

## AGENT OF ACTIVITY EVALUATION OF SOCIAL COMMUNITIES

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*Modern social development has entered into a new era when the information space and based on it the information community have become the real driving-force of development in all human activity spheres.*

*Information community, as the social, economic and cultural system, has been recognized by scientists and researchers when changes became apparent in the society evolution. The main feature of development and formation of the new society is the increasing role of knowledge and based on it technologies. This is the acceleration of technological progress, reducing the share of production in the gross national product, service sector development, improving the quality of life.*

Conference participant,  
National championship in scientific analytics,  
Open European-Asian research analytics championship

The main characteristics of the new information society are associated with the rise of the person's role and importance in production development and active influence on historical processes. Special value of person in all processes of society development, based on knowledge, was determined by D. Bellom professor at Harvard University, who formulated the basic features of the information society [1, 2]. These definitions have become the basis for all subsequent theoretical researches and reflect the evolution in the economic, social and cultural spheres of society:

- in economic sector: the transition from production of goods to expansion of service sector;
- in structure of employment: dominance of professional and technical class;
- axial principle of society: the center of theoretical knowledge as a source of innovation and policy formulation;
- future orientation: the special role of the technology and the technology evaluation;
- decision-making: creation of a new «intelligent technology».

In the concept of «the information society as post-industrial society», information is considered as the economic category and as the public domain, which transform all spheres of social life in progressive direction [3].

The foundation of the information society - computer technology, the main function of which is in considerable enhancement the mental work of person. Informational and technological evolution turns into a new production strength and will make possible the mass production of systematic information, new technologies and knowledge. «The border of

the known» will become the potential market, the possibility of solution of pressing problem and the cooperation development will increase. Intelligent production will become leading sector of the economy, the products of which will be accumulated and distributed through the use of new communication technologies.

As the most important feature of the information society mark out its network temper, which replaces the previous structure of society's division into social stratum, where the dominant processes in the society «are more increasingly organized by the principle of networks». A new social structure is presented by networks, and distribution of «network» logic considerably affects the course and results of the processes associated with production, daily life, culture and politics [4]. The belonging to certain networks, and also the dynamics of development of some networks in relation to another becomes the most important source of information.

The main feature of the post-industrial society - the formation of technological production, for which is characteristic the production of wealth mainly by means of knowledge and information. Its basis is knowledge-intensive and resource-saving technologies. These include micro-electronics, telecommunications, robotics, production of materials with in advance given properties, and biotechnology.

Industrial society - a society of domination of mass production and mass consumption. In contrast, on a post-industrial stage it acts the trend to enhancement of diversity and industrialization of needs and demand. There are qualitative changes of personal consumption, in which the share of needs of non-material, humanitarian character such as

social, intellectual and cultural grows. The structure of consumer preferences is changing. Maximizing the consumption of material goods is gradually giving way to aspiration to improvement the personality. The demand for goods and more high-class services used for lightening life, saving time on housework, leisure, entertainment, sport and tourism is increasing. Requirements to quality of consumer goods, to their environmental purity are raising [5].

An important distinctive feature of the present stage of society development is the increasing its informatization, which is associated with providing stakeholders by reliable, exhaustive and timely knowledge in all human activities. The complication of industrial production, social, economic and political life, the change of dynamics of processes in all spheres of human activity have led, on the one hand, to an increase in requirements for knowledge, and on the other - to the creation of new tools and ways of satisfaction of these wants.

The rapid development of computer technology and information technologies formed the basis for the development of a society, constructed on the use of various information in all spheres of life and professional activity of people in culture, science, education, economics, health care, household sphere. In such society, the main object of management are not physical objects, and symbols, ideas, images, intelligence, knowledge [6].

Modern society has created a new environment - information space, which is similar to natural phenomena, exists independently, develops and interferes with a person's life. Having created another reality - a virtual, where everything is very similar to the usual order of things and at the same time does not have any-

thing in common. The emergence of information space is the next round of the evolution of humanity, called up to take our community to the next level of development and caused by global changes in the requirements, shown by person to everything that surrounds and defines the success of interaction with other members of society.

The information space is characterized by new features so-called cloud computing, as the new organization of infrastructure and the application's creation which replace the traditional client/server, multi-link and distributed solutions for automation various business - tasks. A new way to look at the whole process of automation of company activity and software development, to abandon the high input investment into infrastructure and its subsequent maintenance, and also to solve problems of fast deployment of applications.

Cloud computing - is such approach to the placement and providing applications and computing resources, when applications and resources become available over the Internet by the way of services, consumed on various platforms and devices.

Timely response to changing external factors is one of conditions of successful business. For example, the current market conditions and the actions of competitors may require to rapidly introduce a new product or service, having made thus a full cycle of planning, design and development of an information system. Cloud computing will quickly allow to create the necessary capacity of infrastructure, without the need for initial investment in equipment and software. The traditional way of the deployment of the information system and the development of applications, may take considerable time.

In many ways, cloud computing is the result of the natural evolution of infrastructure of data processing and models of application for the creation and use of scalable distributed solutions. With the developing the methods of application's construction of this type, the possibilities of infrastructure, in which they are performed, also have developed. This co-development has created conditions where infrastructure is separated from the applications, which are placed

in it. The life cycle of infrastructure and lifecycle of applications is no longer associated with each other, and it allows applications to take the advantages of the services, supported by infrastructure, and of the capabilities, having focused thus on business - functionality. At present the application in the cloud - a service remotely accessible through the internet channels.

The existence in the modern information society of social networks pre-determines the development of new technologies related to accumulation and information processing. New technologies significantly influence the development of public relations, business management systems, policy pursued by local authorities and government policy in general. Information space (cloud) in this case serves as a platform for the exchange of information by means of which public opinion is formed, which is accompanied by explosions of civil disobedience and leads to the revolutionary process.

Creation of the service in the cloud, acting as an *iAgent* (intelligent agent) in various fields of human activity, is one of the most popular solutions.

*iAgent*'s role is not only the information accumulation, but also the ability to filter and provide knowledge.

Let's consider the possibility of creating *iAgent* for analysis emerging problems of public opinion in a network information space or in the cloud and define the basic design decisions. At the creating *iAgent* it is necessary to answer the question "what is to provide" and "how to provide" knowledge. The creating *iAgent* needs to be started with the creating a repository of knowledge of information flows. The structure of *iAgent*'s repository is determined by the following factors:

- the research environment;
- the research objective;
- the language of communication.

The structure of the knowledge, represented by *iAgent*, depends on the user's requirements about specificity of research environment and research objective.

An indicator of quality of *iAgent*'s service in terms of knowledge representation is the ability to provide relevant knowledge. And the relevant knowledge should reflect changes of real objects in the research environment.

Let's define multidimensional structure of the repository of knowledge in the following way:

Layer - a set of information flows in the cloud, describing some essence of the research environment.

Function - set of filters of research direction.

Network representations - reflect communications between the layers and functions.

The designing a network representations presents the greatest interest in creating *iAgent* to search for information in the repository and is the most difficult in realization. The difficulty is that it is necessary to observe the following principles of information representation in the cloud:

- the principle of minimum of uncertainty;
- unity and adequacy of information;
- the inheritance of the current state;
- comparability of results.

Network representations determine the information flows, answering to the research direction. Model of the network representation of information on an interesting problem is represented in the following way:

$$\forall R \exists R \in Q \rightarrow \min \notin \emptyset;$$

where  $R$  - layer (set of information flows describing the research problem);  
 $Q$  - *iAgent* repository.

Set of information flows describing the research problem it is defined as:

$$f: P \rightarrow R;$$

where  $f$  - the target function / filter of research direction;

$P = (P_x, P_y, P_z, \dots)$  - set of information flows / network information.

For the research of the information flows, describing the emergence of the problem of public opinion, and thus the activity's evaluation of social communities, *iAgent* must allocate the information flow with the greatest intensity of emergence. For a possibility of allocation of information flow, we introduce the citation index of flow. Thus, the task of searching the information flow from its intensity can be presented as:

$$Y_p(x) = \sum_{x_0}^x \int \delta(t) dt \rightarrow \max;$$

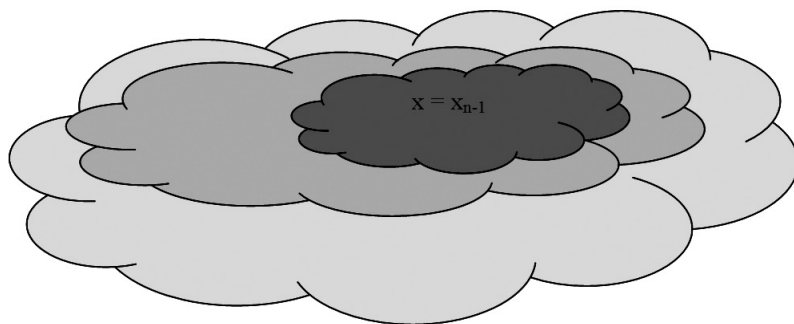


Fig. 1. Layer formation

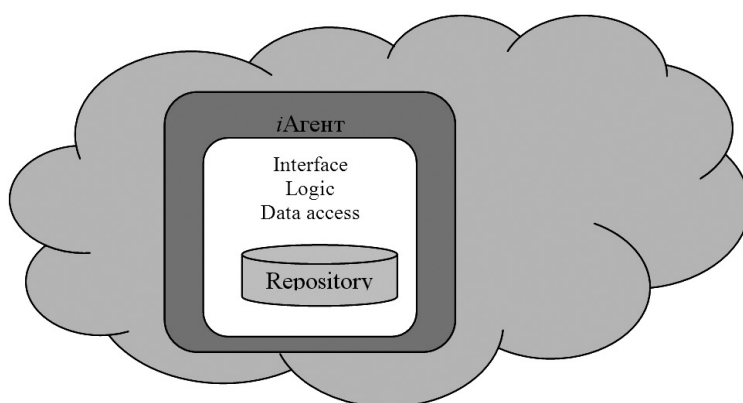


Fig. 2. Architecture of iAgent

where  $Y$  - the intensity of information flow;

$x$  - citation index of information flow.

Formation of public opinion in the network information space can be compared to natural phenomena, when they slowly but surely building up their force, and then call the disaster Fig. 1.

Let's define the architecture of *iAgent*. First of all, it is the service using cloud technology and servicing users' requests Fig. 2.

The analysis of information flow by *iAgent* should be made in two modes. With the information accumulation in the repository about the state of the

networks, forming information flow and the express the analysis, when the repository reflects the current state of the networks, forming information flow.

### Conclusions:

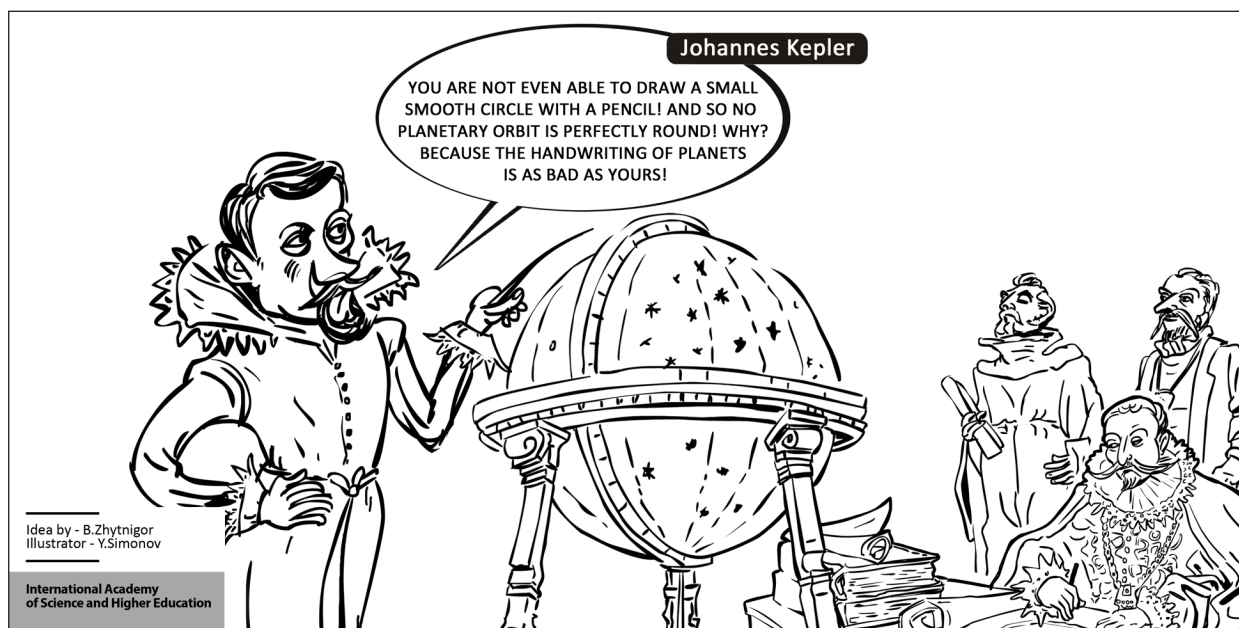
The architecture *iAgent* (intelligent agent) is developed to search for problems of public opinion.

The model of the network representation of information is developed as a layer set of information flows.

The task of formalizing of information flow from the intensity of emergence is solved, which allows to assess the activity of social communities.

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