they grew more diverse in nature and style seemed to merge in their approach to including children more than ever in family decisions. Twenge (2006, page 75) notes *"We expect our kids to have individual preferences and would never dream, as earlier generations did, of making every single decision for our children and asking them to be seen and not heard"*. Where scholars seem to disagree on Net Gens is in the effect of their "specialness".

Twenge (2006) discusses negative outcomes of the overemphasis on individual "specialness" for the Net Gens. In particular, a negative outcome of the overemphasis on individual "specialness", as carried out through both formal and informal self-esteem training at home, at school and at church, has lead to an increase in narcissism, in which individuals are "overly focused on themselves and lack empathy for others" (Twenge, 2006, page 68). Twenge's study (2006) has revealed that this generation is more individualistic and more self-oriented than any previous generation. As a result, this generation is less likely to care about others' opinions, and more likely to flaunt society's conventions. In place of the commonly held standards of past generations, Twenge (2006) argues that what is most important to this generation are the choices of the individual, leading to a generation of individuals whose attitudes are summed up with the statement, *"as long as I believe in myself, I really do not care what others think"* (page 19).

Howe and Strauss (2003), on the other hand, tend to be neutral on very positives outcomes of this "individual specialness" for this generation. They depict Net Gens as sheltered, and expecting safety and support from society and its structures. They believe that Net Gens have translated their special status into confidence in

themselves and their ability to succeed both personally and in their goals for society. In contrast to Twenge (2006), Howe and Strauss (2003) argue that Net Gens will accomplish these goals as team-oriented, community-minded citizens who believe in, and tend to follow societal conventions. That is, they tend to be rule followers because they believe in the rules that brought them through their happy childhoods.

2.2. Feeling about themselves

Scholars disagree among themselves concerning the description of how Net Gens feel about themselves. Howe and Strauss (2003) argue that their special childhood provided the basis for confident, achieving Net Gen teens and young adults. Though they admit that the Net Gens feel pressure to succeed, and to solve societal problems that their parents were unable to solve; they contend that this generation believes they will be both financially and socially successful. Howe and Strauss (2003) also cite achievements in high school academics and extra-curricular activities as evidence that these Net Gens may indeed live up to their confident expectations. From Whitney-Vernon's research (2004) a key characteristic of this generation emerges that students seem to be more oriented towards education. The pressure on education begins very early for the Net Gens; the orientation towards the choice of college already begins in the first years of high school. The Net Gens direct their efforts in high school on the type of college they think they want to enroll in. Gone are the stereotypes of teenagers who are obsessed only with clothes and parties. On the contrary, most teenagers want to do well in school and at the same time socialize with their peers. Many parents of Net Gens say that their children spend the evening doing homework rather than social activities (Whiteny-Vernon, 2004); and reports on the tendencies in 2004 show that one of the main activities of the Net Gens, aged 12 to 24, was to save money for college tuition (Marketing Magazine 2005). From a survey on 100,000 Canadian adolescents, it emerged that young people show a lot of interest in education; this interest is superior to what adults who were questioned during the same survey expect of them (Whitney-Vernon, 2004).

The research arrives at the conclusion that teenagers are so worried about school and careers that *"often they spend Saturday evenings doing homework"* (Whitney-Vernon 2004, page 4). This generation is very goal-oriented, and Net Gens know that to reach their career ambitions they need good education.

Twenge (2006), however, cites research that seems to indicate that the Net Gens are leaving their exuberant confidence behind as they leave childhood. The focus on individual specialness, especially when separated from accomplishment, such as the beliefs that you are special for who you are, not what you do and *"feeling good about yourself is more important than good performance"* (page 56-57); an extension of the emphasis on self-esteem, has been the message that *"you can be anything you want to be"* (page 72). This has bred a generation of individuals who tend to isolate themselves from close relationships, as each pursues his or her personal needs and aspirations. The encouragement that so many young Net Gens heard in childhood, that you can be/do anything, as long as you try hard enough, want it bad enough, and follow your dreams has created unrealistically high expectations of themselves, and the adult society they are entering. Twenge (2006) references a number of statistics and studies indicating that Net Gen students have very high expectations for the academic, professional and economic heights to which they aspire; and then illustrates that many of these confident expectations will be frustrated by simple realities. The stress that Net Generation's young adults encounter in college admissions and in career pursuits are similar. Throughout their childhood years, the Net Generation has been told repeatedly that they are special, unique people, whose opinions are important, and who can achieve anything as long as they follow their dreams. The reality they encounter, however, is that only a few of them will get into the best colleges, and even fewer into the best graduate, law and medical schools. This dynamics continues into the job market where the Net Generation expects high-paying, high-prestige jobs in which their input is highly valued, and their rapid advancement is assured; the reality is rarely consistent with their expectations. This isolation and unrealistic expectations are combining in young adult Net Gens and producing high levels of depression, anxiety and loneliness among them. The most significant finding of Twenge, though, seems to be that generational differences have significant influence on levels of anxiety and stress. She comments on the seeming paradox that this generation that has experienced relative economic prosperity, freedom from traumatic historical events, and distance from war experiences so much anxiety and pain. *"Our growing tendency to put the self first leads to unparalleled freedom, but it also creates an enormous amount of pressure on us to stand alone. This is the downside of the focus on the self – when we are fiercely independent and self-sufficient, our disappointments loom large because we have nothing else to focus*

on. But it's not just us: Generation Me has been taught to expect more out of life at the very time when good jobs and nice houses are increasingly difficult to obtain. All too often the result is crippling anxiety and crushing depression." (Twenge, 2006, page 109).

Concerning loneliness and isolation, Twenge argues that loneliness is the logical, if tragic, outcome of Net Gen's culture of the self. Young people, who have grown up having their unique specialness stoked in the name of self esteem, embark on the pursuit of their individual dreams, and their ability to love themselves. Marriages are put off until dangerously close to the limits of childbearing age. Advancement at work often requires frequent moves. The result is that many Net Gens experience significant loneliness and isolation, which leads to anxiety and depression.

Besides, Twenge, in opposition to Whitney-Vernon (2004), includes in the list of "outcomes of the focus on the self" that she has built to describe the characteristics of Net Gens, the obsession with appearance, the proliferation of body piercings, extending adolescence, and materialism.

2.3. Relating to the Other Generations

Whether in educational settings, family, work or church, Net Gens must interact every day with members of previous generations. As they move through their teens and twenties into adulthood, the nature of the Net Gens' relationships with the members of the generations that preceded them is another theme found in recent literature. Sutherland and Thompson (2001) describe how the changing makeup of the family nucleus has in several cases led to the dynamics in which children are included in family discussions and decisions to a greater degree than previous generations. Howe and Strauss (2003) echo this sentiment in their discussion of the parent-child co-purchase. As these dynamics blend with the message of special importance that Net Gens children have heard all their lives, the result is often a young adult who views his relationship with his elders as a peer-to-peer relationship.

This equality approach has implications in many areas. Culturally, Net Gens believe that their individual opinions and styles are just as valid as anyone else's. Consequently, enthusiastic self-expression flourishes under the perspective that everyone's opinion of how they look or act is equally valid. In the workplace, the idea of paying dues and working up the corporate ladder is foreign. Net Gens expect their

views to be valued from the beginning, and advancement to be rapid (Raines, 2002; Twenge, 2006). In education, Net Gens are more than willing to challenge professors on everything from opinions and conclusions to the very facts themselves, with no conception that the instructor's perspective is any more valid than their own (Twenge, 2006). Generally speaking, what Net Gens seem to be seeking from previous generations is acceptance as equals (Aviles, Phillips, Rosenblatt and Vargas, 2005; Windham, 2005).

Net Gens engage the ideas of diversity and equality in ways that are similar to the ways in which they relate to other generations. Both Twenge (2006) and Howe and Strauss (2003) agree that Net Gens are more accepting of diversity, and view people who are different from each other, whether, for example, race, gender and sexual orientation, as equals. Howe and Strauss (2003) believe they hold these views due to their tendency toward community and team-orientation. Twenge (2006) feels that since they are less likely to believe in moral absolutes, they are tolerant and accepting of diversity in all its forms. *"GenMe may have left behind some of the good social rules about politeness, but following in the footsteps of the Boomers, we have also left behind some of the bad social rules about everyone living life in the same way, and minorities and women staying in their "place". We are less likely to believe in moral absolutes, so we are tolerant and accept diversity in all its forms"* (Twenge, 2006, page 181).

Sutherland and Thompson (2001) call Net Gens KAGOY (Kids Are Growing Up Younger). Howe and Strauss (2003) refer to this in their discussion of the 'busy-ness' of Net Gens children, and several studies on Net Gens' use of technology refer to it as well. This generation has had more access to more information as children than any other. At the same time, their inclusion in family decisions, changes in youth activities, and changes in media programming have given them access at younger ages to experiences that had previously been reserved for older children or adults (Sutherland and Thompson, 2001). This process of growing up younger has contributed to foster their view of older people as peers, and their willingness to share their beliefs and perspectives with adults from a perspective of equality.

Besides Sutherland and Thompson (2001) cite research that seems to indicate that Net Gens are actually experiencing earlier physical maturity, which may contribute to the Net Gens changing attitudes toward sex. Earlier exposure to images and ideas about sex, and encouragement from adults to pursue their personal desires has led to

changing sexual mores among Net Gens. Twenge (2006) spends an entire chapter on the changing sexual mores of Net Gens. In general, the Net Generation takes sex less seriously, viewing limitations on activities that bring pleasure to the individual as anathema. *"The tie to individualism is obvious: do what feels good for you, and ignore the rules of society"* (Twenge, 2006, page 160). As a result, the Net Generation experiments with sex earlier than previous generations, approves of premarital sex more than previous generations, and casual sex outside of any relationship context. Twenge (2006) attributes the concurrent decrease in teen birth rates to increases in the use of birth control.

2.4. Technology

Technology, that is a cultural reality more than a generational characteristic, has so affected and defined the Net Generation that it generally emerges as a theme in literature. All generations alive today have experienced the development of technology, and adapted to the changes it has brought to society while the Net Gens are the only ones who did not live through the *emergence* of this technology as adults. The Net Gens, on the other hand, have and will continue to come of age in a society in which personal computers and the Internet with its related technologies are a given – part of everyday life (Sutherland and Thompson, 2001). Net Gens are amazed by this technology no more than previous generations are amazed by television or radio. Prensky (2001) describes the situation with the analogy that Net Gens are "natives" in a society that is dominated by ICT, whereas previous generations are "digital immigrants". There are significant implications for the differences in the ways that the natives and the immigrants think about the land they live in. Both immigrants and natives may use the same technology, but the two groups do these activities differently, and this situation leads to dissonance and a disconnection between the two groups (Prensky, 2004). Natives are creating their own way of doing things, often without the awareness of immigrants (Prensky, 2004). Natives and immigrants have also a different idea of technology. When asked about technology, the natives' definitions centered on "new", or better "newest", technologies. For example, a cell phone with a new feature was considered technology; a cell phone with standard features was not. What immigrants might consider "new technology", such as blogs or wikis, are not thought of as technology by natives. However, if you ask Net Gens

what technology they use, you will often get a blank stare. They don't think in terms of technology; they think in terms of the activity technology enables. The enabled activity is more important to the Net Gen than the technology behind it. For example, instant messaging wasn't considered a technology; “IMing” is treated as a verb - it is an action, not a technology. They often use the word “talk” when they describe text messaging or instant messaging. Software blends into the background; it enables certain activities to occur, but it is not new, novel, or customizable; this is all part of the Net Gens’, or natives, definition of technology.

What previous generations might describe as distractibility, Net Gens describe as multitasking; effectively using multiple technologies to work on multiple tasks to complete multiple goals at one time. Multitasking is an integral part of the Net Generations’ lifestyle (Oser, 2005). From a research project it emerged that the Net Gens between ages 8 and 18 use many multimedia simultaneously, using the computer and Internet at the same time as well as videogames, printers, music and the phone. In another study it emerged that the Net Gens compress 8.5 hours of media use in only 6 hours.

The Net Gens’ demand for immediacy: what we assumed was impatience, is something they consider immediacy - responses are supposed to be fast. For the Net Gens computers, the Internet, online resources, and instant access are simply the way things are done. They are able to respond quickly and expect rapid responses in return. And just as we often hear about the natives’ frustrations with the immigrants’ understanding of the language, culture and rules of our society, we also hear about the digital natives being frustrated with the digital immigrants’ understanding and use of technology. In the classroom, students are exasperated by instructors who either fail to use technology, or fail to use it effectively (Prensky, 2006; Oblinger and Hawkins, 2005).

3. Conclusions

Knowing the new generation is very important because it helps people belonging to previous generations to understand, and therefore, not to fall into the trap of deciding how today’s young people are different from those who came before them and seeing them somehow as less intelligent or less sincere… than in the Good Old Days… In fact, it works better if we try to understand who today’s young people are and why

they are what they are. As Nancy Truesdell, Dean of students at the Lawrence University said, the answer to: *"What's the matter with kids today?"* is *"Nothing. They are who they are*.

As has emerged strongly during the Memory Line project, for people from different generations to work together it is essential that these people create a communication channel based on understanding and mutual respect. To start the construction of this communication channel it is necessary that people realize that those who belong to another generation, "the others", are neither better nor worse but simply different than they are. To promote this growing awareness by people, it is useful to give them information on the "other" generations with which they come into contact to help them reflect on it. This is precisely what has pushed us into writing this chapter.

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It's digital, but is it creative? Creativity and digital media literacy for learning and social inclusion

Adriano Solidoro

Which role do digital technologies play in the creative process? What is lost and what is added to experience and expression when we use digital technologies in creative practice? How can digital media help us express new ideas? How can we assess processes and results achieved with the help of these new tools and media?

It is not easy to answer these questions in a concise and definitive manner; however I believe that the characteristics of digital technologies not only make using a digital devices and software for creative goals appropriate but also significantly contribute to their achievement.

In recent years new practices have emerged in the use of digital technologies for showcase, feedback, folksonomy tagging and networking. Sites such as Flickr and YouTube enable users to publish their creative digital work for others to visit, evaluate and offer comments, and schools, colleges and informal learning institutions use online learning environments for sharing and publishing work for a more local or limited audience.

The world of digital technologies, in fact, offers new media and ways of participating to creative activities by providing tools that may foster learners' imagination and participation. Thanks to suitable computers and software, people have the opportunity to learn and work creatively, experiencing different processes whilst being creative.

As happens in any creative domain, it is necessary to be original, to ideate and create, whilst looking for meaning and usefulness. Digital technologies (computers, software, networks, recording and presentation technologies, and so on) permit users to access creative activities in such ways as would not be so immediate when using more traditional analogue technology. The same characteristics of accessibility and fluidity, nonetheless, require people working in education and in community service to search for adequate methodologies, organizational approaches and knowledge, which are factors that may inhibit creative processes unless they are dealt with appropriately.

Digital technologies such as mobile phones featuring a camera and a web link, such as editing tools for music and digital videos spread throughout the World Wide Web, are

considered creativity vectors available to anybody at any time. Marketing experts, the press and the institutions define digital technologies as excellent tools for learning and for social integration; some organizations sponsor awards and initiatives for the spread of digital media as a form of knowledge, art and entertainment. As some sectors of the creative industry can benefit from the easy access, production, reproduction and distribution of digital contents, 'consumers' of cultural artefacts may become authors of texts, videos and narrations that can reach a wider audience through the Internet.

Media and society experts state that these technologies offer new forms and opportunities for learning (Johnson 2005), besides new ways by which the audience takes part in the conversation and narration of the media (Jenkins 2006).

Education systems and informal learning practices are in search to adapt to the challenges and innovation creativity affords in our wider society, while creativity is promoted in national educational and community policies developments and initiatives.

Digital tools assisting creativity are manifold and varied; they range from 'idea-generating tools' (brainstorming, conceptual maps, storyboarding facilitators), to tools for film shooting and editing, to the building of a three dimensional simulation environment. Some of these tools are very sophisticated; however cheaper and simpler versions are also available. The availability of low cost digital video cameras offers many users the opportunity to actively participate in the creative process of filming and montage. Photo and audio editing software make images and sounds of contemporary media ecology easy to manipulate, thus opening up to new forms of cultural expressions such as video and musical 'mash up', or Photoshop *collage*.

These technologies lead to the elimination, or at least the lowering, of the level of the barriers which prevent access to media production activities. The Internet opened up new spaces for discussion and knowledge sharing some time ago and the Web became an important showcase for emerging amateur productions. Certainly, many people wrote stories, composed music and made videos even before the Web; yet they missed the stage in which their work could be shown to a wider audience rather than the limited group of their friends. The Web (and currently even the phone network used by mobile devices) allows domestic and amateur productions to be very visible.

Nevertheless, the use of methods for the development of creativity in educational, personal and community development contexts and the use of digital technologies are

hindered by barriers and limitations which are to be acknowledged in order to foster the creative potential of digital media in both the learning environment and in the community. Some of the risks in dealing with digital technologies for creative purposes in education and in the community, for instance, is, on the one hand, the superficial and fragmented emphasis on products, and, on the other, especially as regards non-computer-literate people, an attitude of rejection to the use of digital devices which are not perceived as tools offering new opportunities, but rather as complex and difficult "machines", which prevent, because of their rigid and cold mechanisms, the natural flow of creative ability. More often, barriers are not only a matter of ICT literacy, but complex social and cultural ones.

Thus, creativity can be facilitated and enhanced by using digital technology once its multiple and diverse potentials are understood. However, there are other important issues all those interested in digital media for creative goals in the educational and social work domain should reflect upon. For instance, understanding the concept of "creativity", or which the specific qualities of the digital media fostering a creative attitude are; or also, which methods should be used in creative activities, and last but not least, which are the more suitable contexts which may allow people to express their creative potential.

1. Defining "creativity" in the digital media domain

It is necessary to explore different points of view about this often elusive concept of 'creativity'. Many authors have attempted to define the term 'creativity'. In spite of their efforts it is very difficult to give it a definitive meaning, as the notion of 'creativity' is so abstract and hard-to-grasp.

Over the years, creativity has been identified as the consequence of extremely diverse causes, such as divine intervention (i.e. the famous inspiring Muse!), cognitive processes, the social context, different traits of personality as well as fortuitous events. Many people automatically associate creativity to art and literature and consequently originality is seen as a distinctive feature, unlike what happens in other environments in which creativity occurs (Amabile, 1998). As far as academic literature is concerned, for instance, the more widely accepted concept of creativity refers to a process leading to the production of an artefact which results both innovative and useful (for instance, a new scientific hypothesis). Colloquial

definitions of creativity, instead, usually refer to those activities carried out with the intent of reaching a totally or partially innovative result, such as building or modifying an artefact by giving it new properties and characteristics, or else by conceiving ideas which had never been imagined before, as well as by understanding or carrying out an activity in a different way from what used to be considered as standard or possible beforehand.

Another important issue concerning the definition of creativity is whether it should be considered as such only when it is manifested by exceptionally talented individuals, such as Einstein or Michelangelo for instance, who with their genius modified the widely accepted paradigm of knowledge, or whether it could concern the self-realization potential of each individual through "little creativity" actions or "alternative thinking" which help people make important decisions in their daily life (Craft, 2000).

Also within the Cultural Studies discourse, many authors rejects the construction of creativity as an exceptional process resulting in aesthetically outstanding results. Cultural artefacts are not seen, thus, as the magical product of the exceptional mind of a creator, but, on the contrary, as a process which must be understood as being imbued with the material and social contexts in which it emerges and is consumed (Becker, 1982). Many scholars, then, underlines that creativity is not restricted to aesthetic formalism or rational evaluation, but combines emotional, intuitive and rational responses. While, according to Negus and Pickering (2004) cultural creativity (i.e. in music, film, television, visual art, or fiction) is a matter more of social communication than of abstract aesthetic value. In this view, cultural resources are recombined in novel ways, so that they are both recognizable because of their familiar elements, and create emotional impact through the innovative process of this recombination. For Becker (1982), instead, creativity is always to be understood as grounded in complex networks of social practice, collaboration and negotiation.

Cultural Studies has therefore paid substantial attention to the 'minor' creativity. From the late 1990s onward, Henry Jenkins (2006), has begun to turn his attention to these broader possibilities of digital technologies for 'grass-roots creativity' and the remediation of everyday creative practice, as in Blogs, photo-sharing, and in video micro-narration.

Obviously, this article refers to a wider vision about creativity. I do not use 'creativity' in a evaluative sense; rather, I use this term in the most broadest sense,

describing the processes by which artifacts are designed pursuing the aim of a community shared meaning.

Creativity, no matter what its definition is, seems to play an increasingly important role in our culture and society nowadays. Currently, for instance, many forms of creativity are referred to as fundamental activities within the global economy, such as those of the so called "creative industry", which generates profits thanks to the creation and the use of intellectual property and generally intangible services. The "creative class" is therefore seen as an important vector of contemporary economy, as emphasized by Richard Florida, an economist, who in his *The Rise of the Creative Class* (2002) theorizes that the geographical areas characterized by the "3 T" of economic development, 'Technology, Talent and Tolerance' contain a higher concentration of creative professionals. Also Daniel Pink, in his *A Whole New Mind* (2005) which summarizes the different thoughts emerged from the 20th century, shows that in contemporary culture (and economy) creativity plays an increasingly important role.

Perhaps the above are slightly utopian visions, which, nonetheless, bear witness to the growing attention towards creativity. But there are also some authors (i.e. Osborne, 2003) who contest the legitimate usage in contemporary culture of the term 'creativity', arguing that the appropriation of the concept of creativity by the business discourse and its ubiquity as a social and cultural model leads to 'compulsory' individualism, innovation, performativity and productiveness.

The concept of creativity has also recently undergone changes and currently includes aspects and approaches which, in the past, were perceived as alien. Such as any behaviour allowing the expression of an individual within a community or within an organization, or else, allowing creativity to be used as a means for learning (Jeffrey and Craft, 2001).

Studies of some researchers, as for instance those of Gardner (1993) and Csikszentmihalyi (1996), analyze the different processes and levels of creativity, the characteristics of creative people, and the role played by the context in which the creative activity takes place as well as the wider social context. Other studies concentrate on cognitive mechanisms and emotional states which foster a creative attitude in individuals, as in situations in which intuitive approaches are privileged or else when meditating, daydreaming or being bored, since these states of mind play an important role in fostering creative or problem solving attitudes (Lynn and Rhue,

1986; Claxton 1999, 2000). This ought not to lead to thinking that creativity is synonymous with "fortuitousness" or with unconscious spontaneity, because, on the contrary, creativity gives rise to a type of knowledge which, although not necessarily conscious, draws on previous competences and experiences in order to explore new routes, create original combinations, and transform things (Boden, 2001).

Thus, creativity requires us to be in touch with our 'Self', and also with the 'Other' (people, social context or community). The nature of these relationships reflects the need we all have to continuously address new audiences and receive a response to our creative activities.

These relationships and interactions mould and encourage creativity as an approach to life, as a form of knowledge beyond the rigidity of definitions and of categories within the traditional domains of "arts" and "creative professionals", and the opportunity offered by the Internet to non-professionals to enjoy a special place where creativity can be displayed gave rise to new enthusiasm in expressing oneself and being creative.

This amateur cultural production is interpreted by some (Jenkins. 2006) as a field where an expression alternative to the media's dominant one can be experimented by giving space to diverse types of communities which in this way are able to tell their stories, thus, sometimes contrasting representations of the hegemonic culture and allowing "minor creativities" and subjective voices of individuals and communities to speak out in a multitude of "marginal" yet important communicative genres. Bearing in mind the same amateur creativity landscape, Burgess (2006) coined the neologism 'vernacular creativity' which wants to describe the everyday practices of material and symbolic creativity, such as storytelling and photography, both precedent to digital culture and now remediated by it.

2. The creative practice

In recent years there have been remarkable developments in the educational use and informal learning practices of digital technologies in areas of photo and music editing, and movie making.

Digital video can be an engaging tool in constructing, editing and presenting identities in different contexts, and students and adults learners can make choices about how they represent themselves in the digital media landscape. Virtual worlds and

Machinima offer users opportunities to make virtual 3D puppets and imaginary stage settings; create puppet plays in real-time in networked collaboration with remote users; and watch and listen to their plays and new narratives created from the resources of computer games and Virtual Worlds (i.e. World of Warcraft, Habbo Hotel and Second Life). This type of collaborative work enables people to produce creative outputs together and moves such activity beyond capturing, publishing and visiting other people's showcases.

'Messing about' with the computer to prepare a Power Point presentation of texts and photos downloaded from the Internet, or to upload on YouTube a video clip recorded using a mobile phone, however, does not represent a creative experience in itself. We may, in fact, functionally define creativity as an imaginative activity carried out with the intention of producing both original and valuable results.

Such a definition of creativity is functionally useful because it expresses creative characteristics such as the imaginative process (the process of imagining, supposing and producing original ideas), and the constructive process (the active and conscious focus on attention and the skills necessary for the realization of an idea, giving shape to it and communicating it), as well as the recognition of the value (through which an activity of mutual evaluation and criticism produces further imaginative processes of both individual and collective reflection).

Thus, I believe that it is useful to adopt a reference framework — albeit non dogmatic — which may steer creativity towards useful, shared and recognisable goals. A framework of useful activities and techniques for producing ideas and expressing creativity in conscious and shared forms — however prescriptive — may facilitate the achievement of a creative ethos with meaningful purposes (see for example Nickerson, 1999).

Following the description of creativity illustrated above, we may now define the term "digital media," endeavouring to avoid terms and expressions which are already strongly connoted in other fields. For our purposes, the term "digital media" is used extensively in order to indicate the communication area which includes the audiovisual field and also the many applications of digital interactive technologies for culture and entertainment, for training and interpersonal communication. Likewise, we consider equally important the consideration that 'digital media' is not so much a technological typology but rather a discipline which is becoming increasingly relevant in the daily activities in many sectors of communication and knowledge.

Also for this reason, in this article the expressions “media contents” or “digital contents” are used as synonyms because they are almost interchangeable and may refer both to “interactive media” or to the audiovisual sector in a more extensive interpretation.

The digital and multimedia innovation has not limited itself to the enhancement of mass communication and interpersonal exchange. It also has challenged the split of these two spheres of traditional communication, by achieving multiple models of information and cooperation, by means of the sharing and spreading of contents which were unthinkable up to very recently. Creating contents and making them visible is possible nowadays even to the wider public. Since necessary technologies are accessible to most people, those who wish ‘to give it a try’ just need to become relatively ‘literate’ and possess a certain amount of imagination.

The above is in addition, obviously, to being motivated to participate and share something personal in the ‘social space’ facilitated and accelerated by the Web. As many studies on emerging media have demonstrated, the specific and wide effects being seen in different contexts (ranging from entertainment, politics, interpersonal communication, collective action, organizational behaviour etc.) are not the result of the functionalities of technology itself. Yet, these effects depend on how people use technology and take possession of it in order to replace or integrate communication modes or adopt new ones. The Internet’s most innovative aspect is, in fact, its community dimension rather than its technological interactivity. People are using Web 2.0 technologies to share, to show and to collaborate in making creative work which can engage new audiences and disrupt traditional structures and commercial interests. This is most clearly represented by MySpace, YouTube and Flickr: the convergence of user-generated content and social software to produce hybrid spaces, examples of which are sometimes described as ‘social media’.

It is this ‘social media’ feature of the new networks of cultural production that has the most profound implications for cultural participation, at least in potential. ‘Social media’ is a term which describes comprehensively both the new devices and the traditional experiences of interaction and collective production of contents such as Blogs, and the ‘user generated content’ displayed on social networking platforms, i.e. MySpace, Flickr, Youtube, etc.

Besides the labels and the neologisms, social media are a reality built around both the increasingly widespread and low-cost availability of connectivity and the natural trend

of people to bend technology to their socializing needs. This is also linked to our topics of interest, i.e. learning and creativity. As recognised by the recent developments in understanding learning dynamics, knowledge, in fact, is built through interaction and communication between the members of a community (Lave and Wenger, 1991; Somekh, 2001).

Thus, the speed and the variety of communication afforded by digital media offer users the opportunity to communicate with other users in a synchronic and interactive way at each stage of the creative process. They also offer users the opportunity to work together, and share ideas, pursue goals and constantly assess the different stages of the creative activity. The Internet, in fact, as a social media environment, may also be used as "a shared place" where it is possible to carry out activities that go beyond the communicative exchange.

Nevertheless, it is important to always remember that digital technologies do not generate creativity per se, but rather give the opportunity to enhance and exploit one's imagination. The creative processes of imagination, creation and 'enchantment' are made possible by both easy manipulation and by the possibility to keep track of the progress of the creative work. This makes moving from stage to stage and exploring different options possible.

The exploration of the different options concerns both the physical activity of 'doing' and also the ongoing 'dialogue' in which "the creator produces and the artefact responds" (Loveless, 2000). The result of this dialogue is the representation of a meaning which transforms the artefact into something which is more than mere 'self-expression'. The dialogue is composed by those cognitive, creative and dynamic processes which are active when we give meaning to an image which evokes the author's feelings, a shared experience or suggests a reinterpretation of events or situations.

While, as very often happens, technological literacy is developed in a context in which people can experience and satisfy their curiosity about the production of certain effects; the initiatives aimed at learning and social inclusion should always take into consideration the main aim of the creative expression of meaning. For this reason too, the use of digital media for creative goals, requires multidisciplinary competences and skills.

3. Creativity and literacy

Simulations and co-operation environments (such as Blogs, Wikis and Virtual Worlds) offer many opportunities to creativity — from cooperative writing, to the shared construction of objects and characters, to the creation of films using avatars and the environments of simulated worlds and videogames as actors (or puppets) on stage. Such activities draw attention to the processes and activities through which learners can fashion, manipulate and craft in order to make meanings. Through active engagement with the tools and media, they can express their ideas and make new connections, relationships and representations.

In this creative landscaper, it is important, thus, to re-examine our ideas about 'computer literacy', 'media literacy' and 'media education'. We need to define, instead, an 'everyday creativity digital literacy' which could describe the ability to create and manipulate multimedia content in ways that that serve learners interests and enable participation, including playful participation not predominantly structured around formal aesthetical outcomes.

The concept of a 'creative digital literacy', or, better, of multiple 'creative digital literacies' is necessary in the moment content creation can be recognized as a crucial area of students and adult new media literacy (Livingstone *et al.*, 2005), but it also goes over a technological deterministic approach, and favours experimentation in order to achieve social and cultural goals (Burgess, 2006), rather than ICT capabilities and instructional competences.

As well as technological literacy and creative attitude, there are, thus, many kinds of 'literacies' which facilitators and learners experiment in order to foster a creative and meaningful experience. The 'production of ideas', for instance, requires the capacity to develop imaginative conjectures and the exploration and representation of ideas. The competence of 'making connections', instead, requires being able to support, evaluate, and develop ideas by interweaving knowledge, projects and materials. The competence of 'co-operating', requires working with other people and sharing knowledge; as well as the skill to communicate results obtained so that they can be assessed and appreciated by different audiences. Since Web 2.0 places of participation offer the space for a creative, everyday, cumulative storytelling, the creation of many small pieces loosely joined, and weaving together with the stories of others, also 'network literacy' (Walker, 2005) is necessary. This in order to be able to link to what

other people have created, invite comments from others, understand a kind of creativity that is a social, collaborative process rather than a private act of an individual. This 'network literacy' is constructed by users following norms and dynamics that cannot be obvious to beginners, and therefore can be learned through only everyday practice.

Furthermore, as mentioned above, creativity requires us to be in touch with our inner 'Self', but also with the 'Other', that is to say, the audience, but also the network, the community. Creative participation in Blogs, Wiki, Flickr , MySpace, or Habbo Hotel or in Virtual Worlds narratives involves much more than showcasing one's own work. It requires participation in 'community' activities such as sharing information, commenting on others' work, and engaging in discussion or collaboration. And it is the very consideration of the potential reference audience which may lead learners to have a more critical and reflective attitude towards the significance of their own work. Some authors such as Lachs and Papert emphasize for instance the importance of being aware of a potential audience throughout the creative process, from the making to the presentation of one's multimedia artefact. This raises questions about how we understand and value creativity itself; how we might wish to recognize and acknowledge it in others; and the place that 'value' and 'recognition' might play in the creative process at all.

Each of these activities demands the interaction between the characteristics of digital technologies and the elements of creative processes. An important feature of such tools for creativity and learning is that they offer opportunities for learners to be 'handson-and-minds-on', asking questions and responding to the consequences of their decisions. These interaction between the distinctive qualities of digital technologies and of creative processes reveals new perspectives on the increasingly wide use of creativity in learning and social contexts.

Being able to recognize the potential of these characteristics is an important step towards "computer fluency" — as defined by Papert, who opposed it to the more mechanical 'computer literacy". Learners need to be able to assess whether it is appropriate to use multimedia in a particular context or not. They need "ICT capability", as defined by Loveless, i.e. an ability that goes beyond having mere computer skills, and which includes understanding, informed choice and critical evaluation. It is an ability which is open and susceptible to further expansions. Loveless refers to "ICT capability", for example, when one is looking for images on

the World Wide Web in order to manipulate them with a photo editing software. But not only. He also refers to "ICT capability", when similar skills may be considered as appropriate in solving different problems in different contexts and with different reference goals.

4. The creative environment

But what is the ideal learning environment in order to transfer these competences and enhance creativity? Any digital media literacy initiatives with creative goals should supply an environment and learning strategies which may offer opportunities to play and explore materials, to take risks and make mistakes in a tolerant atmosphere. These strategies should convey awareness of the ways creativity fosters learning, as well as, ideally, involvement of the learners by including both 'training for creativity' and 'creative training.'

This may be realized by creating, in the classroom, as well as in any learning environment, a learning context which facilitates opportunities and promotes an 'ethos' supporting the imaginative activity as a key factor. This learning environment should be fashioned in such a way as to assist in overcoming any intergenerational communication gap, or conflict, between 'digital natives', i.e. owners and activists of the 'digital culture', and the older facilitators (teachers or community workers).

When speaking of digital media for learning and social inclusion, though, the intergenerational gap may not the only critical issue. Especially in the social inclusion context deciding the strategy in the use of digital technologies to favour creativity might be a difficult task. The use of technologies might also be confronted with some resistance (on the part of institutions, the learners – especially if non 'digital native' - and even of facilitators and community workers). Many people may feel that computers lead to a loss in spontaneity, in play and in interpersonal communication. Others may fear that the high level of technological and media competences required for the new interdisciplinary approaches might lead to lower standards if the processes and results are not thoroughly assessed. It is essential to overcome the most critical barrier, the so called 'digital divide' brought about different reasons, such as low income, low education, lack of infrastructures (and this does not refer to developing countries only).

5. *Digital creativity for social inclusion?*

The Web is also a place of aggregation and communication of political communities or youth sub-cultural movements which do not feel they are being appropriately represented by institutional channels or which intend to voice their aesthetic or ethical canons. Minority ethnic groups may find a channel of expression which otherwise would not be viable, while the so called activist media use the Web to deal with the consumerism orientated approach of the media industry.

Again, Cultural Studies approaches may help the investigation of the ways in which the interaction of creativity with digital media might constitute sites of social inclusion. Acts of 'minor creativity' carried out in the digital media landscape represents a 'space of hope' for social inclusion. Digital media promise to be accessible, offering the creative citizen a place to speak, and the Web appears to be a potential means of connection for different voices.

We have to imagine the Web, thus, as an area of the public sphere which can best be described as a network for communicating information and points of view, taking multiple forms, some of which are transitory and ephemeral (Habermas, 1996). It's an area of the public sphere which includes everyday life, affect, and pleasure, as well as the various channels and circuits of popular culture and entertainment, civic engagement, and emotional reflections on how we live and might live.

This model of participatory context could just as easily apply to the creation, showcasing and discussion of 'minor creativity' content production in digital culture — to the core business of extremely popular 'user-led' creative communities, such as Myspace, Flickr and YouTube, but even more to those initiatives which wants to integrate active community participation as a demonstration of, and as a means, to civic engagement.

Especially everyday storytelling is contributing to the landscape of public culture via new media technologies. The re-mediation of ordinary, previously unmediated experience, self-representations and stories in contemporary digital culture contexts might be indicated as spaces of hope for cultural, civic and political participation based around 'grass-roots' creativity. This interaction among 'everyday' creativity with digital media and networks constitutes spaces for the practice of social inclusion through participation into the public discourse. Such spaces have the potential to

support the self-mediated representation of ordinary specificity by individuals, and the potential for such self-mediated representations to build multiple social connections.

Digital Storytelling can be then an example of a method for using digital media for social inclusion, to support individuals, groups who reside in struggling communities to take the stories embedded in their lives and make them available to a wider audience. The community media movement known as 'Digital Storytelling' (Lambert, 2002), promote a workshop-based process by which 'ordinary people' create their own short autobiographical films.

As defined by the Center for Digital Storytelling in Berkeley, a digital story integrates visual images, music, and voice into brief digital video movies or multimedia presentation. First conceptualized by San Francisco Bay Area artists and activists in the 1990s, over the years new applications have emerged and today, this trend continues on the Web. The experience of digital story can bring people together for conversations about the subjects and topics a story explores and suggests, conveying process of reflection in a constructionist learning community.

The finished stories serve as "objects to think with" and also mediate relationships with others in the community of learners. Documenting the creative process, Digital Storytelling implies the high value placed on community, memory, and narration. The Digital Storytelling movement belief is that the knowledge of communities is best shared through stories and other forms of narrative knowledge. In this view, stories are therefore the vital link between individual experience and collective action. Thus, Digital Storytelling can be understood not only as a media form, but as a field of cultural practice and collaborative social interaction in local and specific contexts. From this connection both the storyteller and the audience have the potential to create a shared political view of the world, which enables a collective move to action.

The sharing and transfer of the skills, process, and products of digital storytelling are equally important as the production of stories themselves. Digital Storytelling workshops are intensely social, shaped not only around the creative expression of individual identities and perspectives, but also peer-to-peer collaboration, teaching and learning, and encounters with cultural difference. Thus, the sharing of knowledge and skills and the stories generated through the process of story-making can be of great importance to the development of a community, which is particularly true when a Digital Storytelling training workshop is oriented around a specific target or campaign in the community.

The ways in which participants in Digital Storytelling workshops combine showcasing their own oeuvres, viewing the work of their peers, and the collective participation in communities of practice demonstrate that not all the 'user generated content' might be indicated as futile.

Digital Storytelling forms and workshops process are carried out in educational contexts, as well as community media contexts and cultural institutions in several countries. Examples include the activities of the above mentioned Center for Digital Storytelling in Berkeley but also those of Hi8us Projects Limited, a registered charity established in 1994 to produce creative media with young people in their communities.

The Hi8us project is that of using the experience of creating media as a catalyst for changing lives, giving excluded young people across the UK the opportunity to gain experience of innovative media production, and a chance to tell their stories.

Amongst the many organizations active in Digital Storytelling initiatives in USA and in Europe, there are MassIMPACT, Creative Narrations, EduWeave, and Storybuilders.

6. Conclusions and further questions emerging

In the last few years activities of digital creativity for learning and social inclusion have increased both in frequency and range. Digital technologies are more user friendly and part of a familiar landscape of developing ideas, making connections, creating meaning, collaboration, sharing, publication and exhibition.

However we run the risk of interpreting each experience of creative production with the use of digital media as positive and innovative. We have always to bear in mind which is the cultural context the experimentation refers to. Most experiences reported in literature (essays, reports, projects, Internet websites, etc.) refer to initiatives carried out in the United States or Europe. But this may lead to the "cultural saturation" of the western concept of creativity which prevents us from understanding the way in which it is understood by other cultures (Craft, 2000). This may prove risky when, for instance, immigrants are involved. For many Asian cultures, for example, creativity is above all discovery or imitation: the concept of 'creating out of nothing' is not present in these philosophies and religions.

Academic research may help conceptualize theoretical models for the use of digital technologies for creative processes that include methods for the presentation of ongoing or future practice. Research should help connect the different usage trends of digital technologies for learning and creativity. Practical examples and creative processes implemented through digital tools and media should be described, implemented, theorized and assessed by experts, educators, facilitators and learners with the aim of providing wider and deeper literature on the topic of creativity and digital media for learning and social inclusion. This goal could be met by encouraging the assessment of ongoing projects in order to apply rigorous research methods, and by taking part in research initiatives on a wider range.

The use of digital media confronts us with questions about the assessment of creative processes and artefacts that are different from those produced with more traditional tools. These questions are the need to evaluate both process and product, and to recognize that our understandings of work created with digital tools are still to be further investigated.

These models of creative learning and social inclusion require even more reconfiguration if they are to be useful in any attempt to understand the transformation in ‘popular culture’ represented by the increase in consumer-created content in the digital media domain. It is important to investigate how technological change interacts with everyday creativity, and how particular modes of cultural participation are shaped by it.

Investigation on literacy is especially relevant at moments of media transformation because conventions and norms tend to be constructed and stabilized in informal learning contexts long before they are adopted by the institutions of formal education.

The development of a digital culture of creativity is very new and not fully defined yet and it is thus obvious that its language, grammar and practice have not yet been consolidated. As we are at the dawning of understanding the real features of the emerging digital culture, there is always the danger that ideas of creativity might be reduced to just recording, and mimicking mainstream media forms and narratives.

The great challenge is, thus, to continue to revisit our understandings of creativity, keep questioning how and where this potential creativity and participation currently are being realized in practice, within what constraints, and to what extent do they promote social inclusion or exclusion.

In order to avoid to use the word ‘creativity’ as a synonym of ‘good learning’, we need to explore our engagement with imagination, creative processes, and fashioning, and ask questions about the purpose and the significance of creative activity to individuals and communities. We need to explore the ways creativity is being remediated in contemporary digital culture environment, and the implications for social inclusion and participatory culture.

We have to bear in mind that it’s not a matter of having utopian or dystopian visions of a participatory and digital culture ‘revolution’; the challenge is to investigate in some detail the actual practices of everyday creativity.

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Digitisation

Georgi Todorov

1. Definition and need of digitisation

The European Union has declared that "*Digitisation is an essential first step to generating digital content that will underpin a fully digital Europe. It is a vital activity in preserving Europe's collective cultural heritage, providing access for the citizen to that heritage, to enhancing education and tourism, and to the development of eContent industries.*"

The benefits of digitisation include wider and easier access, conservation of originals, possibilities of adding value to images and collections, reliable storing of memories, stories, images, songs and other entities, related with the memory and the connection between the generations. The digitisation can also publicise materials on different virtual platforms via Internet and attract greater numbers of visitors and users.

Digitisation is the process of creating digital files by converting analogue materials. The resulting digital copy, or digital substitute, is then classed as digital material and is subject to the same broad challenges involved in preserving access to it, as "born digital" material (material created in digital format which has no analogue equivalent). The quality of the file, the format used to store it, its description, its intended use, its long-term preservation, the method of delivery to end users, and protection from infringement of intellectual property rights, are just some of the things which must be considered. Furthermore for each type of material that is digitised specific factors must be taken into consideration to make sure that the digital output can be used to its full potential now and in the future.

It is very important for the realization of the project goals and for valorisation of the results the users as a whole and the family members (young and elder) in particular to have basic knowledge about the digitalization of the artifacts, their preservation and storage, to have skills for using the multimedia technologies in a basic level. All this activities may be assigned to professionals from appropriate studios, offices for digital services, other cultural heritage institutions and commercial organisations. The knowledge about the technologies for digitalization and storage, as well as the

formation of concrete skills in this field will allow the development of digital family collections with various valuable for the generation materials. This will strengthen the connection between the generations.

This activity needs planning and execution of some work procedures. The basic moments are:

- The reason for digitisation, e.g. to provide access to underused holdings, to protect fragile items from the wear and tear of handling, to create a virtual collection, to contribute to enrichment of the generation memory, to contribute to a regional, national or international network;
- What is to be digitised? This will be largely determined by the reason(s) for digitisation and whether permission to digitise can be obtained from the rights holders (According to the Intellectual Property Rights -IPR);
- Choice of digital formats hardware, software, delivery methods or output formats and of course costs.
- Defining the ways of preservation and publication (private digital collections, saved on reliable digital devices as CDs or DVDs) and also uploading on Internet sites or blogs, or both.
- Who will carry out the work - the family, the family community or assigning this activity to professionals from cultural or other commercial organizations?
- A preservation strategy of original materials. The authentic documents undoubtedly are of a great importance.
- Selection. Selection criteria have to be determined by the aims of the materials usage, and may include the following main items:
    - Legal issues such as whether it is possible to obtain permission to copy if needed (Intellectual Property Rights);
    - The importance of the artefacts in the cultural heritage of the family, community, region, country, Europe;
    - The uniquely of the items;
    - The physical condition of the items and the need for preservation of the originals by making digital versions available as an alternative;
    - Financial issues.

2. Hardware and software for digitisation

Hardware and software should be chosen at the planning stage, taking into account reliability, costs, ease of use, customer training needs, maintenance costs, space available, possibilities of renting, etc. Equipment should enable recording and storing to be carried out at the highest possible resolution because a lower resolution image, or smaller file, can be extracted from a higher quality, higher resolution image, but never the other way round. The storage implications should also be taken into consideration, as higher resolution images create larger files and require more storage space.

Hardware

The equipment for digitisation of Memory Line entities must be suitable for the material to be digitised. The equipment includes the following main items: Scanners, Digital cameras, Video cameras, Audio recording equipment.

In respect to this equipment the following points need to be taken into consideration:

Scanners are used for:

- Transformation of text (printed or handwrite) into digital text format or image. The second opportunity is better, mainly in cases when it is important that the document is saved in its authentic mode. When the text is digitalized as an image, it is impossible to be changed afterwards.
- Transformation of images into digital format.
- Flatbed scanners should only be used for unbound printed material or documents;
- Bound items will require a book cradle or digital camera;
- The scanners should ideally be at least as large as the largest item to be scanned to avoid folding and "mosaicing".

3D scanning devices are used to transform the images into 3D format. This equipment may be used for museum objects or historic buildings.

Digital cameras

- cameras may be used for museum objects or for different entities of Memory Line;
- cameras may be used to record events, buildings, sites and landscapes;

- to get good picture quality the number of pixels, the bit-depth, and the optical lens quality are important;
- a stand for holding the material to be photographed will be useful;
- a tripod will be needed for the camera;
- supplementary lighting will in most cases be needed;
- filters will be required to reduce colour distortion.

Video cameras

- equipment will be needed for capturing digital output from conventional film and video;
- video recording equipment is used for capturing moving images and as such will be required for content creation projects resulting in "born digital" material;
- it is also a powerful tool for presenting a continuous view of all sides of an object, or for showing a three-dimensional space;
- the availability of comparatively cheap digital video camera equipment makes this sort of presentation possible for smaller institutions, mainly museums or galleries, which cannot afford the equipment to create full virtual reality content.

Audio recording equipment

- equipment will be needed which can produce digital output from analogue media;
- it is also used for capturing sound (speech, music etc.) and as such will be required for content creation projects resulting in "born digital" material;

Software

Software may be required to process the digital output e.g. correcting the colour of digital images, cropping the edges or compressing the file for web delivery. Such software should be capable of;

- opening very large files;
- modifying resolution and colour depth;
- saving different versions in different file sizes;
- copying part of an image and saving it as another file;
- exporting images in different file formats.

Selection of suitable software must take into account the material being digitised, for example if documents contain handwritten material then an OCR (optical character recognition) package will be required. The licensed or open source software may be used for digitalising needs.

Free and Open Source Software

Purchasing licensed software for the needs of the project may be very expansible and unprofitable investment. A model that has recently generated a lot of interest, especially in the context of public administrations and the not-for-profit sector, is that of free and open source. Free, in this context, should be understood in the sense of “free speech” rather than “free beer”. Open source software will have a lower initial cost (typically limited to service fees for customisation and setup), but will require more specialised technical skills to maintain.

Open Source Software and Free Software (OSS/FS) are two initiatives within the field of computer science which have the same aim, namely allowing users the freedom to run, copy, distribute, study, change and improve software. This does not mean that OSS/FS software is necessarily free of charge. OSS/FS advocates refer to “distributing free software for a fee", the point being that no-one has the exclusive right to distribute OSS/FS software and no-one can place any restrictions on the re-use and modification of such software, and the source code has to be part of the distribution.

The difference between the OSS and FS movements is really one of emphasis. For the Open Source movement, the issue of whether software should be open source is a practical question; for the Free Software movement it’s an ethical issue, i.e. ‘free’ as in ‘freedom’. For practical purposes there’s no real difference between them.

OSS/FS principles are enforced through using special licences such as the GPL (General Public Licence) and "copyleft" to allow others to use their work, with the understanding that all derivative works created are also made freely available to anyone who cares to use them. The most popular OSS/FS licence is the GNU GPL, used by more than 75% of OSS/FS software. (GNU is a recursive acronym for “GNU's Not UNIX”; it is pronounced “guh-noo.”).

The Free Software Definition, given by GNU [1] includes the following features:

Free software is a matter of liberty, not price. To understand the concept, you should think of free as in free speech, not as in free beer.

Free software is a matter of the users' freedom to run, copy, distribute, study, change and improve the software. More precisely, it refers to four kinds of freedom, for the users of the software:

- The freedom to run the program, for any purpose (freedom 0);
- The freedom to study how the program works, and adapt it to your needs (freedom 1). Access to the source code is a precondition for this;
- The freedom to redistribute copies so you can help your neighbor (freedom 2);
- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3). Access to the source code is a precondition for this.

A program is free software if users have all of these freedoms. Thus, you should be free to redistribute copies, either with or without modifications, either gratis or charging a fee for distribution, to anyone anywhere. Being free to do these things means (among other things) that you do not have to ask or pay for permission.

You should also have the freedom to make modifications and use them privately in your own work or play, without even mentioning that they exist. If you do publish your changes, you should not be required to notify anyone in particular, or in any particular way.

The freedom to run the program means the freedom for any kind of person or organization to use it on any kind of computer system, for any kind of overall job and purpose, without being required to communicate about it with the developer or any other specific entity. In this freedom, it is the user's purpose that matters, not the developer's purpose; you as a user are free to run a program for your purposes, and if you distribute it to someone else, she is then free to run it for her purposes, but you are not entitled to impose your purposes on her.

The freedom to redistribute copies must include binary or executable forms of the program, as well as source code, for both modified and unmodified versions. (Distributing programs in runnable form is necessary for conveniently installable free operating systems.) It is ok if there is no way to produce a binary or executable form for a certain program (since some languages don't support that feature), but you must

have the freedom to redistribute such forms should you find or develop a way to make them.

In order for the freedoms to make changes, and to publish improved versions, to be meaningful, you must have access to the source code of the program. Therefore, accessibility of source code is a necessary condition for free software.

In order for these freedoms to be real, they must be irrevocable as long as you do nothing wrong; if the developer of the software has the power to revoke the license, without your doing anything to give cause, the software is not free.

However, certain kinds of rules about the manner of distributing free software are acceptable, when they don't conflict with the central freedoms. For example, copyleft (very simply stated) is the rule that when redistributing the program, you cannot add restrictions to deny other people the central freedoms. This rule does not conflict with the central freedoms; rather it protects them.

Open source software began as a marketing campaign for free software. OSS can be defined as computer software for which the human-readable source code is made available under a copyright license (or arrangement such as the public domain) that meets the Open Source Definition. This permits users to use, change, and improve the software, and to redistribute it in modified or unmodified form [2].

Many people prefer the term free software because, once you have heard that it refers to freedom rather than price, it calls to mind freedom. The word open never refers to freedom

The open source software has the advantage of interoperability, of not tying the organisation to one system, and is generally very robust because the users help to develop and maintain it. Typical examples of open source software of potential interest to museums, libraries and archives are the Linux operating system, the Koha library management system, the DSpace digital assets management system, the Greenstone digital library server software, and others.

3. The components of Memory Line entities

Text

The texts could be created by appropriate software products, called text editors. This software programs allows entering, editing, formatting and saving texts. The digital presentation of text varies from simple coding of symbols to complex languages for

description of page, which could be used not only for description of the symbols of the text but also their presentation in a printed document.

The text as well as the rest multimedia elements could be compressed. The compression schemes decreases the volume of the saved and stored text and eliminated the surplus.

Automated text recognition in the development of collections is realized with a specific class of software, which is called in general Optical character recognition (OCR). It gives the possibility for transforming printed or handwritten scanned images into digital documents for editing.

Types of optical character recognition technologies:

- OCR for recognition of printed text;
- OMR (Optical music recognition) for recognition of notes;
- ICR (Intelligent character recognition) for recognition of handwrites;
- ACR (Advanced character recognition) for recognition of text in forms and blanks.

Images

Statically images (graphics)

The most common type of static images is usually represented by pictures taken from the family archives. Also text documents that have to be edited after the digitalization can be considered as a kind of static images.

The transformation of one static original image into digital mode is made by scanner. There are different scanners, which could be used for the development of digital family archives.

The scanners work under the management of a software. For the transformation and image processing the following program products could be used: Photo Styler of Aldus, Photoshop and Streamline of Adobe, Photo Paint and Corel Tracer of Corel Graphics. They offer a lot of functions for initially image processing as editing brightness, contrast, color scheme, recognition of object outlines, etc.

The Image Processing is a process of development, analysis, transformation and interpretation of images. This process includes:

- Development of images with digitizer, scanner or digital video camera with an appropriate software program.
- Image compression.

- Transferring of the image from one applying process into another according the TIFF standard

Types of processing:

- Removal of bending and defects;
- Widening the diapason of the brightness;
- Separation of the image outlines;
- Coloring the black and white parts of the image;
- Correction of defects, obtained in exhibition of the different parts of the image
- Adding new details;
- Changing in the format and size of the existed components;
- Image recognition;
- Pattern recognition – this is a technique for comparison between existed images and images from preliminary determined categories, which uses different statistic methods.

Dynamic images (video):

The dynamic images change their parameters in the time: color, dimensions, positions in the space, etc. The video data and the animation are dynamic images.

The video is one of the basic multimedia elements. Often the concept "video" is related with the different types of storage devices and standards for moving images: for digital video (for example DVD, QuickTime, MPEG-4) and for analogue video (video cassettes - VHS, Betamax)

Characteristics of the video stream:

1. *Frame rate* – the number of the static images for a unit of time;
2. *Video resolution* – The size of the image is measured in pixels for the digital video and in horizontal lines for the analogue video, according to the characteristics during the scanning.
3. *Aspect ratio* – describes the alignment of elements according the video screen.
4. *Stereoscopic video* - there are two channels – right channel for the right eye and left for the left eye.
5. *Bitrate* – measure for the "speed" of the video stream. Measure unit – number of bits per second *bit/s*. The more high is the value the higher is the quality of the video material.

Methods for video processing:

- Linear computer video processing – the systems are built on the basis of video recorders /tape-recorder/. The scenes are recorded from camcorder /camera/to video recorder, under the management of the computer, without using the hard disk. In this method the requirements of the computer configuration are limited: modern PC, camcorder, video burning device, TV set and card for video processing /video mixer and managing device for the video recorder/ with appropriate software.
- Non-Linear computer video processing –digitalization of the video data on the hard disks. The video film is stored in digital format on the hard disk, which have to answer specific requirements /there are specialized for this goal disks/. The video card digitalizes and compresses the video signal. It pre-codes from VGA to NTSC/standard for recording on videotape/. The computer has to be fast and to passes a definite minimum volume of the operational memory.

- Animation (digital information – there is no need for digitalization);

The animation is a digital data. The animated image is a sequence of quickly changing static images, which are phases of the movement. In other one animated sequence to be represented, it is necessary all the phases of the movement to be preliminary created as separate frames.

Hence, the technical parameters of one animation sequence as resolution and colors depend on the parameters of the separate frames.

The difference between animation and video:

- The video data uses continuous movement by dividing it into many discrete frames.
- The animation uses many separated pictures or graphical files, which are presented in a definite sequence and thus the illusion of uninterrupted movement is created.

Sound

It is formed by the vibrations of the air, which correspond to periodic signals with complex form.

The sounds in the nature are not single sinusoid frequency; they are composed of many similar and not similar signals with different form. Each sound may be composed as the appropriate frequencies are gathered in a correct combination.

The sound may be characterized by three attributes: pitch, timbre and amplitude.

Digital record – Transforms the sound in sequence of bits. The sound wave is scanned thousands of times per second, as values are appropriated to the signal amplitude. The received bits are saved in the memory. The technical tools for digital recording from the PC environment are specialized for these aim controllers. The most famous are - Covox, Sound Blaster, AdLib, Sound Galaxy, Audio PRO 16, Disney Sound Source, etc. Most of the presented controllers may record and also represent sound.

4. File formats and standards for digitisation

The image or output produced by the digitisation process will be held in a particular file format. It is advisable to keep master copies and delivery copies in different formats.

A file format is a particular way to encode information for storage in a computer file.

Since a disk drive, or indeed any computer storage, can store only bits, the computer must have some way of converting information to 0s and 1s and vice-versa. There are different kinds of formats for different kinds of information. Within any format type, e.g., word processor documents, there will typically be several different formats. Sometimes these formats compete with each other.

Some file formats are designed to store very particular sorts of data: the JPEG format, for example, is designed only to store static photographic images. Other file formats, however, are designed for storage of several different types of data: the GIF format supports storage of both still images and simple animations, and the QuickTime format can act as a container for many different types of multimedia. A text file is simply one that stores any text, in a format such as ASCII or UTF-8, with few if any control characters. Some file formats, such as HTML, or the source code of some particular programming language, are in fact also text files, but adhere to more specific rules which allow them to be used for specific purposes.

Many file formats, including some of the most well-known file formats, have a published specification document (often with a reference implementation) that describes exactly how the data is to be encoded, and which can be used to determine whether or not a particular program treats a particular file format correctly. There are, however, two reasons why this is not always the case. First, some file format developers view their specification documents as trade secrets, and therefore do not release them to the public. Second, some file format developers never spend time

writing a separate specification document; rather, the format is defined only implicitly, through the program(s) that manipulate data in the format.

Since files are seen by programs as streams of data, a method is required to determine the format of a particular file within the file system - an example of metadata. Different operating systems have traditionally taken different approaches to this problem, with each approach having its own advantages and disadvantages.

Of course, most modern operating systems, and individual applications, need to use all of these approaches to process various files, at least to be able to read 'foreign' file formats, if not work with them completely.

One popular method in use by several operating systems, including Mac OS X, CP/M, DOS, VMS, VM/CMS, and Windows, is to determine the format of a file based on the section of its name following the final period. This portion of the filename is known as the filename extension. For example, HTML documents are identified by names that end with .html (or .htm), and GIF images by .gif. In the original File Allocation System (FAT), filenames were limited to an eight-character identifier and a three-character extension, which is known as 8.3 filename. Many formats thus still use three-character extensions, even though modern operating systems and application programs no longer have this limitation. Since there is no standard list of extensions, more than one format can use the same extension, which can confuse the operating system and consequently users.

It is preferable to use open standard formats when creating digitised resources to ensure that resources are reusable and can be created, modified and delivered by a variety of software applications. This will increase interoperability and therefore access, will reduce dependency on one supplier, and will help to guard against obsolescence. Master copies should be in a format which supports large, high quality images (e.g. TIFF (Tagged Image File Format) for photographic images).

For delivering resources it is better to use more than one format in different sizes and resolutions, bearing in mind that users will have different types of hardware and software and different levels of bandwidth. Delivery copies will usually be in smaller files suitable for transmitting over the Internet (e.g. JPEG, Portable Network Graphics (PNG) or Graphical Interchange Format (GIF) for still images).

5. Needs of archive standards and Digital Archiving Standards

The job of digitally storing and sharing that content is increasingly complicated. The Web, as just one example, is the largest living document ever created. The content of Web space now is more than 55 times larger than the entire contents of the Library of Congress in Washington. This is the biggest library in the world. The Web is a fundamental information resource for everybody. In nowadays everybody is moving from a print-based world to one saturated with digital content. The Web adds seven million new pages every day, but on average those pages disappear in 44 days [3].

Great part of this information has to be saved for the future generations and not only saved but it has to be in a digital format, which will ensure its usage for many years in the future.

Universities, research libraries, people, and families increasingly are incorporating digital information sources into their collections, while making digital records of physical archives. Yet they are also finding that the old, universally accepted ways to catalogue and access information often no longer apply. Archives aren't purely physical places for the archivist, librarian or other costumers, conducting research, teaching or seeking information.

It is difficult to imagine nowadays our life without standards. For example if each computer manufacturer uses its own slots and couplings how we may connect our new printer, produced by from X firm to computer produced by Y firm? What a chaos will occur if there are no standards in publishing books? For example without title on the cover, without ISBN, the direction of the text to be not as now from left to right, etc.

It would, of course, be chaos, which is precisely what standards are designed to prevent. Nowhere is this more relevant than in the creation of digital archives, whose future is dependent upon standards—community standards that define common procedures, and technology standards that uniformly enable digital storage and retrieval. Without standards, there is really no hope for digital archives to be usable many years from now.

In respect to digital archiving and creating digital records of printed works, films, audio tapes, images or every artifact standards have to offer easy ways for every body, with little or no training, to quickly peruse their options and locate exactly what they need-preferably without first having to open a single digital file.

These issues tie directly into questions about technology. What format that exists today will sustain digital records for 20, 50, even 100 years? Content must be easy to capture, and it must be viewable using tools that are readily available. It's 2008. You just digitalized some very interesting documents from family repository. Let's move forward to 2028 - twenty years from today. Will your children or grandchildren be able to open the documents?

In the legal industry, document conversion problems are a lot. Many attorneys started with WordPerfect and may have migrated to Word. Opening all of those old documents can be troublesome.

Will everything convert? Will it look the same?

In order to answer these questions we have to use appropriate standards for data archiving. There is a great variety of formats for digitalization. Here are some of them:

ASCII

ASCII standard (American Standard for Coding and Interchanging of Information) is one of the most stable standards for data coding. It is used for many years and is a universally accepted standard. This electronic document format is recognized by majority of organizations.

Generally there are two basic disadvantages:

- It is appropriate for text coding;
- Because of the limited number of bits it allows text coding in English and one more national alphabet.

The last disadvantage is overcame with the use of extended table (UNICODE standard), which allows coding in almost all alphabets in the world. Unicode is an industry standard allowing computers to consistently represent and manipulate text expressed in most of the world's writing systems. Unicode consists of a repertoire of more than 100,000 characters, a set of code charts for visual reference, an encoding methodology and set of standard character encodings, an enumeration of character properties such as upper and lower case, a set of reference data computer files, and a number of related items, such as character properties, rules for normalization, decomposition, collation, rendering and bidirectional display order (for the correct display of text containing both right-to-left scripts, such as Arabic or Hebrew, and left-to-right scripts).

HTML, an abbreviation of *Hyper Text Markup Language*, is the predominant markup language for web pages. It provides a means to describe the structure of text-based information in a document — by denoting certain text as links, headings, paragraphs, lists, and so on — and to supplement that text with *interactive forms*, embedded *images*, and other objects. HTML is written in the form of tags, surrounded by angle brackets. HTML can also describe, to some degree, the appearance and semantics of a document, and can include embedded scripting language code (such as JavaScript) which can affect the behavior of Web browsers and other HTML processors.

But not all HTML is created in precisely the same way - an HTML page may appear differently on different Web browser. When costumers need to study an item exactly as it appeared, the limitations of HTML become apparent.

The *Extensible Markup Language (XML)* is a general-purpose *specification* for creating custom markup languages. It is classified as an extensible language because it allows its users to define their own elements. Its primary purpose is to help information systems share structured data, particularly via the Internet, and it is used both to encode documents and to serialize data.

It started as a simplified subset of the Standard Generalized Markup Language (SGML), and is designed to be relatively human-legible. By adding semantic constraints, application languages can be implemented in XML. These include XHTML, RSS, MathML, GraphML, Scalable Vector Graphics, MusicXML, and thousands of others. Moreover, XML is sometimes used as the specification language for such application languages.

XML is recommended by the World Wide Web Consortium (W3C). It is a fee-free open standard.

XML allows information to quickly come together from various locations to form a Web document that can be easily read, and features an advanced approach to tagging content so that its components appear in their logical order once they reach their destination. XML appears to be an excellent candidate for supplying the technical backbone of a digital indexing system.

PDF. While XML excels at transporting information, Portable Document Format (PDF) excels at displaying visually rich information. PDF preserves the pagination integrity of original documents, even when they are viewed on PDAs or next-generation wireless phones. Digital archiving is a marriage of data and documents. The two must live together, and for a very long time.

Many costumers already have successfully created distinctly different digital archives with Adobe Acrobat software, a low-cost authoring tool that easily generates any document in PDF. PDF is a broadly accepted, open specification for final-format documents that can be viewed using freely available Acrobat Reader software. PDF retains the format of the original document or Web page, so elements like pagination, photographs, and hyperlinks remain true to the original.

Adobe Acrobat Software Company also simplifies the process of keeping archived materials up to date. These are living documents, so we need a way to keep them current. With Acrobat, authorized editors just go into the portal from time to time and update the material. You can highlight and annotate material in ways that people don't realize.

Acrobat software exports XML along with PDF, resulting in an XML-tagged document that retains its pagination no matter how it is reviewed. This would allow a journalism student to look up a story from yesterday's Los Angeles Times on her handheld. She knows the story appeared on page 16 in the print version. If the page is stored in PDF and tagged with XML, that's exactly where she'll find it on her PDA [4].

As new display devices become popular, these capabilities will be necessary to find and view records that were archived years before. It has proven this is possible with PDF, viewing a document archived in 1995 on three different platforms: a desktop computer, a Palm OS handheld, and a Compaq iPAQ Pocket PC. When these documents were archived, those two handheld devices (Palm and Pocket PC) did not even exist.

While PDF itself has become a de facto industry standard, two industry organizations are jointly working to establish an official archiving standard based on PDF technology, called PDF/A **(**"A" is standing for archive). The groups are working to see PDF/A recognized by the International Standards Organization as a global standard for document archiving.

For now, digital archivists seem focused on tackling the issue of electronically documenting old and rare printed works, or capturing a Web page before it changes only a few hours later. And as immensely useful as digital archiving standards undoubtedly will be, educators point out that a ubiquitous system for higher education won't likely replace fixtures like research librarians anytime soon. With solid digital archiving standards, that job may become considerably easier.

A recent study estimates that the world's total production of information amounts to about 250MB—some 100,000 pages—for each man, woman, and child on earth. Printed documents comprise only .003 percent of the total [5]. It means that 99.997 percent of all information is digital—and it is growing fast. Some futurists anticipate that someday the world's knowledge will double every 900 days.

Yet because of their historical value, billions of documents need to be managed, preserved, and made accessible for future generations. This daunting task requires a solution that recognizes the wide range of information systems, technologies, and formats in which records are generated.

To a growing number of industry groups and users, one solution is PDF—a broadly accepted standard for the delivery of final-format documents. More than 20 million PDF documents are publicly available on the Internet, and almost half a billion copies of the free Acrobat Reader have been downloaded. PDF retains the content, look, and feel of the document exactly as it was created, ensuring document integrity and security, while also allowing documents to be searched. In fact, some countries already have accepted PDF as an archive standard. However, PDF has evolved to provide a number of functions that, while beneficial to users who share documents, are not ideal for long-term archiving: password-based security of documents, optional (rather than required) embedding of specific fonts, the ability to embed multimedia in other formats, and the ability to launch other applications from within PDF.

Consequently, a subset of PDF - PDF/A is being developed for archiving and preserving digital documents. PDF/A is a joint initiative by the Association for Suppliers of Printing, Publishing and Converting Technologies (NPES) and the Association for Information and Image Management, International (AIIM International). The PDF/A working group first met in mid-2002. The goal was to address the growing need to electronically archive documents to ensure preservation of their contents over an extended period of time, and to develop an International standard that defines the use of the Portable Document Format (PDF) for archiving

and preserving documents. PDF/A will also ensure that those documents can be retrieved and rendered with a consistent and predictable result far into the future. This need exists in a growing number of international government and industry segments, including legal systems, libraries, newspapers, regulated industries, and others.

The lack of a recognized and accepted electronic standard for records preservation - particularly as new generations of hardware and software have made previous digital technology obsolete - has led to the loss of significant amounts of valuable information over the past several decades. Military files from the Vietnam War, records from the Viking Mars Mission, Census Bureau data and land use records have been lost due to the inability to read data formats and the deterioration of magnetic tapes used to store that data.

PDF/A: PDF for Archving

The PDF format, designed to capture the printed intent of a document, is a great solution. With over half a billion copies of Adobe Reader installed, PDF has been *a de facto* standard. Adobe publishes the specification for the PDF, and over 1000 third-party products create, consume or work with PDF in one way or another.

However, government, industry and people need more assurances - they require *de jure* standards. A *de jure standard* is endorsed by an independent standards body such as the International Organization for Standardization (ISO). Such kind of product is PDF/A, an ISO standard.

The specification of the standard was formally approved in May, 2005. PDF/A implementation is based on the ISO 19005-1 standard plus Technical Corrigendum 1 (ISO 19005-1:2005/Cor.1:2007(E)). It was published on October 1, 2005 as a Document Management - Electronic document file format for long term preservation - Part 1: Use of PDF 1.4 (PDF/A-1)

PDF/A is a standard for long-term Archival. The PDF/A-1 formats specified in the ISO 19005-1 standard strive to provide a consistent and robust subset of PDF which can safely be archived over a long period of time, or used for reliable data exchange in enterprise and government environments. PDFlib 7 can be used to create PDF/A output conforming to ISO 19005-1.

PDF/A is targeted at reliable long-time preservation of digital documents. The standard is based on PDF 1.4, and imposes some restrictions regarding the use of

color, fonts, annotations, and other elements. There are two flavors of PDF/A-1, both of which can be created and processed with PDFlib.

PDF/A is in fact a subset of PDF, leaving out PDF features not suited to long-term archiving.

In addition, the standard places requirements on software products that read PDF/A files. A "conforming reader" must follow certain rules including following color management guidelines, using embedded fonts for rendering, and making annotation content available to users.

The Standard does not define an archiving strategy or the goals of an archiving system. It identifies a "profile" for electronic documents that ensures the documents can be reproduced the exact same way in years to come. A key element to this reproducibility is the requirement for PDF/A documents to be 100 % self-contained. All of the information necessary for displaying the document in the same manner every time is embedded in the file. This includes, but is not limited to, all content (text, raster images and vector graphics), fonts, and color information. A PDF/A document is not permitted to be reliant on information from external sources (e.g. font programs and hyperlinks).

Other key elements to PDF/A compatibility include:

- Audio and video content are forbidden.
- JavaScript and executable file launches are prohibited.
- All fonts must be embedded and also must be legally embeddable for unlimited, universal rendering. This also applies to the so-called PostScript standard fonts such as Times or Helvetica.
- Color spaces specified in a device-independent manner.
- Encryption is disallowed.
- Use of standards-based metadata is mandated.

There is also a PDF/A Competence Center[4]. The aim of this organization is to promote the exchange of information and experience in the area of long-term archiving in accordance with ISO 19005. The members of the PDF/A Competence Center actively exchange information related to the PDF/A standard and its implementations, and conducts seminars and conferences on the subject. For more information refer to the PDF/A Competence Center web site at www.pdfa.org [6].

We have to know the following about PDF/A:

- PDF/A is based on PDF Reference 1.4— the Acrobat 5 file format

- The standard dictates that some features are required and others are prohibited.
- There are two versions of PDF/A:
  - *Minimal***.** PDF/A-1b – for documents scanned from paper or microfiche sources. PDF/A-1b (formally ISO 19005-1 Level B) ensures that the visual appearance of a document is preservable over the long term. Simply put, PDF/A-1b ensures that the document will look the same when it is processed sometime in the future.
  - *Ful***.** PDF/A-1a—intended for electronic documents such as word processing, spreadsheets, etc. PDF/A-1a (formally ISO 19005-1 Level A) is based on level B, but adds properties which are known from the »Tagged PDF« flavor: it adds structure information and reliable text semantics in order to preserve the document's logical structure and natural reading order. Simply put, PDF/A-1a not only ensures that the document will look the same when it is processed sometime in the future, but also that its contents (semantics) can be reliably interpreted and will be accessible to physically impaired users.

A new version "PDF/A-2" is currently being worked on. It is expected to be based on the PDF Reference Version 1.6.

The PDF/A specification notes that documents should be *self-contained*, *device independent, unfettered, self-documenting*, and *tagged*. What does that mean?

Self-Contained

Long-term predictability requires that documents do not rely on outside elements to render properly. It makes sense that PDF/A requires that fonts are embedded in the document.

What fonts are used in your organization? Some fonts have a do not embed flag which prevent them from being embedded by Adobe Acrobat.

Fonts add considerably to the “weight” of electronic files, so you can expect that PDF/A files may be larger than the same PDF without the fonts embedded.

A self-contained document should not be reliant on any outside media player or scripting system. PDF/A does not allow external links, embedded files, JavaScript or multimedia elements in documents.

These restrictions rule out certain kinds of documents. For example, a rich, cross-linked eBrief may not be PDF/A compatible.

Device-Independent

The PDF/A spec demands that color is expressed in a device-independent manner.

If you've ever looked at the output from two different printers or monitors, you can easily detect subtle differences. For long term archiving, wouldn't you want to be able to know what the color was really supposed to look like?

Put simply, *device independence* means using a known, standard color space. Software in the application or operating system can then translate the known space to the user color space - e.g. your printer or monitor.

One color space I'd recommend for law firms is the Standard RGB (SRGB). SRGB is supported by most digital cameras and Adobe's product line including Photoshop.

Unfettered

The PDF/A specification insists that documents are unencumbered. PDF security of any kind is not allowed. Besides, who would remember a password twenty years from now?

Self-documenting

PDF/A documents require a metadata structure in the file. Metadata—information about documents— may used to record items such as Title, Subject, Author, Keyword, and so on. This increases the volume of the file in addition, but the metadata structure must be present in the document.

Metadata has a negative connotation in the legal market, but the intent with metadata in PDF/A is to allow future readers of documents to more easily search and classify material.

Tagged

Tagging is the structure added to documents so that the visually impaired may more easily consume the document.

Tagging offers anybody reading documents on a computer screen a number of benefits, however.

A PDF/A document can be identified as such through PDF/A-specific metadata located in the "http://www.aiim.org/pdfa/ns/id/" namespace. However, claiming to be PDF/A and being so are not necessarily the same

- A PDF document can be PDF/A-compliant, except for its lack of PDF/A metadata. This may happen for instance with documents that were generated before the definition of the PDF/A standard, by authors aware of features that present long-term preservation issues.
- A PDF document can be identified as PDF/A, but may incorrectly contain PDF features not allowed in PDF/A; hence, documents which claim to be PDF/A-compliant should be tested for PDF/A compliance.

As a PDF/A document must embed all fonts that it uses, a PDF/A file will often be bigger than an equivalent PDF file that does not have the fonts embedded. This may be undesirable when archiving large numbers of small files that all use the same fonts, since a separate copy of each font will be embedded in each file.

The majority of PDF generation tools that allow for PDF/A document compliance, such as the PDF export tool in Microsoft Office 2007 suites, will also make any transparent images in a given document non-transparent.

PDF/A is software supported by:

- Adobe Acrobat:
- Microsoft Office 2007 supports creation of PDF/A via its Save as PDF Plugin
- OpenOffice.org supports PDF/A since its 2.4 release.

The importance of the PDF/A standard was confirming by organising an providing The first international PDF/A Conference in April, 2008 in Amsterdam. The two-day conference features the newest trends and possibilities for using the ISO standard format for long-term archiving, presented by users from major international corporations, renowned developers and manufacturers, as well as international PDF/A experts.

Some other widely used file format standards

Text file formats

Post Script files(.ps) PostScript is a page description language developed by Adobe Systems Inc. in1985. It is a programming language, specialized in developing images, which include text and drawings. PostScript is used for describing page characteristics and for keeping information about what have to be printed from the printer. In order the content of a PostScript file to be shown PostScript viewer is needed. The easiest way is such a file to be read as ASCII format and to be sent directly to a laser printer.

PDF files - Portable Document Format (PDF) is a file format created by Adobe Systems in 1993 for document exchange. PDF is used for representing two-dimensional documents in a manner independent of the application software, hardware, and operating system. Each PDF file encapsulates a complete description of a fixed-layout 2-D document (and, with Acrobat 3-D, embedded 3-D documents) that includes the text, fonts, images, and 2-D vector graphics which the documents comprise. In order for such files to be read a specialized program is needed - Adobe Acrobat Reader. It is accessible for Windows and Macintosh platforms.

HTML files- HTML (Hyper Text Markup Language) is the predominant markup language for Web pages. It provides a means to describe the structure of text-based information in a document — by denoting certain text as links, headings, paragraphs, lists, and so on — and to supplement that text with *interactive forms*, embedded *images*, and other objects. HTML is written in the form of tags, surrounded by angle brackets. HTML can also describe, to some degree, the appearance and semantics of a document, and can include embedded scripting language code (such as JavaScript) which can affect the behavior of Web browsers and other HTML processors. The easiest way in which one HTML file can be read is to use a software product, called web browser, such as Internet Explorer, Opera, Lynx, Mosaic, Netscape, e.t.c..

SGML files SGML (Standard Generalized Markup Language) The *Standard Generalized Markup Language (ISO 8879:1986 SGML)* is an ISO Standard metalanguage in which one can define markup languages for documents. SGML provides an abstract syntax that can be realized in many different concrete syntaxes. Saving of the text in SGML format requires more time and experience but allows its reuse for other aims. This makes the text more independent from the platform where it is created and more accessible for other technologies.

Sound file formats

The most popular sound formats for IBM PC are:

.*WAV – WAV (or WAVE)*, short for Waveform audio format, is a Microsoft and IBM audio file format standard for storing an audio bitstream on PCs. It is the main format used on Windows systems for raw and typically uncompressed audio. The default bitstream encoding is the Microsoft Pulse Code Modulation (PCM) format.

.*VOC* – a proprietary audio file format developed by Creative Labs for use by their Soundblaster sound cards

.*MID* – it is a MIDI file format. *MIDI (Musical Instrument Digital Interface)* is an industry-standard protocol that enables electronic musical instruments, computers, and other equipment to communicate, control, and synchronize with each other. MIDI allows computers, synthesizers, MIDI controllers, sound cards, samplers and drum machines to control one another, and to exchange system data.

Graphic file formats

The graphic images may be divided into groups according the principles they are developed. In this aspect there are two basic types – raster and vector graphic images. Both of the types may be stored in file in their original mode or compressed. The compression is needed for memory and disk space saving.

Raster graphic images and formats

In computer graphics, a *raster graphics* image or *bitmap*, is a data structure representing a generally rectangular grid of pixels, or points of color, viewable via a monitor, paper, or other display medium. Raster images are stored in image files with varying formats.

A bitmap corresponds bit-for-bit with an image displayed on a screen, generally in the same format used for storage in the display's video memory, or maybe as a device-independent bitmap. Bitmap is technically characterized by the width and height of the image in pixels and by the number of bits per pixel (a color depth, which determines the number of colors it can represent). Each pixel has an individually defined color; images in the RGB color space, for instance, often consist of colored pixels defined by three bytes — one byte each for red, green and blue. Less colorful images require less information per pixel; for example, an image with only black and white pixels requires only a single bit for each pixel. One can distinguish raster graphics from vector graphics in that vector graphics represent an image through the use of geometric objects such as curves and polygons.

The most famous graphic formats are:

.*BMP* – the graphical format BMP is created by Microsoft. The files are with extension BMP - sometimes called *bitmap*. In uncompressed BMP files, and many other bitmap file formats, image pixels are stored with a color depth of 1, 4, 8, 16, 24, or 32 bits per pixel. Images of 8 bits and fewer can be either grayscale or indexed

color. An alpha channel (for transparency) may be stored in a separate file, where it is similar to a grayscale image, or in a fourth channel that converts 24-bit images to 32 bits per pixel.

.*GIF* – The *Graphics Interchange Format* is a bitmap image format that was introduced by CompuServe in 1987 and has since come into widespread usage on the World Wide Web due to its wide support and portability.

The format supports up to 8 bits per pixel, allowing a single image to reference a palette of up to 256 distinct colors chosen from the 24-bit RGB color space. It also supports animations and allows a separate palette of 256 colors for each frame. The color limitation makes the GIF format unsuitable for reproducing color photographs and other images with continuous color, but it is well-suited for more simple images such as graphics or logos with solid areas of color.

.*PCX* - PCX is an image file format developed by the ZSoft Corporation of Marietta, Georgia, USA. It was the native file format for PC Paintbrush (PCX = "PC Paintbrush Exchange") and became one of the first widely accepted DOS imaging standards. The PCX is a device-independent raster image format; the file header stores information about the display hardware (screen resolution, color depth and palette information, bit planes and so on) separately from the actual image information, allowing the image to be properly transferred and displayed on computer systems with different hardware. PCX files commonly store palette-indexed images ranging from 2 or 4 colors to 16 and 256 colors, although the format has been extended to record true-color (24-bit) images as well.

.*TGA* - TGA File Format, often referred to as *TARGA File Format*, is a raster graphics file format. It was the native format of Truevision Inc.'s TARGA and VISTA boards, which were the first graphic cards for IBM-compatible PCs to support Highcolor/truecolor display. This family of graphic cards was intended for professional computer image synthesis and video editing with PCs; for this reason, usual resolutions of TGA image files match those of the NTSC and PAL video formats.

.*TIFF* - *Tagged Image File Format* is a file format for storing images, including photographs and line art. It is now under the control of Adobe Systems. Originally created by the company Aldus for use with what was then called "desktop publishing", the TIFF format is widely supported by image-manipulation applications,

by publishing and page layout applications, by scanning, faxing, word processing, optical character recognition and other applications.

Vector graphic images and formats

Vector graphics is the use of geometrical primitives such as points, lines, curves, and shapes or polygon(s), which are all based upon mathematical equations, to represent images in computer graphics. The advantages of the vector formats are: they are with small size and there is no the effect of the pixelarization as in the raster formats. The basic disadvantage is that there is no opportunity for presenting realistic images. The vector graphical format is a composition of rules according to which the image is saved on the computer.

The most famous graphic formats are:

.*DWG* – Coming from Drawing. Developed by Autodesk with the first version of Autocad and is one of the most popular universal CAD (Computer Added Design) products.

.*DXF* – One of the first vector formats for PC. The basic disadvantage is that it does not support Spline curves, which bring to decreasing the quality of the more complex parts of the image. It is used for graphic data exchange between different software products and even different platforms (Apple/Macintosh и IBM/PC). It is supported by almost all vector graphical software products.

.*EPS (Enhanced Post Script)* – this is the most popular vector graphical format today. It is used mostly in software programs for design and publishing on both hardware platforms - Apple/Macintosh and IBM/PC.

Video file formats:

They are systemized in the table below

*Analog Tape Formats (Analog television***)**	*Digital Tape Formats (Digital video)*
Ampex	D1 (Sony)
VERA (BBC)	D2 (Sony)
U-matic (Sony)	D3
Betamax (Sony)	D4
Betacam	D5_HD
Betacam SP	Digital Betacam (Sony)
2" Quadruplex videotape (Ampex)	Betacam IMX (Sony)
1" Type C videotape (Ampex and Sony)	HDV
VHS (JVC)	ProHD (JVC)
S-VHS (JVC)	D-VHS (JVC)
VHS-C (JVC)	DV
Video 2000 (Philips)	MiniDV

8mm tape Hi8	MicroMV Digital8 (Sony)
Optical Disc Storage Formats DVD (was Super_Density_Disc, DVD Forum) Laserdisc (old, MCA and Philips) Blu-ray Disc (Sony) Enhanced Versatile Disc (EVD, Chinese government-sponsored) HD DVD (Hitachi and Toshiba)	*Digital Encoding Formats* CCIR 601 (ITU-T) – for emitting in real time M-JPEG (ISO) MPEG-1 (ISO) – forVideoCD MPEG-2 (ISO) – fora DVD and Super-VCD MPEG-4 (ISO) – for on-line distribution of big size video files. H.261 (ITU-T) H.263 (ITU-T) H.264/MPEG-4 AVC (ITU-T + ISO) Ogg-Theora – for video through Internet

6. Investigation of existing digital archives

In table 1 some folklore archives and their characteristics (text, audio, video, search possibilities, on line/off line way of work, etc.), which define them as an multimedia digital archives are presented and described.

Table 2 presents a list of organizations all over the world, which activities are connected with their country folklore and its preservation and popularization. It may be concluded that there are a lot of organization all over the world, which work in the field of folklore preservation and research.

Part of them support folklore archives, but in most cases these archives are not accessible for the people in two reasons:

- Even if the archives are digitalized, they are not online accessible. They are stored in the place where the organization is.
- The access to the archive is not free of charge. It is limited and is accessible only for researches.

Table 1 Characteristics of some folklore archives

Name	Text	Audio	Graphic	Video	Searching	Paid	On-line	Notes
Alive human treasures http://www.treasures.eubcc.bg/	+	-	+	+	+	-	+	To the UNESCO's program "Alive human treasures" in Bulgaria; stand out of the typical for Bulgaria in national and regional plan activities – abilities, technologies and practices saved under the form of alive human experience.
Folklore archive http://sdynbg.com/simply/?%D4%EE%EB%EA%EB%EE%F0%E5%ED	+	-	+	-	+	-	+	To the etiology and folkloristic laboratory – part of Philological faculty - "Neofit Rilski" University, Blagoevgrad

Name	Text	Audio	Graphic	Video	Searching	Paid	On-line	Notes
_%E0%F0%F5%E8%E2								
Multimedia data base for music http://musicart.imbm.bas.bg/en/about.htm	+	+	-	+	+	-	+	Multimedia data bases for Bulgarian folklore music in the Bulgarian linguistic institute – BAN
The Fife Folklore Archives http://library.usu.edu/Folklo/	+	+	+	N/A	+	N/A	- (at the scene; online catalog)	American folklore
The Folklore Program at the University of California, Berkeley http://ls.berkeley.edu/dept/folklore/	+	+	+	N/A	+	N/A	- (at the scene; in order)	More than 500 000 ones all over the world
The Ukrainian Folklore Archives http://129.128.116.48:8890/photo_archives/	+	+	+	+	+	-	+	Devoted to the Ukrainian life-style; there are 2 sections in the web site: collection of more than 3000 photos with option for searching and series with description of wedding rituals.
The Israel Folktale Archives (IFA) http://www.folklore.org.il/asai.html	+	-	-	-	+	N/A	- (at the scene)	Cultural heritage in the ethnic groups in Israel.
American Folklife Center, Library of Congress http://www.loc.gov/folklife/other.html	+	+	+	+	-	N/A	- At the scene; online catalogue)	Detailed information about the USA's folklore
The Estonian Folklore Archives http://www.folklore.ee/rl/era/	+	+	+	+	N/A	+	- (online catalogue and orders)	Not only Estonian but Hungarian and this one of the people living in Estonia.
Western Australia Folklore Archive (WAFA) http://www.humanities.curtin.edu.au/cgi-bin/view?area=waf	+	+	+	+	+	+	+ (not the whole archive)	West Australian folklore
Philadelphia folklore project http://www.folkloreproject.org/	+	+	+	+	+	+	+ (not the whole archive)	Folklore archive of Philadelphia, USA
American Folklore http://www.americanfolklore.net/	+	-	-	-	-	-	+	Contains giving mouth to mouth American folk tales, local myths and legends, story tellers, legends for ghosts and all the time of all 50's states

Table2 Organizations all over the world, which activities are connected with folklore heritage, its preservation and popularization.

Name of organization	URL	About the organization	Notes
American	http://afsnet.org/	Established in 1888, the association	The purpose is to unite the people whose

Name of organization	URL	About the organization	Notes
Folklore Society		publish three-month magazine about American folklore and help the learning of the folklore sciences to bring better professional level of its own members and increase the interest to the deferent cultures and their traditions.	exchange knowledge in the field, more than 2200 members. There are deferent periodical publishing and groups by interests. Year's meetings are carrying out. It hold general role in deferent national and international projects. There are electronic versions of documents.
Australian Folklore	http://www.une.edu.au/~arts/FolkloreJournal/AF.htm	Scientist magazine in the field of Australian folklore as well orientated with theoretical purpose as learning of the field from students overseas.	The university of New England publishes it every year. Published is the list with the names of authors and articles arranged by years. Subscription is possible. No electronic versions of documents.
Bozeman Folklore Society - Montana	http://www.bozemanfolklore.org/	Absolutely volunteer organization with no trade purpose, devoted to popular save and share music, dance, arts, crafts and abilities of traditional cultures as putting accent on country dancing and implementation of violin.	Offer activities with dancing and music as organize frequent meetings. Ensure involving in 2 radio programs. Ensure to his members current information about deferent events, provided by other organizations. No electronic versions of documents.
British Columbia Folklore Society	http://www.folklore.bc.ca/	Devoting on collecting and saving of traditional and modern folk cultures, life and people from Britain's Columbia, Canada	Offer deferent legends and tales as well links to pages of its members. There are electronic versions of the document.
California Folklore Society	http://westernfolklore.org	Established at 1941, the association helps learning of all aspects of regional, national and international folklores.	Members are persons interesting in the folklore. Produce thematic magazine. Organize year's meetings, discussions and presentations. Maintain archive of events. There is electronic version of documents.
Center for Folklore and Ethnography, University of Pennsylvania	http://www.sas.upenn.edu/folklore/	Offer bachelor, master and doctor's programs in the field of folklore since 1963. The subject is the history and the theory of the folklore in international plan.	It posses abundant library. No electronic versions of documents. Organize thematic meetings, discussions and presentations. Maintain archive of events.
CityLore	http://www.citylore.org	New York organization with no trade purpose about folklore/cultural heritage. Citylore popularize, present and work above saving of the traditional arts and of local and ethnic cultures in New York.	Publishing thematic magazine as well as other literature in the field. Organize museum exhibitions introducing and meetings. It posses electronic versions of documents.
Folklore Society of Greater Washington DC	http://www.fsgw.org/	Beyond the views, estimate and introducing the traditional folk music and folklore, the organization is sponsor of more than 200 events every year like festivals, concerts, dancing; the web site offer list of links to folklore music	Offer above 200 folk events every year – concerts, dancing and group activities. Organize year's festivals about songs, dances, story tellers and thematic meetings. It posses electronic versions of documents.
Folklore Society, London, England	http://www.folklore-society.com	Established at 1878, the folklore association has office in Warburg institute and archive in library DMS Watson Science part of University College London; publishing brochures and magazine Folklore; organize a few lectures and social events every year.	Maintain book archive and selected periodicals. The subjects are traditional music, songs dance and drama, tales, arts, crafts, famous religions, tradition and local kitchens, national medicine, kinder folklore, proverbs, poems and jokes. It posses electronic versions of documents.
Folkore Fellows at the Kalevala Institute of the University of Turku	http://www.folklorefellows.org/index.html	International science network established in Finland at 1908 which help professional training of folklorist and encourage the scientist contacts and publishing.	Monographic series in the field of folklore, comparable religions, cultural anthropology and ethnology. Focusing on immaterial aspects of tradition culture like stress on oral literature, system of superstitions myths and rituals, methodology and history of sciences. No electronic versions of documents.
Giants Carriers Association	http://www.gegants.org/english/index.html	Federation of groups supporting people, bring giants to public festivals in Catalonia and abroad; The association publishing magazine Giants and manage library and files with dances and music of Giants*. *kind of dolls	Maintain archive of photos, video and music. Offer courses of dance and music. Organize acts related with giants. Explore the world of the giants. Publishing special books and magazines. It posses electronic versions of documents.
Historical Museum of Southern Florida: Folklife	http://www.historical-museum.org/folklife/folklife.htm	Place on show documents about cultural deference in South Florida through the prism of the traditional arts, crafts and music of Anglo-	Organize exhibitions all the time. Offer information photos and publications, catalogues and books. It posses electronic version of documents.

Name of organization	URL	About the organization	Notes
		Americans, Latino Americans and Afro-Caribbean.	
Hungarian Folklore List Discussion Group	http://hungaria.org/lists/folklor/	Perpetuate Hungarian folklore trough exchange of opinions, experience and ideas.(in Hungarian and English language)	The subject is increasing diffusion of Hungarian traditional culture (HTC) like organize deferent kind of activities, strengthen and support on-line activities of the HTC society; Represent and spread HTC overseas. No electronic versions of documents.
Michigan Traditional Arts Program	http://museum.msu.edu/s-program/MTAP/index.html	Partnership between Michigan State University Museum and Michigan Council for Arts for cooperation in the field of art and culture.	MSU Museum run historical and ethnographical objects and materials substantiate traditional culture of Michigan and the area of the big lakes. These collections can be used for exploring, training and exhibitions. There are materials from all over the world in the collection. 3000 objects, over than 4000 records with interviews, 85 000 photos, 3000 reports and reference books. No electronic version of documents.
National Council for the Traditional Arts	http://www.ncta.net/	Devoted of the saving and documenting of the traditional arts of USA trough festivals, tours, concerts, social radio and TV programs and movies.	Posses links to folklore organizations, festivals and etc.
New York Folklore Society	http://www.nyfolklore.org/	Information about the association, its publication and programs, forums and conferences and also links to other folklore recourses.	Offer information about folklore (definitions, bibliography, etc) and thematic organizations. Contain links to virtual collections of museum and organizations, thematic magazines and documents. It posses electronic version of documents.
North Carolina Folklore Society	http://www.ecu.edu/ncfolk/	Established at 1913, the association spread rate and learning the folklore of North Carolina.	Trough its year's meetings, programs, awards and publications the association encourage exploring and saving of the local folklore and offer informative and resource center. Publish list of resources and calendar which may be send as information letters. Offer links to collections and organizations. No electronic versions of documents.
Northern Virginia Folklife Archive - George Mason University	http://www.gmu.edu/folklore/nvfa/	Reports archive about the folklore and traditions in Northern Virginia, Mid-Atlantic region and beyond.	On-line archive containing above 1200 documents about folklore and the habits of Northern Virginia and Mid-Atlantic region and beyond. The materials are available only with request. Support list and searching for resources. It posses electronic versions of documents.
Orpheus Hellenic Folklore Society - Illinois	http://www.ohfs.org/	Specialized in introducing traditional Greece national dances and suites.	The mission is to save the abundant history and traditional Greece national dances, songs and music over the centuries like learn its members and the public trough spectacles, business meetings, lectures, publications and its web site. Support inter-active map of Greece and sub areas and their traditional dances as their collection of authentic suites. It posses electronic versions of documents.
Peloponnesian Folklore Foundation	http://www.culture.gr/4/42/421/42101/4210101/e421a011.html	Established at 1974 with general purpose explore, learning saving and spread of the national culture of Peloponnesian and Greece at all.	Purposes: to record and learn the material side of modern Greece, spread results of scientific research trough exhibitions and publications; organize training objects and events to meet the children with the deferent kind of activities of the museum bringing in it education and game at same time, offer training for experts. No electronic versions of documents.
Seattle Folklore Society - Washington	http://www.seafolklore.org/	Mission: to save encouraging and rate of the tradition and folk art tough education with more publications and spectacles.	Established at 1966, the organization is not with trade purpose and is member of Folk Alliance. Offer concerts with folk music, dancing, songs, camps, information letters and brochures. Many of the members are involved in the events. No electronic versions of documents.
Spokane	http://www.Spok	Volunteer organization with no trade	Organize periodic camps and festivals. Have

Name of organization	URL	About the organization	Notes
Folklore Society - Washington	aneFolklore.org/	purpose, devoted to glorification if the traditional arts – particular in music and dances.	a calendar of the events. Support archive photos from festivals as well links to video materials available to everybody. Possess electronic versions of documents.
The Western Folklife Center	http://www.westernfolklife.org	Located in Elko, Nevada, the association is devoted to document and save the art and culture of the American West. Provide lodging for poetical meetings of the cowboys and maintain huge archive.	The mission of archive is to collect and save materials in any formats which introduce traditional arts and life-style in the region of Great Basin and the American West. Often organize participation in radio programs, exhibitions and education. No electronic version of documents.
Vermont Folklife Center	http://www.vermontfolklifecenter.org	Saving the cultural traditions in Vermont. Include auction of "wealth" and events of society.	The center is cultural-researching society organization since 1984, having much materials document traditional culture of Vermont and the region. The archives contain above 3800 audio records which are available to everyone, made with farmers for the country habits. These materials served as base for radio programs, video projections, exhibitions and learning programs, teacher meetings and wide circle of publications. Support many useful links to other archives and organizations with free access. Possess electronic versions of documents.
Victorian Folklife Association	http://home.vicnet.net.au/~folklife/	Devoted to defense and spread of cultural heritage of people from Victoria, Australia, on not formal, unofficial aspects and their heritage as folklore.	Their mission is doubled from the suggestions of UNESCO since 1989 for saving the traditional culture and folklore, required actions by the participants about the saving, defense and spread of the traditional culture and life. Help to individuals, groups and organizations in that field. Offer useful connections to his members. Organize and participate in seminars, scientific researches, projects and other activities. No electronic version of documents.
Virginia Folklore Society	http://www.virginia.edu/~vafolk/	Organization with no trade purpose, established in 1913 devoted to finding, collecting, publishes and saving the folklore and traditional culture of state of Virginia and the better understanding and introducing the traditional arts and crafts of the state.	Established in april17th 1913, the association is one of the oldest in the country. In the very beginning the members has been only teachers interesting in the field of folklore and materials related with it. Since 1974 it organizes years meetings and publishes the periodical magazine "Folklore and Folk life in Virginia" Possess electronic versions of documents.
Culture – Republic of Macedonia	http://www.culture.in.mk/default.asp?rub=Ethnology		Introduce information about the cultural life and traditions – music, theatre, art, visual arts, movies, publicity, and literature and also about current events, projects, festivals and interviews. In addition for memorials of their culture and ethnology. No electronic versions of documents.
RUSSIAN FOLKLORE	http://www.arts.ualberta.ca/SEEFA/RUSSIAN.HTM		Contains useful links to magazine "Jivaq Starina" elaborating on conception dictionary of oral folk culture, good press for books and video encyclopedia of the Russian culture. No electronic version of documents.
Palestinian Folklore	http://www.barghouti.com/folklore/	Palestinian Folklore cover many aspects as popular literature, habits, clothes and embroidery, poesy and etc. The popular literature goes trough many generations oral before have publicized and they meet in the written form with it.	Offer songs, proverb and tales. Contain useful links to the Palestinian folklore center, which offer opportunity to seeing traditional suites and etc. Possess electronic versions of documents.
Slavic and East European Folklore Association	http://www.arts.ualberta.ca/SEEFA/	SEEFA is organization with no trade purpose, devoted to exchange knowledge between schools interesting in Slavic and East-European folklore. Organize national ad international conferences to present school materials and exchange, summer campuses, and scientific researches in the field of anthropology ethnic sciences,	SEEFA publish thematic magazine FOLKLORICA 2 times per year like give access to everyone to the materials. Support links to other similar pages. Give the information about the folklore arranged by geographic regions and also for the latest dissertations in the field of Slavic Folklore. Possess electronic version of documents.

Name of organization	URL	About the organization	Notes
		histories, literature and musicology.	
East European Folklife Center (EEFC)	http://www.eefc.org/site/	EEFC is member organization with no trade purpose which mission is to train the regular people about folk music, national dances and the folklore of the Balkans trough introducing and sponsoring of activities which celebrate with the wealth of this cultures; to care about rate and the respect of all people trough sharing the experience of the Balkan cultures.	Organize work meetings to introduce The Balkan folklore. Offer information letters as well as searching in the archive of the old ones. No electronic versions of document.
WebFolk project	http://musicart.imbm.bas.bg/en/about.htm	This data base is created in many years efforts of scientific collective from II-BAN for saving, systematization and computer treatment of unique Bulgarian folklore music samples, collecting over a century in the institute. This project has been awarded in 1997 with 1st award for regional project with the initiative Global Inventory Project of the European commission and G7	The project WebFolk.bg is 8+ year efforts of Associate Prof. Lubomir Kavaldjiev's collective. 15 000 + records containing song texts, analysis of ethnomusicologists, audio records (RA) notes and photos (GIF) and video (RM) from the Bulgarian folklore music. It offers complex searching by map or by list. Possess electronic versions of documents.
The Bulgarian-Macedonian National Educational and Cultural Center	http://www.bmnecc.org/home.html	BULGARIAN-MACEDONIAN NATIONAL EDUCATIONAL AND CULTURAL CENTER is organization with no trade purpose established in 1955. The mission is to save, bring trough the centuries and present wealth cultural heritage of the nations of Bulgaria and Macedonia trough exhibitions, training programs and spectacles of Bulgarian folklore groups and orchestras.	BMNECC have average 1000 traditional subjects, made by human hand, over 100 oil pictures and graphs, several thousand audio and video records, about 500 suites, more than 1000 books and magazines as it have 36 national suites MNECC have plan to document whole families. Organize tourist attractions, cultural centers, museums, libraries and archives. No electronic version of the document.
European Folklore Institute	http://www.folkline.hu/index_e.html	European Folklore Institute is regional center for saving, breath live into and bread of the tradition cultures and folklore of Europe. The focus is in the fields identification, documentation, saving of the European traditions, ethnos (include scientific researching, education, art and renaissance)	The institute goals are to make better the international relationships and exchange of knowledge in these fields; to populate the institutions whose work with that; to stimulate the public and the government interest to traditional cultures; to increase the professionalism trough making better the identical and self-respect, trough feed up each other respect between the deferent ethnic groups, trough stimulate the cultural creativity. No electronic versions of documents.
Authentic folklore	http://www.fnpp.uni-sofia.bg/S_W_Folk/Site/proba.htm	Created by Southwest University "Neofit Rilski", Blagoevgrad. The database and the page are created with concurs of National Fond "Cultura".	Support archive which may be seen by categories and alphabetical order. There is access to audio files with songs. There is description of music instruments. Possess electronic version of documents.
Euro-Bulgarian culture center	http://www.eubcc.bg/main.php	Euro-Bulgarian cultural center is organization with ideal goal, registered in July 14th 1999. The general purpose is to support the development of the Bulgarian culture trough interaction with the European structures, values and models.	There is information for current cultural events and connection with cultural organization. Support searching of cultural contacts according description of the organization, region of action, area of interests and string for searching. Possess electronic version of documents.

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Digital preservation

Margarita Todorova, Donika Valcheva

1. Definition

Now a large quantity of information exists in digital forms, including emails, blogs, different kinds of websites, web photo albums, culture and folklore heritage, and sites which change their content over time.

The unique characteristic of digital forms makes it easy to create content and keep it up-to-date, but at the same time brings many difficulties in the preservation of this content.

Digital preservation raises challenges of a fundamentally different nature which are added to the problems of preserving traditional format materials [1].

Digital preservation refers to the management of digital information over time. Preservation of digital information is widely considered to require more constant and ongoing attention than preservation of other media. This constant input of effort, time, and money to handle rapid technological and organisational advance is considered the main stumbling block for preserving digital information. Indeed, while we are still able to read our written heritage from several thousand years ago, the digital information created merely a decade ago is in serious danger of being lost, creating a Digital Dark Age (The Digital Dark Age is a term used to describe a possible future situation where it will be difficult or impossible to read historical documents, because they have been stored in an obsolete digital format).

Digital preservation can therefore be seen as the set of processes and activities that ensure continued access to information and all kinds of records, scientific and cultural heritage existing in digital formats. This includes the preservation of materials resulting from the process of converting analogue materials into a digital format as a surrogate of the original (Digital Reformatting), but particularly information that is born-digital and has no analog counterpart. In the language of digital imaging and electronic resources, preservation is no longer just the product of a program but an ongoing process. In this regard the way digital information is stored is important in ensuring their longevity. The long-term storage of digital information is assisted by

the inclusion of Preservation Metadata (Preservation metadata is information that supports and documents the digital preservation process. Preservation metadata stores technical details on the format, structure and use of the digital content, the history of all actions performed on the resource including changes and decisions, the authenticity information such as technical features or custody history, and the responsibilities and rights information applicable to preservation actions).

Digital preservation is defined as: long-term, error-free storage of digital information, with means for retrieval and interpretation, for the entire time span the information is required for. Long-term is defined as "long enough to be concerned with the impacts of changing technologies, including support for new media and data formats, or with a changing user community. Long Term may extend indefinitely [2]. "Retrieval" means obtaining needed digital files from the long-term, error-free digital storage, without possibility of corrupting the continued error-free storage of the digital files. "Interpretation" means that the retrieved digital files, files that, for example, are of texts, charts, images or sounds, are decoded and transformed into usable representations. This is often interpreted as "rendering", i.e. making it available for a human to access. However, in many cases it will mean able to be processed by computational means.

2. Physical deterioration and Technological obsolescence

Digital materials are at risk from technology obsolescence and physical deterioration. The objective of preserving resources is to ensure that they remain accessible for current and future generations. In the case of digital resources additional considerations (as compared with the preservation of traditional analogue materials) include:

- *Physical deterioration*. The first challenge digital preservation faces is that the media on which digital contents stand are more vulnerable to deterioration and catastrophic loss. While acid paper are prone to deterioration in terms of brittleness and yellowness, the deterioration does not become apparent in at least six decades; and when the deterioration really happens, it happens over decades too. It is also highly possible to retrieve all information without loss *after* deterioration is spotted. The recording media for digital data deteriorate at a much more rapid pace, and once the deterioration starts, in most cases

there is already data loss. This characteristic of digital forms leaves a very short time frame for preservation decisions and actions.

- *Technological obsolescence*. Another challenge, perhaps a more serious and important one, is the problem of long-term access. Digital technology is developing extremely fast, and one retrieval and playback technology can become obsolete in a matter of years. When faster, more capable and cheaper storage and processing devices are developed, the older version gets replaced almost immediately. When software or decoding technology is abandoned, or a hardware device is no longer in production, records created under the environment of such technologies are at great risk of loss, simply because they are not tangible any more. This process is known as digital obsolescence. The speed of changes in technology means that the timeframe during which action must be taken is measured in a few years, perhaps only 2 to 5, as opposed to decades or even centuries for traditional materials. This challenge is exacerbated by the lack of established standards, protocols, and proven methods for preserving digital information [3]. For example, we used to save copies of data on tapes, but media standards for tapes have changed considerably over the last five to ten years, and there is no guarantee that tapes will be readable in the future[4]. While the rapid advance of technology threats access of digital contents in length, the lack of digitizing standards affects the issue in width.
- the fragility of some storage media used for digital resources. These can deteriorate quickly although externally no damage may be visible;
- the ease with which changes can be made. This means that there can be challenges associated with ensuring continued authenticity;
- the dynamic nature of some “born digital” materials. This means that they are intended to be continually updated. This use of technology is very effective for providing up-to-date reference information, maps, etc., but poses challenges in terms of the ability to compare data at different points in time;
- the lifecycle of a website. According to a report by the US Library of Congress, 44% of the sites available on the internet in 1998 had vanished one year later [5]. Now the average lifespan of a website is estimated to be about 44 days[6]. This is similar to the problem of ephemera in the analogue world.

Ways need to be found to collect and preserve important websites and selected examples of all other websites;

- the question of originals. With digitised materials, care must be taken to preserve analogue originals. However, with "born digital" materials there is no analogue equivalent to fall back on – once they are lost they are gone forever. For example, the first telegram ever sent, in 1844, has been preserved in analogue format and has been digitised; the first e-mail, sent in 1971, has been lost.

Preservation issues must be considered an integral part of the digital creation process, whether making a digital copy of an analogue item or creating a "born digital" item. It is essential to document and record all the technological procedures that led to the creation of the digital object, and much critical information can be captured only at the point of creation. The costs and implications of not having a preservation strategy can be high. Retrospective preservation, if possible at all, is likely to be expensive. Although techniques such as digital archaeology (rescuing digital resources which have become inaccessible) exist, they are not always successful. Loss of access to the growing body of material only available in digital form could have serious implications for future generations. Precautions can be taken which will reduce the danger of loss such as:

- storage in a stable controlled environment;
- implementing regular refreshment cycles;
- making preservation copies (subject to licensing/copyright permission);
- establishing appropriate handling procedures;
- using standard storage formats and media.

3. Strategies for preservation

In 2006, the Online Computer Library Center (OCLC) [7] developed a four-point strategy for the long-term preservation of digital objects that consisted of [8]:

- Assessing the risks for loss of content posed by technology variables such as commonly used proprietary file formats and software applications.
- Evaluating the digital content objects to determine what type and degree of format conversion or other preservation actions should be applied.

- Determining the appropriate metadata needed for each object type and how it is associated with the objects.
- Providing access to the content.

There are several additional strategies that individuals and organizations may use to actively combat the loss of digital information.

Refreshing

Refreshing is the transfer of data between two types of the same storage medium so there are no bit rate changes or alteration of data. For example, transferring some kind of data from an old CD to a new one. This strategy may need to be combined with migration when the software or hardware required to read the data is no longer available or is unable to understand the format of the data. Refreshing will likely always be necessary due to the deterioration of physical media.

Replication

Creating duplicate copies of data on one or more systems is called *replication*. Data that exists as a single copy in only one location is highly vulnerable to software or hardware failure, intentional or accidental alteration, and environmental catastrophes like fire, flooding, etc. Digital data is more likely to survive if it is replicated in several locations. Replicated data may introduce difficulties in refreshing, migration, versioning, and access control since the data is located in multiple places.

Technology emulation

Emulation is the replicating of functionality of an obsolete system (Rothenberg, 1998). For example, emulating an Atari 2600 on a Windows system or emulating WordPerfect 1.0 on a Macintosh.This involves developing techniques for imitating obsolete systems on future generations of computers. Emulators may be built for applications, operating systems, or hardware platforms. Emulation has been a popular strategy for retaining the functionality of old video game systems. At the present time this tends to be expensive and technically complex. Also it will have to be re-done each time a new technological platform appears. It can thus only be regarded as a solution for long-term preservation.

This strategy is not quite suitable for using by individuals in order to create different digital components of Memory Line.

An additional consideration is that software copyright issues may need to be addressed

Data migration

Migration is the transferring of data to newer system environments. This may include conversion of resources from one format to another (e.g., conversion of Microsoft Word to PDF), from one operating system to another (e.g., Solaris to Linux) or from one programming language to another (e.g., C to Java) so the resource remains fully accessible and functional. Resources that are migrated run the risk of losing some type of functionality since newer formats may be incapable of capturing all the functionality of the original format, or the converter itself may be unable to interpret all the nuances of the original format. The latter is often a concern with proprietary data formats.

United States National Archives and Records Administration (NARA) is developing a migration system that will preserve any type of document, created on any application or platform, and delivered to the archives on any type of digital media[9]. In the system, files are translated into flexible formats, such as XML; they will therefore be accessible by technologies in the future.

This is perhaps the simplest and most commonly used method, despite the possibility of data being lost or changed in the migration process. It preserves the intellectual content of the original data but may lose original features and appearance. If these are important then technology preservation or emulation may have to be used.

Metadata attachment

Metadata is data on a digital file that includes information on creation, access rights, restrictions, preservation history, and rights management. Metadata attached to digital files may be affected by file format obsolescence. ASCII is considered to be the most durable format for metadata [10] because it is widespread, backwards compatible when used with Unicode, and utilizes human-readable characters, not numeric codes. It retains information, but not the structure information is presented in. For higher functionality, SGML or XML languages should be used. Both markup languages are stored in ASCII format, but contain tags that denote structure and format.

The capture of metadata is a critical part of a migration strategy in order to ensure continued use of the resource if any change in, or loss of, functionality occurs, as it

probably will over successive migrations. In this case preservation metadata will provide essential information.

Trustworthy digital objects

Digital objects that can speak to their own authenticity are called *trustworthy digital objects* (TDOs). TDOs were proposed by Henry M. Gladney to enable digital objects to maintain a record of their change history so future users can know with certainty that the contents of the object are authentic [11]. Other preservation strategies like replication and migration are necessary for the long-term preservation of TDOs.

4. Authenticity

The choice of preservation strategy will be influenced by how authentic the preserved item needs to be. There is no universally accepted definition of authenticity, but it broadly means that the preserved copy should be as much like the original as possible, and the connections between documents and objects should be preserved to assist with interpretation. With analogue records, it is possible for example to trace how decisions were reached by examining the relationships between documents; historians are concerned that, with the proliferation of records only available in digital format, this ability might be lost to future generations.

In the analogue world, the preserved item usually is the original, although copies may be made for use in order to prevent damage from handling etc. In the digital world the preserved item will be a copy of some sort since there is no physical artefact. As it is dependent on technology for access, over time this copy will be subject to many changes in order to ensure that it is still accessible on new technologies. It is therefore crucial that metadata is preserved with it to define its authenticity, and ideally this should be created simultaneously with the information.

All this necessitates some methods for protection of the authenticity. There are different methods for protection of the digital data – traditional passwords, different cryptography methods and modern techniques of steganography.

Steganography is the art and science of writing hidden messages in such a way that no one apart from the sender and intended recipient even realizes there is a hidden message. By contrast, cryptography obscures the meaning of a message, but it does not conceal the fact that there is a message. Today, the term steganography includes

the concealment of digital information within computer files. For example, the sender might start with an ordinary-looking image file, then adjust the color of every 100th pixel to correspond to a letter in the alphabet - a change so subtle that someone who isn't actively looking for it is unlikely to notice it.

The word *steganography* is of Greek origin and means *"covered, or hidden writing"*. Its ancient origins can be traced back to 440 BC. Herodotus mentions two examples of steganography in *The Histories of Herodotus*. Demaratus sent a warning about a forthcoming attack to Greece by writing it on a wooden panel and covering it in wax. Wax tablets were in common use then as re-usable writing surfaces, sometimes used for shorthand. Another ancient example is that of Histiaeus, who shaved the head of his most trusted slave and tattooed a message on it. After his hair had grown the message was hidden. The purpose was to instigate a revolt against the Persians.

Generally, a steganographic message will appear to be something else: a picture, an article, a shopping list, or some other message. This apparent message is the covertext. For instance, a message may be hidden by using invisible ink between the visible lines of innocuous documents.

The advantage of steganography over cryptography alone is that messages do not attract attention to themselves, to messengers, or to recipients. An unhidden coded message, no matter how unbreakable it is, will arouse suspicion and may in itself be incriminating, as in countries where encryption is illegal. Often, steganography and cryptography are used together to ensure security of the covert message.

Steganography used in electronic communication include steganographic coding inside of a transport layer, such as a file, or a protocol, such as User Datagram Protocol (UDP). Usually, files meant for internet means are put into media types that are lossless, such as FLAC, WAV, and BMP and other file types.

A steganographic message (the plaintext) is often first encrypted by some traditional means, producing a ciphertext. Then, a covertext is modified in some way to contain the ciphertext, resulting in stegotext. For example, the letter size, spacing, typeface, or other characteristics of a covertext can be manipulated to carry the hidden message; only the recipient (who must know the technique used) can recover the message and then decrypt it.

Modern digital steganography entered the world in 1985 with the advent of the Personal Computer applied to classical steganography problems. Development

following that was slow, but has since taken off, based upon the number of 'stego' programs available.

- Concealing messages within the lowest bits of noisy images or sound files.
- Concealing data within encrypted data. The data to be concealed is first encrypted before being used to overwrite part of a much larger block of encrypted data.
- Chaffing and winnowing. This is a cryptographic technique to achieve confidentiality without using encryption when sending data over an insecure channel. The name is derived from agriculture: after grain has been harvested and threshed, it remains mixed together with inedible fibrous chaff. The chaff and grain are then separated by winnowing, and the chaff is discarded. Although it bears similarities to both traditional encryption and steganography, it cannot be classified under either category.
- Involving digital watermark. The digital watermark is a special mark, which is added in the image, text or signal but is insensible.
- Null ciphers. A null cipher is an ancient form of encryption where the plaintext is mixed with a large amount of non-cipher material. It would today be regarded as a simple form of steganography. Null ciphers can also be used to hide ciphertext, as part of a more complex system.
- Concealed messages in tampered executable files, exploiting redundancy
- Embedded pictures in video material (optionally played at slower or faster speed).
- Blog-Steganography. Messages are fractionalyzed and the (encrypted) pieces are added as comments of orphaned web-logs (or pin boards on social network platforms). In this case the selection of blogs is the symmetric key that sender and recipient are using. The carrier of the hidden message is the whole blogosphere. (*Blogosphere* is a collective term encompassing all blog and their interconnections. It is the perception that blogs exist together as a connected community (or as a collection of connected communities) or as a social network)

A great role in the steganography is played by the so called stegosystem. In order one stegosystem to be stable the following requirements must be observed during its design process:

- The security of the system must be completely defined from the secrecy of the key. This means that the offender can know exactly the algorithm of the system work, but this is not enough for him to receive additional information if there is or not a message in a given container.
- The knowledge about the existing of a message in given container must be not enough for the offender to know that there is another one in different from this container.
- Adding a message must not influence the quality of the container
- The possibility of finding a secret message somewhere it does not exist to incline to zero.
- The admissible complexity of the algorithms for coding and decoding is very important;
- The requirements are effective also for the watermark:
  - The watermark must be easy to recover from their owner;
  - It must be stable for:
    - Basic signal processing;
    - Basic geometric transformations – rotation, translation, scaling, etc.
  - Universality – same watermark for all objects;
  - Unambiguousness.

According to their stability from outside influences the stegosystems can be classified into 3 types: stable, fragile and semifragile.

The fragile watermarks break under modification of the container. The difference with the digital signature is that the fragile watermarks admit small modifications, which is important for the compression. The semifragile watermarks are stable in respect of some influences and not stable of other ones. Generally all watermarks can be associated with this type. For example they may allow compression, but they may be not stable when elements of the container are removed.

Methods for image protection with watermark

The images may be protected with watermark in two ways.

A. Hiding the data in the space area– the data is added directly in the end image. The basic advantage is that it is not necessary additional modifications of the image. The watermarks are added by manipulation of the brightness or of the image colors. The basic disadvantage is the less stability.

B. Watermark with spread specter – it is based on different transformations of the container - for example discrete cosines transformations (DCT). It gives great stability for modifications.

Methods for text protection with watermark. The following approaches have to be mentioned:

A. Line-Shift Coding. This is a method in which the text lines are moved vertically, in order for the document to be coded in an unique manner. Often as a incoming alphabet is used {-1, 1, 0}, which is coded as removing the line up, down, or staying in the same place. In most cases the decoding can be realized without the original document, if it is known that the distance between each two lines in the document is the same. It is easy to be found but it is stable under noise. This method is used for protection of pdf files.

B. Word-Shift Coding. This is a method in which words are moved horizontally, in order for the document to be coded in an unique manner. The method is less noticeable, when is applied in documents where the distances between the words are different. Because of the variable distance in decoding, the original document is needed and especially the distance between the neighboring words in the original document.

C. Feature Codin. In this method the document is examined for definite text characteristics and they are changed or not according to the code word. The decoding requires the original document. The choice of the text characteristics may be done according to different criteria.

Digital sustainability

Digital sustainability encompasses a range of issues and concerns that contribute to the longevity of digital information [12]. Unlike traditional, temporary strategies and more permanent solutions, digital sustainability implies a more active and continuous process. Digital sustainability concentrates less on the solution and technology and more on building an infrastructure and approach that is flexible with an emphasis on interoperability, continued maintenance and continuous development [13]. Digital sustainability incorporates activities in the present that will facilitate access and availability in the future.

5. Storage and preservation formats.

Storage of the Memory Line entities may be realized online, as well as offline. In both cases strategies for storage will be needed. Delivery files in continual use will need to be stored online, on servers. Master files are best stored offline since they are less frequently accessed. Storage of the original analogue objects or source texts is also important and links need to be made to these.

- *Online storage* – it is easy to allow storage space to become cluttered with several versions of documents and other unnecessary resources. It would be useful to have a plan which clarifies which resources need to be accessible online and offline; it is necessary an enough space in Internet to be provided and also an opportunity for an accurate reproduction of the stored objects from the different browsers: Internet Explorer, Mozilla, Opera, Netscape Navigator e.t.c.
- *Offline storage* must take into account the problem of media degradation. However, despite its fragility as compared for example with paper, most storage media will outlive the hardware and software needed to use it. Over the last 30 years storage media has moved from punch cards to DVDs via cassettes, floppy disks and CD-ROMs, but the technology to retrieve data stored on the early media is difficult to find. Storage cannot therefore be a once-for-all task but must be part of an ongoing regime. Points to consider include:
    - Archival media – it is advisable to select the best quality archival media affordable. A variety of digital storage media is available, including CD-R, DVD-R, DAT (Digital Audio Tape) and DLT (Digital Linear Tape). Digital images should be preserved on Write Once Read Many (WORM) drives which enable the files to be viewed frequently without being overwritten;
    - Archival copies – at least two archival copies should always be made and stored in different locations. If possible multiple copies should be made on different storage media. Copies made using different software, and/or comparable software purchased from different suppliers, will help to protect data against corruption from malfunctioning software or viruses;
    - Media refreshing – it is useful to have a plan for refreshing or transferring archive copies to new media at specified times, e.g.

- within the minimum time specified by the supplier for the media's viability;
- when new storage devices are installed;
- when a quality control check discloses significant temporary or read "errors" in a data resource;

° Quality control – consider having a quality control procedure involving:

- checking all media periodically for readability;
- using bit/byte or other checksum comparisons with originals to ensure the authenticity and integrity of items after media refreshing;
- recording all actions taken.

The requirements of a file format for archiving are broadly the same as for creation (Digitisation). It is preferable:

- to use an open standard file format rather than a proprietary format to guard against obsolescence;
- to use a file format that can support the embedding of metadata;
- not to use any compression to guard against losing data - a lossless format such as Tagged Image File Format(TIFF) is preferable, but if there is real pressure on space, the Portable Network Graphic (PNG) file format can provide an alternative lossless format.

The same general rules apply to the preservation of audiovisual formats, but digital broadcasting media present enormous challenges. Most televisions are now produced in digital format.

Electronic Resource Preservation and Access Network (ERPANET) suggest the following file formats for preservation [14]:

- Text documents: plain ASCII, PDF, XML,TIFF;
- Image documents: TIFF, JPEG2000;
- Audiovisual documents: WAV, BWF, MPEG.

Because of the number and variety of formats available, information about them is being collected in file format registries such as the UK National Archives' PRONOM[15]. Local institutions may need to seek advice from regional or national professional associations as to which one is suitable for their requirements.

6. Digital preservation standards

To standardise digital preservation practice and provide a set of recommendations for preservation program implementation, the Reference Model for an Open Archival Information System (OAIS) [16, 17] was developed. The reference model (ISO 14721:2003) includes the following responsibilities that an OAIS archive must abide by:

- Negotiate for and accept appropriate information from information Producers.
- Obtain sufficient control of the information provided to the level needed to ensure Long-Term Preservation.
- Determine, either by itself or in conjunction with other parties, which communities should become the Designated Community and, therefore, should be able to understand the information provided.
- Ensure that the information to be preserved is Independently Understandable to the Designated Community. In other words, the community should be able to understand the information without needing the assistance of the experts who produced the information.
- Follow documented policies and procedures which ensure that the information is preserved against all reasonable contingencies, and which enable the information to be disseminated as authenticated copies of the original, or as traceable to the original.
- Make the preserved information available to the Designated Community.

OAIS is concerned with all technical aspects of a digital object's life cycle: ingest into and storage in a preservation infrastructure, data management, accessibility, and distribution. The model also addresses metadata issues and recommends that five types of metadata be attached to a digital object: reference (identification) information, provenance (including preservation history), context, fixity (authenticity indicators), and representation (formatting, file structure, and what "imparts meaning to an object's bitstream" [18].

It is advisable to adhere to open standards when archiving digital resources. As these are not tied to specific hardware/software they help to guard against the dangers of technological obsolescence. There are standards for the different aspects of storing digital information. Some examples include:

- Interoperability standards - these allow communication between different systems. Examples include ISO 23950:1998 *Information and documentation -- Information retrieval - Application service definition and protocol specification* and the CIMI (Consortium for the Computer Interchange of Museum Information); Application Profile for Cultural Heritage Information;
- Resource encoding standards - these define formats for different types of digital information. Adherence to this type of standard allows data compatibility across a wide range of systems. Examples include standards for:
    - page description formats e.g. PostScript, Portable Document Format (PDF);
    - graphics formats e.g. Tagged Image File Format (TIFF), Graphics Interchange Format (GIF);
    - structured information formats e.g. Standard Generalized Markup Language (SGML), Extensible Markup Language (XML);
    - moving images and audio formats e.g WAV, Broadcast Wave Format (BWF), MPEG;
- Resource identification standards - these provide a way of uniquely identifying digital resources in order to ensure long-term and reliable access to resources while they are available over the Internet even when their location changes. URLs (Uniform Resource Locators) can change. Examples of permanent identifiers include Universal Resource Names (URNs), (Digital Object Identifiers (DOIs), Persistent Uniform Resource Locators(PURLs) Handles and Archival Resource Keys(ARKs);
- Resource description standards - these can facilitate effective resource discovery. Examples include AACR2 and Dublin CORE]. There are also a group of standards which relate to metadata syntax, such as Machine-Readable Cataloguing (MARC) and the Encoded Archival Description (EAD). The World Wide Web Consortium (W3C) is currently involved in developing the Resource Description Framework (RDF), which will provide the infrastructure to support the coexistence of many different metadata sets, or "schemas", of which the Dublin Core will be one example;
- Data archiving standards – these provide for the long-term preservation of and access to digital information[16,17];

- Records management standards – these provide guidance on how to implement records management strategies, procedures and practices [19].

It is also advisable to adhere to standard formats and media. Simply using standard file formats and standard media will go a long way towards ensuring the safety of a digital collection.

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BLOG as a container for preservation and sharing Memory Line entities

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Considered from a purely technological perspectives, the process of preserving and storing the memory line of the generations embraces two basic aspects:

- Digitalization and storage of memory entities;
- Publishing and ensuring an access to a wide range of public.

The first aspect was discussed in the previous chapters. In the following pages we will now analyze the second one.

For publishing the enormous heritage of the generation memory in a digital format it is necessary to adopt dedicated tools, which have to be:

- Easy for work;
- Must not require specific knowledge in ICT;
- Offer basic skills for working with PC;
- To be accessible ;
- Be free of charge.

By the use of Internet the Memory Line project results will be accessible to a wide range of people all over the world. In this case 2 ways could be used: developing web site or creating a Blog.

There is a simple comparison between web site and a blog:

- Creating a blog is very easy and quick process and does not require specific skills
- Most of the sites do not offer opportunity for publishing data from the users, in the blog the comments are arranged in a horizontal line and are saved for a long time.
- By the blog the author may communicate with the reader. The web site mostly informs and sells.

Obviously the Blog answers exactly to the formulated above requirements. That is the reason we recommended its use for publishing the results of the project in Internet.

What is a blog?

A blog (a contraction of the term "WeB LOG") is a Web site, usually maintained by an individual, with regular entries of commentary, descriptions of events, or other

material such as graphics or video. Entries are commonly displayed in reverse-chronological order. “Blog” can also be used as a verb, meaning *to maintain or add content to a blog*.

Many blogs provide commentary or news on a particular subject; others function as more personal online diaries. A typical blog combines text, images, and links to other blogs, Web pages, and other media related to its topic. The ability for readers to leave comments in an interactive format is an important part of many blogs. Most blogs are primarily textual, although some focus on art, photographs, sketches, videos, music, audio, which are part of a wider network of social media. As of December 2007, blog search engine Technorati was tracking more than 112 million blogs.

But how can we define what precisely is a blog? A few very short answers, can be the following:

- A blog is a personal diary. The presented records will be of a great significance for the future generations after 10, 20, 50 years.
- A daily pulpit. This is the place where everyone may present its position, his attitude towards the processes in the life, towards the historical and cultural heritage
- A collaborative space. You can use a group blog with multiple authors as an excellent communication tool for small teams, families and other groups;
- A political soapbox;
- A breaking-news outlet;
- A collection of links. Everybody as a single author, can create a private online space for collecting news, links, and ideas, to keep to himself or share with as many readers as he wants;
- Your own private thoughts. A blog gives people the opportunity to be in public web space. It's a place to collect and share things that somebody finds interesting - whether it's political commentary, a personal diary, some memories, intergeneration relations, or links to web sites in order to be remembered.
- Memos to the world and place for publishing materials for Memory Line. People from different generations may publish and share memories and stories, to publish pictures, to describe different traditions and customs, which may be stored for the coming generations.

1. Types of blogs

There are various types of blogs, and each differs in the way content is delivered or written.

By media type:

- Photoblogs – a blog comprising photos;
- Video blogs – a blog comprising videos;
- Tumblelogs – a blog with shorter posts and mixed media types;
- Sketchblog - a site containing a portfolio of sketches;
- Linklog – a blog comprising links;
- Artlog - a form of art sharing and publishing in the format of a blog, but differentiated by the predominant use of and focus on Art work rather than text.

By device:

- Moblog - a blog written by a mobile device like a mobile phone or PDA is called a moblog;
- Blog - a website where entries are commonly displayed in reverse chronological order.

By post:

- Instructional - Instructional posts tell people how to do something;
- Informational – a blog post types where you simply give information on a topic;
- Reviews - highly searched for term on the web;
- Lists - one of the easiest ways to write a post is to make a list;
- Interviews - you're approaching people for an interview on your blog;
- Profiles - profile posts are similar to case studies but focus in on a particular person;
- Link Posts - 'link post' is a favorite of many bloggers and is simply a matter of finding a quality post on another site or blog;
- 'Problem' Posts – a blog similar to a review post but focuses more upon the negatives of a product or service;
- Inspirational - tell a story of success or paint a picture of "what could be";

- Satirical - a satirical form, taking pot shots at politicians.

By genre:

- Political blogs;
- Travel blogs;
- Fashion blogs;
- Project;
- Music;
- Sports;
- Science
- Trade;
- Business and many others;
- Combined.

2. Blog Design. Some general remarks

There are different methods and tools which must be used for designing a Blog. The following concepts may be taken in mind:

Templates - The collection of templates will get you started with an attractive site right away without you having to learn any HTML, though Blogs also allow you to edit your blog's HTML code whenever you want.

Custom colors and fonts - When you're ready to take the next step, you can further customize our templates to create a design that perfectly reflects you and your blog.

Drag-and-drop page elements - log's simple drag-and-drop system lets you easily decide exactly where your posts, profiles, archives and other parts of your blog should live on the page.

Post photos. Sometimes you just want to share a photo. There's a button for uploading photos. Just click the photo button to upload a photo from your computer. If the photo you'd like to put on your blog is already on the web that's fine too. Just tell us where it is. You can also send camera phone photos straight to your blog while you're on-the-go with Blogger Mobile.

Choosing a blog community (platform for creating blog). Because it's not always easy to move from one blog platform another, so it's important to make a good choice in the first place. Before choosing one, consider these points:

- *Other blogs in a community* - some communities group Internet users according to interests or age. Have a look at several dozen other blogs in a community to see if it has a "typical" group.
- *What the blog looks* - though the choice is often small, communities (platforms) usually have a fair range of colours, fonts and home-page layouts to choose from. You can get a good idea of the possibilities there too by looking at some of the community's sites at random. Many free-of charge communities require all blogs to carry ads on all pages. Also check options for the blog's address, which could be: http://myblog.thecommunity.com, http://www.thecommunity.com/myblog or http://www.thecommunity.com/mynumber.
- *Features on offer* - Check these to see if you'll be able to redesign the blog, bring in other contributors, post images or sound, post things by phone or restrict access (totally or partially) to registered users. Also find out if posted material can be easily forwarded to another community and if you can insert paid ads to make money.
- *Cost* - Some communities are free but have to be paid for after a certain point, especially according to the amount of data stored and the bandwidth used.

The list of some communities is given below.

Blogger[1] - Free. Set up in 1999, bought by Google in 2003 and the biggest one of all, with eight million blogs. Easy to use but features rather limited.

LiveJournal[2] - Free or paid (about $2 a month). One of the oldest platforms, with six million blogs, mostly young people.

MSN Spaces [3]- Free. Microsoft platform, set up in late 2004. Lots of features, some beyond the blog (photo-sharing, Messenger link). Must be aged at least 13 to register a blog.

20six [4] - Free or paid (€3-7 a month). Lots of features, some quite sophisticated and including basic version.

Over-Blog [5] - Free. Well-designed and easy to use.

Skyblog [6]- Free (with ads). The biggest platform in France, very popular with young people, though features sometimes limited.

TypePad [7] - Paid (€5-15 a month, according to number of features). Very professional with good range of features.

A free version can be had through blog communities set up by third-parties, such as *Noos* [8] or *Neuf Telecom* [9].

ViaBloga [10] - Free for non-profit associations, or €5 a month. Original and dynamic, with some unusual features.

Major Blog tools:

DotClear [11].

MovableType [12]- For years now, Movable Type has had a powerful "Style Catcher" built in, which lets you browse a number of different style libraries all over the Internet, and then apply a style to your blog with just a click.

Wordpress [13] - a state-of-the-art semantic personal publishing platform with a focus on aesthetics, web standards, and usability. WordPress is both free and priceless at the same time. More simply, WordPress is what you use when you want to work with your blogging software, not fight it.

Blog is much easier to maintain than a normal website. Blog platforms have slightly different posting methods, but the principles are the same. For creating a blog we recommend to use one of the most popular free of charge tool Blogger [14]. It has the following features:

- user friendly interface;
- supports 40 languages;
- supports right-to-left templates;
- toolbar buttons for bi-directional text editing in the post editor;
- blogger Photos in Picasa Web Albums. Picasa is a software [15], which helps to search, edit and share easily all pictures in a given computer. This software is accessible in 37 languages.
- It offers various tools (gadgets) - videobar, newsreel, header images, polls, search box, google gadgets, slideshow, subscriptions links, and so on;
- auto save mode;
- profile search engine;
- possibility for video uploading, etc.

3. Creating a blog in 3 easy steps

As we have seen, the blog is a personal tools, whose aims is to expose the priority of the chosen platform and gain advantage over an ordinary web site. Blogging is a powerful tool of freedom of expression and sharing memories.

To create a blog, using free of charge community, you can visit http://www.blogger.com.

After opening the home page box language it offers a list of languages.

The same page offers you 3 steps for Blog creation:

1. Create an account.
2. Name your blog.
3. Choose a template.

1-st step. Click to the button **CREATE YOUR BLOG NOW**. A new page is open, where you may create your account. This process will create a Google account that you can use on other Google services. You may use an existed account.

You fill the pointed field with your **Email address** (must already exist), **Retype email address** (write the same address for verification), **Enter a password** (must be at least 8 characters long), **Retype password**, **Display name**, and **Word Verification**.

After finishing this, you can go further clicking the **CONTINUE** button.

2-nd step. The second step is opened; here you have to input the **name of the blog**. Your blog's title will appear on your published blog, on your dashboard and in your profile. In the next box you have to write the Blog addres (URL). A URL is the location of a file on the Web. An example of URL is http://myblog.blogspot.com/ . The URL you select will be used by visitors, or yourself, to access your blog.

During the blog creation process you'll have to select a URL for your blog if you want it hosted on BlogSpot. Since there are already a large number of BlogSpot blogs, you'll need to get creative and possibly try a few different ones before you find one that's available.

In this case you will use Advanced Blog Setup link. This will allow you to host your blog somewhere other than Blogspot.

One thing to note when selecting your blog's URL is that hyphens (also known as dashes, -) are the only non-alphanumeric characters allowed. Spaces aren't permitted, nor are underscores (_) or any other special characters.

3-rd step. Choose a template. After clicking the CONTINUE button the page for choosing a template is appeared. A number of templates are available, and you can select the layout of your blog.

At this stage you created you own Blog. Rather than shell of the Blog. You can now add your posts to it, create your personal profile, or customize how your blog looks.

Blogger platform itself has an array of settings, many of which work to your advantage in this endeavor.

- *How to post*

One of the big differences between a blog and a normal webpage is that it’s easier to update a blog. Most platforms allow you to type posts in plain text without bothering about layout. With newer ones such as Blogger, you can change fonts, sizes and colors and insert links and pictures.

Posts are preparing using the option POSTING. Publishing posts is completed automatically after clicking the PUBLISH POST button. In order to be saved it is necessary to press SAVE NOW button.

- *How to edit your blog posts*

Clicking "Edit" in your blog posts section will allow you to choose the number of posts you would like to display on your main page. You can choose either the number of days with posts to display or the total number of posts on the main page. You have also the option to show email post links that let your visitors easily email posts from your blog to their friends.

- *How to add a picture*

The image icon in the post editor's toolbar will allow any users (with blogs on Bloodspot or published via FTP) to upload images to their blogs.

When you click this icon, you will get a window that allows you to select an image or multiple images from your computer. Just click the "Browse" button to locate the ones you want. Alternatively, you can enter the URL of an image that is already online and have it inserted into your post.

If you click on the link for choosing a layout, you can customize the way your images will appear in your post.

The left, centre and right options will determine how the text of your post flows around the pictures. This size option lets you scale the pictures to different sizes within this posting area. Note that the picture will still be uploaded in its full size; this option just determines how it is scaled within the content of your post.

- *How to add a video*

Videos are a great way to spice up your blog. In fact, the form has proven so popular that pure video blogs - or "vlogs" - are popping up all over the Internet. If you'd like to join in on the fun, posting a video using Blogger platform is simple. It's not currently possible to directly host video files on Blogger. However, you can embed or link to video files on your blog as long as they are hosted elsewhere on the Web.

- *Archiving*

Blogger "archives" are additional web pages that contain all of your older posts. All of your blog posts are stored in a database even if archiving is not enabled. However, if you do choose to turn on archiving, your posts will be accessible through web pages rather than just through the Blogger interface.

Archive frequency is how you select the increment at which your blog posts are archived. The options are Monthly, Weekly and Daily. A Monthly archive, for example, will contain all your posts for a given month, while a Weekly archive will only contain a week's worth of posts. To change this setting, go to Option SETTINGS, and then to ARCHIVING command.

- *Delete a blog*

To delete your entire blog, just go to Settings | Basic. At this point, make absolutely sure that you are on the right blog and that you want to permanently remove it from your account. Then click **Delete This Blog:** and confirm by clicking OK.

- *Permission*

By default, your blog is completely public, and can be read by anyone on the internet. However, if you want to keep it private, you can do that, too. The setting for this is on the **Settings | Permissions** tab.

Under the **Blog Readers** heading, you‘ll probably see "Anybody" selected as the default. When you change this to "Only readers I choose," you’ll get an **Add Readers** button.

Click the **Add Readers** button and then enter the email address of a person to whom you want to grant access to your blog. To add multiple people, separate their addresses with commas.

For each address entered, the Google Account associated with that address will be given access to view your blog. If an address is not associated with an account, that person will be sent an invitation email with a link allowing them do one of three things: sign in to an existing account; create a new account or view your blog as a guest (no account required).

If you want to revoke someone's access to your blog, simply click the **remove** link next to his or her name in the **Blog Readers** list. You can also toggle back to the "Anybody" option any time you decide to make the blog completely public again.

- *How to add a page element*

You can add several page elements to your blog page or sidebar by clicking on "Add a Page Element" (fig.24). This will open a pop-up window that will allow you to add the following elements to your blog by clicking "Add to Blog" in the desired element section:

- add a slideshow of your photos;
- survey your visitors by adding a poll to your blog;
- add a list of your favorite books, movies, or anything you like;
- add a collection of your favorite sites, blogs, or web pages;
- add a picture from your computer or from somewhere on the web;
- earn revenue by displaying relevant ads.

- *Fonts and Colors*

In the Template | Fonts and Colors tab, you can easily edit and customize the fonts and colors of your blog without any knowledge of HTML or CSS. (Note: Certain templates allow you to edit more elements of your blog than others.)

First choose the element you would like to change the color of.

Then choose the color you would like that element to be. You can either click on the color you want or enter the color hex code.

When you change your blog colors, you can view your changes in the blog preview beneath the color panel. Make sure you save your changes after you have finished selecting the colors for your blog. If you are feeling adventurous you can click "Shuffle blog colors" to randomly shuffle all of the colors already in your blog. If you

do not like your changes, you can revert back to your default colors by clicking "Revert to template default".

If you want to edit the fonts in my blog first choose the element you would like to change the font of.

Then choose the font you would like that element to be by clicking the radio button next to your font of choice. You can also change the font style to bold and/or italic by ticking the box next to the style you want and you can make the font size larger or smaller by clicking "larger" or "smaller".

When you change your blog's fonts, you can view your changes in the blog preview at the bottom half of the screen. Make sure you save your changes after you have finished selecting the fonts for your blog.

- *Switching templates in Blogger*

Go to Template | Pick New Template and pick a new one. Finally, click the orange "Save Template" button.

Before switching to a new template, it's a good idea to back up your current one (if you've made changes to it). Go to the **Template | Edit HTML** tab and copy and paste the template code to a text file on your computer.

You can arrange the elements in your template the way you want them displayed. Simply click on the element you would like to move and drag and drop the element where you want it to be. You can move your page elements to the bottom of the page, anywhere in your sidebar or below or above your blog posts. (Note: you can move all elements except your navigation bar, blog posts and header in some templates).

- *Dashboard*

Most blogs have a “dashboard”, where you can see at a glance everything happening on the blog, including the latest posts, comments and track backs. You can access all the blog’s features from here and change how it looks, increase bandwidth, edit old posts and manage your users and their permissions, such as their right to post comments.

- *How to edit costumer profile*

Clicking "Edit" in your profile section will allow you to edit/add your profile title, "About Me" description and location.

Photo Albums and Photoblogs

Photo albums often make great companions to blogs. For instance, you might be blogging about your latest trip to Hawai'i and have dozens or hundreds of photos to share with your friends. If you create a photo album and upload your pictures there, your readers will be able to click a link and browse all your photos in easy thumbnail or slideshow formats. They could even order prints for themselves. There are a number of sites that offer free photo album services. You can do a Google search to find them, or you can start by checking out some of these links: Picasa Web Albums [16], Flickr [17], Buzznet [18], DotPhoto[19], Fotki [20], Ofoto [21], Shutterfly[22].

Moblogs

Another possibility for creating a blog is using mobile communication technologies and mobile devices such as Personal Digital Assistants (PDA) or mobile phones (with camera). This ensures extra opportunities for wide spreading and sharing content of the certain blog. These kind og blogs are known as **moblogs** (Mobile Blogs).

Moblog is like a blog, but rather than a series of text entries, it's a series of photos. If you have a camera phone, you don't even have to be near a computer to send in photos. With Blogger Mobile software platform you can post cameraphone shots directly to your blogs. You can also use sites like Buzznet and Flickr for photo-blogging, which have ways to syndicate your images and display the latest ones as thumbnails on your website.

All you need to do is send a message to go@blogger.com from your phone. You don't even need a Blogger account. The message itself is enough to create a brand new blog and post whatever photo and text you've sent.

Later, if your want to claim your mobile blog or switch your posts to another blog, just sign in to go.blogger.com and use the claim code Blogger sent to your phone. More information can be found in http://www.blogger.com/mobile-start.g.

4. Blog terminology (The language of blogging)

In order to have more close understanding of blog's technology, the core of blog thesaurus is given in the table below.

Audioblog	A blog where the posts consist mainly of voice recordings sent by mobile phone, sometimes with some short text message added for metadata purposes
Biblioblogosphere	A humorous reference to the world of librarian blogging
Blaudience	The audience, or readership, of a blog

Blag	A humourous misspelling of 'blog'
Blath	A math oriented blog. A portmanteau of "math" and "blog"
Blawg	A blog focusing on commentary about the law, generally written by a law professor, law student, or lawyer. A portmanteau of "law" and "blog".
Bleg	A blog entry consisting of a request to the readers, such as for information or contributions. A portmanteau of "blog" and "beg". Also called "Lazyweb."
Blog	Short for Weblog. A website that contains written material, links or photos being posted all the time, usually by one individual, on a personal basis.
To Blog	Run a blog or post material on one.
Blogger	Person who runs a blog.
Bloglet	A small blog entry, usually one or two sentences long.
Blogosphere	All blogs, or the blogging community
Blogware	Software used to run a blog.
Blogroll	List of external links appearing on a blog, often links to other blogs and usually in a column on the homepage. Often amounts to a “sub-community” of bloggers who are friends
Blogsite	Sometimes confused with a simple blog or blog site, but a blogsite is a web site which combines blog feeds from a variety of sources, as well as non-blog sources, and adds significant value over the raw blog feeds
Blogsnob	A person who refuses to respond to comments on their blog from people outside their circle of friends.
Blogstipation	The state of being unable to think of any topic to blog about, leading to irregular, strained blog entries. A rush of interesting events can clear the block; this is sometimes known as a blenema.
Blogstorm	When a large amount of activity, information and opinion erupts around a particular subject or controversy in the blogosphere, it is sometimes called a blogstorm or blog swarm.
Blogstream	A play on the term mainstream that references the alternative news and information network growing up around weblogs and user driven content mechanisms. Can also be used as a play on the phrase "thought-stream", referring to the stream of consciousness as expressed through a weblog
BlogThis	Pioneered by Blogger.com, BlogThis links on a blog allow the reader to automatically generate a blog entry based on the blog entry he/she is reading, and post to their blog.
Blog Carnival	A blog article that contains links to other articles covering a specific topic. Most blog carnivals are hosted by a rotating list of frequent contributors to the carnival, and serve to both generate new posts by contributors and highlight new bloggers posting matter in that subject area.
Blog Farm	A website constructed from a group of linked weblogs, typically with the main blog aggregating the total content/acting as a gateway.
Blog feed	The XML-based file in which the blog hosting software places a machine-readable version of the blog so that it may be "syndicated" for further distribution on the web. Formats such as RSS and Atom are used to structure the XML file.
Categories	This is a method of organizing blog entries by assigning each entry to a predetermined topic. Each topic (category) will link to a list of entries, all with related content.
Celeblog	A blog detailing the lives of movie stars, musicians, and other celebrities, much like tabloid magazines. They often feature embarrassing or revealing paparazzi photos.
Collaborative blog	A blog (usually focused on a single issue or political stripe) on which multiple users enjoy posting permission. Also known as group blog.
Comment spam	Like e-mail spam. Robot “spambots” flood a blog with advertising in the form of bogus comments. A serious problem that requires bloggers and blog platforms to have tools to exclude some users or ban some addresses in comments.
Content syndication	How a site’s author or administrator makes all or part of its content available for posting on another website.
Dark Blog	A non-public blog (e.g. behind a firewall).

Desktop Blogging Client	An off-line blog management (posting, editing and archiving) tool.
Fisking	To rebut a blog entry in a line-by-line fashion.
Flog	A portmanteau of "fake" and "blog". A blog that's ghostwritten by someone, such as in the marketing department.
Glog	A first-person recording of an activity, in which the person doing the recording is a participant in the activity. Probably a portmanteau of "gonzo" and "blog".
Gulog	A portmanteau of "gulag" and "blog". Used when a blog is so dismal and depressing, it's as if it were written in a Soviet labour camp.
Hits	Number of users visited is often referred as hits. (website / blog hits).
Milblog	Term for blogs written by members or veterans of any branch of service - Army, Navy, Air Force, or Marines. A contraction of military and blog.
Moblog	Contraction of “mobile blog.” A blog that can be updated remotely from anywhere, such as by phone or a digital assistant.
Multi-blog	Creating, maintaining, and running multiple blogs (2 or more) simultaneously.
Multi-blogger	An individual, business, or institution that runs multiple blogs.
Photoblog	A blog mostly containing photos, posted constantly and chronologically.
Plog	Political blog - blog containing mainly politically-oriented material.
Podcasting	Contraction of “iPod” and “broadcasting.” Posting audio and video material on a blog and its RSS feed, for digital players.
Post	An item posted on a blog. Can be a message or news, or just a photo or a link. Usually a short item, including external links, that visitors can comment on.
RSS (really simple syndication)	A way of handling the latest items posted on a website, especially suited for blogs because it alerts users whenever their favourite blogs are updated. It can also “syndicate” content by allowing other websites (simply and automatically) to reproduce all or part of a site’s content. Spreading fast, especially on media websites.
RSS aggregator	Software or online service allowing a blogger to read an RSS feed, especially the latest posts on his favourite blogs. Also called a reader, or feedreader.
RSS feed	The file containing a blog’s latest posts. It is read by an RSS aggregator/reader and shows at once when a blog has been updated.
Shocklog	Weblogs to produce shocking discussions by posting various shocking content.
Spam blog	A blog which is composed of spam. A Spam blog or "any blog whose creator doesn't add any written value."
Splog	A term used to refer to a 'spam blog', made popular in 2005 by Mark Cuban
Storyblog	A term used to describe blogs used primarily to publish written stories and poetry used for practice usually by aspiring writers.
Subscribe	The term used when a blogs feed is added to a feed reader like Bloglines or Google. Some blogging platforms have internal subscriptions, this allows readers to receive notification when there are new posts in a blog.
Template	Templates, used on the "back end" of a blog that work together to handle information and present it on a blog.
Vlog	A video blog; a vlogger is a video blogger (e.g. someone who records himself interviewing people of a certain field).
Web diary	A blog
Wiki	From the Hawaiian word “wikiwiki” (quick). A website that can be easily and quickly updated by any visitor. The word has also come to mean the tools used to create a wiki (wiki engines). Blogs and wikis have some similarities but are quite different.

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9. http://www.neufblog.com.
10. http://viabloga.com.
11. http://www.dotclear.net.
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Readiness of the people for digital challenges

Georgi Todorov

This section presents statistical data for the status of the ICT sector and the rate of readiness of people to use them in their daily life.

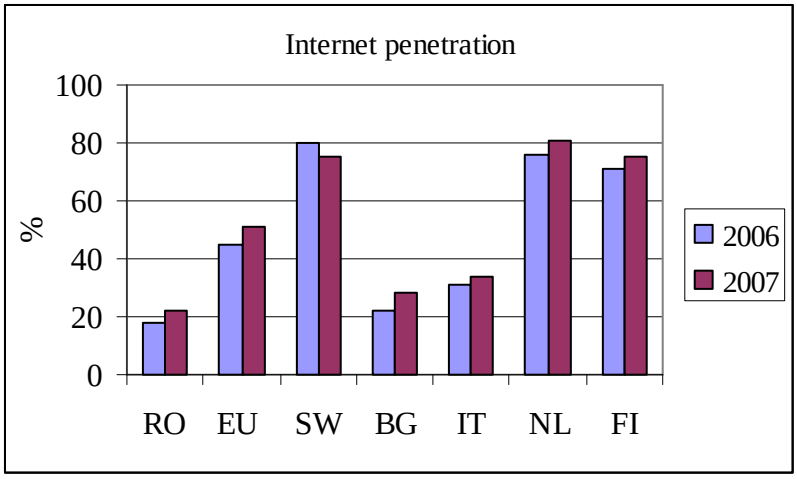
The following three groups of indicators are presented:

- Policy indicators;
- E-skills of individuals;
- Computers and the Internet in households and enterprises.

Policy indicators

This group of indicators is presented by one generalized indicator – the usage of Internet from the people as a whole. The indicator is measured in percentage of the total number of individuals and covers all individuals aged 16 to 74 who access the Internet, on average, at least once a week, within the last three months before the survey. Use includes all locations and methods of access.

Year	2005	2006	2007	Remarks
Romania	n/a	18	22	Partner from the project Minimum
EU (27 countries)	43	45	51	Average for EU
Sweden	76	80	75	Maximum
Bulgaria	n/a	22	28	Partner from the project
Italy	28	31	34	Partner from the project
The Netherlands	74	76	81	Partner from the project
Finland	62	71	75	Partner from the project



Remarks: 1. All statistical data are from the official EU site Eurostat [1] (http://epp.eurostat.ec.europa.eu/)

2. In order to compare the situation in Romania besides the data for Romania the figures for other project partners are given as well, as for those with maximum and minimum values.

3. The data are arranged in the following way: In the first row of the table is putted the country from EU with the least of all values of the indicator, then Romania, average data for EU (27 countries), the country with the greatest value of the indicator, and information about other partners of the project (Bulgaria, Italy, The Netherlands and Finland.

4. This layout of the table is applied to all tables.

E-skills of individuals

The following indicators are given:

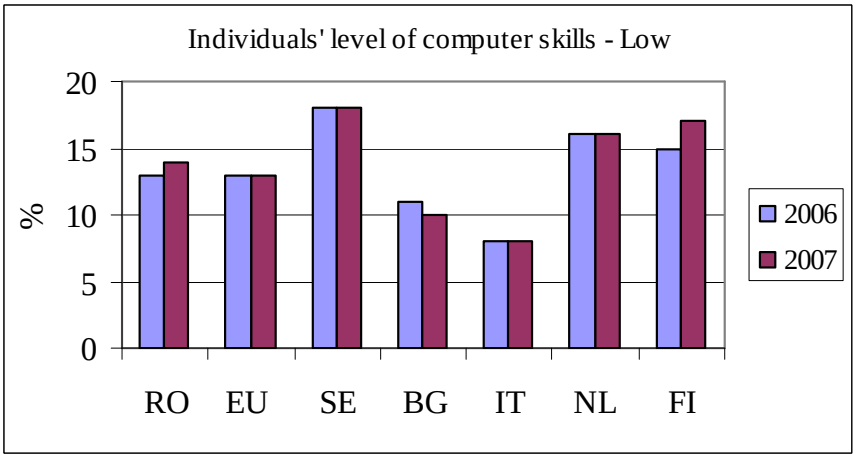
- Individuals' level of computer skills – Low;
- Individuals' level of computer skills - Medium;
- Individuals' level of computer skills – High;
- Individuals´ level of computer skills;
- Individuals' level of Internet skills.

Individuals' level of computer skills – Low (Percentage of the total number of individuals aged 16 to 74).

This indicator presents the percentage of individuals who have carried out one or two of the following computer related activities: used a mouse to launch programs such as an Internet browser or word processor (only in 2005); copied or moved a file or filder; used copy or cut and paste tools to duplicate or move information on screen; used basic arithmetic formulae to add, subtract, multiply or divide figures in a spreadsheet; compressed files; connected and installed new devices, e.g. printer or modem (only in 2006 and 2007); written a computer program using a specialised programming language.

Year	2005	2006	2007	Remarks

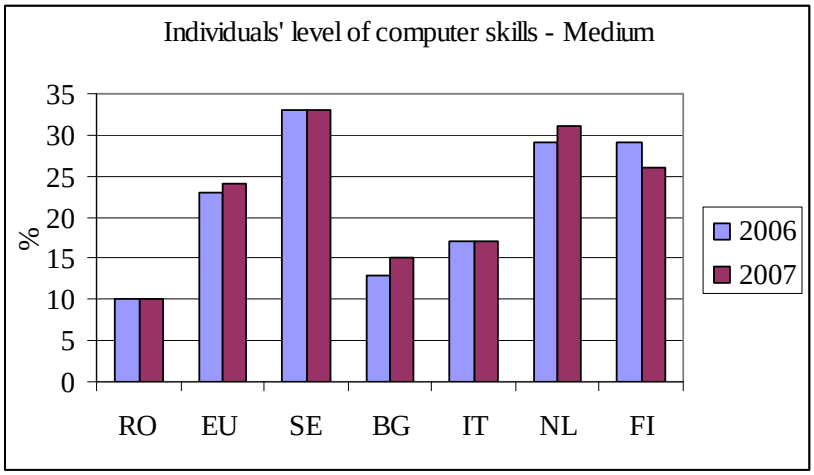
Italy	5	8	8	Minimum (Partner from the project)
Romania	n/a	13	14	Partner from the project
EU (27 countries)	15	13	13	Average for EU
Sweden	20	18	18	Maximum
Bulgaria	n/a	11	10	Partner from the project
The Netherlands	17	16	16	Partner from the project
Finland	17	15	17	Partner from the project



Individuals' level of computer skills - Medium(Percentage of the total number of individuals aged 16 to 74)

This indicator presents the percentage of individuals who have carried out **three or four** of the following computer related activities: used a mouse to launch programs such as an Internet browser or word processor (only in 2005); copied or moved a file or folder; used copy or cut and paste tools to duplicate or move information on screen; used basic arithmetic formulae to add, subtract, multiply or divide figures in a spreadsheet; compressed files; connected and installed new devices, e.g. printer or modem (only in 2006 and 2007); written a computer program using a specialised programming language.

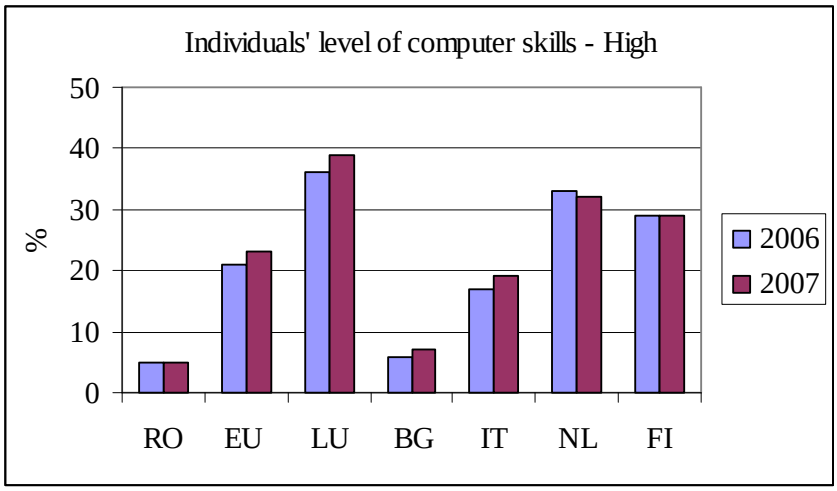
Year	2005	2006	2007	Remarks
Romania	n/a	10	10	Minimum (Partner from the project)
EU (27 countries)	27	23	24	Average for EU
Sweden	37	33	33	Maximum
Bulgaria	n/a	13	15	Partner from the project
Italy	18	17	17	Partner from the project
The Netherlands	36	29	31	Partner from the project
Finland	37	29	26	Partner from the project



Individuals' level of computer skills - High(Percentage of the total number of individuals aged 16 to 74)

This indicator presents the percentage of individuals who have carried out **five or six** of the following computer related activities: used a mouse to launch programs such as an Internet browser or word processor (only in 2005); copied or moved a file or filder; used copy or cut and paste tools to duplicate or move information on screen; used basic arithmetic formulae to add, subtract, multiply or divide figures in a spreadsheet; compressed files; connected and installed new devices, e.g. printer or modem (only in 2006 and 2007); written a computer program using a specialised programming language.

Year	2005	2006	2007	Remarks
Romania	n/a	5	5	Minimum (Partner from the project)
EU (27 countries)	22	21	23	Average for EU
Luxembourg	42	36	39	Maximum
Bulgaria	n/a	6	7	Partner from the project
Italy	19	17	19	Partner from the project
The Netherlands	33	33	32	Partner from the project
Finland	13	29	29	Partner from the project

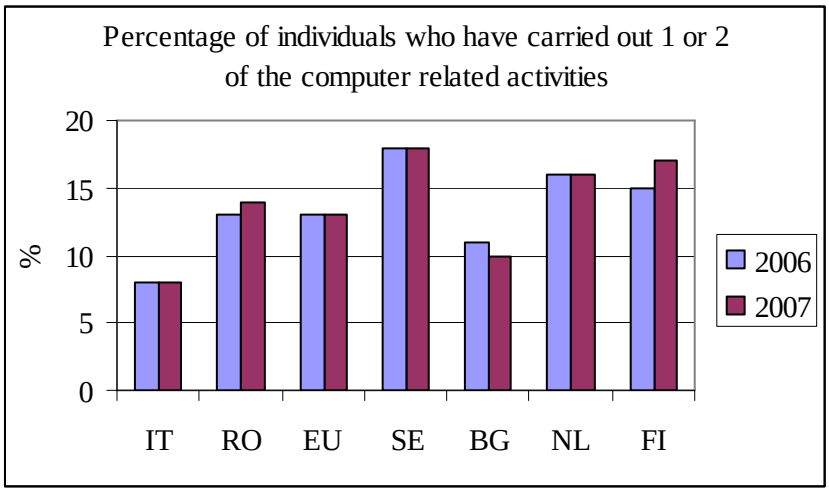


Individuals´ level of computer skills (Percentage of the total number of individuals aged 16 to 74)

Level of basic computer skills are measured using a self-assessment approach, where the respondent indicates whether he/she has carried out specific tasks related to computer use, without these skills being assessed, tested or actually observed. Six computer-related items were used to group the respondents into levels of computer skills in 2006: copy or move a file or folder; use copy and paste tools to duplicate or move information within a document; use basis arithmetic formula (add, substract, multiply, divide) in a spreadsheet; compress files; connect and install new devices, e.g. a printer or a modem; write a computer program using a specialised programming language. Instead of the item on having connected and installed new devices, the 2005 items included the use of a mouse to launch programs such as an Internet browser or word processor. Low level of basic computer skills: Individuals who have carried out 1 or 2 of the 6 computer-related items. Medium level of basic computer sills: Individuals who have carried out 3 or 4 of the 6 computer-related items. High level of basic computer skills: Individuals who have carried out 5 or 6 of the 6 computer-related items.

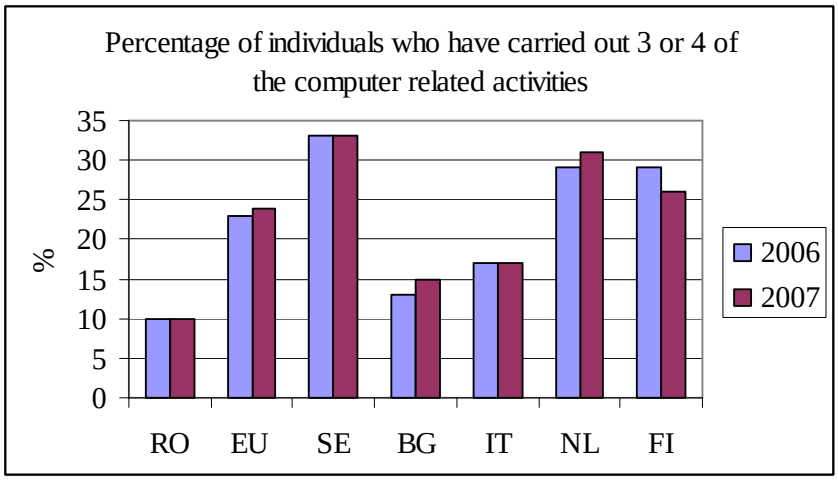
Percentage of individuals who have carried out 1 or 2 of the computer related activities

Year	2005	2006	2007	Remarks
Italy	5	8	8	Minimum (Partner from the project)
Romania	n/a	13	14	Partner from the project
EU (27 countries)	15	13	13	Average for EU
Sweden	20	18	18	Maximum
Bulgaria	n/a	11	10	Partner from the project
The Netherlands	17	16	16	Partner from the project
Finland	17	15	17	Partner from the project



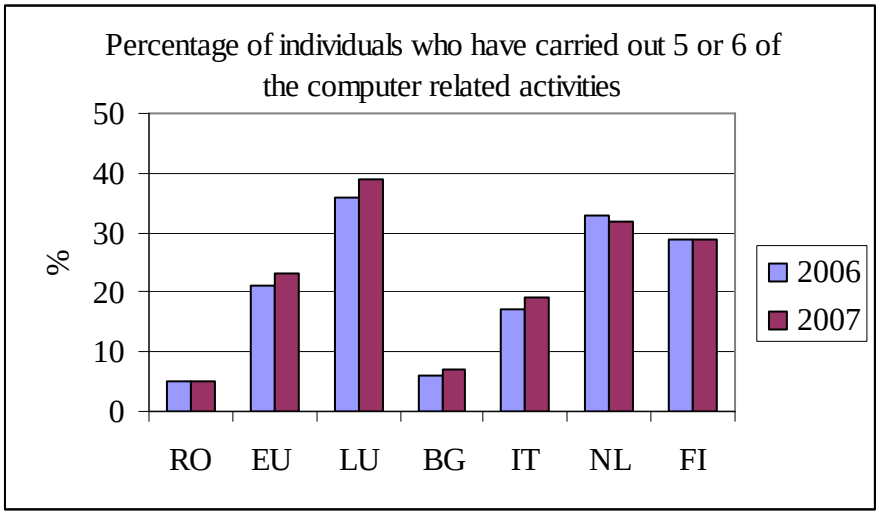
Percentage of individuals who have carried out 3 or 4 of the computer related activities

Year	2005	2006	2007	Remarks
Romania	n/a	10	10	Minimum (Partner from the project)
EU (27 countries)	27	23	24	Average for EU
Sweden	37	33	33	Maximum
Bulgaria	n/a	13	15	Partner from the project
Italy	18	17	17	Partner from the project
The Netherlands	36	29	31	Partner from the project
Finland	37	29	26	Partner from the project



Percentage of individuals who have carried out 5 or 6 of the computer related activities

Year	2005	2006	2007	Remarks
Romania	n/a	5	5	Minimum (Partner from the project)
EU (27 countries)	22	21	23	Average for EU
Luxembourg	42	36	39	Maximum
Bulgaria	n/a	6	7	Partner from the project
Italy	19	17	19	Partner from the project
The Netherlands	33	33	32	Partner from the project
Finland	13	29	29	Partner from the project



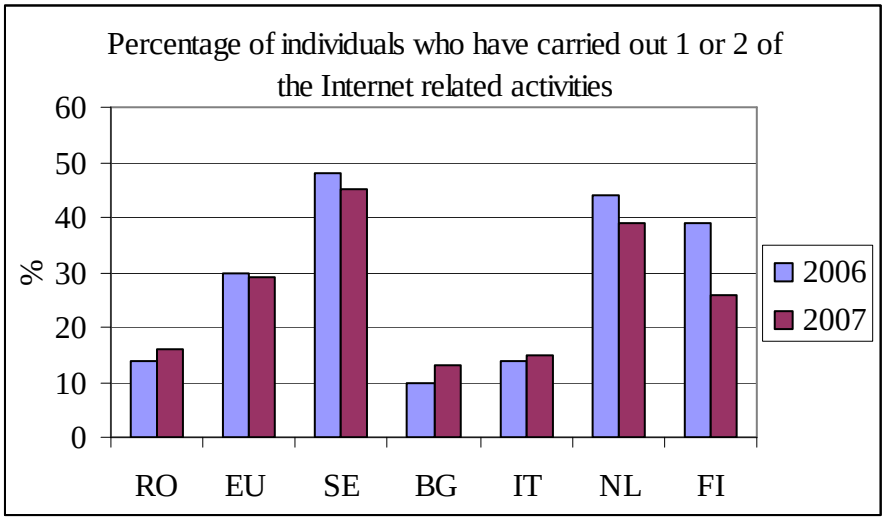
Individuals' level of Internet skills (Percentage of the total number of individuals aged 16 to 74)

Level of internet skills are measured using a self-assessment approach, where the respondent indicates whether he/she has carried out specific tasks related to internet use, without these skills being assessed, tested or actually observed. Six Internet-related items were used to group the respondents into levels of Internet skills in 2005

and 2006: use a search engine to find information; send an e-mail with attached files; post messages to chatrooms, newsgroups or any online discussion forum; use the Internet to make telephone calls; use peer-to-peer file sharing for exchanging movies, music etc.; create a web page. Low level of basic internet skills: Individuals who have carried out 1 or 2 of the 6 Internet-related items. Medium level of basic internet skills: Individuals who have carried out 3 or 4 of the 6 Internet-related items. High level of basic internet skills: Individuals who have carried out 5 or 6 of the 6 Internet-related items.

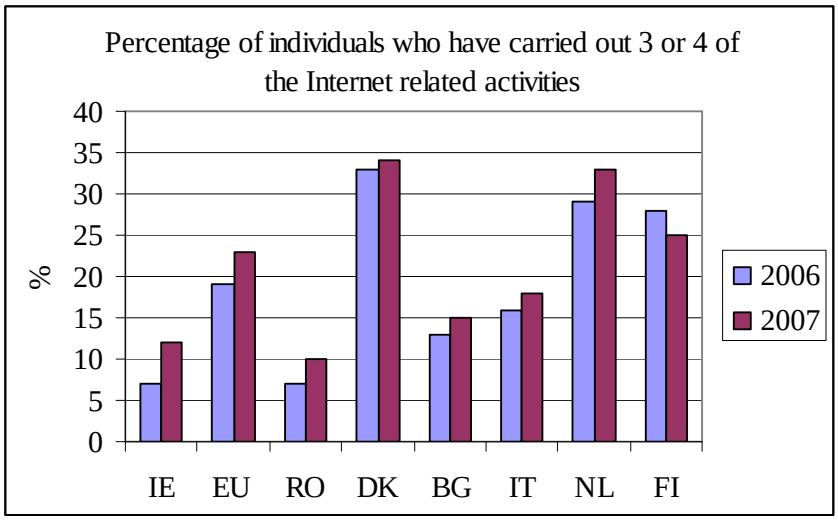
Percentage of individuals who have carried out 1 or 2 of the Internet related activities

Year	2005	2006	2007	Remarks
Romania	n/a	14	16	Partner from the project
EU (27 countries)	31	30	29	Average for EU
Sweden	52	48	45	Maximum
Bulgaria	n/a	10	13	Minimum (Partner from the project)
Italy	14	14	15	Partner from the project
The Netherlands	49	44	39	Partner from the project
Finland	37	39	26	Partner from the project



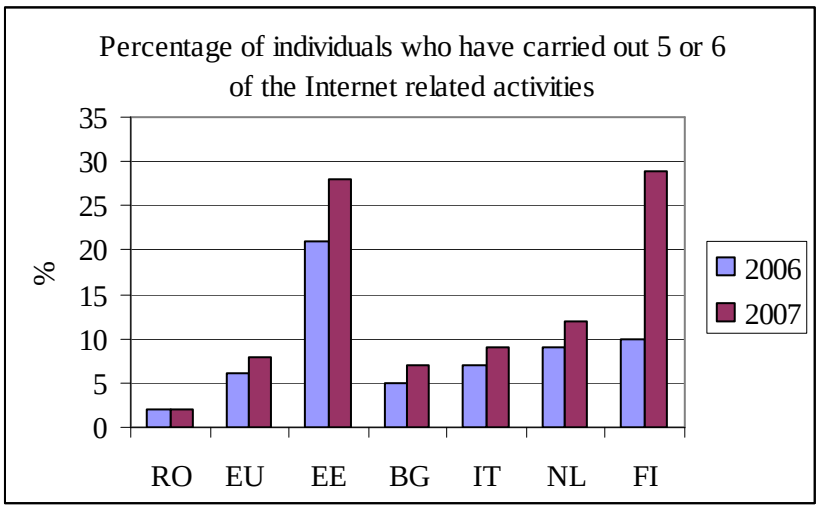
Percentage of individuals who have carried out 3 or 4 of the Internet related activities

Year	2005	2006	2007	Remarks
Ireland	5	7	12	Minimum
EU (27 countries)	17	19	23	Average for EU
Romania	n/a	7	10	Partner from the project
Denmark	27	33	34	Maximum
Bulgaria	n/a	13	15	Partner from the project
Italy	15	16	18	Partner from the project
The Netherlands	25	29	33	Partner from the project
Finland	25	28	25	Partner from the project



Percentage of individuals who have carried out 5 or 6 of the Internet related activities

Year	2005	2006	2007	Remarks
Romania	n/a	2	2	Minimum (Partner from the project)
EU (27 countries)	5	6	8	Average for EU
Estonia	20	21	28	Maximum
Bulgaria	n/a	5	7	Partner from the project
Italy	6	7	9	Partner from the project
The Netherlands	6	9	12	Partner from the project
Finland	8	10	29	Partner from the project



Computers and the Internet in households and enterprises

Three indicators are included here:

- Households having access to the Internet, by type of connection;

- Individuals using the Internet, by place of use;

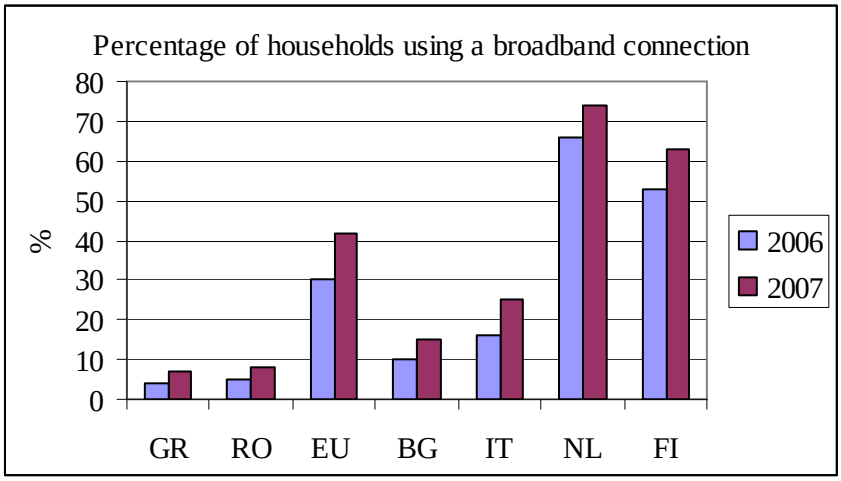
- Enterprises having remote employed persons who connect to the enterprise's IT systems from home, 2006

Households having access to the Internet, by type of connection (Percentage of the total number of all households)

The access to Internet of households is measured by percentage of households that are connectable to the Internet over a broadband or a Dial-up or ISDN connection. Some households may use more than one type of connection to connect to the Internet. It covers all households having at least one member in the age group 16-74 years.

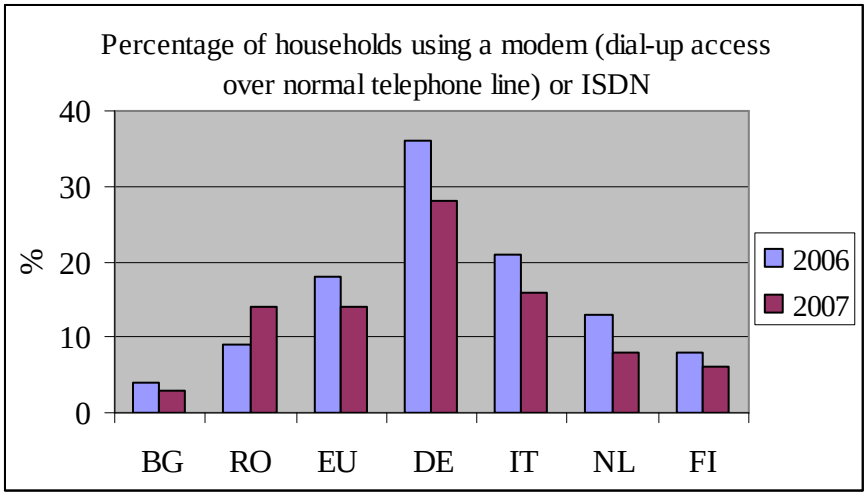
Percentage of households using a broadband connection

Year	2005	2006	2007	Remarks
Greece	1	4	7	Minimum
Romania	n/a	5	8	Partner from the project
EU (27 countries)	23	30	42	Average for EU
Bulgaria	n/a	10	15	Partner from the project
Italy	13	16	25	Partner from the project
The Netherlands	54	66	74	Maximum (Partner from the project)
Finland	36	53	63	Partner from the project



Percentage of households using a modem (dial-up access over normal telephone line) or ISDN

Year	2005	2006	2007	Remarks
Bulgaria	n/a	4	3	Minimum (Partner from the project)
Romania	n/a	9	14	Partner from the project
EU (27 countries)	26	18	14	Average for EU
Germany	43	36	28	Maximum
Italy	24	21	16	Partner from the project
The Netherlands	24	13	8	Partner from the project
Finland	15	8	6	Partner from the project

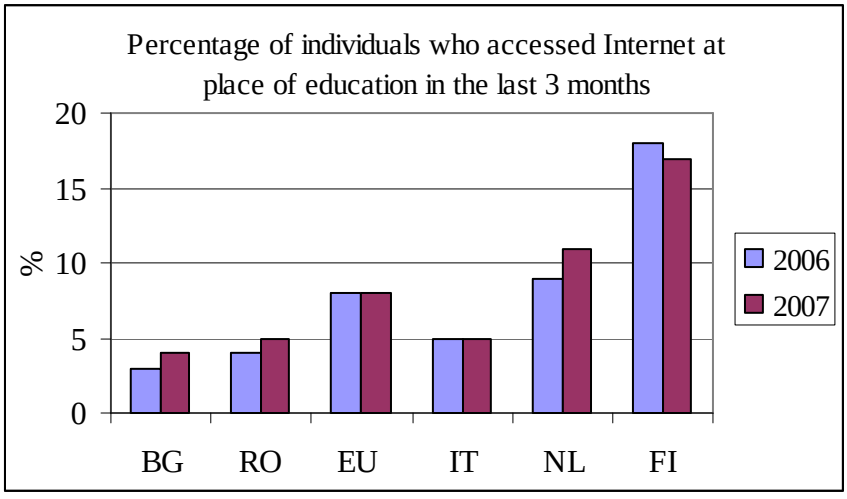


Individuals using the Internet, by place of use (Percentage of the total number of individuals aged 16 to 74)

This indicator relates to all individuals aged 16 to 74 who accessed the Internet within the last three months before the survey.

Percentage of individuals who accessed Internet at place of education in the last 3 months

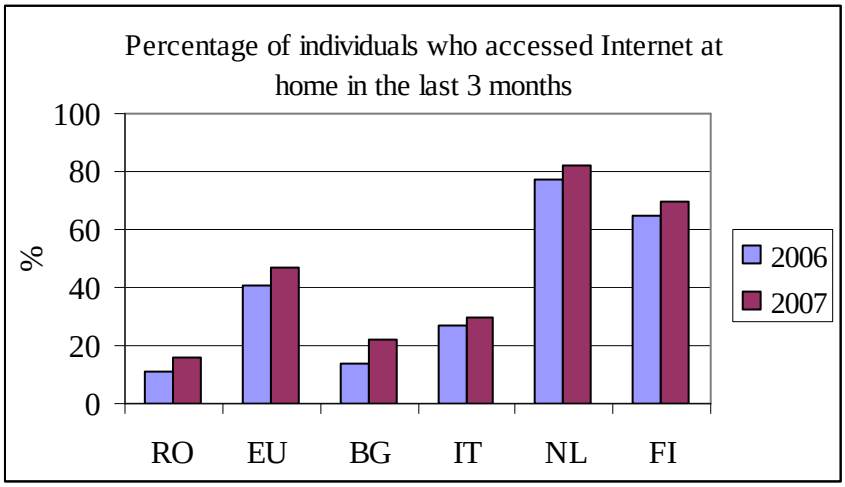
Year	2005	2006	2007	Remarks
Bulgaria	n/a	3	4	Minimum (Partner from the project)
Romania	n/a	4	5	Partner from the project
EU (27 countries)	8	8	8	Average for EU
Italy	4	5	5	Partner from the project
The Netherlands	8	9	11	Partner from the project
Finland	n/a	18	17	Maximum (Partner from the project)



Percentage of individuals who accessed Internet at home in the last 3 months

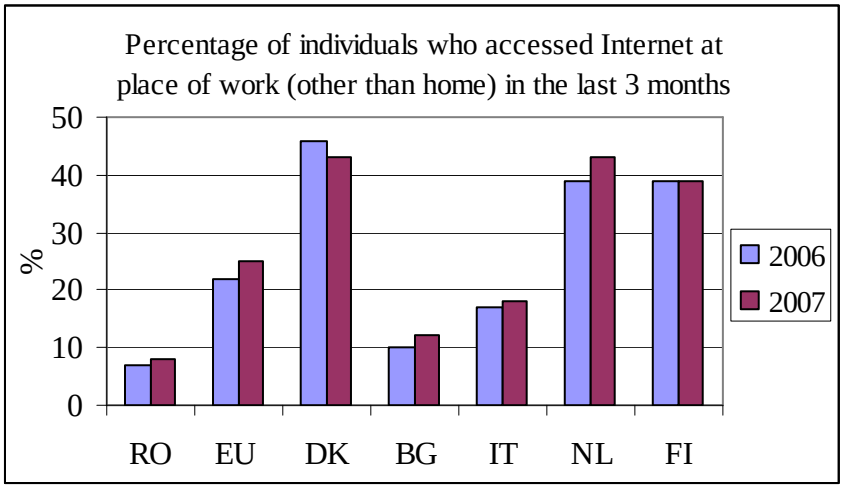
Year	2005	2006	2007	Remarks

Romania	n/a	11	16	Minimum (Partner from the project)
EU (27 countries)	40	41	47	Average for EU
Bulgaria	n/a	14	22	Partner from the project
Italy	24	27	30	Partner from the project
The Netherlands	74	77	82	Maximum (Partner from the project)
Finland	56	65	70	Partner from the project



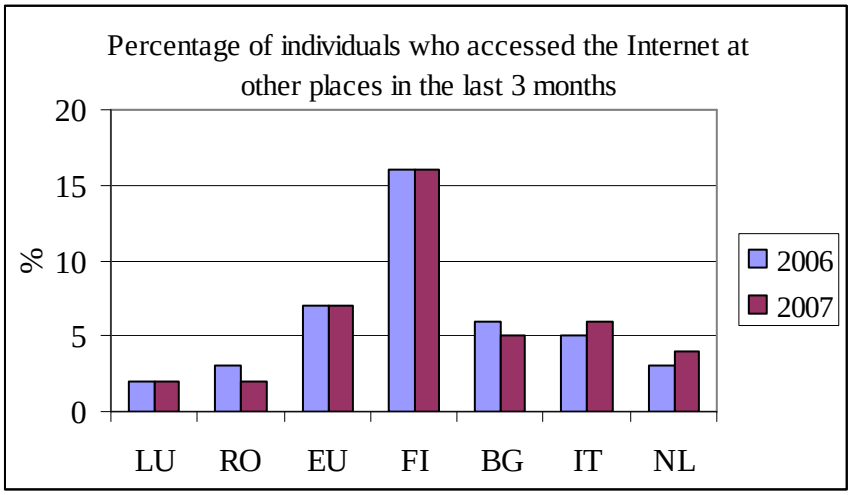
Percentage of individuals who accessed Internet at place of work (other than home) in the last 3 months

Year	2005	2006	2007	Remarks
Romania	n/a	7	8	Minimum (Partner from the project)
EU (27 countries)	21	22	25	Average for EU
Denmark	37	46	43	Maximum
Bulgaria	n/a	10	12	Partner from the project
Italy	16	17	18	Partner from the project
The Netherlands	36	39	43	Partner from the project
Finland	38	39	39	Partner from the project



Percentage of individuals who accessed the Internet at other places in the last 3 months

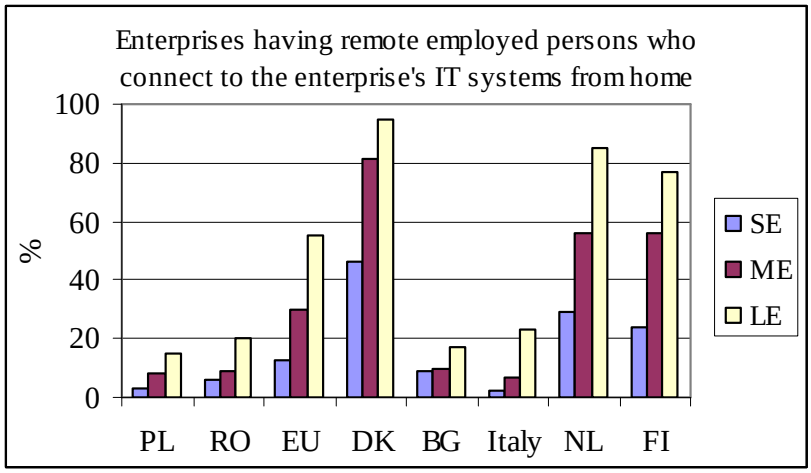
Year	2005	2006	2007	Remarks
Luxembourg	3	2	2	Minimum
Romania	n/a	3	2	Partner from the project
EU (27 countries)	7	7	7	Average for EU
Finland	n/a	16	16	Maximum (Partner from the project)
Bulgaria	n/a	6	5	Partner from the project
Italy	4	5	6	Partner from the project
The Netherlands	3	3	4	Partner from the project



Enterprises having remote employed persons who connect to the enterprise's IT systems from home, 2006, %

This indicator measures enterprises with persons employed who regularly work part of their time (half a day per week or more) away from the enterprise's regular work site (at home) while having access to the enterprise's computer systems. It covers all enterprises (Small, Medium, and Large).

	Small enterprises (10-49 employed persons)	Medium enterprises (50-249 employed persons)	Large enterprises (250 employed persons or more)	Remarks
Poland	3	8	15	Minimum
Romania	6	9	20	Partner from the project
EU (27 countries)	13	30	55	Average for EU
Denmark	46	81	95	Maximum
Bulgaria	9	10	17	Partner from the project
Italy	2	7	23	Partner from the project
The Netherlands	29	56	85	Partner from the project
Finland	24	56	77	Partner from the project



Conclusions:

- According to almost all the indicators, presented above, Romania and Bulgaria are under the average level of the indicators for the whole European Union. This means that in front of this countries stay very serious challenge of the digital society.
- In 8 from the 17 presented indicators Romania is in the last place in the frames of the whole European Union. Bulgaria is in the last place for 3 of the indicators.
- In the context of the Memory Line project the home access to Internet is of a great importance. In this respect Romania and Bulgaria again are in the last places.
- The different activities with the personal computer are not so well known. Only according to the indicator “Percentage of individuals who have carried out 1 or 2 of the Internet related activities” Bulgaria and Romania are around the average rate for the European Union.
- Individuals' low level of computer skills in Romania and Bulgaria is commensurable with the rates for the European Union. Because for the digital storage of the Memory Line entities is not required high qualification a wide range of people can participate in this process.
- The last analysis of the ICT sector shows that the market is developing very fast, that there is a tendency for its continuous growth and for improvement of the digital competences of the people from the both South-East countries, members of the European Union. [2].

- The execution of this project, its dissemination and valorization will stimulate the younger and the elder people from the small communities (families) to use the new ICT technologies in their life. This will overcome the challenges of the modern digital society and will help for the preservation and storage of the generation memory.

References:

1. http://epp.eurostat.ec.europa.eu/.
2. http://www.marketresearch.com/product/display.asp?productid=1829997&g=1

II. Empirical PART

The role of Memory Line Research Project and its methodology

Adriano Solidoro

The Memory Line research project wants to conceptualize theoretical models of creativity with ICTs which can support a range of research questions, methodologies and modes of presentation of the practices which are ongoing or being developed.
This research wants to make connections between the different strands of memory, creativity and educational ICTs research. Examples of creative practice and development with ICTs are here described, analyzed, theorized and presented for peer review in order to provide greater breadth and depth in the literature.

This has been achieved through:

- The encouragement of small-scale evaluations of ongoing work which apply rigorous research techniques, as well as more large scale and longitudinal research designs.
- Guidelines for a 'creative toolkit' of ICTs resources have been identified to enable individuals and communities to have access to technologies which permit them to engage in a range of creative processes from conjecture to evaluation.

This includes:

- Descriptions of the types of ICTs applications and equipment which could support a range of creative practices or memory expression
- Research on the target groups with narrative research methodology (autobiography, interviews, focus groups)
- ICTs adoption models
- Collaborative, intergenerational work practices

Some topics

- Memory, technology and knowledge

- Experience machines: capturing and retrieving personal content
- Constructing and sharing memory: community informatics, identity and empowerment
- Community memory and ICT in a developing economy
- Digitally creating and accessing personal family memory and history in indigenous and refugee communities
- More…

For the Memory Line project, it is important to understand what the new communicational environment has been able to provide in terms of the instatement and appropriation of the collective memory, and in what measure it participates in reconfiguring communitarian social cohesion.

Memory Line project wants to analyze how the new forms of communication change social relations along with collective memory, living memory and territory. Our approach might counter the research of Robert Putnam in the late ‘90s (to name only one) who has shown how we are witnessing a decline in civic commitment, as well as a decrease in social capital, and that the phenomenon is largely due to the electronic revolution and television in particular.

According to this author, if we wish to strengthen social ties, group members must meet face-to-face if they are to put into place common actions that reinforce relationships between people. It is by meeting informally in public places (to play cards, dance, bowl...), or in formal associations (work, school, church, charity...) that people create and cultivate social networks, mutual trust and behavioural norms.

We think, instead, that Memory Line project electronic networks and workshops helps considerably to set up these other networks.

But not only Putman has been very critical about the relationship of ICT and media and collective memory. Jean Baudrillard, for example, speaks of the “fossilisation of memory”: in his assumption, if we put all the information in a networked and digitised system, the community could lose its memory. The fact that humans have put memory in a parallel system, such as computer networks, is like extraditing memory, putting it outside the social body, and this could be a real danger. Consideration of history writing in relation to *human action* also provides an instance in which the application of a cognitive technology is not an immediately helpful

prosthesis but instead appears as an encumbrance. While the artifice of writing allows more complete and detailed retention of what humans did in the past, for Aristotle, this additional retained material adds to the noise against which we attempt to discern the signal and meaning of the past. Just as for Borges' character Funes, remembering more does not necessarily mean understanding the past better.

Nevertheless, we think this has been always the case: since all times people externalised memories. People write books, people write history, people have newspapers concerning the community, and that information is always disembodied from physical people. But this is a way to allow the communication between people and to build a community. Of course, just as with any other records, we are facing the problem of selection of information, and of memory, and this will structure all other community activity, behaviour or history.

It is true that, in reality, we consider people, groups and organisations as sets of knots representing social structures. Along this same line of thought, many authors show that as soon as computer networks, like Internet, link people and not just machines, they become social networks. It is in this sense that we use telecommunications systems not just to keep up acquaintances or friendships, like with the telephone for example, but users use Internet to access veritable resources.

In our research on the social impact of new technologies for collective memory, we want to analyze the assumption of the increase in dynamics that makes that users access information as well as other human resources, and this allows for growth in what we define as social capital, or the mutual trust and aid between people. The use of electronic mail and discussion lists, allows to keep up and enlarge our social ties and networks. From the group of retirees to the school and other groups that form the social fabric of the city, we observe dynamics in which individuals not only maintain their ties and increase their social relationships by using the network, they can also "cross" information and relationships to create truly new dynamics.

1. Collective memory and community digital narration

Another important aspect, is that Edgar Morin has defined as "myth makers"; people have a need to relate and take part in community gossip. The human being is characterised by narration, creating myths, little daily myths shared with the community and that allow for a feeling of true belonging to the community. In

participating to the creation of these little myths, a community member participates in the construction of its collective memory and feels a part of the community. Then there is the notion of 'Genius Loci' in relation to community belonging, the atmosphere and magical aura that characterizes a place in its interaction with people and the environment. People want to participate in the reconstruction of their own places through the very act of narration, appropriate and adhere to the place, to its collective memory. Members of a community, in order to maintain their cohesion, must commemorate together facts. Commemoration is not, however, just an event for recalling facts , it allows the community to relive that which is being commemorated. Just as a community recalls common things, it recalls them in common.

Community and the digital divide

But there is also the theme concerning the digital divide. It is difficult for a citizen, as a single individual who does not belong to an association or a school, to produce information content for the Web; where the Web is concerned, it's the associative milieu that remains the funnel through which the communication passes. Citizens have other places where they can express themselves, such as forums or chat-rooms, and they do, even though we'd expected greater participation on their part. In reality, un-moderated forums are too fluid, with a high turnover in participants.

In terms of the collective memory of human societies, Edgar Morin points out that the fact of sharing memory makes people aware that their existence is not simply functional and utilitarian, but that they may live a "poetic" existence. The sharing of memory gives people the feeling of a poetic existence that goes beyond rational calculation and economical reasoning.

But can poetic memory be echoed on the web? Memory Line workshops and communities create stories or poetry in the form of collective writing. Other associations do on-line exhibitions designed exclusively for the network. Many associations put on-line forms of production to no particular end, but rather in a logic that has more to do with personal fulfilment (see for example Filografia project www.filografia.com). The network allows for new forms of expression that fit in precisely with this notion of poetic existence. In these forms of memory the notion of experience is interesting in that the network allows us to narrate our experiences with great simplicity. But at the same time, we are losing the kinaesthetic notion that colours have smells, that fragrance have sounds, etc.

But at the same time, we teach the ABC of Internet, teaching not just the basic notions necessary to use it, but also notions of network behaviour. We are trying to convey the bases for the new culture that is opening up to us. We hope to strengthen users faced with the new systems of communication, and we think education, and lifelong learning, are the best strategies. Dissemination and productive use of media technologies depends on education. access and computer literacy for young people and seniors citizen is a widely conceded priority.

As in most sectors where economic gain is not immediately quantifiable, lack of finance blocks the integration of media technologies in education and lifelong learning. To compensate for insufficient public funding, many institutions request direct corporate sponsorship. Certain computer and communications consortia have responded to this need, but industrialists are a suspicious stand-in for 'disinterested' national policy makers and advisors. Academic and corporate partners sometimes set up their own organisations to promote new media in education and lifelong learning.

Investment where 'ROI' is unpredictable calls for a different kind of social commitment, and is unlikely to come about in the absence of strongly formulated policy, valorising corporate and academic partnerships. There are, however, simple ways of preparing for technological implementation in inexperienced structures, including exchange programmes allowing students and/or teachers to familiarise themselves with work methods in equipped institutions. Media residency programmes, offered by growing numbers of organisations (university, city council, lifelong learning institutions) deserve strong policy support for this reason.

Nomadic events devoted to culture and new technologies should be encouraged, as should current attempts to diversify their localisations. Such events could enhance interaction between itinerant cyberculture specialists, and local structures keen to promote reflection on these questions. Indeed, a widening of cultural approaches to new media depends on extension of the currently limited platform for debate. Moreover, cohesive action between host sites and new media personalities may favour technological implantation in otherwise neglected areas: through itinerant conferences, industrial developers attentive to high-end cyberculture discourse could be made aware of 'outpost' infrastructure requirements.

In conclusion, we consider the multimedia and ICT might better help people share memory on-line and preserve community cohesion. Therefore, we want to debate the fore-mentioned J. Baudrillard's notion of fossilization of memory. We are aware,

though, that with digitalization of information, we risk creating parallel worlds where memory is stored on computer hard disks, extraditing it from our conscious, but stocking memory on the network it's not a way of de-finalising it, of creating a world of memory without the memories. To avoid this risk we have to be aware that managing the new complexity is certainly fundamental to preserve community memory, this is rendered more evident by electronic means of storage. Certainly, the archives mustn't be destroyed, on the contrary, it's good that they are there when needed, but they have to be not "living". And this is the aim of long research, as well as of the next coming European Archive of Intergenerational Communication.
However, the physical encounter of people is at the basis of our Memory Line project workshops. Even if the project encourages the use of Internet a lot, we want people to get together physically. Even if everyone is connected, we think a place is needed to organise any action, we stress the importance of meet space, precisely in order to emphasise this complementary and fundamental dimension of network communities. A centre is therefore needed where people can get together. In these locales, these places ties are created, are reinforced. Here, groups have common forms of commemoration; this is where shared adventures are remembered, and communicated to the younger generation. In this dynamic, the new network communities, though perhaps more international, work just like classic communities**.**

2. Research Methodologies

For the living memory project we've done a research that aims at understanding the role of memory in communities.
The approach is socio-cultural, and our basic assumption is that:

- Community needs memory to exist.
- Creative use of ICT involves communication and shared information amongst community and amongst different generations (seniors and youngsters).

The process of this study consists of 3 main parts:

Part 1. desk top analysis
Desk:

- Reports
- Articles
- Other projects…

Part 2: focus group

Focus groups are likely to prove a powerful tool for the Memory Line project in exploring and evaluating the ICTs experience and the intergenerational communication level in each of the five participating countries in relation to current technology available. As a result, it is important to start organising focus group sessions very early in the Memory Line research plan. Moreover, the need to compare the findings of the focus groups in each country requires the development of a common methodological framework, without which comparison would be difficult if not impossible.

This methodology will be mixed with those of narrative research, in order to:

- evaluate the ICTs and the intergenerational communication experience
- draft a series of ICTs tools for collective memory collection, demanded and wished by the participants

Among the most widely used research tools in the social sciences are group depth interviews, or focus groups. Focus groups are group discussions organised to explore a people's views and experiences on a specific set of issues. Focus groups are useful when it comes to investigating *what* participants think but they excel at uncovering *why* participants think as they do. Focus groups can achieve this because participants not only articulate their views about a particular topic, but also explain to the group members the reason why they hold these views. Such participation occurs as participants question each other, or even challenge views, which might differ from their own. Participants are requested to expose the reasoning behind their own opinions allowing the researcher to explore and record such interaction.

Focus groups are fundamentally a way of listening to people and learning from them. Focus groups create line of communication. This is most obvious within the group itself, where there is continual communication between the moderator and the participants, as well as among the participants as well. Moderators should be

motivated to listen and learn from the participants. This is not a passive process. Moderators are responsible to decide which topics they want to hear and to focus the discussion on the things that they want to learn. At the same time, they must not be too controlling. Every group has its own *dynamics*, therefore they need to acknowledge the participants' priorities if they want to hear they thoughts and ideas.

Focus groups provide a number of advantages relative to other types of research:

- Focus groups provide data from a group of people much more quickly and at less cost than would be the case if each individual were interviewed separately.
- Focus groups allow the researcher to interact directly with respondents. This provides opportunities for the clarification of responses, for follow-up questions, and for the probing of responses. Respondents can qualify responses or give contingent answers to questions. In addition, it is possible for the researcher to observe non-verbal responses such as gestures, smiles, frowns, and so forth, which may carry information that supplements (and, on occasion, even contradicts) the verbal response.
- The open response format of a focus group provides an opportunity to obtain large and rich amounts of data in the respondents' own words. The researcher can obtain deeper levels of meaning, make important connections, and identify subtle nuances in expression and meaning.
- Focus groups allow respondents to react to and build upon the responses of other group members. This synergistic effect of the group setting may result in the production of data or ideas that might not have been uncovered in individual interviews.
- Focus groups are very flexible. They can be used to examine a wide range of topics with a variety of individuals and in a variety of settings.
- Focus groups may be one of the few research tools available for obtaining data from children or from individuals who are not particularly literate.
- The results of a focus group are easy to understand. Researchers and decision-makers can readily understand the verbal responses of most respondents.

The following are some of the most important uses of focus groups in the Memory Line project:

- Obtaining general background information related to the characteristics of existing digital and intergenerational divide and the use of ICTs for personal and community memory.
- Discovering and exploring in depth the needs of current and potential users of ICTs for cross-cultural communication and memories.
- Stimulating new ideas and identifying solutions on how to best meet these needs and make the current on-line services or common ICTs technology more responding to the evolving nature of these needs.

Desk top analysis: Memory and ICTs related projects case studies

Adriano Solidoro

In this section you will find some examples of memory line research project desk top analysis. Memory, community, intergenerational communication and ICTs related projects from various international organizations are described and collected along their main topics.

1. *Memory and intergenerational communication*

The Intergenerational Initiative fostered by Memory Line project is the mindset that we are at our best when older and younger generations address problems together.
Goals of the Memory Line Research are:

- to investigate how to foster communication and contact between generations and cultures
- to investigate how to foster communication and contact between generations and cultures
- to enrich the educational experience through lifelong service and learning
- to publicize the stories about younger and older generations

Case Study 1: Urban Memory Project

Developed by Rebecca Krucoff and Ain Gordon, The Urban Memory Project (http://www.theurbanmemoryproject.org/) was created in response to the extensive transformation of New York city's social, economic, cultural, and physical landscape, erasing layers of history. The Urban Memory Project introduces young people to alterations in the physical landscape by analyzing and documenting the surrounding environment. As historians, students draw meaning from their observations and pose a variety of questions based on their findings: What do these transformations tell us about ourselves and the world we inhabit? How will the changes impact our future? Understanding the forces at work behind such development and our role within this evolution provides us with a choice. Do we want to impact these changes, or not?

During the school years of 2005-2007, Krucoff and Gordon partnered with teachers from several Brooklyn schools to engage adolescents in an exploration of various Brooklyn neighbourhoods. High school students from the Brooklyn School for Global Studies, Williamsburg Preparatory, the Secondary School for Research and Midwood High School examined trends that have influenced these communities and factors that have shaped their histories. In an effort to determine how current development impacts various segments of the population, the students used photography and oral history techniques to document aspects of the physical landscape they felt may soon disappear. Groups of students then displayed this work in community exhibitions featuring photographs, text, maps, interview excerpts and video footage of the project.
In the current school year of 2007-2008 Krucoff and Gordon are expanding the Urban Memory Project to additional schools in Brooklyn and throughout New York City, while deepening the level of student involvement within existing schools. An additional component of the project involves a research and development process that will allow Gordon to create a multi-media theatrical portrait of the borough featuring professional actors, video documentation and interview transcripts.
The project is funded by the Brooklyn Historical Society, a museum, library and educational center dedicated to encouraging the exploration and appreciation of Brooklyn's rich heritage. The Brooklyn Historical Society fulfils this mission by collecting, preserving and making available important materials representative of Brooklyn's diverse peoples and cultures both past and present. The Brooklyn Historical Society places the materials it collects in a meaningful context by presenting innovative exhibitions and public programs.

Case Study 2: The Illinois Intergenerational Initiative

The Illinois Intergenerational Initiative, http://www.siu.edu/offices/iii/communication.html was founded by the Illinois Board of Higher Education in 1986 to involve older adults in education as tutors, mentors, and sharers of their life experiences. Individuals from more than 40 organizations came together for a retreat at Allerton Park to discuss the potential for a statewide coalition that would promote intergenerational development. Representatives from universities, community colleges, aging organizations, elementary and secondary groups, and state agencies discussed the roles their organizations could play in this new initiative. Participants

said that one of the retreat's biggest benefits was that it brought together people who were working parallel and had much in common. Also considered valuable was the time spent analyzing organizations to determine the potential for promoting intergenerational programs. Everyone made commitments on how they could work together. As a follow-up and to promote communication within the fledgling network, a quarterly newsletter named Continuance was established. The original steering committee included the Illinois Community College Board, the Illinois Department on Aging, the Board of Regents, the Board of Governors, the Illinois State Board of Education, and Southern Illinois University. A central focus in the early years was the creation of awareness and interest among leaders and decision makers, through publications, meetings, and advocacy for intergenerational approaches.

Case Study 3: Ark Youth and Community Project

The two projects - Home Front Recall and Our Mining Heritage - were both designed to create a historical record of life in the Rhondda Valleys in the twentieth century through an inter-generational project.

Breaking down the barriers between younger and older people by increasing young people's awareness of what the older generations in the Rhondda had gone through during the war years and the final decades of the mining industry was a key objective. Producing a valuable educational and historical resource for future generations was another. Both projects can be seen to have achieved their objectives, and also to have had a number of other highly beneficial outcomes.

A range of partners from the voluntary, educational and heritage sectors were involved. The projects were led by The Ark Youth and Community Project, a charity based in Tonypandy which works towards the social and economic regeneration of the local community and the wider area.

What does this project exemplify? **An inter-generational approach** in which secondary school pupils capture the experiences of elderly local people.

Objectives explicitly seeking to strengthen community bonds and to break down the barriers between different groups of people in a community that experiences deprivation and disadvantage.

Value added. A further project grew out of the Home Front project. This new project increases the opportunities for social and physical activity available to local older people, and the projects have had a more extensive range of positive outcomes than was originally envisaged.

Case Study 5: The Gates Memory Project

The Institute for the Future of the Book, The Gates Memory Project is undertaken in cooperation with Flickr, the photo-sharing platform available on the web. The Gates Project was an art installation erected in New York's Central Park that was only in place for sixteen days. 7,500 bright orange drapes were suspended from custom-built frames. They wound, ribbon like, through the park inviting people to experience them from various vantage points. The installation took place during the frigid month of February when most people in New York stay indoors. Due to the number of drapes and their circuitous path thousands of visitors snapped pictures of the artwork from many unique vantage points. The Gates Memory Project was officially titled *The Gates: An Experiment in Collective Memory*. The project uses the Flickr photo sharing platform to collect everyone's images of the art installation, or as they state on their website, *"The aim is to harness the creativity and insight of thousands to build a kind of collective memory machine – one that is designed not just for the moment, but as a lasting and definitive document of the Gates and our experience of them"*.

2. Technology and collective memory

With the Memory Line research project we want to provide a rounded account of the progressive intermingling of social and electronic networks, especially related to the collective gathering of memories. The subject matter is broad and interdisciplinary, with contributions from computer science, sociology, design, human factors and communication technology systems to model and support communal memory and social knowledge. Here, we want to investigate the ways in which the Internet affects both familial and social relationships, communal and civic involvement, social capital and lifestyle.

Following there are some case studies illustrating the different initiatives in this area, interesting both from a sociological and technological point of view.

Recent media technologies including the cell phones, dvd, digitised broadcast, and Internet services, are increasingly drawn on in the course of professional and leisure activities, welfare and health services, education and culture. Unfortunately, the considerable attention paid to these technologies by user countries almost systematically undermines the fact that most of the earth's inhabitants are still oblivious to and beyond the reach of these tools. Inequality on our planet, notably in terms of technological status, is nothing new, but is today ironically highlighted by hype surrounding new media, all too often championed for their ‘universal’ portent. Yet new media technologies will not represent any ‘universal’ benefits unless we manage to reduce the gap between the info-rich and the info-poor; the humanist potential of these tools entirely depends on access.

The fact that new media technologies can contribute to key sectors like education reinforces the urgency of their wider implantation. Computer literacy can neither precede nor replace conventional literacy skills, but it can valorise them by enabling those who have acquired them to consolidate and exchange knowledge through vast, multicultural, responsive information spaces

Amongst other things, these tools can establish and reinforce cultural identity, a condition of effective social integration.

There is still a sharp contrast between cutting edge research to develop seamlessly combinable multimedia bases, and grass-roots effort to compile and present archives in modest text bases or simple audiovisual production. Nevertheless, throughout the technological world, appropriateness of imported resources is not just a matter of tangible machinery, but is intimately tied up with intangible design factors. Questions such as how we build our cultural archives, i.e. how we hierarchise and organise our digitised heritage to optimise its use, depend on hard- and software choices, in turn subject to immense economic competition. As any documentalist knows, the world's richest data bases are worthless without effective indexation tools. Referencing and access routes within media systems, interconnectability of multiple bases, and interface design, need to be engineered from the outset with potential user populations in mind.

Those who are empowered to design networks to bear our cultural memory should be morally held to implicate representatives of other peoples in the building of information architectures.

Hence, the emergence of monolithic, doctrinaire systems can be constructively countered, by the creation of more acceptable data repositories.

In addition to training and recruitment, it is urgent to facilitate participation of end users at international events devoted to information system design, ensuring that adequate resources are officially allocated to constructive debate on the multicultural and multigenerational implications of such systems.

Cultural ramifications of data base design should be an explicit topic on the agenda of major international new media events. Industrialists should be alerted to the importance of this discussion, which may enrich current design concepts, and facilitate future acceptance of information and communication technologies in currently unequipped regions. Multilingual browsers and search engines need to be developed for these same reasons. Organisations like the European Information Technology Conference should be lobbied to heighten awareness of the need to foster plural inforoutes and data base architectures.

Case Study 6: Local Projects

Local Projects is an award-winning design studio that seeks to tell stories in public spaces, museums, and over the Internet, often simultaneously. By committing to projects that combine information design, media, and interactivity, Local Projects has made high-tech to no-tech interfaces that engage visitors in innovative and effective ways: “Collaborative storytelling” projects whose content generates from the audience itself. The process allows for multiple participants to offer stories that come together into a single archive; “Environmental media” integrates stories into architecture, where the plots and characters unfold as the audience navigates through physical space.

Here some examples of projects:

TIMESCAPES: Project realized for The Museum of the City of New York. Four hundred years of New York History are compressed into a twenty-two minute presentation morphing maps, images, and narration in the new three-screen installation 'Timescapes,' at the Museum of the City of New York. It’s an absorbing biography of the city, neatly organized into chapters that outline the city’s explosion out into its five boroughs, up into the skyscrapers, and down into the subway system.

THE CHRONOSCOPE: Project located at the Axa Gallery, Times Square. The Chronoscope is a 3D interactive documentary, providing the final experience for the Times Square Centennial Exhibit. It appeared at the Axa Gallery through March 2005, and then opened at the Times Square Visitors Center. By locating photos of the past in a 3D model of the present, it has been created the Times Square for all times. Those same streets and sidewalks retain the old and new, public and private, personal and epic. Visitors fly through the abstracted “now2, and see a specific framed view transformed into a historic photo of the past.

MINERS STORY PROJECT: The Miners’ Story Project gathers, preserves, and share the stories about life in the mines, and around mining communities in the Southwest U.S. The Miners’ Story Project will become part of the new Mineral Museum at the Flandrau Science Center, allowing the Mineral Museum's world-class collection of gems and minerals to be complemented by the sounds and stories of the miners who carried them from the earth. To provide a recording space and promote the project, a trailer clad entirely in copper was built, in homage to the single metal that the Southwest is famous for supplying. The trailer’s main feature is a profile portrait of a copper miner, whose pixilated image is made up of small speakers holes, allowing the trailer to broadcast oral histories.

STORYCORPS: Project located at Grand Central Station / World Trade Center / Nationwide. StoryCorps is a nationwide initiative to instruct and inspire citizens to record each other's stories in high-quality audio. Participants receive a CD of their recorded interviews while a copy goes to the Library of Congress for a national oral history archive. StoryCorps’ flagship booth was launched at Grand Central Station in October 2003. The exterior of the StoryBooth has a 3 LCD-panel motion graphics loop that provides dynamic signage. “Listening Stations”, speakers embedded in the side of the architecture encourages people to put their ear against the cube for sample stories.

MEMORY MAPS: The Smithsonian FolkLife Festival gathers over 1 million visitors in two weeks on the National Mall by displaying exhaustive research of three specific locations’ cultures. As one of the 2001 cultural choices, New York City posed a special challenge-- the representation of a vibrant living culture where the mixing of many different cultures together into a small diverse city creates a larger cultural ecosystem. Reminiscent of a subway car wrapped in fluorescent construction mesh, Memory Maps was a system of enormous street maps of New York City which

allowed visitors to share their stories of the city by anchoring memories to specific locations.

Case Study 7: Living Memory

Living Memory is a project founded by the European Commission which addresses the research domain of Intelligent Information Interfaces (i3). The programme for i3 is aimed at the broad population, and seeks to create novel interaction paradigms for interacting with information. Living Memory will provide members of a selected community who live and work in a particular locality or neighbourhood with a means to capture, share and explore their collective memory with the aim to interpret and preserve the richness and complexity of local culture.

Living Memory will create concepts to support the communication of local history, local news and the sharing of personal experiences and memory in multiple media, accessible via innovative, intuitive interfaces that are integrated in people's homes or in public space. The research proposes to use the specific content created by the community as the driver for the creation of interfaces: in other words, the premise is that a user interface for a 'content-based service' should reflect the particular typologies of content which the service contains. Reference is made to aspects such as the representation of social structures and the local culture, and to characteristics of the narrative structures and media currently applied in personal and public content.

The analysis of the content will generate initial user interface paradigms. A role is provided for intelligent agents in the process of marking significant events and public discourse, on the basis of, for example, the analysis of user interest in particular content. Over a period of time this then represents the potential creation of 'memory' for the community. Active involvement of community members throughout the entire research trajectory will ensure the development of relevant and meaningful interfaces for content creation, communication and preservation that prove to be usable and attractive for the community members. The community involved are people who live, work or meet in a particular area in Edinburgh, UK. Deliverables from the project include visionary concept renderings aiming 5 - 10 years ahead from now, a working prototype system illustrating the user interface to a collective memory that has been built up during the project life by the community involved in the research, guidelines for the creation of user interfaces for content-based services, along with

methodologies for the intelligent handling of memory through the application of agent technology.

Case Study 8: Storymapping

StoryMapping http://www.storymapping.org/ is a project of The Center for Digital Storytelling (www.storycenter.org), taking the lessons learned from more than a decade of work in Digital Storytelling and integrating it with an emergent tool set of digital mapping technologies now available to the broad public. Whether it is geo-tagging images on Flickr, building story-based GoogleMaps, developing Windows Live virtual tours, organizing local cell phone walking tours, or the permanent embedding stories into locations to be received by Bluetooth and other wireless information, the project aim is to create maps that share stories about the places that matter to people, and place people life stories in countless geographic contexts. The Center for Digital Storytelling will be developing a series of national projects for organizing digital story projects based on the link between narrative and place.

3. *The impact of community archives on memory and the intergenerational communication*

An increasing number of community archives are seeking and receiving help and making links with existing heritage or community organizations. Swapping experiences and best practice is of great benefit, and more detailed studies are needed of what works and what does not. Memory Line research wants to provide a contribute to this study.

Our Memory Line research aims to investigate the distinct impacts that community archives make. The assumptions to validate are the followings:

- Cultural capital gains: can cultural resources used for personal and community development be described as ‘cultural capital’?
- Can young and old people meet and work closely together, developing a sense of mutual respect?
- Can heritage and history are re-balanced in favour of under-voiced communities?

- Can activities bring about a sense of belonging?
- Opportunities for lifelong learning: can community archives provide people with significant opportunities for learning? For example, opportunity to acquire skills and experience in using digital technology. People can be trained in transcription, scanning and other IT skills. Staff and volunteers can learn negotiating skills, honed though working with diverse groups. Many of the skills learned by participating in community archives are transferable. Computer technology, research and interviewing skills are good examples.

About community archives

Community archives allow groups of people who may often be unrepresented or overlooked in their society to identify, explore and celebrate their own communities. Community archives allow users to develop new skills, and they promote historic narratives that would otherwise be lost. And because community archives are a grassroots development, participation is empowering and encourages a sense of belonging to a community.

But what is in community archives? Photographs, documents and oral histories arranged so as to represent a community's understanding of its history and identity. The community may be based in the same geographical area, or it may be a community related by a shared interest, occupation, identity or ethnicity. Most projects are geographically based, but a number are united by a common interest instead.

The digitally-linked groups can upload material, access the wider collection online and share both histories and practical advice.

The quantity of material held by community archives can vary widely, from few hundred items while others had a few thousand.

Most community archives have no paid staff and between one and fifty active volunteers. 30,000 volunteers are estimated (for 3.000 archives) to be actively engaged with community archives throughout the UK, amongst them 50% receive funding from the Heritage Lottery Fund (HLF). More than 25% rely on donations and subscriptions. 50% collect documents and sound archives – including oral history. Nearly 70% collect photographs and 80% create electronic records from these

sources. Although, community archives are not just a British phenomenon. For example, in Canada and Scandinavia there is a widespread interest and experience, and much could be learned from them.

Many community archives are loosely constituted. Fewer than 25% are registered charities and another 30% are part of an existing organisation. 45% are run completely informally. A typical range for user numbers is between one hundred and five hundred. Our research suggests an average of about 250 users, including online users.

About the funding, this is received from a range of sources, donations are often small amounts. Subscriptions may be lucrative for the relatively few archives that use them. Those who build community archives create and engage with collections of photographs, documents, material objects, oral testimonies and other audio-visual material. These resources contain otherwise hidden narratives that trace and celebrate the worth of communities and individuals, past and present. From them spring educational and social initiatives that may engage the wider community. Some of the stories contained in community archives describe the distant past; others are from more recent times. They may be about a place, or about a shared experience or way of looking at the world. Compiling a community archive brings together people of varying ages, experience and ability. Some participants in community archives have limited formal educational qualifications, but this is no obstacle to working together to understand, value and celebrate the communities to which they belong.

Archives and the intergenerational communication

By contributing to their community archive, users learn new skills and use them to the benefit of the community at large. And the records they create provide a legacy for present and future generations.

Community archives offer a unique form of participation. Very few parts of modern cultural life provide the opportunity for people of all backgrounds and ages to meet, talk about what they have in common and collectively build the material that links them together. But this is what community archives can do.

Our Memory Line research would like to show how, by engaging with the archive studies, young people came to understand how people in their own community have been affected by changes. This understanding may help the young to feel more

strongly rooted in their community, improve their confidence and make them more outward-looking.

Older people also benefit from projects that involve several generations of people. We found that by working on oral history projects, older people feel validated and less afraid of younger people.

Useful organizations

To look at more detailed information about archive collections there are a number of websites that cover different parts of the UK.

The National Register of Archives contains information on the nature and location of manuscripts and historical records that relate to British history and can be searched by corporate name, personal name, family name or place: http://www.nationalarchives.gov.uk/nra/. For records held in Scotland see the Scottish Archives Network http://www.scan.org.uk/. For records held in Wales see the Archives Network Wales http://www.archivesnetworkwales.info/. For records held in England (and some Welsh public records) see Access to Archives http://www.a2a.org.uk/. The A2A database is hosted by The National Archives on behalf of smaller repositories throughout England. The database allows you to search and browse catalogues from many archives in England, dating from the 900s to the present day. These archives are cared for in local record offices and libraries, universities, museums and national and specialist institutions across England, where they are made available to the public. The Archives Hub is a gateway to descriptions of archives in UK universities and colleges: http://www.archiveshub.ac.uk/.

The Community Archives Development Group (CADG) http://www.ncaonline.org.uk/community_archives/terms_of_reference/ aims to monitor and inform developments in the field of Community Archives, and to act as an expert body on best practice in this area. The Group was set up to build on the work of the Community Access to Archives Project. It was affiliated to the National Council on Archives in July 2005. The Group brings together bodies and organisations concerned with Community Archives, and provides a forum for the regular exchange of views and information. The Oral History Society http://www.ohs.org.uk/ provide really good, basic practical advice for groups undertaking interviewing projects. The Archives 4 All

http://www.nationalarchives.gov.uk/partnerprojects/a4a/ website features collections from archives and community groups around England. Archives 4 All, the fourth phase of the Access to Archives (A2A) programme, has developed partnership projects between archive holders and users. In order to help establish and reinforce connections between archives and the local community, repositories have been encouraged to work with community groups.

Case study 9: The Memory Project

Created in 2001, The Memory Project (http://www.thememoryproject.com/digital-archive/about.cfm) is the Dominion Institute's flagship educational programme, designed to connect veterans and students online and in classrooms across the country. The Memory Project Speakers' Bureau includes 1,500 veteran volunteers from across Canada visiting classrooms and community groups to share their stories with youth. The veterans in The Memory Project represent a wide range of conflicts, including World War I, World War II, Korean War, Peacekeeping Operations and Canadian Forces experiences.

The Memory Project Digital Archive, an online database that houses the oral histories and artefacts of more than 1000 Canadian veterans, complements the Speakers' Bureau. To date, these veterans have reached more than 300,000 young people.

Case Study 10: Hpmemory

This web site (http://www.hpmemory.org/) is the virtual showcase of a private collection of equipment and documents acquired over a lifetime career of work in the high-tech era of the 20th Century. The overall HP Memory Project is a work of gratitude from one of the many people who had the good fortune to spend a full professional life working for one of the world's most successful High-Tech Companies, the Hewlett-Packard Co. HP was one of the very few Companies in which the frame of mind of the founders, David Packard and William Hewlett, grew from their cooperative philosophy of life into a model of a wonderful way of management.

Studying the relation between digital technologies, local memories and intergenerational communication: some results from the field

Andrea Pozzali and Michelle Pieri

1. Introduction

In this chapter, we would like to present and analyse some of the main results and evidences obtained by the empirical research that has been done within the Memory Line Project. As it has already been discussed in another contribution (Cfr. the chapter on the methodology of the project by Adriano Solidoro in this same volume, this research activity has been carried out in joint cooperation by the University of Milan-Bicocca and by the University of Veliko Turnovo, and has consisted in the conduction of focus groups among all the partners involved in the project.

The main aim of this research work was to investigate more in depth in which ways digital technologies can really help to bridge the gaps between generations, and in particular how they can help to build and share a sense of common local memories between elderly and youngster. At the same time, the focus groups were also helpful in order to gain some more insights on the specific ways in which people from different generations may approach digital technologies. In particular, we were interested in seeing to what extent it is possible to say that our societies are at risk of producing a real kind of intergenerational digital divide, as elderly may find more and more difficult to interact with the computer and all related technologies, what kind of practical consequences this may produce, and how we may develop ways to cope with this problem and reduce its negative effects. Last but not least, the focus groups give us also the opportunity of giving and receiving feedbacks from all the participants involved in the intergenerational ateliers organized within the Memory Line Project, and this enabled us to perform a sort of auto-monitoring and evaluation of the project itself, that may be helpful in order to plan future initiatives that may follow the same line.

As already mentioned, focus groups have been carried out among all the partners involved in the Memory Line project: in Pescia (Comune di Pescia, Italy), in Rotterdam (CNV Kunstenbond – Christian National Trade Union for Artists of Netherlands, Netherlands), in Kuusankoski (Adult Education Centre of Kuusankoski,

Finland), in Bucharest (ANUP – Association of Romanian Popular Universities, Romania) and in Lugano (CFC/FSEA – Swiss Federation for Adult Learning, Switzerland). All the focus were moderated and conducted by researchers of the University of Milan-Bicocca and of the University of Veliko Turnovo, who also jointly prepared the materials and guidelines used for the realization of the focus[1]. This was done in order to allow for some comparisons of the results obtained, even in some cases problems may arise, as some focus groups could not be held in national language, but had to be carried out in English.

All focus groups were recorded and some were also videotaped, in order to allow for a following analysis of interaction and contents that has been carried out by the authors of the present chapter. The average length of the focus groups was one hour and a half and in general the level of participation and involvement of people involved was reported to be fairly high, especially for what concerns elderly people. The involvement of youngster was somehow more problematic, as long as in many cases they limited themselves to listen to what other people were saying, so a direct intervention of the moderator was sometimes needed in order to assure their active participation to the debate. This is something that has happened in almost all focus groups and that could represent a point that deserves further attention, as long as it can represent a structural element of the processes of intergenerational communication.

The content analysis of the focus groups has been developed by making attention to a series of common themes such as: how do elderly and youngster relate with technology in general, how do they specifically interact with modern digital technologies of information and communication, what are the pros and cons of the present wave of technological progress, how can new technologies be helpful to create, share and preserve local memories and enhance processes of intergenerational communication. In the following pages we present the results, considering separately each theme and trying to underscore differences and/or communalities that may emerge between the different focus groups, and that may be linked to specific local or national contextual factors. The chapter is structured as follows: in paragraph 1 we

[1] We would like here to thank all people that have been involved in the organization and realization of the focus groups and in particular Paolo Ferri and Adriano Solidoro (University of Milan-Bicocca), Margarita Todorova, Georgi Todorov, Donika Valcheva and Miroslav Petrov (University of Veliko Turnovo), Ileana Boeru (ANUP), Jedidja van Burg (CNV Kunstenbond), Miikka Rikala and Hilkka Jämsä (AEC Kuusankoski), Francesca Di Nardo, Paola Mæusli-Pellegatta, Pepita Vera Conforti and Roberta Cecchi (CFC/FSEA), Bruna Franzinelli and Giorgio Riccitelli (Erreeffe srl). A special thank obviously go also to all people who took part to the focus.

focus our attention on the relationships that people have with technologies, considered both as “traditional” or “old” technologies (for example the dishwasher, the car, the washing-machine) and more specifically as new digital information and communication technologies; paragraph 2 is dedicated to the analysis of the consequences that new technologies can have on communication processes between people; in paragraph 3 we discuss the impact (whether for good or for bad) that these same technologies can have as long as the preservation of memories (both at the individual and social level) and the building of a sense of shared community are concerned; finally, in the last paragraph we draw some provisional conclusions and present some suggestions for further research.

2. Different attitudes toward technologies

One of the first issues that has been discussed during the focus concerned the relationship with “traditional” or “old” technologies. In particular, when asked to speak about a technology which “gave them satisfaction”, the answers of the elders went from the washing machine to the dishwasher, from the VCR (the senior who mentioned the VCR has a library of 400 videocassettes) to the “Topolino” (the very small Fiat automobile made in the 50’s, is still very famous in Italy), to the radio transistor which is listened to during housework. Taking the example of the Topolino, an elderly woman for example remembers how this new car marked a strong development in the 50s: “the idea of racing, of going, of seeing …. that car gave me a sense of freedom of movement! It was the 50s!”.

One of the most relevant finding is related to the attitude toward television. For many elders, TV is an integral part of their daily life, as is the computer, internet and the mobile phone for the younger generations. In some cases the TV is always turned on, “when I’m home I keep it turned on, not that I watch it, I listen to it ….”, “when I iron it keeps me company”, “I watch it often”. For several seniors there are regular TV appointments related to their personal interests such as “basketball games on Monday and Tuesday evenings” or the “show of Sunday afternoon”. On the other side, the younger generations watch TV only during meals at “lunch and at dinnertime along with some news”, at snack time “a few cartoons”; they do not watch much else on TV.

Regarding “new technologies”, as a general result, the focus groups have clearly shown that elderly people have a “mixed attitude” towards new information and communication technologies. A few people, that have been able to overcome the initial difficulties in approaching these technologies, have with time, and on their own, developed the ability to use them even in a quite advanced way (for example a woman from Kuusankoski told that she uses quite often the Internet, also to do online banking; another man living in Pescia has learned, thanks to the Memory Line Project, to use blogs and has even created its own blog). On one hand the seniors recognize the usefulness of the computer while, on the other hand, the prevalent feeling is still one of refusal or, at best, suspicion. Regarding the recognized usefulness of the computer, an elder says “It is so interesting, in Internet I find news and information I never thought even existed….like the history of Cambodia and Laos”.

Concerning the feeling of refusal and suspicion, some elderly people from Pescia show a real resentment towards the computer. “I can’t bear to learn to use the computer, I have refused to learn to use it…I hate the computer”. Another elderly woman said, “I have one…it’s been turned off for a year…I look at it with hatred…I’m afraid to turn it on…..I’m afraid that it will blow up when I turn it on”. Also “reading a newspaper online doesn’t give the same satisfaction as reading it on paper…picking up a newspaper and turning the pages and smelling the ink…!”.

The focus group have also shown that there are some elders who would love to learn to use the computer…an elderly woman said that she would like to learn to use the computer, but that she thinks she is too old to do so, “I would love to learn to use it, but at this age, where do I go to be taught? They tell me to go to bed.” Another woman said, “I like the computer, but the computer and I don’t get along very well, but I want to learn and be more updated”. Some older people ask for help to their children and grandchildren. An elderly man from Lugano said “I’m envious of my children, they are born with the computer, I was very good to use the typewriter…” and “whenever I want to learn something new about computers I ask my children, one insults to me, the other one is more patient, if he becomes bored he does not show it…”. Some elderly declare that their children help them with the computer, but this can also have an opposite effect, as long as it can prevent them to spend full effort in developing the ability of using the computer in their own. An elder form Lugano says “I have the chance or the bad luck to have two children living at home and so they

always help me with the computer…", another elder says "The children help elderly to use ICTs. If you want to learn, you have to try alone...if you have every time somebody who helps you, you become lazy".

It must be highlighted that, in general, the Memory Line Project was instrumental in helping elderly people to overcome, or at least to start reconsidering, their previous negative attitude toward the computer. The project was therefore very useful to help approaching the computer for those subjects that otherwise would have been strongly exposed to the risk of being excluded from the possibilities of exploring the use of new technologies and of the Internet. This was a key point in particular in Finland, where the push toward a full digitalization of society has been particularly strong in the last few years. Participants at the focus explicitly recalled the massive campaigns that have been promoted, also at the level of government, in order to "put everything on the net": in this situation, people that cannot easily have access to the Web are at a risk of social exclusion. On the other side, the pressure to adapt to this kind of social change can further increase, as a counter effect, feelings of refusal toward the computer and the new technologies, that can more and more be seen as something completely extraneous that comes "from outside" to revolutionize the "normal" way of life:

Finnish society expects that everyone has a computer and the Internet at home, and everyone knows how to use it and ... most of the information that used to be on TV or radio or on the magazines has gone into the Internet [...] so there's a problem for those people who don't have a computer or don't have the Internet.

Among the difficulties that still may prevent elderly people to interact in a positive way with the computer and with all the related technologies, two of the most significant factors are related to memory and language. On one side, some people told that they have experienced many difficulties in keeping in memory all the different things (e.g. procedures, tasks, instructions) that are needed to make the computer work. Another problem is related to the fact that still, for many uses and specific applications, it is not possible to interact with the computer in native language, but it is necessary to make reference to the English language, whose knowledge is not commonly spread among old people. An elderly woman from Pescia tied her resentment to the computer to linguistic problems, to the fact that "the computer is in

English. I hate the computer because it is in English….I studied French and German….why do I have to learn English….we are in Italy….we speak Italian!". Moreover, especially when some problems arises, messages and prompt coming from the computer are formulated in a "technical jargon" that is quite difficult to understand.
When it comes to younger people, as it was quite obviously expected, things get quite different, as the interaction with the computer and with the new technologies of communication has become a normal part of everyday's life; we can take as an example what a young girl says about her relations with its computer:

I'm addicted to my laptop I guess, so... everywhere I go my laptop goes and I actually use it for a lot of things ... so, it's for school, but it's also for personal things, ... it's for my work and ... yeah, for my social context [...]
Yeah I'm on Internet, I think, as long as I'm awake because I get out of bed and I ... put my e-mail!

For the younger people it is normal to stay connected online all day, a girl from Pescia says "I have a monthly rate[2]…my computer is on all day even if I'm not always in front of it". Even more than the computer itself, the cellular phone seems to be the technology that youngster use the most. A boy from Lugano says "I use the computer only during the evening to chat with friends because I work during the day, but obviously the mobile is always with me!". What differentiates between youngster and elderly people, as long as the usage of the cellular phone is concerned, is not linked only to the sheer amount of time, but also to the specific tasks performed: while elderly use the cellular phone almost exclusively to make calls, youngster make a more intensive use of it, as they also exchange text messages, use it as a personal agenda, listen to music, take pictures and so on. The relation with the cellular phone can become almost symbiotic, as it is highlighted in this brief excerpt from the Rotterdam focus:

[2] A "monthly rate" refers to the fact that you pay a fixed amount of money for your Internet connection and this independently from how much time you actually surf the net. This make it convenient to remain always connected during all the course of the day.

SUBJECT A (young girl): I think I check my phone every hour, to see if I got text messages or something
SUBJECT B (another young girl): I think I check it every fifteen minutes!
SUBJECT C (middle-aged man): You're sick! It calls you!
SUBJECT B: Yeah, and actually you don't have to check it, because you hear it anyway!

What is interesting here is that, even if there is a complete awareness of the fact that checking the cell phone every fifteen minutes is quite useless, as long as every call, or every new message, is signaled with a sound, still people need to look at the phone on a regular basis; it seems that, in a given sense, the cellular phone could be perceived as making integral part of the sense of personal identity.
The use of the mobile phone for the younger generations has been part of their daily life since childhood, a girl from Pescia says "I have had a mobile phone since I was 12….it was a gift". Youngster send SMS text messages regularly. While, seniors use their home phone line when they are at home and their mobile phones when they are travelling or for sending SMS text messages with relatives abroad. They do not have anything against the mobile phone if it is used "correctly"; and unlike the younger generations, they always use it "correctly", with a note of controversy towards the youngsters. An elderly woman declares, "the mobile phone is very important for me, but I use it correctly." Two women from Pescia, for example, do not use SMS text messages, but they would like to learn to use them if someone would teach them how.
Youngster take photos with their mobiles, while the seniors do not use the mobile to take photographs. In Italy, indeed, the same act of taking photographs with the mobile phone was regarded in a negative way: referring to the cases of bullying in schools, for example, elderly said that "if there weren't the possibility to take pictures with the mobile, many problems wouldn't have even existed".

3. *How do new technologies of information and communication change the way in which we communicate with other people?*

In a certain sense, it is quite obvious that new technologies have substantially changed the way in which we communicate, but still it is difficult to assess precisely the overall impact that they are still producing in our everyday life. If we second a

"optimistic" view of technologies, we can say that surely they have enhanced our abilities to communicate, but it is also possible to hold a more pessimistic stance, by saying that this enhancement is a mere quantitative one and that, under the surface, the real quality of our communications has actually decreased. In particular, this "pessimistic" view is common among Italians elders. Seniors Italians fear that the computer can limit, or if used excessively, even destroy, social relations and interpersonal relationships. Seniors prefer face to face communications with respect to computer mediated communications. A woman confirmed that "I use the computer for necessity; I learned to used it for necessity even if I don't love it very much, while I love to listen to and meet other people! The use of the computer is very important, and I think its abuse though is a problem, it destroys social relationships…it takes away from the social relations; the personal relationships we once had, going out. Instead, people close themselves up in front of these boxes".
We reproduce here a brief part of the focus group held in Rotterdam because we think that it represents a good exemplification of these two different positions:

SUBJECT A: ...that's maybe an incredible change, that in the ancient days you were going to sit together at the table, have lunch together and ... a family discussion took place, now... now and then you have a meal together but you talk a lot ... probably we talk now more by using our mobiles, wherever we are, ... so I think we communicate more and better.

SUBJECT B: I don't agree totally with you about phoning, because I think, personally – I phone a lot of people, and people phone me also a lot – but... I also remember a time when there wasn't a mobile phone, so that you see more people... now what you have is that "oh, we have called each other, so why should we meet tonight or tomorrow?" ... we have maybe more contact with more people but ... you miss, you know ... face-to-face ... I think there's a difference.

It is quite clear that the point here is in determining exactly what we mean by "communication". As a first approximation, we can distinguish between the communication one has to make for her everyday work and other, more personal communications. New technologies have surely had a great positive impact on our abilities to communicate for our job, and this view was almost unanimously shared by

all people involved in the focus groups. But things change a bit when it comes to personal communication, as long as in this case there was no unanimous consensus on the fact that new technologies can carry only positive consequences. The view that they can also lead to a lower level of direct, face-to-face interaction was indeed shared by many of the participants, and this was in turn perceived in many cases as a factor that can lead to more superficial, and impoverished, communications. Actually, there are a lot of things that may go on in the course of a direct interaction, and may not need to use words, in order for certain feelings to be communicated and shared between people: all this non-verbal ways of communicating are clearly irreplaceable with, for example, a phone call, but still they represent a very important part of our everyday communication. Take for example the following story, by a middle-aged man that is now retired from work:

My experience is this... when I was still working I phoned my parents ... and now I have time to go them so ... every Wednesday I go to them. But my experience is this: when I phoned, I can talk much about my situation, my wife, my children, but now I go to them and I talk less, I don't... but I see what they are doing. So I communicate in a different way than formerly, when I called them.

Quite paradoxically, the impact that new technologies can have on our personal communication (as distinguished from communications made for working purposes) could be in a certain sense linked to geographical distance, in a sort of inverse relationships: these technologies may indeed enhance our ability to communicate with people that are very far from us (for example, we can chat with our friends who live in different continents), but may also lead us to hold more superficial communications with people that are nearer (for example, we can phone our parents while commuting on a train from home to work or vice versa, and this may prevent us from visiting them). An elderly woman from Pescia said "It lets you communicate with those who are far away, but it doesn't help your relationship with your neighbor".

4. Technologies and memories

The relationship between technologies and memories is another significant issue that was debated in the course of the focus groups. It is well know, thanks also to the work

of well known scholars such as Marshall McLuhan (1964) and Walter Ong (2002), that every advancement in communication technologies has a deep repercussion on the way in which we use our memory. Even if we must be careful in drawing clear-cut distinctions, as long as new waves of technological advancement cannot completely replace old practices and habits, there are no doubts that, for example, the introduction of the printing technique marked a crucial step in the development of modern civilization. Currently, with the "digital revolution" we are living in, we are maybe witnessing another important turning point. The analysis of the way in which the computer and all related technologies can change the way in which we memorize things therefore represents a point that deserves special attention.

Concerning this point too, clear differences between youngster and elderly people appear to be present, as the former are quite used to consider their computer as a natural extension of their mnemonic faculties, while the latter prefer to use more traditional ways of keeping tracks of facts, events, and information. We can take as an example the different ways in which people tend to store their personal pictures: while elderly keep them in the traditional photo albums or in shoe boxes, youngster use directly the computer as an archive. This usage has became so natural that somehow even the idea of "printing" a picture may be considered somehow as an oddity, as this young girl said:

When you have pictures on your laptop you really have to think like... oh maybe I should print them sometime, but I really have make myself do it, because it's so... I'm not used to it anymore ... printing my photographs?

Elderly people are much more suspicious about the possibility of keeping their personal memories on the computer, also because they fear the possibilities that something may go wrong (for example, a crash in the hard disk may occur), thus leading to a loss of data and information. Only a minority of elderly people use or would like to use new technologies to preserve their memories. An elder from Lugano, for example, said "the years pass, the photo albums are bulky, I asked my son to help me to digitalize the photos when he will have time". Another elderly man from Pescia declared his enthusiasm with, "I use it [the computer] as I can, I learned to use it by myself and for many years I have put in my memory, stories, and personal experiences...". In general, concepts such as "backup", or "safety copy", are not so

easily managed by elderly people[3], while youngster are more confident in their possibility of preventing bad accidents: some of them also have said that copies of all personal data, files and information can now easily be stored directly on the Internet, and this is the best way to cope with the risk of a personal hard disk crash. This point is interesting as long as it highlights how the relationship with the web can develop from a simple passive consultation toward more active usages, in which the net becomes an integral part of a self personal identity.

As was already mentioned, it is quite interesting to note that the new technologies could not completely replace traditional habits; for example, youngster in some cases reported that they still, sometimes, use written mail and postcards to communicate with their friends. What has to be remarked is that, with the advent of the e-mail, the traditional mail is now becoming something special, which can have a high symbolic value:

Every day, people get e-mails ... for me, when I get a letter from somebody ... wow! I really take time, you know ... you put it out, and you look to the paper, to the hand writings [...] for me a letter is something special you receive from somebody.

5. Conclusions

In general, the "Memory Line" project was perceived in a positive way, as long as it allowed elderly people to share together their feelings and find a way to overcome their skepticisms toward the computer by developing strong group relationships. Furthermore, the use of new technologies in order to recall and save traditional local memories helped to understand, on a practical level, that these technologies are not "bad" or "good", but they simply represent a strong potential that can be used in many different ways, depending on the specific purposes one wishes to attain. Working with younger people also was useful, as the transmission of memories to the new generation further reinforces this overall positive attitude: digital technologies were in this way perceived as something that is not in contrast with the traditional roots of society, but on the contrary can help to share and preserve them. The project has also

[3] An interesting experience was reported by a middle-aged man in Rotterdam, who told that his hard disk crashed and he didn't have a good backup, but fortunately he had all the most important files printed on paper, so that he was able to re-up all the content on a new computer. Since then, he has always kept a paper copy of all his more important files and information.

had a sort of “cascade” effect as long as it has encouraged elderly people to elaborate even more on their own personal memories and histories: some people started to write down the histories of their family, and for this purpose they have also engaged in more wide and deep communication with parents and relatives that can help them to reconstruct their past.

As long as the participation of younger people is concerned, it must be underscored that in all the focus groups, except the one held in Switzerland, they are more reluctant to openly express their views, notwithstanding the efforts made by the moderators to actively involve them in the debate. This phenomenon was particularly evident in Italy, where the moderator encouraged participants to express their opinions, obtaining “excessive” results from the seniors and decidedly insufficient results from the youngster. In fact, the seniors were almost unstoppable in expressing their opinions while the youngster were reluctant to speak; it seemed that they became shy by the enthusiasm and loquacity of the elders. This did not only happen in the focus group, but also in the rest of the workshop; one young girl said “we are here together every now and then, and we *listen*”. More than once when the moderator asked a question to the youngster, the elders answered instead of the youngster; for example, the moderator asked the youngster, “which technology satisfied you the most?” An elderly woman immediately and decisively answered, “I’ll tell you, the mobile phone!!” When the moderator asked the youngster, “on average how many text messages a day do you send?” and an elderly man answered, “oh, lots!!” During the whole focus group the elders turned to the youngster present as representatives of young people in general, with their “idea of young people today”, people who “do not have the values of the past” and that they spend all day on their computers or sending messages, neglecting social relations and what’s really important in life.

Maybe this negative and sometimes aggressive stance of elderly people against young people is also due to the fact that seniors feel that “youngsters do not listen to them”. In fact, seniors recognize the great importance of their experience and memory, and they complain a lot about the fact that they would like to speak with young people, but they do not want to listen, especially their children. For example, an elderly man said, “when I want to tell my daughter something which would be useful to her to for not making a mistake, she tells me that she prefers to make a mistake on her own than do it right with my advice…. and so she doesn’t listen to me”. The seniors underline that everything was very different when they were young; they listened to and

considered not only their parents and their grandparents as precious “teachers of life”, but also to the other elders of the community.

All things considered, it must in any case be remarked that the Memory Line Project accomplished some significant results in empowering the intergenerational communication. In many cases the project enabled the youngsters to directly hear and learn some details of local history that were not generally known, also because they are not normally included in school programs. This was useful also in order to gain a better understanding of recent history, that otherwise is at risk of being substantially neglected and ignored. This is not only due to the fact that certain facets of recent history are not dealt with at school, but also to the fact that hearing the direct voices of those who have lived in those times help to make things more vivid and salient than reading a mere historical description: as one participants to the focus in Kuusankoski put it, “history books, they always tell what happened but people, they tell how they lived, how they felt, that’s the difference”.

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Investigation of the focus group in Romania

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1. Participants

The focus group held in Romania involved the following people: 5 adults, selected from the most active participants at the realized workshops, 3 students from the same group who participated at all the 5 workshops, a moderator, an assistant manager and two local experts from the National University of Theatre and Film, Bucharest.

All the participants showed interest in coming at the discussion and compiled the questionnaire given. Only one participant does not have and does not use computer or mobile phone, but showed interest in learning how to use it at the end of the focus group. Some of the young participants have two devices, desktop and laptop. Only one participant has got digital equipment. Half of the participants have got wireless connection. As long as Internet access is concerned, only 2 young participants have access to Internet to public spaces. For what concerns the intensity of the use, 6 people have access several times a day at personal computer, 5 use the internet occasionally; all use the internet at the personal computer or at friends and at work. Only one person reports to use Internet quite rarely. Only two participants (1 adult and 1 young one) have blogs. It must also be underlined that the adult does not often update his blog, while the young person updates his blog daily.

Basically, Internet is used for instant messaging; going online to get new information about current events; going to web sites about movies, TV shows, music groups, or sports stars; watching a video on a video-sharing site like YouTube or GoogleVideo. Almost all participants consider that the digital and ICT technologies have made their life easier. Only one person has got an ambivalent position: technologies have made his life at the same time easier for certain aspects and more complicated for others.

2. Conclusions from the focus group and workshops

The general theme of the workshops concerned the methodology of working with new technologies within the project Memory Line. There have been discussions

concerning what can be done for using the new media, because there are different levels of difficulty for working with these media; the elderly people who are not accustomed with this kind of work have not enough knowledge to proceed. So, a list with possible procedures has been drawn up:

- Digitalization: text and scanning of pictures;
- Image editing, using non professional software(for example image editor);
- Sound recording, using non professional software (for example sound wave, sound forge, wave editor);
- Video recording –video editor , using non professional software;
- Web design: creating a personal blog;
- Animation –animation editor, using non professional software;
- Face editor for the puppets show.

A list of topics have been discussed within the focus group, starting from the personal history of relationship with modern ICT. Adults use them mostly with their children, or to exchange mail with friends and to search for some everyday life information. An adult lady says that she does not use any computer or mobile phone, but she is on the other side addicted to reading. For the youngsters, things are quite different, as they simply grew up with the new technology. The most commonly used ICTs are the mobile phones and the computer, while only one person uses a PDA. The preferred activities include watching films and listening to music.

As long as the relationship between digital technologies and the narration of memories is concerned, the prevailing feeling is that they can help, but it depends on the type of story and of reader. Sometimes narration is more adequate for novels than for visual technologies. There are also examples which are more appropriate for images: for example haiku is a type of poem, which is more appropriate for photos or video.

A series of practical questions also has arose, concerning for example the concrete way in which personal memories can be put into a digital story or in a blog, and how they can be made accessible to the public. A blog with the title of Memory Line can be created to explain the methods available and encourage people to make such stories. In Mihailesti, a village near Bucharest, there is also a museum with ancient

ceiling objects that can represent a valuable source of materials and ideas to be digitalized.

3. Appendix: Romanian Experts' communication

By Dr.Ioan Bracu**,** lecturer at the National University of Theatre and Film, Bucharest, and Lucian Nastase**,** assistant at the National University of Theatre and Film, Bucharest.

Here are the main steps of a digital storytelling workshop:

- Regarding the content: in the beginning the row material should be collected without interpretation, without interference in the process, limiting the number of interventions, in order to preserve the highest degree of objectivity to the original story.
- The next step would be the selection of the stories, considering that not every story could be interesting from our point of view. We must consider, above all, the impact it will have on the public.
- The young people who will gather and process the row material (with expert help) have been selected on a voluntary basis, in the first place, and secondly, they have been selected among the "furious youngsters", at an age when passing from teenage to maturity acutely raises the need to find solutions to the problems they are confronted with. This, we believe, will make the final product (which, in the end, will look very much like a documentary film) more interesting, will give it more of the value of an example, thus enabling it to fulfill its requirements.
- Processing the raw material implies multimedia techniques (documents and photos scanning, mixing sounds and musical backgrounds, cutting and editing all of these) in the purpose of underlining, of enhancing certain aspects of the story. Simply by mixing a sound background to an image can totally alter its meaning; just as well as adjoining and mixing different images, alternating them and the rhythm in which we do this, all could radically change their meaning, sometimes with no connection to the original.
- This raises the problem (of a rather ethical nature) of the extent of involvement in the raw material. A 100% degree of objectivity towards the story is impossible to attain, firstly due to the artificial behavior of the subject (it is known

that man has the tendency to act when subject of a shooting, to embellish the story, to become else, thus altering, from the start, the percentage of objectivity), secondly, due to several filters which are the people processing the raw material (who differently interprets the story, according to each personality, temper and education), and thirdly due to the personality of the consume which, in his turn, interprets everything he/she sees and/or hears. If perfect objectivity is impossible, that means we are involved in the story, we are a part of it, whether we want it or not. It is old matter of deontology and there is no such thing as absolute truth. However, what we can do is to keep in mind this ideal of objectivity and to process, to interpret the original story in a way that we do not betray the "fact of life" truth it contains.

- From this point of view we think it might be useful to also present, in the final product, the reactions of the young people, in order to deliver a feedback that might enable the elderly to take a step over the gap, at their turn. In fact, the "treatment" of the story will be, in itself, a feedback.