

## MEMORANDUM ON NEW FIELD FOR TRIZ APPLICATION AND DEVELOPMENT: TRIZ IN VIRTUAL WORLD (BUSINESS PROPOSAL FOR YEARS 2005-2020)

### 1. What we are engaged in:

Starting from 1995, we (by we I mean IID - Institute of Innovative Design, Krasnoyarsk, Russia) are engaged in innovation development and designing (in other words, we are professional inventors) working by contracts with largest corporations from USA, Japan, Germany and Russia<sup>1</sup>. We don't have a permanent customer or partner.

This forced us to look for new ways - in particular, to work out "*a strategy of innovation intervention*", - which implies creation of a large package of intellectual property in the field of information and communication technologies. A new class of inventions - namely, business methods emerged recently in this field.

In 2004 we have made several inventions associated with the development of new digital media technologies. One invention ("Method For Remote Registration of Property Rights Over Media Items") was properly documented and submitted (in electronic format) to the USPTO. Another invention (actually, this invention includes a "bundle" of inventions – "Method and system for selling consumer services") needs to be translated and optimized. The third invention (this invention also includes a "bundle" of inventions – "Method of the removed dialogue with use of video communication and system of synthesis, analysis and protection of images of the users") needs to be optimized too.

The cost of the first patent (approximate) would be US\$5M, while the cost of the second and third inventions would be US\$50M each. We have potential buyers for these inventions - in the USA dozens of companies are engaged in purchasing patents in the field of digital media technologies. A set of articles was compiled that gives an idea of the actual cost of patents in this field.

We have compiled a tentative plan for business development for the nearest future. During 5-7 years we can make up to 50-70 inventions and sell them for up to US\$0.5-1B (with an average price of one patent being US\$10M).

Many TRIZ experts could be involved in work on the project during a period from 2005 to 2020.

### 2. Why we are engaged in digital media technologies?

We have formulated very simple questions given below:

- what field is a leader in terms of turnover of money and investments (in other words, in what field the Main Useful Function (MUF) is maximum?
- what field of modern industry is currently progressing so dynamically that a stepwise growth is expected in this field in the nearest future (i.e. period of invention implementation is minimal)?
- in what field only "pure brains" are required, while research, experiments and development activity are not needed?

All three conditions are met only in the field of information-and-communication technologies.

A new class of inventions has recently emerged in this field - business methods.

Since 1998 it is allowed to patent business methods, which are not based on new engineering solutions and technologies, but contain only organizational and program-related procedures (such an amendment to patent law was enforced by court).

### 3. Actuality of this Issue

In the years immediately ahead all information, communication and entertainment media systems would be integrated into a single Global Network and a new virtual world will be created, in which absolutely unknown at present systems will rapidly get synthesized and progress.

---

<sup>1</sup> Information sheet on directions and main results of work could be sent via E-mail by request.

What existed previously? The human and the actual world. It was a small world, palpable, convenient and inhabited, a comfortable world. It included a family, acquaintances, work and city...

What will exist in future? The human, the actual world and the virtual world (a system shell over the society). This system shell over the society will gradually draw all people into the system and involve all people into mutual contact. It will bring an individual human into contact with the world community. It is horrible for the human, if it turns to be a confrontation (world community against the human). And it will be rather pleasant, if it is an interaction (world community will make the life of the human easier). The human will not be able to select. The human will be unable to live without interaction.

What problems will arise in this case? Here are some obvious problems, to name but a few:

- **The problem of coming into contact (interaction).** The contact should be simple, intuitively understandable (consisting in a pointing gesture of a finger or in a short utterance - as it is the case with contacts between people). There should be no power source. For example, the warmth of the human body should be used as an energy source. Or something renewable (for example, self-condensation of moisture from air and catalytic decomposition of it into hydrogen and oxygen, fuel cell). An engineering system as a continuation of the human is an easy "addition". ES (Engineering systems) should be "united" with human: it should be able to feel the human, to recognize him, to test him and to adapt itself to his needs. There should be no software programs and operations with these programs (for example, chips instead of programs).
- **The problem of human intellect retardation as compared to AI of virtual world.** It will first become explicit in 2010-2015. Then the process of retardation will be precipitant, the number of people understanding what is going on in the virtual world will be decreasing gradually. The human will lose his capacities "to do something himself". Engineering systems will act instead of him. A tremendous variety of functions and engineering systems will appear. Still greater number of functions will remain unknown for the human during the entire life. A special system is required, which will identify what the human wants, what can be offered to him and what things require explanation. There should be a system of automatic advisers. The main useful function of the virtual world: designing and implementation of assistance to the human.
- **The problem of emotionality in interaction.** Cerebral cortex is responsible for the logic, while sub-cortex is "in charge of" emotions. Why does it happen that the emotions are stronger than the logic in the humans? The cortex of hemispheres exists only for several thousand years. However, the sections of the human brain, which are responsible for emotions, exist for millions of years. It means that the cortex of hemispheres, which is responsible for logic, is thousand years younger than the brain sections, which are responsible for emotions. Consequently, a human is rather an emotional creature than a rational one. More often than not our cerebral cortex is inferior to strong and developed sub-cortex. The virtual world is a set of engineering systems without any emotions, built on logic. The virtual world is characterized by instantaneous transfer of information and equally instantaneous reaction of participants of virtual world. What's to be done with emotional outbursts, for example, after the terrorist act, at the moment of electing the president (he can be elected during 1 hour), referendum on sending the criminal to the electric chair, etc.? The former "inertia (time delay)" will not exist any longer (there is no need to wait until the newspapers roll off the press or until the president speaks on TV).
- **The problem of regulating the relationship between logical and emotional thinking.** Two mutually opposite processes develop in the nervous system (the brain being the main organ of it): excitation and retardation. When a certain section of the human brain is strongly excited, all other sections of the human brain are automatically retarded. It is preconditioned by nature to make the human concentrate as much as possible on one particular activity. Besides, processes of intensive recovery of energy develop in those sections of the brain, which are in the state of retardation. The conclusion is: the human can't experience strong emotions and ratiocinate. Whenever a human being succumbs to a certain strong emotion, the cortex of hemispheres, which is responsible for logic, is automatically retarded. It means that there can be "gaps" in interaction because of "shut-

offs" of the logic. Maybe special systems will be needed for "killing" emotionality, for calming down and for emotional correction.

- **The problem of self-realization of the human.** The human is a social animal. The virtual world should assist him in satisfying his biological (respiration, feeding, safety, sleep, sexual communication, etc.) and social (spiritual communication, upbringing, education/training, career, etc.) instincts. Bio-social complex (instinct) of the human is formed from the combination of various features and properties (pre-conditioned genetically and acquired in the process of upbringing). This complex (instinct) stays with the human throughout the entire life (life only introduces small corrections). The main goal of the human in life is self-realization (a wish to follow his own biosocial instinct, the foundation of which is inherited from nature). Each human tends to realize his potential using his own method. If the self-realization is successful, the human feels happy. If it is unsuccessful, the human at best feels worry, irritation, a sensation that "something is missing". In the worst case, the human begins to think that there is no sense in life and sometimes commits suicide. Thus, the main demand of the human is a demand for self-realization. All other demands and capacities only assist the human to realize himself. What forms will self-realization take in the virtual world?
- **The problem of communication.** With whom does the human want to communicate? With the entire world or with someone else? It is a firmly established fact: the human wants to communicate not with any person, but with particular persons. The human wants to experience certain emotions and the nature has created this world and human nature in such a way that joint experiencing of emotions with other people intensifies the pleasantly exciting effect many times. People try to do many things jointly. Each person, (though it can be done subconsciously) tends to find like-minded fellows or, to be more exact, people of the same emotional make-up so that many desirable feelings could be experienced together. People of the same emotional makeup are people with close bio-social instincts. "Rough" gradation implies the existence of more than 30 varieties. If refined tastes of persons of advanced development are taken into consideration, the number of such varieties will amount to several thousand. However, there are billions of people in the world. It means that the ease of finding people of the same emotional makeup in the virtual world will lead to the generation of multi-thousand symbioses. What problems will arise in this case? What systems are required for that? What conflicts will appear between the groups, which are actually antipodes? What does the "virtual war" mean?
- **The problem of "putting information into a human".** The problem of accessibility of information is solved with the appearance of Internet. However, the majority of people don't want to learn anything. Since the early childhood and throughout the entire life the human perceives only part of information. The part, which helps the human to realize himself, produces very strong and pleasant impression upon the human and is well memorized. The part of information, which is useless or harmful from the viewpoint of self-realization, is ignored by the human and is not memorized. The human tries to insulate himself from useless and inconvenient information. The psychologists identified numerous techniques, with which the human protects himself from useless and inconvenient information. To such techniques refer, for example: negation, displacement, projection, identification, rationalization, substitution, etc. And the human can protect himself both consciously and sub-consciously. Thus, since early childhood, the human absorbs information like a sponge, however it refers only to that part of information, which helps the human to realize himself. Will there be a necessity to offer objective information to all humans and in equal amount? And how will it happen?
- **Problem of human personality protection.** Each participant of the virtual world is a part (component) of the global system. But in contrast to the components of engineering systems, this is an individual capable of sensing and thinking. An individual, which has not yet dissolved in a single super-organism, and tends to preserve his independence. I am afraid to be "open" in the global system, I am afraid of losing or of getting bankrupt or deceived, I don't want my secrets to get disclosed. With the globalization of the virtual world, the degree of protection of the individual should grow. Each human will have his

own degree of independence: along the borderline "good/bad for me". If something is good, it will be given to super-organism. If something is better performed by a human, it will remain with him. There is an intention to make the human a component of the system. The natural reaction is rejection. It is an eternal question, a contradiction, which keeps history developing.

- **Problem of subjectivism/objectivism.** The main source of conflicts in human history is the victory of subjectivism (of one person or of a small group) over the objective laws of society evolution. Objectivism exists only outside the human. It is for the first time that a possibility appears to fully objectivize the evolution process – appearance of memory and thinking outside the human. The human wants his problems to be solved by non-human! Only in this way, he can hope for justice. What problems will arise in this case? What will small groups of fanatics do in order to beat objectivism?
- **Problem of separation of humans according to intellect and exploitation.** All existing systems are in constant competition between themselves. The systems, which are best adapted to the environment, survive, while the ones that are less adapted degrade and become "construction material" for more perfect systems. It leads to gradual appearance of systems, which are more and more complicated and which are better and better adapted to the environment. The world evolves from simple to complicated entities. Virtual world is an intellectual world. The winners will be clever people. They will use the others for their purposes, trying to construct their own virtual systems. How will all this happen, before the virtual world is converted into a united super-organism?
- **Problem of rate of information consumption.** The inability of the human to absorb information much quicker than it is done today is a serious hindrance of the progress. For example, more than one day is spent on reading only one book. It happens very often that only several new ideas can be obtained from one book. Therefore, a human is unable to absorb a somewhat serious amount of information during his life simply for physical reasons. How quicker might the humans develop, if they could quickly absorb any amount of information as quickly as possible! And these amounts are increasing all the time! What's to be done? What can be organized in a virtual world?
- **Problem of cyclic character of interaction with the virtual world.** For example, the obtainment of pleasure (entertainment) in a virtual system. The human starts interacting with the system and with a manifold increase in energy tends to what was missing in his life for long time. And gets satiated with what he had in large amount for long time. Every human knows what a feeling of satiation is. It is impossible to experience any pleasant feeling endlessly. Satiation will come sooner or later. What does the human do in this case? Drifts off? Switches over to something else?

This is a world of digital media technologies, and this world comes into being beneath our eyes. This world has its own (unusual) trends of functioning and evolution.

Mankind will encounter new (so far unknown, but partially predicted) problems. Problems and contradictions will be resolved, which would result in the emergence of fundamentally new technologies (methods, systems) that within some time would become global standards.

For example:

Patent 5,960,411 September 28, 1999 Method and system for placing a purchase order via a communications network (Amazon.com, Inc.) - All known technology "1-Click".

Patent 5,838,906 November 17, 1998 Distributed hypermedia method for automatically invoking external application providing interaction and display of embedded objects within a hypermedia document (Eolas Technologies, Inc.) - The judicial claim for infringement of the patent to Microsoft for sum US\$520M (see <http://www.eolas.com/news.html>)

A person who is the first to foresee such problems, a person who is the first to solve these problems and to patent obtained solutions, would become an owner of intellectual property of the future. And this intellectual property will be worthy of many billions of US dollars.

Examples of particular problems, which need to be solved today:

**Problem 1.** 10 billion CD disks were manufactured in USA and Canada during 15 years of existence of CD disks technology. The majority of these disks preserved in home music collections (the average one amounting to 200 items), there are collections amounting to 1000

items, while devoted collectors have still larger stocks of disks). With the advent of digital technologies a possibility appeared to preserve them on a hard disk (Winchester). The year of 2003 saw the birth of the company RipDigital ([www.ripdigital.com](http://www.ripdigital.com)), which offers to convert your collection at a price of 1 dollar per one disk. To do this, one needs to wire the advance payment for this service, the company sends you a fragment of cardboard boxes, you assemble them and put the CDs inside them, go to the post office and send them back to the company, and after a lapse of 2 weeks you get these disks back plus a hard disc with your collection. However, it is impossible to re-record at least one tenth of existing disks using this technology. How can it be done quicker, at several times lower expenses and without mailing? The same could be said about films on videocassettes, the average collection of which amounts to 100 items.

**Problem 2.** There are sites with collections of digital pay-for music, the amount of which is millions of music pieces (let us call them songs for the sake of simplicity). The biggest site includes 30 million songs. Such sites increase their collections by 1000 songs daily. Here are the problems, which are associated with it:

- how to classify these songs, it is impossible to do it manually, an automatic mode is required,
- how to subdivide these songs into genres, how many "boxes" and what type of boxes are required for each genre,
- a human visits the site with a wish to select something new – thousands of genres, arrangements, performers, languages, etc. Imagine a hyper-text contents – it is possible to spend many hours and to find nothing,
- what is an "abstract" of a song (10-20 seconds), how to compile it automatically,
- what is direct-mail advertising of new songs (it is impossible to send 1000 songs every day to all subscribers, no more than 1-3 songs are required, however, they should be sent directly to a subscriber, who needs them).

**Problem 3.** Videophones will oust modern mobile phones very soon and very quickly. The problems associated with it are quite numerous. One of the obvious problems: how to preserve one's immunity, personal right for privacy. Regardless of where and in what condition and with whom I am now, the videophone will betray me (to a wife or a boss).

Mobile telephone communication represents an analog for the evolution of the Global Network. This evolution would proceed absolutely in the same manner as the evolution of the Mobile telephone communication - new technology would be mastered by billions of people during a period of 10-12 years.

#### **4. Inventive Level in the Field**

We have conducted an analysis (to be exact, express analysis at this point) of 15 000 patents in this field.

General conclusion: the level of inventions is not too high, which is most likely explained by small number of professionals (lack of teachers and institutions in this field). Engineers employed at leading companies engaged in manufacture of computer hardware (Microsoft, Apple, Hewlett-Packard, Phillips, Sony, etc.) and mobile telephone equipment (producers and operators) are engaged in invention activity. As a rule, these engineers are not skilled in inventive methodology - therefore, their inventive productive capacity is very low. One of the leading companies, at which the managers decided to make a breakthrough in one of the digital technologies, may serve as an example. To accomplish this goal, the managers of this company created a working team consisting of 200 engineers who started working on one project. After 2 years of work this team produced.... only 150 inventions - that is, less than one invention per team member during 2 years of purposeful work! However, as a rule, no planning of the inventive process is practiced at companies and inventions "appear" like mushrooms in forests - the trial-and-error method is the only method used.

#### **5. What we managed to extract from the analysis of patents?**

The work we did is almost similar to the work that was performed by G.S.Altshuller with patent information from "hardware" branches of engineering. After conducting such an analysis we found certain inventive techniques and standard solutions. We have formulated (at the preliminary level)

of several trends. The virtual world differs strongly from the real one, and therefore TRIZ tools (in their conventional form) are almost inoperable for the virtual world.

## 6. What are the criteria of a branch of economy that would give us an opportunity to earn a billion?

What branch of economy is ideal from the standpoint of TRIZ?

$$I(S) = \frac{\Sigma F(MUF)}{\Sigma(WSE)}$$

Greater is the Main Useful Function and the lesser is the payment factors (WSE) - the higher is the ideality of a system<sup>2</sup>.

In addition, such technologies are needed, which would find use among billions of people.

Besides, a service should be inexpensive for people - e.g. its price should be from US \$ 0.1 to 1.0 - i.e. the formula is simple "*minimal price - maximum availability*". These are the main features of ideal business systems!

Let's formulate the criteria for a technology that would be used by billions of people:

- overall availability (it is available everywhere plus the rules of service consumption are very easy at the intuitive level);
- pleasantness of a service (a service should be desired by people) – humanity, hedonism;
- a service must be as inexpensive as possible.

## 7. Constructs (components, systems) of the virtual world.

Below are listed the areas of the virtual world that are of greatest interest for us:

- Music and any other sonic creations.
- Movies and any other video creations.
- E-book and any other textual creations.
- Mobile communication and any other types and ways of communication.
- Advertisement and everything related to advertisement.
- Entertainment and any other ways of getting pleasure.
- Virtual transaction and any other business relations.
- Virtual communities, groups and contacts based on common interests.
- Virtual teaching systems and everything that is associated with the process of acquirement, storage and transfer of knowledge.
- Virtual trips in space and time in all directions.
- Health – all aspects of maintaining, correction and changes. Virtual world diagnostics of health conditions, a unified data base (data from birth till death), single medical consulting system.
- Fashion, external appearance, manners, etiquette, image, virtual stylistics.
- Family, children, domestic animals, care and bringing up, entertainment.
- "Smart house" – evolutionary progression of all subsystems (nutrition, transport, communication, relaxation, hygiene and healthcare, entertainment, cleaning, climate, comfort).
- Video communication and all aspects including privacy (keeping, protection, control).
- Acquaintances – search for, knowing one another better, socializing.
- Virtual mass performances – events, entertainment spectacles, carnivals, feasts, manifestations, concerts.
- Restaurants, nutrition, degustations, "culinary symphonies".
- Direct "brain-to-brain" relationships, sensual contacts, emotional copulation, spiritual

---

<sup>2</sup> Salamatov Y.P. "TRIZ: THE RIGHT SOLUTION AT THE RIGHT TIME: A Guide to Innovative Problem Solving", Netherlands, Published by Insytec B.V., 1999, p.141.

interfusions.

- All forms of plants and animals world.
- Intellectual property – creation, protection, control.
- Virtual persons (personages, actors, copies of actual persons), – generation, control, sympathy (jointly experienced feeling), relationships, dynasties, clans, virtual villages, life after death.
- Virtual conflictology, wars, resolution of contradictions, reaching agreements.
- Virtual psychology, psychotherapy.
- Social aspects – state structures, elections, referendums on death sentences to recidivist criminals, humanity, social aid, penetration of neuro-virtual network systems into social structures of society.
- Linguistic revolution – resolution of contradiction "many languages – unified world language".
- Unified world rescue service and emergency situations service.
- Psychosemantic remote testing, analysis and correction (the system of professor I.V.Smirnov) – of personalities, human settlements, countries.
- PMMD - The Personal Mobile Media Device.
- Children – all aspects.
- Women – all aspects.
- Sports – all aspects.

And so forth – by now, in total about 100 directions for inventive activity have been formulated.

Here we didn't take into account the specific fields, which have been successfully evolving for a long time according to their own trends:

- E - commerce (trade),
- E – banking business,
- Games,
- Protection of information from pirates and hackers, etc.

## 9. Conclusion

We are suggest establishing a scientific business company of new type.

We research task of the project is the development of a methodology of inventive activity in the new field of human activity.

The business essence of the project is a great number of developments covering the majority of virtual media technologies.

1. Scientific novelty: developments are created ahead of time (by 3-10 years); they are patentable and they don't have prototypes.
2. Applied novelty: they don't have analogs in modern media technologies.
3. Consumer novelty: new services, new features and new properties of their consumption, changes in the social life of billions of people.

We will continue to inform the TRIZ community about our research, and about the progress of our methodology

### About the author:

**Director of IID, Yury P. Salamatov, PhD**



**Dr Salamatov is a Master of TRIZ, with more than 30 years of experience.**

**He has authored more than 60 inventions, and more than 60 publications.**

He is the author of several books on TRIZ:

**1984 – "IDEALIZATION OF TECHNICAL SYSTEMS ON EXAMPLE TS — THERMAL TUBE"** (USSR, Krasnoyarsk, manuscript [www.triz.minsk.by/e/21102600.htm#03](http://www.triz.minsk.by/e/21102600.htm#03) - in Russian)

**1987 – “FEATS AT A MOLECULAR LEVEL. Chemistry helps to decide challenging inventor problems”** (USSR, Petrozavodsk)

**1990 – “HOW TO BECOME AN INVENTOR”** (USSR, Moskow, [www.trizminsk.org/r/41000100.htm](http://www.trizminsk.org/r/41000100.htm) - in Russian)

**1991 – “THE SYSTEM OF THE LAWS OF ADVANCES IN TECHNOLOGY”** (USSR, Petrozavodsk, [www.trizminsk.org/e/21101000.htm](http://www.trizminsk.org/e/21101000.htm) - in Russian)

**1999 – “TRIZ: THE RIGHT SOLUTION AT THE RIGHT TIME: A Guide to Innovative Problem Solving”** (Netherlands, Published by Insytec B.V., [www.insytec.com](http://www.insytec.com))

**2000 – "TRIZ PHILOSOPHY: the heart of creative problem solving"** (Japan, Nikkei Business Mechanical Corporation [www.osaka-gu.ac.jp/php/nakagawa/TRIZ/eTRIZ/](http://www.osaka-gu.ac.jp/php/nakagawa/TRIZ/eTRIZ/)).

**2005 – “HOW TO BECOME AN INVENTOR”** (The second edition, Moskow)

**TRIZ experience:**

Since 1980, Dr. Salamatov has worked at developing TRIZ in the Public Laboratory of the Theory of Invention, headed by G. Altshuller. Between 1982 and 1991, he taught TRIZ to engineers and scientists at the Krasnoyarsk University of Creative Research and Development, under the auspices of the local Research and Development Council. Between 1989 and 1993, Dr. Salamatov was the Director of the Krasnoyarsk Branch of Invention Machine Laboratories. In 1998, he became the founder and director of the Institute of Innovative Design. Since 1990, he has worked on **42 innovative projects (comprising more than 500 concepts at a level of invention)** for many companies, worldwide.