

## E-SPECIALIST

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**Motto:** Creating artificial intelligence will be the *biggest event* in human history, unfortunately, it might also be the *last*.

**Stephen Hawking**

**Rezumat.** *Articolul se referă la formarea, misiunea și statutul specialistului din secolul XXI, care trebuie să facă față provocărilor din epoca informațională, pe care societatea umană o produce și și-o asumă cu rapiditate. Sunt analizate caracteristicile erei digitale, supraîncărcarea informațională, impactul tehnologic, comunicarea, care le impun specialiștilor să-și sporească nivelul competențelor informatice atât în formare cât și în întreaga activitate.*

**Abstract.** *The paper is about the training, the mission and the condition of the 21-st century specialist, who must keep up with the challenges of the informational era, which is rapidly establishing and embracing human society. It analyzes the characteristics of the digital age, information overload, technological impact, communication, which requiring specialists to increasingly leverage their digital techniques, both in training and activity.*

**Keywords:** digital era, social networks, digital connectivity, e-specialist, e-governance.

### 1. Introduction

It is known that strong research structures currently work to implement biotechnologies and non-biotic intelligence, for example, it is estimating that, by 2050, artificial intelligence will be billions of times stronger than any human intelligence. He expects that until that year, technology will make even immortality possible through the ability to control cells reproduction.

Bio conservatives are researchers who are worried about this perspective, insisting that we have to fight for the preservation of humanity, as well as for the environment.

Transhumanists support the opposite, forcing the boundaries of the biology, so that the human species becomes stronger, more rational, smarter [1].

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## 2. Digital era

Two major revolutions have occurred in the recent history of the Internet: the emergence of Google (1998), who ordered information and Facebook (2004), which ordered individuals behind screens. Note that smart phones today are stronger than IBM computers used in 1969 by NASA to send the first people on the Moon.

The Facebook population has now reached 1.5 billion users worldwide; Facebook is a virus that affects an entire generation, creating addiction through overexposure to privacy and personal information.

Romania has an accelerated increase in the number of users connected to the network, with a population penetration rate of over 40% (over 8 million Facebook users). It is worth mentioning that the penetration rate of the Internet among the Romanian population is over 50%.

Those who most often access Facebook during a day are teenagers who can spend up to 7 hours with six to 10 hits, while adults do not spend an average of 30 minutes daily on this social network.

More than 80% of users have up to 1000 "friends", and 15% have more than 1000 "friends" on their personal network.

The most used device for accessing Facebook is the phone, accounting for 81% of users.

We suffer from information overload, which makes it difficult to make a decision because of too much information available. Cognitive overload is also determined by electronic messaging, which creates feelings of emergency, generating both communication and informational overload. Cognitive saturation syndrome may occur, too. Often, if the human subject simultaneously receives multiple information from multiple sources and if he or she does not have the ability to integrate, class or perform it, this piece of information is no longer a resource but a parasitic constraint that can disorient the user.

The search engines of the human mind are ankylosing every day.

Advantages of using Facebook:

- socialization / relationship;
  - maintaining relationships with friends, establishing new relationships;
  - access to information;
  - the speed of communication;
  - advertising;
  - relaxation, recreation.
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Disadvantages of using Facebook:

- exposure to privacy;
- lack of information security;
- creating addiction;
- spreading fake news.

### **3. Technological impact**

Technological developments require us to delegate more and more machinery to our relationship with the world. A study published in 2011 in the prestigious Science magazine shows that because of the increased accessibility of search engine information (Google), it is harder for us to remember information, but it is much easier for us to remember where we can find. Ultimately this can also be evidence of brain flexibility. Instead of being overloaded with information, he retains resources to use for other purposes. So the Internet has become a kind of external memory in which we store information. But this may be the explanation for reversing the Flynn effect (increasing performance in intelligence tests across generations), as lately, instead of having intelligence scores grow in future generations, there is a downward slope, which decreases .

The digital generation has become capable of doing more tasks at the same time, but this comes alongside costs in terms of time and performance. Data is mixed about the relationship between time spent in front of the TV, the use of smart phones, Facebook and academic performance. On the one hand, there is evidence that they have a negative impact on school grades, but depending on their length and nature, they can be beneficial. For example, watching TV programs with educational content in five year olds can predict reading books in adolescence. Let us enumerate, however, that if reading was a great revolution, it is now more and more stifled. The technology will soon allow for the "immersive reality" in which, for example, with your mobile phone and a pair of Oculus glasses you can design yourself anywhere you have a "friend". Interaction will look perfectly real, but not physically, but only perceived as real. Thus, reality is projected into the virtual environment. The dream of SF movies, teleporting, is almost accomplished.

In fact, some of the authors state that the speed with which technology is evolving today exceeds the capacity of the human brain to adapt to the world created by this technology; the human brain can remain behind its own creations.

Our technological extensions, such as iPhone, Apple Watch, iPad, iPod, Air Book, are synchronic and can give you the soothing feeling that you stay connected permanently no matter where you are. You can write text on your laptop while recording messages on WhatsApp, while email notifications, LinkedIn or Instagram appear and disappear.

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Because sustainable information requires a sedimentation time, the cadence of digital information bombardment decreases the substance itself. The continuous flow of news creates confusion and even anxiety. We see that Facebook is becoming a media grabber more and more [2].

#### **4. Digital connectivity**

We live in a time of hyper-connectivity, for which we agreed to give in, among other things, space and private time. People have learned to trust in the unknown and have more real life in virtual life that are populated by blogs, Facebook accounts, virtual friends, tinder, shopping apps, e-bay, electronically created odors and emailed, MP3 music and online avatars. Relationships are built on the same paradigm: we know ourselves on the internet, we have a click on the like button, we wrap around signing a petition on the internet, and we organize marches that flood the servers, with an apparent lack of responsibility or a denial of consequences. The Internet will become a repository that reminds us of the unconsciousness of our subconscious, the instant processing and regurgitation without the logic of messages. We can say that the structural change of the means of communication is not "a change in society" but a "change of society". People define themselves as "the network of friends". The vast majority see an ambitious future where internet access will be effortless and for most people will be as accessible as electricity. Mobile devices, easily wired and connected to the network, will be linked to the so-called Internet of Things (IOT), which will allow people to move in the cloud, an artificial intelligence environment for storing and spreading Information. Even reality will no longer be the one we know today, the world will open to the perception of portable or implant technologies that will facilitate the perception of an "augmented" reality. Experts expect the next decade to revolutionize human interactions, affecting in particular areas such as health, education, labor, the economy, politics and entertainment. But when they were asked to describe the good and bad aspects of the predictable future, most of the experts also identified worrying, even threatening, issues. Tomorrow's society will have to cope with concerns about ethical degradation, surveillance, terrorism, aggression, crime, which will accentuate the debate on the priority of civil liberties towards security needs. It was thought, perhaps too optimistic, that the Internet would "democratize" politics in the sense that all voices would be equally heard.

There are other elements of the pathology of connectivity, which is manifested by:

- Mobile, internet, computer games;
  - Fear of losing the cellphone, entering uncovered areas, anxious to check if a new mail or SMS has been received;
  - The fear of not getting rid of something;
  - Inability to discern between essential and unnecessary information.
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## 5. Greet the bit generation

Certainly, the impact of technology development on the young generation is a topic of widespread debate. Their brain is extremely malleable during this period of development, being susceptible to environmental experiments. In fact, children grow up in an environment where technology means everything, searching for information, friends, fun, communication, and learning. According to a report of the European Commission, in Romania approximately 69% of children use the Internet in their room on a weekly basis and 79% have a Facebook account. The proportion of children who know more about Internet than their parents is higher in Romania and Denmark than in other European countries.

Young people today do not want intimacy, they do not want private life, they expose their feelings, they publish their phone number; Want to be found, want to be contacted, want to communicate. They are amazed at how their parents and grandparents managed to get to know and coordinate their meetings without Facebook, WhatsApp, or cell phone.

## 6. The ego in digital age

The theme of "ego" is extremely fluid in the digital age. The "virtual" communities in which they build their "ego" have nothing to do with "the flesh and the bones". Virtual, I can be brother with all mankind: in the real world this is impossible. In the virtual environment, we can build and rebuild the "self" at any moment, having the full freedom to choose, in a dialogue with oneself and with others.

In Phaedrus, a platonic dialogue about love, education and communication, Socrates was worried about the emergence in writing. A book, he says, can no longer talk to the interlocutor, and anyone can interpret how he wishes. Note that Socrates shares all these concerns in writing. The emergence of social networks has changed the nature of human interactions. Become friendlier, being hundreds of friends on social networks, or more shy, because we no longer train our socializing skills? Social networks are a good environment for people with certain deficits in social skills to make friends, being an effective way to get social support. Facebook may, however, lead to depression. There are studies that show that Facebook is associated with depression, but on the other hand, it seems that this only happens if there is an individual vulnerability such as low self-acceptance, global self-evaluation of others, etc. Unlike the epistolary gender that gave thanks to the interpersonal relationships of the past centuries, communication on social networks is marked by rage, febrile, does not give the time for meditation and reconsideration. We prefer to transmit emotions quickly, with a push of a button. Often, the divergence of opinions turns into hostility. The absence of communication "tête-à-tête" takes precedence over the mimics and gestures of the interlocutors, the intonations of their voice, the written dialogue becoming vague and often altered.

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## 7. Romania and the Europe 2020 strategy

The Europe 2020 strategy aims to prioritize smart growth, like an economic development based on knowledge and innovation. Flagship initiatives address topics such as "Innovation Union", "A Digital Agenda for Europe", "An Agenda for New Skills and New Jobs" and so on [3].

At European level, the capacity of the research and innovation system (R-I) is highlighted by three main indicators: human resources, system attractiveness and funding.

Table 1 presents comparatively these indicators for the European Union and Romania, valid in 2014.

**Table 1.** Indicators for the European Union and Romania, valid in 2014

	<i>Human Resources</i>	<i>The attractiveness of the R-I system</i>	<i>Funding</i>
Romania	0,421	0,087	0,218
European Union	0,557	0,478	0,585

It is clear that efforts need to be stepped up to increase R-I demand and supply to get closer to the European Union average. In particular, we can observe the paradox of the fact that Romanians are known and feared hackers, but their talent in computer science is not found in a Romanian production of new technologies.

In the digital age, universities in Romania need to make more use of e-learning, learn how to learn, so that graduates are a flexible class capable of acquiring new skills.

By 2020, the proportion of jobs requiring a high level of training in the European Union is estimated at over 31% of the total.

In the services sector, for example, there is a clear tendency to expand the range of competency due to "unusual services". ICT specialists must, for example, acquire marketing or management skills, and services staff in IT. There is an increasing demand for transversal skills, such as analytical, communication, linguistic, and so on. By 2020, more than 17 million new high-skilled jobs could be created in the European Union, such as leadership in administration, marketing, logistics, teaching and technicians.

The need for training and reforming the highly skilled workforce has also led to the creation of a European meta-framework for qualifications, an instrument capable of facilitating and promoting the transfer, transparency and recognition of qualifications and competences at European level. In this context, was established in Romania a National Center for Qualifications in Higher Education (CNCSIS), which established the structure of qualifications, their national recognition, as well as their compatibility and international comparability.

## 8. E-Governance

Electronic governance implies a process of digitization of the public sector, facilitating the interaction between public institutions and between them and citizens [1].

E-Governance is essential for eliminating or simplifying bureaucratic procedures, strengthening the administrative capacity of public institutions, fighting corruption, improving access to information, and so on. E-government leads to resource and time savings for both public institutions and citizens, providing them with equal treatment, eliminating arbitrary actions.

One of the key principles of e-Governance is the security of IT systems, which is ensured by the assignment of electronic identities, telecommunications security, confidentiality, the use of digital signatures, etc.

Security of informatic systems must prevent illegal access to databases, illegal interceptions, fake information, computer fraud, unintentional use of software, and so on.

In Romania, Law 161/2003 established the main objectives, terms and conditions of use of the electronic procedure for access to public information and services as part of the public administration reform. For this purpose, the National Electronic System was established, with the components of "e-government" and "e-administration", referring to central and local public administration respectively [7].

## 9. E-Specialist. Conclusions

From the above, it follows that, at present, the process of training an e-specialist has the following characteristics:

- e-specialist training starts from the earliest age, because many children learn the electronic tablet just before they learn to walk;
  - initial training in e-specialist school is enhanced by e-learning teaching and pedagogical practices, which we can synthesize in the "tabletop to tablet" paradigm;
  - learning processes are increasingly based on "digital memory" provided by digital technologies, so learners need to know where to search for information rather than memorize it;
  - learning is often affected by information overload, making it difficult to select useful and nonessential information;
  - digital connectivity has a number of advantages, such as the speed of communication, but also many disadvantages such as exposure to privacy, the
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spread of false information, the creation of addiction, and especially escape or even alienation into a virtual reality;

- structural change in the media is not a "change in society" but a "change of society";

- means of communication become as important as means of production;

- the Europe 2020 Strategy, to which Romania is a party, formulates requirements for graduates to be a flexible and lifelong learning class, and to acquire new skills at all times;

- the acquisition of new competences for the purpose of training and reforming the highly skilled workforce has generated the European meta-framework of qualifications, assimilated in Romania, which allows national and international recognition of qualifications obtained in universities in the European Union;

- the creation of e-specialists made e-Governance possible, also introduced in Romania by Law 161/2003, thus facilitating the relationship between public institutions as well as between them and citizens. E-Governance is one of the most modern and necessary applications of the digital age.

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