



# The Human Needs of Smart Nations in the Era of Artificial Intelligence

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**Abstract.** Understanding how the mechanisms of intellectual development work allows us today to see trends in the impact of digital information and communication tools on cognitive abilities. Digital technologies not only change our lifestyle and give us new ways to communicate, but also redesign the mechanism of our brain, our cognitive abilities. Technologies are improving exponentially, and the Internet is rapidly transforming the intellectual abilities of the average person. Artificial intelligence is capable of surpassing man in many fields of activity already in the XXI century. For many people modern benefits of a civilization turned out to be factors not of development, but degradation. At the same time, due to the spread of the Internet and the general improvement in the comfort of life, there are increasing differences in the levels of development of individuals. New ways of effective thinking for preservation of human brain advantages in its already started competition with artificial intelligence appear as mankind reaction to the current situation. One of such methods is called trouble-hacking: with its help it is possible to search for the best way to solve a wide range of tasks algorithmically. Trouble-hacker is a perfectionist of systems; the inventor of non-standard ways of the solutions of problems, applying them in practice; a prototype of the person of the future who will have an indisputable superiority over artificial intelligence.

**Keywords:** Trouble-hacking · Artificial intelligence · Superpowers · Information and communication technologies

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## 1 Introduction

Cumulative knowledge is an integral part of a nation's development. According to Vivian Balakrishnan: "We live in a world where the way we create values is determined by how we work, how our societies communicate, mobilize and transform. Everything has changed. The time for robots is coming. If we do nothing, there is a danger that the middle class will lose their jobs. So we are talking about the distribution of opportunities. This is why we are so obsessed with education and the acquisition of

future skills. The point is that with new jobs, we would have people with the right skills. We have to compare our population with the new jobs that have been created.”

Our country also understands that in the era of the digital revolution, when new jobs are taken up by robots, there is a need for the middle class to acquire new skills in order to compete with robots and to adapt quickly to changing living conditions. Consequently, there is a need to educate people about new jobs, constantly create new ones, and inform people about the knowledge and skills they will need in the near future. Accordingly, society needs to invest in additional training, organizing education for people who will go to retrain from obsolete occupations to promising occupations. According to Vivian Balakrishnan: “This is hard work. It is not a glamorous job. It’s not a quick solution. But it is a real solution...”

## **2 Background and Methodology**

If we talk about the values and needs of Smart Nations, it is enough to refer to the Russian-English dictionary to list the qualities that such a person will have: fast, energetic, smart, fashionable. In the opinion of the youth surveyed, the type of Smart-Man is more like a certain intelligent machine that will work quickly (mentally, not physically), immediately make complex decisions and new discoveries. Such a person will have outstanding intellectual abilities, but at the same time they will lack physical functions. The new man will invent robots (including software products) that will do the work for them, but at the same time, difficult work, where it is necessary to use willpower and overcome obstacles, may gradually disappear, but it is this type of work that originally turned a monkey into *Homo sapiens*.

Thus, with increasing comfort of life we launch a vector of intellectual and physical degradation of man as a species, while technology is developing at a fantastic pace. It is likely that in the near future we will be able to watch a huge mass of people who are no longer in demand on the labor market because their physical and intellectual functions are incomparable to robots. Man as a working unit can become unprofitable in many areas, and we need to find an advantage that will give mankind an undeniable superiority over machines.

It is already becoming increasingly difficult for a person to compete with modern digital technologies. Humans are beginning to demonstrate inadequate behavior and professional burnout more and more often. Neural networks calling and communicating with customers are currently a perfect example. Just one program can replace hundreds of employees. The program does not have a bad mood, the program has no desire to present the activity in front of the boss, the program does not need rest. It is not difficult to compare the profitability of hundreds of employees who must be paid their salaries every month, and many related problems should also be solved, with one program that was purchased once and does not require significant investment.

We see only the beginning of active introduction of artificial intelligence systems, but this already makes us think that in the nearest future people without the unique skills which are not reproduced by machines, will not be in demand on the labor market. In other words, it will be unprofitable to hire these people and they will be left without a source of livelihood. We remember the enormous negative consequences of

the Great Depression (1922–1933) caused by the world economic crisis. But what if, in the future, we get a new Great Depression caused by the uselessness of man as a working unit? Our children of today will face this, and in order to prevent this, we need to come up with ways of thinking that are not reproduced by machines and that are in demand by the market. But what methods could it be? Simple intellectual abilities like good memory and attention are reproduced by machines, as well as the presence of any knowledge, including in the field of medicine. In our opinion, the only human thinking ability that is not simultaneously reproduced by machines and can make commercial profit is the ability to build new systems, create and improve them.

In 2019, a contemporary researcher I.V. Volochkov invented the methodology of improving systems called trouble-hacking and published it in his book “The Realist’s Diary: a book about money, relationships and meaning of life” (Volochkov 2020).

Let’s turn to the term trouble-hacking (literally: trouble – problem, unpleasantness, and hacking – searching for loopholes). This is the methodology of improving systems; a set of methods and means aimed at the invention of non-standard ways of solving problems, and their application in practice. Accordingly, a trouble-hacker is a universal inventor of original, creative ways to solve problems that arise in this or that area of life. Trouble-hacking works on the basis of special algorithms and methods, some of which use Soviet engineering technologies and authoring software products. For example, one of the algorithms of trouble-hacking “Vector” allows solving problems in business and life through the use of a special database – “Register of trouble-hacking inventive ideas” (Trouble-hacking technologies 2020).

Also, trouble-hacking contains methods of improvement of internal systems of the person, such as system of reception of pleasures that, in turn, triggers a steady vector to self-development in the person. In other words, trouble-hacking is a methodology of algorithmized creativity and self-development that can have significant commercial benefits, which makes trouble-hacking a skill of the man of the future that will strengthen their superiority over machines.

### 3 Discussion and Results

Modern knowledge about the influence of electronic information technologies on cognitive abilities of an individual gives us an opportunity to assume the ability of human brain to change. According to American psychologists G. Small and G. Vorgan, the brain of the modern man is still evolving nowadays. It seems to be adjusting to changes in the world and forms new neural chains: there is an ejection of neurotransmitters, dendrites appear from neurons and new synapses are born.

“Perhaps we are witnessing one of the most unexpected, yet most significant, breakthroughs in human history. We can assume that it starter from the moment when cave men managed to ease their life with the trade tools.” The authors of the book take a more cautious stance, asking: “Will the natural mind of man be able to keep up with such a rapidly developing technology?” (Small and Vorgan 2011).

The quality of an individual’s interaction with a computer depends on his or her age. For example, in the range from 35 to 50 years old the perception of a person is quite flexible, and people who have a certain level of education and constantly work on

the computer, have got a good dynamics to the development and assimilation of new knowledge (Sokolovskaia and Volochkov 2019a).

People over 60 are called “digital immigrants” by specialists. The thinking formed in pre-computer times, the sluggishness of thought reactions makes their work on the computer ineffective. At the same time they have some advantages – while the brain of such a person perceives the flow of information slowly, its neural networks quickly perceive the “picture” as a whole. The latest research shows that the brain of adult people retains flexibility and efficiency throughout the whole life cycle (Sokolovskaia and Volochkov 2019b).

Another fact: spending too much time in front of a computer (games and social networks) has a negative impact on cognitive functions of young children. Long use of the computer leads to the fact that young people do not develop the necessary sections of neural networks, which are essential for the transition to a new level of development, when the brain begins to think not only in specific categories, but also in abstract ones. For example, to experience feelings not only towards oneself but also towards other people, i.e. to show empathy.

Unfortunately, there are already statistical data on the underdevelopment of young people’s frontal lobes of the brain, and this means the inability to reason logically, further lag in the development of intelligence, potential immaturity (Gerasimova 2017).

However, there are already the first generations of people who have not seen the “pre-computer” world, who have new skills compared to their predecessors. They are very good at electronic technology, are able to manage processing of large arrays of information, can solve several tasks simultaneously. They are used to constant consumption of information, the brain of these people requires a new load all the time. However, life in such an information flow also leads to negative consequences: superficiality of perception develops, there is a tendency to bring up simple topics, to procrastination, when large projects are postponed, and small problems are solved instead (Sokolovskaia and Volochkov 2019a; 2019b).

The experts of the III International Scientific Forum “Step to the Future: Artificial Intelligence and Digital Economy” came to a common opinion that artificial intelligence today is not only an engineering-mathematical and IT-discipline, but also a complex of technological solutions, which allows simulating the cognitive functions of a person and obtain the results comparable to at least the results of human intellectual activity in the performance of specific tasks.

During the discussions held in the section “Education and science – the disharmony of co-evolution” it was noted that the growing specialization in the division of labor leads to the emergence of several types of specialists working in the same field, who have common competencies, but differ from other employees with one unique ability – to collect, systematize and present systematized knowledge for students of specialized educational courses that are preparing to become specialists. This narrow specialization of an employee transforms him/her into another role – an employee of a university or an academic institute. As a rule, such specialists lose understanding of the needs of real production. The situation of co-evolutionary development arises: producers develop knowledge of their production in reality, while specialists in higher education institutions improve their own competencies based on the study of production processes as

teachers and scientists. Therefore, the problem of universities and academic institutions lies in the parallel development of competencies that often do not meet the needs of society.

According to the author of methodology I.V. Volochkov in his book “The Realist’s Diary”, “the key algorithm of trouble-hacking (the algorithm of effective problem solving) is actually able not only to change our psyche and way of thinking, but also solve a lot of problems, from theoretical to purely practical” (Volochkov 2020).

#### Prerequisites for creating trouble-hacking methods

The main tool of trouble-hacking for improving external systems is the Algorithm for Effective Problem Solving, created by I.V. Volochkov, which can be considered as an improved method of brainstorming, as well as a development of the theory of solving inventive problems of technical nature, which was used in the Soviet Union more than half a century ago.

Here are some important principles of trouble-hacking: the right direction of the thinking vector to get the most rational way to the goal; striving for the ideal final result; definition of the goal core with the minimum cost of resources (time, money, labor, energy, etc.).

Trouble-hacking allows inventing and applying methods of problem solving, many of which cannot be invented without knowledge of trouble-hacking methods or theory of inventive problem solving. But, what is most important, such creative process cannot be reproduced by machines. Trouble-hacking allows not only inventing new systems and improving existing ones, but also using resources more efficiently. Thus, a trouble-hacker can increase the profitability of a business and reduce costs, which guarantees commercial benefits not reproduced by machines.

In comparison with traditional methods of defining and solving problems, trouble-hacking allows doing the same much more effectively. The method of trouble-hacking Algorithm for Effective Problem Solving for this purpose searches for ways to improve the ideality of all systems involved in a particular problem, as well as analysis and elimination of risks, the so-called kernels of interference (Volochkov 2020).

In the algorithm of trouble-hacking “Vector” this process is automated at the expense of the software package “Register of trouble-hacking inventive ideas”, in which ideal states of systems and ready-to-use ideas for different spheres of life are set in advance, and on their basis it remains only to come up with concrete scenarios of actions in practice.

In addition, the Algorithm for Effective Problem Solving involves dividing the goal, which is set as a result of solving the problem, into sub-targets, i.e. a number of consecutive steps on the way to the desired outcome. Further, the state of ideality is searched already for systems from the sub-targets. Thus, the process of problem solving is simplified, because the problem is broken down into a number of small ones, whose solutions at each stage will lead to the final goal, not to mention the fact that the domino effect may work – having made one of the steps, we immediately, bypassing the other sub-targets, will come to the result (Volochkov 2020).

Mastering the skills of trouble-hacking enables a person to solve tasks according to a single algorithm. Mathematically verified thinking order performs the function of software, where each subsequent step follows the previous one. The questions asked when moving towards the sub-targets are broken down into sub-questions, formatted

and grouped into a clear system with further elaboration of each component with a clearly projected result. Remembering the ideas of the great philosophers of the past – Aristotle, Descartes and La Mettrie – that man is a machine, we can imagine a modern individual as a bio-cyborg capable of finding the most rational solutions to any problem.

According to a study by Science magazine, “the Internet has become the primary form of external or transactional memory where information is stored collectively outside of us”, and consequently our brain has become dependent on the availability of this external source of information. This is all connected with the image of trouble-hacker as a man of the future, where the individual plays the role of a self-propelled computer with the unlimited Internet instead of limited memory, which almost makes them a superhuman thanks to such a superstructure over the mind. Thus, we can conclude that trouble-hacking is a new way of thinking that can give humanity superiority over artificial intelligence.

## 4 Conclusions

Today we live in a new reality, where the successful development of a country is determined not by its geographic location and the availability of sufficient fossil resources, but by the quality of the intellectual potential of the population. It is human capital that today forms the key trends in the development of national economies of the world. Accordingly, it is not the ability to work routinely that comes first, but creative thinking.

Unfortunately, the conveniences of the modern world are not conducive to the development of human intellectual abilities. People live in phones and computers, wasting time on the consumption of useless Internet content. Against the background of the general development of artificial intelligence systems and robotics, the children of today may in the future be commercially unprofitable, which may lead to mass unemployment and global social upheaval. Considering this danger, we need to develop those features of thinking in the society that cannot be reproduced by machines in the foreseeable future. Trouble-hacking may be one of the solutions to this problem.

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