



### Can an IT-Company like Apple Be Established in Belarus?



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*Andrew Schumann:* The school of Soviet mathematics gave a huge number of important theorems proved in different areas including as well branches connected to IT-theory such as theory of recursion functions, theory of automata, non-classical logics, group theory, graph theory, etc. This school was very strong, maybe one of the strongest all over the world in theory of IT, but not in praxis of IT. How can you estimate abilities of recent Belarusian mathematicians working in the IT sphere? Can Belarus become sometime a leader in IT and appear more effective than for example even India? Can Belarus produce own IT?

*Valery Tsepalo:* In order to develop information technologies and implement them we should have something else, not only talented mathematicians and engineers. I agree with estimations belonging to Walter Isaacson who named Steve Jobs and Bill Gates supernovae, superstars. They appeared, lighted up, because all – space, time, person – should have converged in one point so that the creative idea would be fruitful. And for them all converged indeed. When someone tells me, let us make so that in the Hi-Tech Park of Belarus Apple will appear, I emphasize: let us start with small project – let us create, for example, the company like Boeing in Belarus which will supply all merchant fleet all over the world and which will produce lunar rockets, etc. And so now Boeing is only 1/12 of company like Apple. Why do we want to start up with something large? Let be with something small so that to fly to Mars and to Moon. The problem is that the appearance of the largest IT-companies was a phenomenon which could not be predicted. Similar phenomena arise suddenly and not clearly how. Therefore any expecting that a theoretical product can lead to similar results, I would not accept.

Let us reflect, why all largest brands in IT sphere are located in the USA. The EU is large enough, about 500 million persons. Nevertheless it is possible to name only SAP as a well-known brand. India has more than billion population, but also there is difficult to name their own brand. In China the same is observed. In Japan we can find good brands in microelectronics such as Sony, although the given company suffers now heavy losses and every year a situation for them only worsens. Samsung for a long time has already bypassed all Japanese companies.

The matter is that for establishing big IT companies an appropriate environment which takes place in the USA is necessary. Belarusians are creative as well as Americans, Germans or Japanese. The main task of our Park has been in creation of the environment which presumes something valuable to be born. For us, first of all, there should be a critical mass of engineers. In the Silicon Valley the following significant factors have converged: talented open-minded engineers and creative thinkers like Steve Jobs (who even did not finish his education in a humanitarian speciality). But also in his brilliant case the business started with an engineer. If there was not Stephen Gary Wozniak and there would be no

possibility to enlarge staff of engineers in the company, Jobs could not have been successful as the organizer of the biggest IT-company. Developing creative ideas without a staff of engineers is not productive at all. Traditional mathematical education is quite good, as it gives a wide world-outlook that can be applied in IT, but it is not enough for success.

For the Western experts the outlook is a little narrowed, they are ground at once on narrow tasks: encoders and other. Though in the field of custom programming there are outstanding experts in the West. The first thing that we should do in the Park consists in a transfer of high technologies from the USA to Belarus. This transfer should make the Belarusian IT-creativity successful and effective.

What is creativity in general? It should be obviously in the common trend. For example, one outstanding Belarusian scientist about 8 years ago invented a unique method of magnetic tape data storage. Thanks to this method the information can be stored longer and more. Tape chemical properties are in that it can be stored in less whimsical conditions. But the problem is that on magnetic tape nobody stores information now. It is a deadlock branch. This scientist fulfilled a serious study but when you are out of understanding, what now is in mainstream, your opening will not become IT-project.

*Andrew Schumann:* At the beginning the IT development in the West and in the USSR was independently and in absolutely parallel ways. The USSR practically did not have a time lag (maximum from 1 to 2 years). For instance, the first own computer with a safe program, MESM (in Russian *МЭСМ*, Small Electronically Computing Machine), created under the supervision of Academician Sergey Lebedev (1902–1974), was put into operation in 1951. The IBM mass-produced the first industrial computer IBM 701 in 1952. Since then the IT development in the West has been much quicker. One of the explanations is that the management and decision-making in the USSR was less effective (or ineffective at all). For example, Arcady Zakrevsky, the great Belarusian computer scientist, participated in the creation of first computers in the USSR and became the developer of the first Soviet programming language for logical tasks LYaPAS (in Russian *ЛЯПАС*), told me in the interview that in the 1970s the country leaders made a decision to stop all original developments in the field of computer technics. The decision was to follow copying IBM's samples, though sometimes in technical implementation it appeared more challenge, than a creation of own samples. Since then developers of Soviet computers have called their “child” Stolenscope (in Russian *Драгоскоп*) for fun. After the USSR had quitted race for creation of more and more perfect computers, IBM became the world leader in this sphere. In Belarus there is an authoritative political regime that is based quite often on Soviet ways of management and decision-making that are not effective as we have just said. Could you please describe how decisions are made in the IT policy in Belarus now and who are main actors in decision-making? What is effective and what isn't in comparison with the Soviet Union?

*Valery Tsepikalo:* The main problem of the Soviet Union consisted in that the state was a unique customer of any innovations. At the same time, the work cost in the USSR was the lowest. As a result, developing high technologies economically was not favourable. If we consider the situation in the Western countries, thanks to high salaries they have been forced to implement high technologies in production for possibility to reduce expensive work places. On the other hand, the Western workers had a lot of money on hands and they had opportunities to purchase expensive computers. So, the first computers which were done by Jobs 25 – 30 years ago cost from 2 to 2.5 thousands USA dollars. Now this sum is equivalent to about 5 thousands USA dollars. Who in the USSR could have bought such computers? In the Union there was no economic basis to accumulate the IT-companies at all. The low payment in the USSR has prevented economic development.

The same case has been observed in Belarus now, there is a weak capitalisation in society, low salaries. We are the export-oriented country. Customers of residents of the Park are located in the USA, the West Europe, some countries of Asia. Among all our orders Belarus has only 10%. Why? A bright example. Yesterday I parked my auto. I should pay for parking about 25 USA cents to the young, healthy worker who I guess receives a very little salary. For economic reasons using this man is more favourable and effective, than to deliver any system with the difficult software, to have possibility to pay, say, by a mobile phone. Accordingly, there are no instruments, requirements and stimulus to install system of meters or electronic parking. If you were forced to pay for his job \$1,300, in this case it would be more favourable to deliver e-meters.

I think that the main obstacle of IT-developing the Soviet Union was not that samples were copied. After all at first Taiwanese, Koreans have successfully copied. Recently China has copied. After all when you copy, the own staff of engineers which know already all recent trends and last specifications is being organized for you. In this critical mass the own products start to implement. So in this way ADC in Korea developed. So in this way there appeared Japanese brands in mechanical engineering – first they started with copying the American developments. I have no anything against copying as a form of the transfer of high technologies. But there should be an appropriate market environment. Without it all is useless. In the Soviet Union the problem was not that they copied, but that there was no market environment. Say, a computer was made and then there was a real problem to put it into operation. The ministry should have required pointers about implementations from the works manager. The director had other estimations of his success. He was evaluated by the number of work places and if he implemented computers this number of places should have been reduced. At the level of Soviet chiefs there was a tearing away of new technologies. For the development of high technologies in the USSR there was no appropriate economic and social environment, there were no requirements for a real sector of economic activity. This was a principal cause of backlog of the USSR.

*Andrew Schumann:* In Belarus there are many examples of implementing IT into the everyday life. How and why is it possible to develop e-government and other IT implementations under conditions of the Belarusian authoritarianism? How far can e-government and e-democracy develop in Belarus recently? What may be expected in the future?

*Valery Tsepka:* On the one hand, in Belarus something is done already in the field of e-government. On the other hand, as a whole we essentially lag behind. It is not the problem of us as developers of IT-products. We did a similar production for many countries: the USA, the Great Britain, Kazakhstan, and Ukraine. For example, we did it for urban authorities of Los-Vegas. Implementing e-government for us faces the same negative economic and social reasons which were in the Soviet Union, too. The problem is that the government in itself should be electronically-oriented. After all, the implementation of electronic government changes all administrative procedures. It should involve modifying the structure of management by ministries, changing mechanisms of interaction between ministries. As a result, it is necessary to rewrite all regulations.

Thus, e-government more is a management reform in the country, than simply a certain implementation of electronic units. For us as for developers of IT-product in Belarus it would be easy to realise this task within the context of quite good past developments which we did for other countries. But here the government should understand that we should pass through a serious management reform, e.g. to force chiefs of the first level to manage by means of computers.

The task of e-democracy is to solve the question to make decision-making and actions of authorities transparent as much as possible. Especially, in the economic sphere the power should be as much as

possible understandable and open, e.g. delivering plot allocations through open auctions. The greatest problem for democracy is in corruption. For this purpose there should be a complete transparency of mechanisms of decision-making. In Singapore the Prime Minister is the most highly paid employee. He earns about \$2 million a year. In the USA the President receives about \$350,000 a year. Once the Prime Minister of Singapore told to a journalist that Ferdinand Marcos in Philippines receives, say, \$9 a year, but his personal accounts in the Swiss banks content about \$9 billion and what is better, the high salary of employee or corruption. It is obvious that first of all there should be transparent decision-making in economy. Although it should be everywhere, e.g. in recruiting on a state position, on an academic position etc. For denying corruption it is necessary to beat out the economic chair.

*Andrew Schumann:* The Hi-Tech Park in Belarus is a good sample of the Belarusian innovation policy. The Park has been quickly developed. What are its main goals? What are the most interesting and promising projects in the Park recently?

*Valery Tsepka:* The Park really became the successful project. For six years thanks to creating the Hi-Tech Park the export of Belarusian computer programs has grown more than 2000%. The Park fulfils also an important role of integrating Belarus into the world trends. In my article *The Remaking of Eurasia*<sup>1</sup>, published in the journal *Foreign Affairs*, I considered a geopolitical situation of integration on the post-Soviet territory under the conditions of the Russian crisis connected with disintegration processes on Caucasus, low costs of barrel of petroleum etc. At that time I worked as the Ambassador of Belarus in the USA and in talks to Belarusians, Ukrainians, Russian, working in the Silicon Valley, never at all it was supposed that Belarus can sometime export IT-products. Then it seemed that Belarus can do only manual labour. After the disorder of the Soviet Union there was a big problem of employment and nobody thought of quality of employment. There was no system of retraining of personnel. And I was convinced as well that we cannot work in the sphere of IT.

We could make the Buran spacecraft, but it is not an innovation at all, it is not a kind of high technologies. From my point of view any innovation assumes at once commercialisation. You can make up any project, let be the greatest invention, but nobody will give you money, if this project does not assume a commercial result. In this meaning it is a bit strange that the Soviet Buran spacecraft is not an innovation, but iPhone is an innovation. In the latter case the market as an ultimate goal of project was ever visible. We could have done difficult things in the Soviet Union, but their majority was not entered in modern economy.

For this year we have made thousand projects for Belarusians and foreign customers. Our partners now are Google, Reuters, Dun & Bradstreet, and so on. For Belarus we do only 10% from all our projects, thereby for the last year we have realised for Belarus about 8,500 projects. I am pleased that many interesting projects start gradually to be implemented in our country too – in the field of management and so on. Recently, there was published an article in *BusinessWeek*<sup>2</sup> and it was devoted to the project Viber that was realised in Brest (Belarus). Another our well-known project is the World of Tanks<sup>3</sup>.

*Andrew Schumann:* Which global trends in IT can be emphasized? Might Belarus be in trends? Which ones?

*Valery Tsepka:* In 2002 I asked the Minister of Finance of the USA, Paul Henry O'Neill what is the next big thing. Always in the American economy something was a main drive at this or that stage: mechanical engineering, atomic engineering, aircraft construction, biotechnologies, information technologies. But there were also periods of crisis. Here it is possible to remember the crisis of dot-

coms in 2000. The Minister told me that if he knew the right answer, he would not be the Minister of Finance of the USA, and would be a very rich person. The matter is that to predict the development of new trends is a too difficult task. When iPhone and iPad have appeared, first there were many critical recalls in top journals such as *BusinessWeek*. But these projects all have shot.

At my modest sight, most likely, IT-directions linked to mobile-phone applications will become priority. There will be a further integration of phone and computer. Programming for mobile phones, for mobile terminals will develop. Many our residents actively attend to this trend now. We open laboratories at the Belarusian universities where all these programming languages are studied. For at least 5 years it will determine a fashion, trend. Also, all programs linked to cloudy computation which allows us to develop customisation and personalisation will develop rapidly.

**Notes:**

1. <http://www.foreignaffairs.com/articles/53811/valery-v-tsepka10/the-remaking-of-eurasia>
2. <http://www.businessweek.com/articles/2012-08-23/the-skype-killers-of-belarus>
3. <http://www.businessweek.com/articles/2012-04-19/is-world-of-tanks-the-belarusian-farmville>