



Insafing: New Promising Form of Intellectual Communication

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The article explores a new form of intellectual communication built in accordance with an in-advance-prepared sense scheme. This type of communication utilizes the elements of Activity Organizing Games called Insafing. The article suggests a retrospective review of the scientific researches, particularly, the researches of the Russian scientific schools that served as the basis for Insafing technology development. Furthermore, the scientific and methodological fundamentals of Insafing based on the Theory of Dynamic Information Systems (TDIS) and the methods of cognitive engineering are discussed. The article also provides an example of Insafing application to tourism industry development in an urban area.

Keywords: Insafing; communication; intellectual communication; Theory of Dynamic Information Systems (TDIS); cognitive engineering; Activity Organizing Game (AOG); scheme techniques; knowledge management

Introduction

We remain to be the heirs of the intellectual tradition formed in the classical antiquity. In Plato's dialogues, the main character, Socrates, demonstrates his communication skills that can be described as the following: (1) The interlocutor is suggested to discuss a topic, e.g. 'what is beauty;' (2) A specific cloud of senses and content is created, relative to which problem questions and hypothetical definitions are formulated; 3. In comparison with his interlocutors, Socrates shows the best knowledge of the subject and the best ability to use it; he strictly criticizes their attempts to go beyond

the scenario of his argument; (4) The variety of conclusions appears to be limited and only one true conclusion remains (Plato, 1961).

Sophists went along a slightly different path, collecting conventional methods of building an accurate argument. Socrates was distinguished from sophists by his ability to reason at the level of God-inspired art guided by the Pythagorean geometry (Rozhanskij, 1989). Plato set the problem of geometrical substantiation of an argument (Plato, 1971). However, antique geometry could not provide the basis for argument substantiation. Even in the 17th century, B. Spinoza's experience of the geometrical substantiation of ethics did not form into a separate value (Spinoza, 1957).

Aristotle's logic is laid into the basis of the intellectual culture, because it provides simple and handy algorithms of knowledge presentation in the form of syllogisms (Aristotle, 1978). However, thinking, speaking, and writing are linearized. The transition from reasoning to practice is difficult and could only be implemented with considerable distortions. On the one hand, Aristotle's logic is poor for solving tasks, which are diverse in sense and content. On the other hand, it is underdeveloped in formal mathematical respect, so that mathematical logic appears. Thus, the contemporary prospects of the intellectual communication development are between Scylla and Charybdis, both remaining in the bounds of Aristotle's logic and trying to apply the achievements of modern mathematics and logic, which may lead to enormous difficulties in the formalization and mathematical treatment of content-rich materials (Razumov, Ryzhenko, & Sizikov, 2009).

This paper is devoted to our experience of the theoretical construction and practical application of the new forms of knowledge presentation. Our theoretical outcomes are based on numerous research experiments on devising the universal methods of knowledge presentation for tasks in different fields of science, education, and project development, including the symbols of ancient philosophy, dialectics formulas, as well as the developments in the systematic and cybernetic approach.

The first outcome is the categorical systematic methodology (CSM) (Razumov, 2004). It enables the development of cognitive patterns for knowledge presentation. CSM can be applied to a wide range of tasks where it is necessary to make the transition from content-rich knowledge to its formalization and consequent construction of a mathematical model using the CSM apparatus.

The next outcome is the Theory of Dynamic Information Systems (TDIS) (Razumov, 2004) – a mathematical theory, which has a solid ontological basis, as well as physical interpretations. TDIS is useful for intellectual communication, because it allows the reconciliation of the requirements of sense and content peculiarity of knowledge with its form-mathematical organization. And finally, the application of the TDIS apparatus in different

communication (cognition, teaching, business) offers the possibility of using TDIS as a basis for original communication technology – Insafing.

The article is arranged as follows. First, it reviews the topics related to the history of communication management, which played an important role in this research. The historical review is specified and supplemented with the ideas of contemporary scientific schools studying the field of communication management. A special attention is paid to the thought-activity approach and activity organizing games (AOG) created by the school of Georgy Shchedrovitsky. In order to combine the theoretical developments based on the TDIS with AOG practice, we had to implement a special research aimed at the formation of cognitive engineering and creation of special technologies for sense scheme development (Ryzhenko, 2012b). Furthermore, the article describes a new communication technology – Insafing – and discusses further possibilities of its application.

Historical Background of Communication Management

Communication management has been considered a separate subject of scientific research and practice since the appearance of neuro-linguistic programming (NLP), public relations (PR), political discourse, as well as different technologies allowing for people management by working on the level of communication. The researches of David Meerman Scott (2011), Igor Reichman (2013), Eric Enge, Stephan Spencer, Jessie Stricchiola and Rand Fishkin (2013), Fred Reichheld and Rob Markey (2011), Mark van Hoecke (2002), and Teun van Dijk (2008) are congruent with the conception of thought-activity as the basis for business games development. The effectiveness of a game depends on the base scenario. Scenario development requires a certain abstract model providing the answers to the following questions: who, with whom, and according to what rules interact, what determines the result, and how the result is manifested. However, the technologies suggested for practical application were not well elaborated at the conceptual level; thus presenting a problem for the communication management.

When analyzing the experience of the authors of this paper in strengthening the schemes of communication management at the conceptual level, we questioned the possibility of devising a form of intellectual communication based on an innovative interdisciplinary model enabling project development and research on a wide range of scientific and study materials. This paper presents the approach to intellectual communication management utilizing the Theory of Dynamic Information Systems (TDIS), which is being developed by the Omsk scientific and methodological school. TDIS explains the operations in ontologically comprehended structures: decoding (specification), folding¹ (synthesis), and mutation (shift of categories) (Razumov,

2007). These operations determine the rules of communication management in a business game called Insafing. Insafing differs from the aforementioned communication technologies, because both, the office stage of problem solving as well as the process of communication, are arranged in accordance with TDIS apparatus.

There are a number of relevant researches in this field. Very useful are the works of James Austin (1975), Michael Foucault (1970–1971), Georgy Shchedrovitskiy (1995), and Randall Collins (2002). Sense, as a product of thinking, is considered to be an element of social action. Shchedrovitskiy (1995) views sense not just as understanding, but as certain inner commands directing humans' behaviour in the process of communication.

The conception of intellectual systems, developed by Iosaf Ladenko (1990) and Dmitry Pospelov (1989), is valuable in this respect. In an intellectual system, senses emerge and are transmitted among the members of the system. In this process, a shared sense field is created. Perception of a phenomenon becomes a collective act and the members of the system use the same concepts. Guided by further development of this conception, we interpret an intellectual system as a system, which elements use special data processing tools and are able to form senses in the process of interaction, thus ensuring the achievement of intended outcomes in a given area (Ryzhenko, 2012a). The Insafing technology helps to form intellectual systems; its universal cognitive basis can be applied to solving almost any management problem.

Development of Communication Management Technologies in Russia

Georgy Shchedrovitskiy (1929–1994) is the leader of an original logical-methodological research area. Since 1970s, he had been developing the thought-activity approach and, on its basis, the theory and practice of activity organizing games (AOG). Nowadays, his ideas are expanded in the works of his followers: Petr Shchedrovitskiy, Oleg Anisimov, Sergey Popov, Oleg Alekseev, and others.

Georgy Shchedrovitskiy and Aleksandr Zinoviev were ideological and organizational leaders of the Moscow Logical Circle (later called the Moscow Methodological Circle). After Zinoviev's emmigration from USSR, Iosaf Ladenko (1933–1996) took his place. While developing the scientific school of 'intellectual systems,' both Ladenko and Shchedrovitskiy emphasized schemes as a tool of cognitive communication. However, there was a difference in the suggested scheme application. Implementing AOG, Shchedrovitskiy (1995) used schemes as a tool for visualizing reasoning. However, he did not pay attention to the problem of methodology and the logic of schematization. Ladenko (1990) and his followers used schematization

of traditional logic (circular schemes, diagrams). They applied cybernetic flowcharts or 'organigrams' and considered schemes as a form of knowledge presentation and communication in intellectual systems (a complex including the research subject, research group, tasks, cognitive tools and techniques).

In the interest of combining the AOG practice with the ideas in the field of intellectual systems, the members of the Omsk scientific and methodological school – the authors of this paper – are working on the development of intellectual scheme-technique. Intellectual scheme-techniques are a combination of the categorial-system methodology with the TDIS apparatus conveying sense and content of the research subject in the form of a scheme, while at the same time complying with the requirements of logic and mathematics (Razumov, 2004; Razumov, 2007; Razumov et al., 2009; Ryzhenko, 2012b). The development of intellectual scheme-technique allowed us to create an innovative technology of intellectual (sense) communication that is implemented on the Internet (<http://thoughttring.com>) and corresponds with the research on ontological engineering.

TDIS explains the structures and the essence of informational functioning in a group of communicating subjects. Furthermore, TDIS relates to management, because it can be applied to and can serve as a basis for developing a universal approach to solving any management problem at the informational level. TDIS is inherently aimed at the synthesis of ontology, mathematical models, physical representations and their expression in the form of geometrical schemes. Its application allows the combining of problem solving (including scientific, learning, and project development problems) by means of scientific methods with output representation in the form of a categorial scheme, which presents a digraph. In spite of the scientific rigidity of the schemes, they can be easily utilized if a manager uses the existing type schemes as a frame for material related to his/her problem (Razumov, 2007; Sizikov, 2009).

Cognitive Engineering and Sense Schemes

The term 'sense scheme' is a word-by-word translation of the Russian word collocation 'smysl'² scheme. TDIS applications development led to the formation of a scientific discipline 'cognitive engineering' (Ryzhenko, 2012b). The scope of this science is the formation of senses in intellectual systems, whose elements are the subjects of creative communication; and its method is the transformation of information into senses by means of TDIS. Cognitive engineering employs the so-called sense schemes – geometric structures that are akin to semantic networks but are constructed with the help of a special DIS2 standard, which includes the above-mentioned operations of folding, decoding, and mutation. The cognitive engineering ap-

plication related to intellectual communications design and management is called Insafing.

Insafing is a form of intellectual communication consisting of the elements of activity organizing games and relying on in-advance-prepared sense schemes. Insafing includes an office stage and a gaming stage. In the first office stage, a sense scheme for further communication is built. For this purpose, we use the software Cognitive Assistant (Lunacharskiy & Ryzhenko, 2011). Consequently, communication strokes simulating TDIS foldings and mutations happen sequentially. Participants' speeches are filmed. In the final office stage, reports and video recordings are analyzed; and on the basis of this analysis, the final reports are prepared and posted on the First Sense Network website (<http://thoughttring.com>).

An Example of Insafing Application

The contemporary form of seminar and conference organization arises from the traditional work at universities and science academies, which stems from medieval and ancient forms of communication. However, the degree of efficiency of a traditional form of communication cannot be high because of the limitations related to a fixed time limit of an event.

Insafing, as a new form of intellectual communications on setting and solving management problems, relies on the idea that interaction is based on an in-advanced-prepared sense scheme of the discussed problem. This scheme is simplified to a list of simple questions and a clear procedure of arranging participants' interaction. In this case, the participants of communication play certain roles identified in the corresponding positions in the sense scheme. They make their speeches short and concise in accordance with the intellectual system thus dramatically increasing the degree of its efficiency.

The range of Insafing application is almost unlimited. We have successfully applied it for: devising a strategy of Omsk Region development, determining operation factors for holding the Investment Forum of Siberian and Far East Cities, designing a profile of a village with a population of 5000 people, as well as tourism industry development in a number of Siberian and Far East cities. Those who studied the basics of Insafing successfully employ it as a project development technology. Scientific rigidity of Insafing enables the development and management of large-scale projects. The sense scheme in Insafing bears certain indices, which enable Insafing to function as a cognitive framework suitable for arranging communication on any issue. When this framework is applied to a specific material, the indices are substituted by the terms characterizing the different aspects of the object in question. In addition to the unlimited variety of topics, which Insafing can be applied to, this technology also allows for building sense schemes

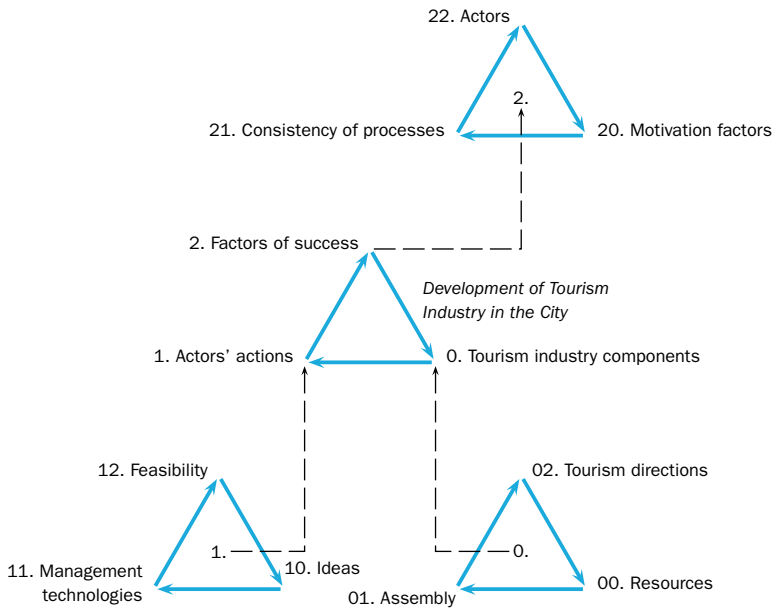


Figure 1 Sense Scheme 'Development of Tourism Industry in the City'

and arranging intellectual communications at all levels of Maslow's hierarchy of needs. It helps to identify the basic senses and values of a group of participants. The sense scheme in the case of tourism industry development had the following structure (Figure 1).

In each position of the sense scheme numbered with a two-digit index is an actor who attempts to answer his question. In the process of communication, the actors in the group answer a common group question, which reflects the folding of actors' positions in the group. The questions that the participants of communication answered in the corresponding positions (places) of the sense scheme are presented in Table 1. The scheme and the questions were formulated as a result of data analysis received from the participants of the All-Russian conference on international and domestic tourism.

Both, in Figure 1 and in Table 1, the positions in the sense scheme are numbered in ternary arithmetic (modulo 3). The answers to the questions make it possible to produce a detailed description of the subject area as a result of intense work of approximately thirty experts during a work-day (sometimes, however, Insafing may take two working days). The sense scheme itself can easily be created using the 'Cognitive Assistant' software (Lunacharskiy & Ryzhenko, 2011).

As a result of Insafing application, the interest for project development in

Table 1 Insafing Sense Scheme ‘Development of Tourism Industry in the City’

To develop tourism industry in the city	On what conditions and how can tourism industry be developed in the city?
0. Tourism industry components	What components of tourism industry can and should be developed in the city?
00. Resources	What do we have and what should we obtain or attract in order to develop tourism industry in the city?
01. Assembly	How should the structural components of tourism industry be connected with each other?
02. Tourism directions	What tourism directions should be offered by tourism industry?
1. Actors’ actions	What actions should be undertaken for tourism industry to develop?
10. Ideas	What creative and original ideas can be used to develop tourism industry in the city?
11. Management technologies	What are the advantages and disadvantages of modern management technologies?
12. Feasibility	What prevents tourism industry in the city from development?
2. Factors of success	On what conditions and under the influence of what factors will tourism industry develop in the city?
20. Motivation factors	What motivates the subjects (who exactly) for developing tourism industry in the city?
21. Consistency of processes	Inconsistency of what processes (in the society, business, management, etc.) prevents tourism industry from development?
22. Actors	Who is able to successfully develop tourism industry in the city? What qualities should people possess to be able to develop tourism industry? Where can such people come from?

the area of tourism has increased in different territories of Siberia and Far East, Russia. The following projects should be mentioned: ‘Siberian Route’ and ‘Chekhov’s Route’ aimed at creation of a tourist route following the way of the Russian author Anton Chekhov (end of XIX–beginning of XX century) through Siberia to Sakhalin island (see <http://thoughttring.com/ViewForm.aspx?id=119>). Currently, the authors of this paper are using Insafing in consultations on creating inter-regional agro-industrial cluster. The project information analysis and presentation is created with the help of an algorithm used in the scheme and the table.

The implementation of Insafing in different problem-solving situations proved that the work on solving a problem should begin with finding the answers to following three indexed questions: 0 – what is the object of our work; 1 – what tools do we need to work with this object; 2 – what outcome do we plan to get, and in what larger system can it be incorporated.

Theoretical and Methodological Side of Insafing

Both parts of Insafing: office stage (development of communication sense scheme) and communication itself refer to the field of knowledge management. The process of knowledge reception and transmission is facing the problem of knowledge association with the underlying informational processes. This science field touches upon the research and development performed in the field of artificial intelligence (Ladenko, 1990; Pospelov, 1989; Reichheld & Markey, 2011; Shchedrovitskiy, 1995). We would like to point out that this field of research has kept a fundamental cognition problem unsolved: concord of sense-content and form-mathematical method of reality description. To be more precise, the automatization of reasoning was devised and implemented for the first time in the XIV century by Ramon Llull (Gardner, 1958). He constructed a device consisting of connected mobile metal circles of categories.

The next step is considered to be the development of 'logical machines' in the XIX–XX century. However, this research was limited only to solving the logical queries and reached an end. The automatization of calculations was first implemented by Blaise Pascal (1997) in his arithmometer. Later, this device was further developed by Gottfried Leibniz (1984). The end of the Second World War brought about a dynamic growth in the field of calculus research and provided the basis for the consequent ubiquitous process of computerization. In spite of the success of these fields, the automatization of calculus did not contribute to the automatization of reasoning. The discrepancy between the research in sciences and humanities is becoming increasingly broader. The field of management appears not to use the methodology concurring with the sense-content and the form-mathematical approach in order to solve any kind of scientific problem. In this case, Insafing application is to reconcile the art of management with the theory of decision-making.

Unfortunately, the rational acts of communication and management comply with the logic of Aristotle; however, the achievements of the mathematical logic are of no appropriate use in this case. Based on TDIS, Insafing facilitates the creation of new logical constructs allowing the transmission of comprehensive volumes of information to the level of knowledge. The technology of Insafing provides a way to counteract the fragmentation of the manager's activities.

Knowledge is a product of cognition. At first glance, it would appear that if a person comprehends the sense of a piece of information, it has that same sense. However, sense is formulated in a person's consciousness as a result of deciphering the informational signals. So, knowledge is a part of information, understood and interpreted by a person. On the account of

the process of computerization, the afore-mentioned discrepancy between the automatization of both calculus and reasoning provoked a discord between the acceleration of information growth and the retention of the former speed of information transmission to knowledge. This is clearly displayed in the present day management problems on both small (sole proprietor) and big scale (multinationals and governments). Discursive practices are widely dispersed in the process of communication. These practices require the circulation of information currents, but they do not reach the level of knowledge and are therefore considered as a manipulative art of the communicator. Thus, the acute problem of knowledge management arises. Its solution requires the development of new intellectual technologies, which could be useful in organizing communication. Part of these technologies is Insafing, which is the focal point of this paper.

A full-blooded industry dealing with creating and transmitting information with the help of computer technology arose in the modern open information society. The information volume growth rate is higher than the rate of its comprehension by different communities. It accelerates the creation of ephemeral senses (simulacra) and the activation of the technologies of mass conscience manipulation. Human cognitive abilities cannot keep up with the possibilities provided by the information age (Razumov et al., 2009; Ryzhenko, 2012b; Simon, 1978). The technology of Insafing not only implies the examination of different positions of a given problem, it also suggests in which larger system the analyzed activity will be integrated, and which values and senses it is connected to.

The emerging post-modern culture influences the field of management. The post-modern approach suggests the pluralization and proliferation of positions, as well as the rejection of the dictatorial style. This reaction can be explained with the crisis of the rational culture, including mathematics and logic. Discourse practices and management aimed at arranging the intellectual group communication are far from science.

The prevailing situation is bringing to life the necessity to create tools that would allow for an efficient knowledge management, both at the level of information packing as well as at the level of communication and transmission of senses. These tasks could be solved with the help of Insafing, based on the development of new knowledge management models. Particularly, we had to diverge from the traditional approach of ontological to cognitive engineering (Ryzhenko, 2012a), and from the traditional logic to the so-called 'logic of senses' (Ryzhenko, 2012b, p. 39), a part of intentional logics. Cognitive engineering is devised as a tool for knowledge management and creation of new objects. Cognitive engineering, developed on the basis of TDIS, is opening new ways for the use of mathematical applications for knowledge management at the level of mathematical modelling.

It enriches management with serious scientific ideas that could be safely applied to practice.

Relation of Theoretical Fundamentals to Insafing Application

The sense scheme creation in Insafing employs the afore-mentioned 'sense logic,' whereas the game stage uses the intellectual communication practices to correlate the participants' standpoints. Let's take a look at 'sense logic.' The table and the sense scheme are built upon the operation of decoding developed in TDIS. Decoding implies that Insafing is devoted to a specific topic, which is determined by the source category. In the example discussed earlier, the category was to develop a tourism industry in a city. This category is specified by a group of three categories (first level decoding). Each of these categories serves as the basis for generating new triad categories (second level decoding), etc. The scope of this paper is focused on the second level decoding. Naturally, any other topic can be developed using this model, for instance, low-rise apartment building in n-district, etc.

At the game stage, the participants transform their own pre-communication (or pre-Insafing) opinions into one common understanding of the project situation; hence the probability of implementation of the generated knowledge increases multifold. The transference to the game stage of Insafing supposes the use of the potential of information currents. Even though the participants are not aware of these currents, they connect them. The theoretical and methodological basis of Insafing is in this case the functional aspect of TDIS. We can shortly describe them in the following way. DIS can be presented as a digraph with two types of edges (leading and controlling). The process of information functioning in the digraph is one of re-distribution of two types of resources (assets and liabilities) between its nodes. There are three ways of re-distribution (Razumov, 2007; Sizikov, 2009):

A_s – sum of assets in liabilities along the controlling edges of DIS;

A_t – transformation of liabilities into assets in some nodes of DIS;

A_d – distribution of assets along the leading edges of DIS.

Related to management through decision making, A_s provides local build-up of resources up to the required volumes, which are sufficient for decision making in the corresponding local places. Herein A_t displace the decision making acts. Essential in this case is the fact that decision making in DIS can occur simultaneously in more than one node, thus, potentially providing for a harmony driven environment, allowing for a prototype of management implementation as monitoring with the help of an imitation model (Sizikov, 2009). A detailed description of the application of this mechanism to management presents a research topic that can be explored in a separate paper.

In Insafing, it is important to affix the positions suggested by the formal model to the participants. In all triads, consisting of nine categories of second level decoding (indexed 00, 10, 20), the categories answer the following questions: what is it, what objects do we deal with, and what notions do these objects designate. Categories indexed 01, 11, 21 answer the following questions: what actions should be taken considering the objects, what mechanisms are we dealing with. Categories indexed 02, 12, 22 answer the following questions: what results are we getting and how to analyze and evaluate them. In Insafing, this could be presented by the move from a sense scheme to a table displaying the questions corresponding with a specific category on the scheme. There are two options: (1) the sense scheme is created by the moderators at the office stage and provided to the participants; (2) the sense scheme is generated as a part of the group work.

Managers, as well as specialists in other fields holding a higher education degree, can easily utilize Insafing technology. However, strictly defined scientific foundations imply the standardization of the process of preparing and making management decisions.

Insafing includes two stages: analysis and synthesis. Analysis unfolds through topic specification and decoding, which is implemented during sense scheme creation. At the end, nine participants become experts on the topics corresponding with the categories designated with double digit indexes. The transition to synthesis begins with the work at the level of the triads. Participants report on each of the three triads, accounting for the opinions of the three experts on the questions suggested by the first level decoded categories. Finally, the three experts, who reported the integrated answers to the category questions, combine the efforts to prepare and communicate a final report on the topic of Insafing, reflected in the initial category. An expert position should not include merely a single participant. The principle formulated earlier is dispersed at all levels of communication.

The peculiarity of Insafing at the functional level of working with information currents is the idea of the two forms of information – active and passive, together with the idea of the three stages of the functioning of information. Namely, in any communication each participant should realize that all communicators go through the acts of: receiving (A_s), understanding and creative interpreting (A_t), and transmitting information to other communicators (A_d). In Insafing, the participants are aware of each of these acts. The theoretical understanding and the practical development of this skill provide for the concurrence of the informational processes with the mechanisms of working with knowledge. In management, the role of the unconscious is discussed in many aspects. The examination of the three stages of information functioning in TDIS allows for the extension of these mech-

anisms to the behaviour of both individuals and groups. In this case, the acts (A_s) dominate at the level of the unconscious; the acts (A_t) refer to the manifestation of the unconscious; while the acts (A_d) present the transition to conscious actions – to making well-grounded decisions.

Theoretical and Practical Groundwork: Some Prospects for Insafing Development

This paper describes a simple example of Insafing organization. Its theoretical and methodological basis implies the use of only one TDIS operation – decoding. This allows for sense scheme construction on a given topic, group work, and, as a result, the acquisition of the project fundamentals. This work requires between 4 and 6 hours. The full version of Insafing includes the two additional TDIS operations: mutations and folding. Understanding the practical application of Insafing requires the provision of mathematical definitions. DIS at the level n^1 has 3^n nodes and 3^{2n-1} leading and controlling edges. The n -enumeration of its nodes 0, 1, 2 (mod 3) allows for the leading edge to be directed from node N_1 to node N_2 (respectively, controlling edge in the reversed direction) specifically when $\sum_2 - \sum_1 = 1 \pmod{3}$ ³ (Gantmacher, 1988). Connected mutation of DIS, as a digraph, presents a shift of its nodes. This shift does not break DIS geometry and connection topology between its nodes. However, it provides for a new way of DIS formation with the help of triad decoding of any initial category.

The set of all connected mutations of DIS at the level $n \geq 1$ forms an algebraic group M_n related to their super-positioning. In this case, the quantity of the elements is $3(3^{n-1})^3$.

Specifically, DIS at level 1 (standard triad) has three connected mutations providing the reversion of the triad to 0/3, 1/3, 2/3 parts of a full turn. DIS at level 2 has 648 connected mutations.

Therefore, if we take the scheme presented in picture 1, we can get a few more schemes, every one of which reveals a new aspect of the discussed problem. The new triads of categories, in this case, are given new names, which did not exist at the initial stage of work, resulting in a huge heuristic effect.

Consequently, based on the definitions referring to the basic sense scheme, we can construct five additional sense schemes. All of these new sense schemes act as the initial sense scheme and present a specific aspect of understanding the topic. As a result of the mutations, six new groups of categories appear. At this point, we use folding, the operation opposite to decoding. Folding provides a collective name for the original triad of categories. This heuristic mechanism in Insafing enables the search of six new categories, every one of which suggests an original idea, stage or direction in the project development.

Insafing: Overcoming the Discrepancy between Science and Communication Practice and Management

The rift between science and the practice of communication and management arises from the fact that science, in its origin and to present day, functions in 'unrealized imperfection.' This is exemplified by the following. Assuming that the titles of the categories represent the exact content of the underlying material, we would have to work out ($n!$) combinations in order to calculate all variations of the topic. Paradoxically, the more titles we specify, the more categories we get. The discourse of all variations becomes impossible. Therefore, scientific findings receive limited applications in the practice communication and management; as the basis we use experience, intuition, and instruction.

TDIS, cognitive engineering, and Insafing allow for the shift from unrealized to realized imperfection. This means that we can determine in advance the full set of possible combinations. TDIS permits the limitation of the factorial of all possible combinations to a smaller set of ontologically comprehensive elements of DIS class systems. In relation to this, an important function of Insafing is personnel training in order to work with new intellectual technologies connecting information and knowledge, as well as providing new forms of knowledge presentation, differing from the logic of Aristotle.

It is critical to point out the 'multi-objectiveness' of Insafing. The experience of the researchers (Lunacharskiy & Ryzhenko, 2011; Ryzhenko, 2012a, 2012b) shows Insafing to be effective both for faculty members teaching TDIS as well as for the practitioners solving a specific problem, who are unaware of the logic and mathematics.

Insafing for Knowledge Management and Intellectual Technologies Development

The transition from extensive to intensive models of economics and their emergence at the innovative level of development are impossible without the creation of new intellectual technologies. Constructive proposals for the agreement between the form-mathematic and the sense-content technologies of calculus and reasoning should be established at the basis of these new technologies. All of this calls for a systematic approach in the form of an interdisciplinary project, integrating mathematics, physics, and philosophy. The value of the scientific findings has to be assessed based on their ability to emerge at the level of new strategies of intellectual communication and management.

New intellectual technologies will be disseminated if they can be implemented in new information technologies. The booming IT-Industry involves people into communication processes diverse in their content, scale, and

speed; however it does not facilitate the improvement of their group research skills. Insafing is not a simple Activity Organizing Game, developed on the basis of TDIS, it helps form a new culture of managers' creative activity. A culture that facilitates the development of modern calculating tools concurring with intellectually heavy communications of people. Insafing gives a new approach to knowledge management integrating the achievements of the IT-Industry with the new proposals for the strengthening of the human intellect. The topic of this paper has a strong connection with the tasks necessary to implement innovations in business with the help of science and interdisciplinary research.

Insafing is safely applied to management schemes development for objects such as: corporations, clusters, cities, regions of the Russian Federations. For instance, its application in the project 'Omsk – the Entry Region to the Russian Federation' shortened the time and reduced the resources for project development and considerably increased the reliability of the results.

Conclusion

Insafing may be used for the development of conceptual documents in a given research area, reconciliation of different attitudes of experts regarding a given problem, development of strategies and performance of in-company consulting. It is taking on a special significance in education, because it not only allows the creation of a conceptual definition of a research area, but it also helps train the personnel who understand the problem and are ready to implement the ideas elaborated in the process of communication.

Insafing technology can be learnt and mastered by both students and professors specializing in various fields of study. In case of the training of future managers, the emphasis is on the action part arranged as an activity organizing game. In small groups involving 3–5 people, Insafing suggests that each participant individually works through all sense scheme positions on a given task.

The base methodology of Insafing is universal; it is intensively developing as a scientific program. The technological decisions for preparing and implementing Insafing can be applied to different problems from different fields of science, education, and project development.

Future research of Insafing development involves a variety of aspects such as: strengthening the fundamental basis of Insafing and developing TDIS and its applications, improving the Internet project First Sense Network (<http://thoughttring.com>) and Cognitive Assistant software, which have a common TDIS base described in this paper. Interdisciplinary research team formed by the authors of this paper continues improving Insafing for its application to the process of arranging communication on different projects

and consulting in various fields. Another aspect that needs further research is the development of tutorials for teaching future managers and other specialists on how to use Insafing in communication management.

Notes

- 1 In TDIS, folding is the operation opposite of decoding, which happens when it is necessary to choose a category as a name for a developed triad of categories.
- 2 The Russian word 'smysl' is close to the English word 'sense' meaning 'substance or gist', but it has a more philosophical interpretation in the aspect of rendering objective substance or knowledge conceived by a subject.
- 3 \sum_i – sum of the digits in N_i ($i = 1, 2$)

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