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### **S1.1 History and conditions for success**

#### **Title: “Up to the HUB”: Humanities networking technology for developing young people's innovation potential**

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### **1. Introduction**

In modern Russia everybody, including politicians, businessmen, scholars, teachers, journalists, talks about the necessity of developing the innovation potential of young people. The titles of conferences and articles contain different combinations of the words “young people’s innovation potential” (YPIP) which have turned into some kind of “mantra”. Evidently, it reflects the belief in transformation something desired into reality by repeating it verbally many times. Those who sing “Hare Krishna” know exactly what they sing about, whereas people talking about young people’s innovation potential can not specifically define it in the most cases.

It is a common practice to define “YPIP” as a set of some characteristics possessed by young people which permit them to be engaged in innovation activities. Despite there is an agreement on definition for innovation activities,<sup>1</sup> there is still no common definition for the “set of characteristics”. It raises at least three questions:

1. What kind of characteristics does this set consist of?

2. Why is it so necessary to emphasize the importance of young people’s innovation potential if people of other ages are also capable of conducting innovation activities?

3. Finally, what are the ways to turn young people’s innovation potential as a “set of characteristics” into young people’s innovation potential as system characteristics of a young individual which is manifested in his deliberate striving for innovation and determines his professional choice, career, and place in the society.

After clarifying the authors’ opinion about the first and the second questions, we will try to answer the third one. We will present our own model of technology for development of young people’s innovation potential what is the main **objective** of this paper.

## ***2. Young people’s innovation potential – “Pandora’s box” or the most valuable resource?***

It has been a while since psychologists figured out that human being is not a machine with determined functions and power potential, which can be directly embedded into any production system. Nevertheless a reductionistic approach to the human innovation potential (IP) and its role in modern society still exists in theory and practice of Russian management. Within such a simplified approach an “innovation potential of an employee” is regarded as a complex of 4 abilities. They are: 1) an ability to perceive new information, 2) to increase professional knowledge, 3) to put forward new competitive ideas and 4) to find solutions to non-standard tasks and new ways of solving common tasks. Without pretending to disclose the whole depth of such complex phenomenon as human innovation potential, we want to note that there must be at least one more element in its structure. It is a *values* indicator an employee is focused on in his innovation activity.

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<sup>1</sup> “Innovation activities” are usually defined as actions taken to produce, use, or distribute something brand new.

Ideally, this "fifth element" would differentiate an IP engineer, manager, and programmer from an IP killer, terrorist, and hacker. Emphasizing the role of young people as those possessing the innovation potential, most of the Russian researchers do not specify the IP phenomenon in relation to this particular generation. Hence, a conclusion (perhaps quite arguable) suggests itself that "innovative potential" in respect to a person of any age is universal, i. e. has the same structure.

However we want to consider the point of view of some Russian scholars<sup>2</sup> who defines innovation potential of young people as a specific phenomenon and separates it from their *novative characteristics* (NC). NC are the attributive features possessed by young people in any society and in any historical era. As a natural way to support sociality novative characteristics of the youth are quite primitive but thanks to them a person orientates in the surroundings even without a certain experience.<sup>3</sup> The lack of precedent forces him to create a "new" knowledge. This "new" knowledge, appeared "here and now", may be formed as a model, a pattern, a setting. NC are the basis for creative thinking. However, disposition to creativity is not youth's constant, it increases and decreases according to its demand, and particularly on the part of society. When a person grows up NC do not disappear absolutely but demand in them decreases sharply as person starts mastering more effective means of sociality learning (for example professional training, experience etc.). Novative characteristics of young people are, per se, the nature of their perception and the absence of fear of making mistakes. The perception issue relates to the young people's desire for everything new and their independence from logic and existing knowledge: young people can easily meet challenges which seem to more mature and experienced people to be insuperable barriers. The second issue is connected with young people's effort to get a new experience without reflecting on the possible a mistake.

Such vision of young people's NC, in our opinion, is remarkably well combined with the concept of the basic properties of the "iconoclasts", developed by Gregory Berns - a famous American specialist in neuroeconomics [1]. According to his interpretation, the "iconoclasts" (they destroy their own and other people's stereotypes) are the innovators or people who generate ideas and successfully put them into practice. Those ideas rely on absolutely unusual (or, even, impossible), for the majority of people, perception of the world around (ontology). Very often the results of their revolutionary activities (hacking usual stereotypes) become common property (i.e. turn into new stereotypes). Berns believes that there are three basic parameters which differentiate "iconoclasts" from the majority of people. They are perception, reaction, and social skills.

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<sup>2</sup> For example, A. Lukov's [9]

<sup>3</sup> In a certain sense not only youth, but also young primates and even young birds have novative characteristics. See: Fisher, J.; Hind, R.A. 1949. The opening of milk bottles by birds. *British birds* 42: 347-357; Hind, R.A.; Fisher, J. 1951. Further observations on the opening of milk bottles by birds. *British birds* 44: 392-396.

According to Berns, it is just perception<sup>4</sup> that plays the leading role in destroying stereotypes. *Stereotype destroyers see the things not the way the others do.* In a literal sense. Their brains avoid the trap of efficiency, i.e. unlike most people's brain, their brains try to avoid the most obvious ways to perceive objects and facts. Rejection of the new is explained by that the novelty launches the system of *fear* in the brain. Fear is the second serious obstacle to non-stereotyped (creative) thinking. There are many types of fear but only two of them get on the way of perception free of stereotypes. They are the *fear of insuperability* and the *fear of being the object of ridicule*. The true iconoclast does not let those fears prevail over him even if he has them. But even when individual can control the perception and overcome fears, he also must be able to represent his ideas before other people. Therefore he must possess certain social (communicative) skills. If an iconoclast can overcome fears but does not have social skills, he remains an "unrecognized during the lifetime genius". Modern iconoclast operates under the conditions of dynamically changing social bonds. Individuals possessing all three characteristics are rare but they are capable of making the impossible (from the point of the regular people) things.

From our point of view, the concept of G. Burns that deserves attention by itself is also good as it helps to understand the difference between the innovative potential of youth from its novative characteristics. In other words, it helps to understand the diversity between young innovators-"iconoclasts" and "ordinary" young people with sensitive perception and lack of fear of being mistaken. Basically this difference is expressed in *social skills* which certainly are not limited only by the ability to represent the innovation ideas. Ideally, they should include the ability to build effective communication and to get involved in mutual activities with all the subjects of interest ("partners", "opponents", "experts", "investors", "consumers", "mass media"). There is another point that makes YPIP different from NC. Firstly, it allows young people to go beyond the limits of "here and now" situation into broader contexts.<sup>5</sup> Secondly, it is focused on moral values that are dominant in the society. If we compare innovation potential of young people and older ones, should we find out that in the first case the dominant component is "novative characteristics", and in the second case – social skills and "value orientation".

YPIP may become an "explosive mixture" and be used in public favor or vice versa, when there are poorly developed social skills, low value orientation, no fear of being mistaken, but high level of creativity. It explains the controversial attitude of society and state institutions towards YPIP. Officially, the idea of developing innovation potential is always supported. In real life it is often not

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<sup>4</sup> G. Burns believes that perception is the most creative and cognitive function. Though perception remains pliable much longer than other cognitive functions this pliability starts its decrease at about thirty years [1, 220].

<sup>5</sup> It is meant that a "new knowledge" is supposed to be produced not only because it is needed "here and now" but also in the future.

encouraged or even restrained because of the fear of unpredictable results. Due to these and some other issues the young people's innovation potential remains to be latent ("asleep"), i.e. on the level of innovative characteristics.<sup>6</sup> But if the social skills may develop during lifetime, innovative characteristics (as a basis for creative thinking and creative developing of the reality), not being actively used at early ages, fade as the years go by. However, the public opinion on the young people's innovation potential, as the basic source for the innovative characteristics – creativity and freedom of thinking, is being drastically changed under the pressure of quantity, diversity and complexity of the challenges the society faces. They become such rare and valuable resources that it is impossible to ignore them or to postpone their development.

### ***3. How to awaken the young people's innovation potential and to direct it for constructive purposes?***

Speaking of the technology for developing young people's innovation potential we want to make the following idea clear. We are far from thinking that successful developing YPIP is the result of applying any humanities technologies or even High-Hume.<sup>7</sup> Personal human consciousness and sub-consciousness as the objects for influence are too complicated and understudied phenomena. There is no way to find the direct connection between them and any influence resources. Human being is a "super-complex self-developing system" (V. Stepin) [14]. He always has the freedom of choice of any other action (reaction) in any concrete situation. The same is true for the situation when he is the object for any technology application. We can only speak of relatively predictable results of any human activities, including thinking, when applying the law of large numbers and the mechanisms of mass psychology. Despite the fact that we consider a social subject with mass consciousness (youth) we will not rush to create any direct connections (i.e. connections between mass consciousness of young people we want to into innovation and humanities technology we want to apply).

It has been quite a long time since people admitted that nothing can form human thinking and behavior as a certain environment can. Due to this fact the technology for developing young people's innovation potential is nothing but the technology for creating the appropriate innovation environment

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<sup>6</sup> For reference. The Institute of Comparative Social Research, Russian counterpart of European Social Survey (ESS), according to the survey of 585 people (18 to 30 years) presented the following data in the journal "Expert": The main criterion for the choice of future job for 44% of young Russians is high salary, and only 4% - the possibility of innovative and creative activity. Career of a scientist today would be chosen by only 1% of young people. The most desirable place of work for 37% of the respondents (46% men and 28% women) is certainly not "Skolkovo" and not even Silicon Valley but "Gazprom". 2% of the respondents would dream to work in a small group of like-minded persons, and respectively, 1% - at a university or a research institution.

<sup>7</sup> Humanities technologies are the technologies of management of human resources development. Its elements are knowledge, ideas, patterns, kits, sign environment, qualification, copy rights, etc. They all are the results of humanities activities which can not be physically estimated (P. Shchedrovitsky) [13]. High-Hume are humanities technologies developed on new paradigmatic basis (for example, quantum mechanics, synergetics, wave theory, etc.). They are application-oriented post-nonclassical knowledge. Moreover, High-Hume are management technologies accompanying Hi-Tech.

(IE) that forms YPIP. The key moment here is determining the parameters of the innovation environment. The first thing to focus, when determining these parameters, is their correspondence to the forming system social quality which is YPIP. The second thing is socio-psychological particular qualities of young people as social subjects.

We have already mentioned some of those qualities which are flexible perception, the ability to process large information flow and the lack of fear of making mistakes. Also there is an instability and paradoxicalness of young people's consciousness and behavior. This paradoxicalness is revealed in combination of controversial features: high level of criticality in evaluating external events and low level of self-criticism; tendency to self-identification and desire to stand out from other people; conformism and negativism; imitation of idols and rejection of common rules; thirst for communication and detachment from the world outside; high ambitions and uncertainty; desire to be active and passive at the same time. It is assumed that young people have problems with self-actualization because of their partial (incomplete) involving in the system of social relations, the real creative activity. It turns to be the main reason for the mentioned contradiction between consciousness and behavior.

It helps to formulate a **preliminary hypothesis**. The environment which forms young people's innovation potential (novation characteristics + social skills and communication competences + value orientations) must have certain parameters: *poly-subjectiveness, systematicity, communicativity, network structure, openness, self-developing, non-linearity, synergetic constructionism, combination of the principles of freedom and control, high novelty, reflexivity, polysubjectiveness, interaction between social subjects, research (projective) focus, educational character, emotional impact, ability to satisfy ambitions, insight into everyday life*. Those parameters suppose to provide future innovators with the wide range of facilities.

Furthermore we are going to give a brief characteristic for each parameter.

*Systematicity* means unity and inter-relationship between all the element of innovation environment, its ability to create new, missing relations and to generate new characteristics (emergent) which are not limited with characteristics of separate elements. The basic emergent feature, as well as the objective of the innovation environment (IE) as a system, is creating YPIP. The objective is set by the upper-system which is the society.

*Communicativity* is an ontological characteristic of the IE. Social communication (direct and mediated) is a form of its existence (functioning). If there is no communication, there is no environment. In other words, IE is an eternal communication process which includes many communication flows. Those flows are different in length and scale. The most powerful flows determine the directions in which the IE will develop. That will influence on developing YPIP.

*Network structure* is explained by the “network” morphology of the current information and communication society (M. Castells, R. Collins).

*Openness* suggests that the IE is always open for exchanging energy and information with other systems. Sub-systems and upper-systems (different social institutions, social groups, society on the whole). It is open to accept and to release an unlimited amount of social subjects and new ideas, including the most non-standard. It is open for constructive discourse, for alternative commenting, and for humanities and value expertise of the given innovations.

*Self-developing* means that IE develops through making its system relations and hierarchy of structural organization more complicated. Each new level of IE has the reverse of those already formed and reconstructs them. As the result – the environment as a system finds a new integrity. The IE changes with every new level of organization. New, relatively independent, subsystems are formed inside of it. Along with that the set of IE managing gets reconstructed, new parameters of order appear, new types of direct and reverse relations get created. Self-developing of IE leads to forming particular information structures in it. They fixate its features of interaction with the external environment important for the system integrity (the “experience“ of the previous interactions). These structures serve as systems in the functions of the programs of the IE behavior.

*Non-linearity* reveals the following characteristics: the fact that the elements of the IE are not only due to regular but random factors as well; non-specified results (for example, the degree of formation of YPIP elements); involving different social subjects and structures of different levels of development into the IE (for example, new innovators and authoritative experts, start-ups and mature entrepreneurs).

*Synergetic constructionism* is a way to foresee the future of the YPIP through constructing this future relying on the IE hidden resources and opportunities. Synergetic constructionism admits that individual and collective social subjects have the key role in choosing possible ways of developing the IE as a self-organizing socio-communicative system. It is important to mention that only those variants come to life which agree with the values of the social subjects and the internal tendencies of the system (IE) they are part of.

*Combination of the principles of freedom and control* (chaos and order) provides the IE with full freedom of thinking and the potential innovators’ initiative. At the same time this characteristic helps to put everything and everybody in order (it “insure” the risks connected with the fact that young people have no fear of being mistaken).

*High novelty* is a feature of the IE which provides young people with large amount of unknown data, knowledge and technology to develop their creative thinking and interest towards innovation activities.

*Reflexivity* is the ability of the IE to encourage young people and other social subjects to reflect or, in other words, to permanently evaluate the processes and their results that take place inside of the IE.

*Poly-subjectiveness* represents the involving of many social subjects into the IE. They are not only young people but also people of other ages, of different institutional spheres, professional groups, etc.

*Interaction between social subjects* always has an ambivalent nature (cooperative and competitive). It is the basic encouraging power and the form of self-developing processes (self-organizing) in the IE as a complex social system.

*Research (projective) focus* of the IE provides young people with the conditions they need for developing and improving their abilities and skills, for implementing concrete innovative projects.

*Educational character* allows the IE to function as an educational institution. It not only gives a set of ready knowledge about innovation activities to young people but teaches them to get it by themselves in order to turn it into an integral system. It is important that young people can learn and teach as well.<sup>8</sup>

*Emotional impact* can provoke young people's strong emotional experiences in the process of innovation activities. It represents the necessary conditions for forming inventive and entrepreneurial spirit and other basic social values.

*Ability to satisfy ambitions of potential innovators* meets young people's need for public appreciation (for example, to reach certain statuses corresponding with personal achievements, to rank high in ratings, etc) or for a big audience to witness the young innovators' present or future success .

*Insight into everyday life* is the ability of the IE to be part of young people's everyday life.

After having described the parameters of the IE, it is clear that they all are interconnected and each of them represents the condition for functioning of one or several other parameters.<sup>9</sup> On the opposite, several parameters of the IE create conditions for appearing another one. Overlapping each other, the parameters enhance the main emergent feature of the IE which is YPIP formation. Thereby the IE turns out to be a complex self-developing socio-communicative system which aims to form YPIP as a system characteristic of a social subject. IE communicative ontology explains its procedural (permanently changing) structure. In our opinion, the best metaphor to define this structure is the term "hub" as a "junction" of various communications and, at the same time, the "center" of innovative thinking and innovative activities. But as far as communication, thinking, activities are "born" by

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<sup>8</sup> It represents one of the characteristics of the current information and communication society and young people as a social subject. Young people are the first who acquire information technologies which enables them to teach IT to older people.

<sup>9</sup> For example, such features and parameters of the IE as "systematicity", "non-linearity", "openness" and "interaction between subjects" are the conditions of its "self-developing" as of a system, and "reflexiveness" is a condition of its "educational nature" and so forth



people, the term “HUB” means the “union of people generating innovations” (HUB is the abbreviation for “Human”, “Union”, “Bearing... the innovations!”).

#### ***4. What is the technology for developing the “HUB-environment” which forms young people’s innovational potential?***

**The fundamental hypothesis:** The humanities networking technology (Net-high-Hume) under the conventional term “Up To the HUB” may become one of the most effective technologies for developing young people’s innovation potential. It may be accomplished by creating an appropriate environment – the “HUB” (“Join the union of those who create innovations” or “Come to the communication HUB bearing innovations”).

The basic characteristics of this technology are: 1) *information and communication ontology*; 2) *self-organization*; 3) *“double-net” mode* (functioning in “on-line and off-line” mode); 4) *belonging to the triple-helix system*; 5) *ability to be embedded in problem-oriented social media (such as “facebook” platform)*.

The hypothesis is based on a set of socio-philosophic, socio-economic, socio-psychological and natural sciences theories and concepts. All together they allow to accept a principle of possibility of developing such technology as “Up to the HUB”. The pivotal theories of the methodological complex are: the concept of information network society by M. Castells; the theory of social systems by N. Luhmann; the sociology of the intellectual communicative networks by R. Collins; the theory of self-organization by I. Prigogine and H. Haken; the idea of the “Chaordic Alliance” by D. Hock; the idea of four principles of “collective intelligence” existence by D. Tapscott and A. D. Williams; cognitive psychology by G. A. Kelly; the hypothesis of techno-humanitarian balance by A. Nazaretyan; the triple-helix concept by H. Etzkowitz.

Now we shall proceed to explaining the meaning of each theory and concept for developing “Up to the HUB” technology.

The theory by **M. Castells** outlines the edges of the information epoch and includes rich methodological ground for creating various technologies in humanities [2]. His definitions of the terms “technology” and “network” are of the most interest for us. They help to understand the essence of the innovation processes. Castells represents technology as using scientific knowledge in order to find the ways to produce something in a reproductive manner. In the context of our problem, it means using appropriate socio-philosophical and scientific concepts in order to determine the way to create the innovation environment which develops YPIP. According to Castells, technology does not determine society but embodies it. Society is not a monopolist in defining technological trends because the process of technological innovation and its implementing are based on many factors including inventiveness of an individual and entrepreneurial spirit. That is why the results of any innovation process depend on those factors and a complex structure of their relations. Castells calls the current

information society a “Network” because it was generated by the network of manufacturing, government and experience. The appearance of the interactive computer networks, growing exponentially, created new forms and channels of communication, as well as new morphology of the social life. These networks produce the culture of the “real virtuality” in global flows which can go across time and space. Real virtuality is a system where the reality is embedded in the world of virtual symbols. The symbols do not just represent metaphors but contain the actual experience. Despite his insight, Castells could not foresee the outpacing of the mass media by the computer communication in the beginning of the 21 century. But he was one of the first who saw the phenomenon of forming virtual communities behind the regular instrumental computer communication. The communities which are self-organizing digital networks of interactive communication, joined on the basis of common interests and objectives.<sup>10</sup> There are two ideas found in Castells’ concept which help us to find the basic characteristics of “Up to the HUB” technology. Firstly, it is its network and self-organizing character, ability to be embedded in virtual communities (problem-oriented social media). Secondly, it is the parameters of the “HUB” environment such as its non-linearity (dependence on many factors) and communicativity (mode of functioning).

The theory of social systems by **N. Luhmann** [8] and the sociology of the intellectual communicative networks by **R. Collins** [3], in our opinion, are well combined with Castells’ ideas. However they better represent the double-nature of the Network society structure and of the communicative processes in it. This double-nature lays in the fact that information and communication society, unlike all the previous social formations, exists simultaneously in two modes: virtual (on-line) and real (off-line). Therefore, its structure and processes may be represented on “non-subjective” and “subjective” levels at the same time. According to the “non-subjective” theory of social systems by N. Luhmann, society develops and functions on the basis of continuous and joining to each other communications (“communication is caused by communication”). The relations between society and communication have a circular character: society does not exist without communication;

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<sup>10</sup> At the time when the Russian version of the book “Information Epoch” appeared, M. Castells did not consider Russia as one of the countries capable of having broad on-line audiences in any nearest future. However in the beginning of 2011, the international consulting company J’son & Partners Consulting, which specializes in telecommunication markets of Central and Eastern Europe, Central Asia and the ICU, announced that there are more than 57 million people using Internet in Russia. It was found out that since 2010 Russia ranks first in virtual communication as there are 31 million of active Internet users. It is 38% more than in 2008. Since the beginning of 2011, more than 27% of Russians use social networks at least once a month. “VKontakte” remains to be the most popular network in Runet. 12-14 million people a day (almost 10% of the population) visit this site. Facebook showed the greatest raise of users in Russia in 2010, even though the number of people using it in Russia is just 1,2 million. The “Yandex” experts say that we witness a burst of Facebook and soon it will become the second popular social network in Russia. Russian social network audience gets younger. Its biggest part (around 25,3%) consists of people from 15 to 24 years old. The second big group consists of people from 25 to 34 (24,3%). Russian Center for Public Opinion Studies created a common portray of a Russian social network active user. It describes him as an independent young person, living in Siberia or the Far East. <http://www.rbcdaily.ru/2011/02/10/media/562949979689739>; <http://nauka.vgi.volsu.ru/?p=1533>

communication does not exist outside society. N. Luhmann defines social sector as a complex of communication systems between individuals where those individuals are excluded from the systems. The meaning and the theme specify the frame of each social system. Therefore, the systems correspond to each other, reproduced by themselves which means they are self-referent. This approach allows considering “HUB” as a set of virtual self-referent systems of communication defined by themes concerning the problems of innovation. The appearance of a new “innovation” theme makes the frames for another virtual communicative system as a new element of the IE which forms YPIP.

The sociology of the intellectual communicative networks by R. Collins is of interest, first of all, due to the fact that it combined “objective” views on ramified networks and permanent lines of succession with “subjective” ideas of micro-sociology. In other words, his theory lets us describe the “non-subjective” and “virtual” (on-line) perspective of the IE, as well as the “subjective” and “real” (off-line) perspective. Along with Luhmann, Collins insists on self-referent (self-originating) nature of the social communicative systems. Unlike Luhmann, Collins admits their subjective nature: “The men of wisdom do not precede the communication but the communication creates men of wisdom as new units” [3, 46]. Comparing “intellectuals” and “innovators” we come to the idea that, from R. Collins’ point of view, the process of creating innovation environment – the “HUB” - can turn into the process of crystallizing groups of real and potential innovators. Using the *organization grounds* (the principles of management, humanities technologies, factors of external environment, etc.) the innovators argue with each other. These discussions are the basis for the *intellectual rituals* with exchanging *cultural assets and emotional energy*. Being the participants of the discussion, the innovators formulate their intellectual (innovative) positions, compete with each other for the *attention extend*. They get divided into groups or, vice versa, consolidate in accordance with the *lines of opposition* or the *identity of views*. They borrow innovative ideas from other people and disseminate their own thoughts, they experience periods of creative prosperity and stagnation. Due to all these processes certain *intellectual networks* (personal bounds between the subjects of the innovation environment) appear as a real and virtual basis for the “HUB” environment. According to Collins’ theory, the network structure of the intellectual world can be removed into the creative conscious of an individual (real or potential innovator). At the same time the individual thinking is considered as a “conversation with the imaginary audiences” [3, 106].

For better understanding the phenomenon of self-organization (self-reference, self-structuring, self-determination) as one of the basic principles of forming and functioning of the “HUB” environment, it is necessary to refer to the theory of the dissipative (non-equilibrium, disbalanced) systems by **I. Prigogine** [12] and the theory of self-organization (synergetic) by **H. Haken** [5]. In the broadest strokes the main positions of these theories can be summarized as follows. The sources of generating systems with higher levels of organization or the sources of “order out of chaos” are dissipative states of these

systems. The notion of disequilibrium as imbalance, instability in this case does not contain any negative sense. According to I. Prigogine only in a non-equilibrium system unique events and fluctuations (perturbations) promoting these events can take place. Thanks to this there is intensive growth of the system, increase of its sensitivity to the outside world, a historical perspective, i.e. the possibility of more sophisticated forms of organization appears. A system in a completely equilibrium state, i.e. quiescent state (“absolute order”) is not able to develop. As the founder of synergetics H. Haken also stressed the role of chaos in the formation of highly ordered structures. These are just open self-organizing systems where reveals the dual nature of chaos that can be now constructive, then something devastating. As synergistic approach is inherently *communicative*, i.e. synthesizing, open for the cooperation between different sciences so far as it is mostly focused on the understanding of the specifics of information and communication society, all its processes. From the perspective of synergy dialogue, polylogue, communication is the situation of “chaos”, every moment of which is a kind of “bifurcation point”, the point of various communication vectors. Projecting the main positions of synergetics as the theory of self-organization on the subject-matter field of our scientific interest we get the following. Innovative “HUB”-environment that forms such a highly ordered structure as IPYP must be constantly maintained in a state of *productive chaos* or *productive communication* and *productive creativity*. The main way of maintaining such a state is initiating of ongoing discussions on the issues of innovations and innovational activity, creating conditions for intellectual competition, expressing the alternative points of view and discussing them in virtual and real communication spaces (in “on-line” and “off-line” modes).

The parameters of order in the “HUB” environment, which do not let it turn into destructive chaos (non-regulated communication), seem to be the principles of behavior of the social subjects (young people and people of other ages). These principles correspond to the major social values, they are accepted voluntarily and shared by all the subjects of the communication, no matter whether the subjects have identical views or they are competitors.

The possibility of successful applying the principles of self-organization in management practice in order to improve its effectiveness proves the history of decentralized non-stock corporation VISA<sup>11</sup> created by the entrepreneur and founder of “corporate synergy”, **Dee Hock**. One of the results of his theoretical activity became the concept of “Chaordic Alliance”, a global institutional association (“organization without frontiers”) which connects people and organizations for improving, distributing and realizing more efficient and fair solutions of commercial, political and social structures [6]. “Chaordic Alliance” is aimed to create conditions to form a practical, innovative organizations that would harmoniously combine competition and cooperation in order to serve the interests of solving critically important issues of network communities. Neologism “chaord” that includes the first letters

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<sup>11</sup> First VISA USA (1972), and then - VISA International (1974).

of the word “chaos” and “order” means “chaotic order”. Dee Hock gives name "chaordic" to any organizational system that has features both of chaos and order. None of these traits at that is not dominant. Chaordic organizations such as self-organizing network structures are characterized by flexibility, innovation, adaptability and voluntary relationships. The idea of an “atmosphere of creative chaos” as an obligatory condition for the creation of innovations is shared by many theorists and practitioners of modern management.<sup>12</sup> On this basis we can assume that IE created by the technology “Up to the HUB” as chaordic (self-organizing) structure can happen to be may be perfectly viable and successful in terms of IPYP development. The order parameters for “HUB”-environment not giving it to come into the state of destructive chaos (unruly communication) are firstly, the factors of external social environment and secondly, the principles and rules of behavior of social egos (young people and others) that correspond to dominant social values dominant. External environment- social medium as if “hints” “HUB”-environment at what kind of internal IE trends must be realized to meet the new conditions (expectations) of social medium. As to the principles and rules of behavior they are accepted voluntarily and are shared by all IE egos regardless of whether they are intellectual like-minded persons or competitors.

What principles in this case can we speak about? For example, about four principles of "collective intelligence" as co-operation which **Don Tapscott and Anthony D. Williams** write about in their book “Wikinomics” [15]. Among them there are: openness, peering, access and the ability to share, the global character of activity (“Openness, Peering, Sharing, Acting Globally”). The principle of openness is very rarely used in management of traditional companies for fear of losing their valuable assets (exclusive information, technology, etc.) and competitiveness. However, there are so far companies that started rethinking the meaning of the concept "openness"<sup>13</sup> This led to profound changes in a number of business functions related to personnel policies, industry standards, communication and innovation. Companies that open their borders for external ideas and human resources are much more effective than companies that rely solely on their own resources and abilities. They are in the forefront of their own industry thanks to wide open doors for all the talents who are out the company. Peering is a form of "horizontal" organization of economic activity that implies the interaction of equal partners (peer-to-peer). At the moment peering is mostly developed in the information industry: the production of software, entertaining and news content as well as in culture. But there is no doubt that its abilities are much broader.<sup>14</sup> Access and ability to share is one more

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<sup>12</sup> In particular, Tom J. Peters, one of the world's leading experts in the field of management consulting, Vadim Kotelnikov, Russian business consultant, the founder of the international network of coach trainers and the ideologist of the global “Virtual Venture Valley” (VVV), etc.

<sup>13</sup> For example, the “Lego”company.

<sup>14</sup> The confirmation of this is the activity of CAMBIA, the Center of applying Molecular Biology in international Agriculture that addresses the issues of promoting food security and productivity in the agricultural sector. CAMBIA publically places the results of its works called "biological licenses with open access"- BiOS8. This allows an even greater number of talented scientists contribute to solving the problems of farmers.

principle of "collective intelligence" as co-operation. Understandable in terms of interpersonal communication in management practice, this principle is applied just recently. It is considered to think that intellectual resources and especially innovations should be protected by getting patents, copyrights and trademarks. However, more and more companies in these latter days are beginning to realize that traditional ways of protecting intellectual property are beginning to hinder them in creating values and particularly innovative products. The wisest of them consider intellectual property as a mutual fund - they maintain the balance of their intellectual assets protecting some of them and providing open access to others.<sup>15</sup> Contribution to the cause is not so much altruism as one of the best ways of building flexible business ecosystems to accelerate growth and innovation. Finally, access of companies to new markets, resources, technologies and ideas is supposed by the principle of global activity. It is important today that not only companies but also online communities can globalize their activity (primarily mental one). All the marked principles can be realized in "HUB"-environment that forms IPYP as its "collective intelligence".

The phenomenon of "collective intelligence" is not the antipode of individual mind. They are conditions for the development of each other. Not only collective but individual mind plays an important role in the process of IPYP making. This happens due to the *exploratory* nature of both of them. Every person and all people in their daily lives act like scientists or researchers - this is one of the main positions of **George Alexander Kelly**'s cognitive theory [7]. This suggests that people first of all, in their behavior and actions are orientated on the future and secondly, have the ability to actively form their view of the outside world and not just passively react to it. Just the same way as scientists create theoretical constructs to explain and describe natural phenomena or human consciousness people judge about their world by means of conceptual systems and models that they create and try to adapt to objective reality. And even if these models are unsuccessful they help people in their identity and determining their place in this world. According to G. Kelly a person always pilots these constructs trying to predict events in the environment. From this point of view Kelly's theory of personal constructs goes well together with the methodology of creating an innovative "HUB"- environment as it offers one more mechanism for self-organization "natural" desire of a person to research activity.

Freewheeling human research "instinct" can become too powerful entropic factor able to bring the entire system - the society - to the condition of irreversible (non-productive) chaos. Growing technological potential, as a consequence of the implementation of such research instinct, makes the

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<sup>15</sup> Public partnerships SNP Consortium and Alliance for Cellular Signaling are aimed at collecting genetic information obtained in the course of biomedical researches in public databases. They also use their combined structures to attract resources and innovations from the research world - both corporate and public non-commercial projects.

social system less dependent on the conditions and vacillations of the environment but more sensitive to the state of mass and individual consciousness. The fact that humanity has not yet destroyed itself gives us hope that not only its technological potential is growing but the same is happening with its intention to tolerance, understanding and compromise. But the given tendency is not always predetermined and needs to be constantly “feeding”. **Akop Nazaretyan** as the author of *the law of techno-humanities balance* stresses that under the conditions of modern tempi in technologizing all the spheres of society and without improving the cultural and psychological mechanisms to inhibit aggression humanity faces global civilizational crisis that it might not survive [10]. In accordance with the hypothesis of A. Nazaretyan a regular relationship between three variables – technological potential, the quality of culturally developed regulation and the stability of society is observed at all stages of social development (from the Paleolithic to the present days). In the most general form the law of techno- humanities balance that reflects this dependence says: the higher is the power of industrial and military technology the more perfect should be the means of cultural regulation that save society. On this basis one can make a conclusion about the necessity of continued humanitarian expertize of all the ideas and technologies produced in “HUB”-environment. A. Nazaretyan`s hypothesis of techno- humanities balance has a synergistic basis. As part of the synergetic model society is represented as an open steadily non-equilibrium system. Technological progress is not the objective and not the way to the final cause but a means of preserving the society as a non-equilibrium system in the periods of instability; and culture is a combined antientropic mechanism. As is well known all non-equilibrium systems including society are able to transform constructively to overcome permanent crises only on the condition that they have sufficient *preliminary resource of internal diversity*. This resource that has the potential (possible) nature includes the whole spectrum of knowledge and forms of social activities, ideas, suggestions and technologies currently existing in society. Some of them are still not implemented (or will never be implemented) in mass practice. Another part will not only be demanded by society in the future but will embody this “future of society” itself. You can never predict exactly what kind of ideas and technologies will be in-demand and what will not. That is why it is important to develop and maintain all their diversity. Here from A. Nazaretyan`s concept is also interesting as it makes more obvious such the function of “HUB”-environment as forming an essential preliminary resource of internal diversity of society, i.e. just as IPYP. So, the technology “Up to the HUB” we are interested in should be able to have the possibilities to maintain necessary techno- humanities balance in IE and the development of its resource diversity.

For the development of humanities technology "Up to the HUB" we need one more methodological concept, which not only could offer some other important principles of organization of innovative environment that forms the IPYP, but also would indicate those social actors who could implement them . **H. Itskovits`s** concept certainly has such advantages [4]. If we consider High-

Hume as management technologies accompanying High-Tech, the principles of innovative regions development, described in H. Etzkowitz' works, are extremely important elements of High-Hume. From this point of view, the given principles may become the basis for the "Up to the HUB" technology which is aimed to create the environment for developing YPIP. Primarily we mean the "triple-helix" principle of interaction between universities, business and government as a DNA of innovation development. It is supposed that all three elements of the helix remain evident and relatively independent statuses. To develop our concept it is important to consider the principles of network communication and non-linear (poly-dimension) development. They are described in H. Etzkowitz' concept as well. They are expressed in the idea that the foundation for innovation development of a region is the communication network between universities, business and governmental structures. They all create the triple-helix space in non-linear manner. Therefore the "HUB" environment could be considered as a networking non-linear system of "knowledge, consensus, and innovation spaces" which may be organized in any order and be specified by each other. "HUB" could be represented as a "hybrid organization created by the efforts of the public motion". According to H. Etzkowitz, participation of different institutional spheres representatives in the discussion on designing plans and strategies of development provides access, vital to fulfillment of the ultimate plan. If the "ultimate plan" is developing YPIP as a system characteristic of a social subject, then this statement is actual for developing the "Up to the HUB" technology algorithm. H. Etzkowitz' concept is also useful for us because it emphasizes the special role of universities in developing innovative regions. The universities in particular permanently provide the environment with young people who bring new ideas. The "Up to the HUB" technology implies the leading role of universities in developing the "HUB" environment which forms YPIP. Yet there are differences between the management principles by H. Etzkowitz and our "Up to the HUB" technology. The first are focused on creating regions, producing innovations and existing particularly in "off-line" mode, limited by territorial (often nominal) boundaries. Our technology is aimed to creating the "HUB" environment which forms YPIP and functions in both "on-line" and "off-line" modes. Besides, it has no territorial limits.

All the mentioned concepts and theories have unique methodological opportunities for developing different elements of our technology. But only when combined they turn into a complex, necessary for implementing "Up to the HUB" as Net-High-Hume which is capable of creating the innovation environment, developing YPIP. That reveals system (emergent, synergetic) characteristics of the represented methodological complex.

## ***5. The algorithm of "Up to the HUB"***



Now we proceed directly to the description of networking humanities technology "Up to the HUB". In the implementation of the humanitarian technology "Up to the HUB" participate: a) the *target audience* – "network" youth (senior pupils, students, recent university graduates); b) *experts* – acknowledged innovators from various fields of professional activities, including scientific, technical and artistic; c) *organizers, moderators and researchers* (university structures – departments, research groups); d) *grant givers and sponsors* (governmental and non-governmental funds, business-structures, venture capital companies, private companies, etc.); e) *hosting providers*.

The algorithm of "Up to the HUB" that creates innovative environment ("HUB") for the development of the young people's innovation potential is as follows. The first step implies that researchers identify the cluster of the most zealously discussed "innovation" issues in the global electronic communicative space (social media and official mass media) and a group of the most acknowledged experts in the related field. The idea of the second step is that organizers and moderators carry-out appropriate seminar-discussion with the participation of these experts on one of the several international educational sites in the dual mode – "on-line and off-line" (live seminar broadcasting). The international educational platforms are organized on universities bases and form an academic "net" (inter university partnership). At the third step discussion is relocated to the problem-oriented social network ("Facebook" technologies permit quick development of profiled networks). Discussion is supported in the network by moderators and experts during a particular period of time (1-2-3-4 months). All this time the target audience (young people who are interested in innovations) has the opportunity to get the answers to their questions in the on-line mode directly from the experts. The fourth step: the most important and current issues get revealed and accumulated and the plan of work for the next on-line and off-line seminar is being developed, and so on in the "helix" mode.

The main advantages of the technology "Up to the HUB" are in the fact that it creates self-organizing "HUB-environment" in which:

1. Not only experts and researchers (the representatives of the innovation business, venture companies and universities) but also the targeted audience itself (young people) will be able to participate in forming the content of the process to develop their innovative potential (the principles of openness, peering, access to information and ability to share, the global character of activity). The phenomenon of "collective intelligence" that appears at this stage will maintain the values of individual intelligence.
2. Thanks to social media the following will happen: a) the broadening of the net of targeted audience - there will be more young innovators and they will be instantly known by all the participants of the "triple helix" (universities, business and governmental institutions); b) the "connection" of innovative environment to everyday life of youth.
3. The combination of the two modes ("on-line and off-line") will provide the state of "productive **disequilibrium**" of the "HUB"-environment not allowing it to be either totally controlled (ordered) or uncontrolled (chaotic). Freedom

of discussion in the social “on-line”-network will be combined with planning of workshop content in the academic “off-line”-network. In addition, the presence of these two modes provides a “techno-humanities balance” necessary for: a) carrying out humanities and axiological expertise of all the suggested ideas; b) the adoption of innovative technological knowledge at the personal level.

Winning grants young people with the highest motivation to innovative activity will tend to participate in the workshops for face-to-face communication with the outstanding experts-innovators from different countries as the Internet will never completely replace live communication.

## **6. Conclusions:**

The use of technology “Up to the HUB” functioning on the principle of “**triple helix**” + “**double network**” (social media and academic, “on-line and off-line”) may lead to the creation of self-organizing innovative “HUB”-environment as a new type of educational structure – “Open Networking Innovation University” (ONIU). Its main socio-cultural functions are IPYP forming as its system quality and maintaining the creative abilities of the society in general. The advantages of the open networking innovation university as the bundle (hub) in the network of intellectual communications in its accessibility (openness) for all the potential innovators, mobility, flexibility, “first-hand” knowledge transfer. ONIU is a bundle in communications network that supports the creative power of society.

To identify all the resources of the proposed technology “Up to the HUB” forming an innovative environment for the development of IPYP as well as all the effects and consequences of its application it is necessary to conduct a comprehensive and multidisciplinary study. It should include philosophical, sociological, cultural, psychological, economic, political, legal and other aspects. The first phase of the study is the preparatory one (before the implementation of the technology), the second stage is the main (technology implementation).

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