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## **MODERN TOOLS OF COMMUNICATION FOR IT-PROJECT MANAGEMENT PROCESS: PRACTICE OF ADAPTATION**

**The practice of adaptation and basic aspects of the different kind of communication using modern tools for IT project management is presented in this article. The project communication components and channels are considered in details. The basic recommendations for organization of the effective communication were defined. The relational model of organization of the IT project communications is developed. The comparison of different kinds of modern communication defines dependency of the main project's successful components.**

*“Global literacy” is defined as a state of seeing, thinking, acting and mobilizing in culturally mindful ways. To be successful in the 21<sup>st</sup> century, leaders must acquire four interrelated and interconnected global literacies: personal, social, business and cultural.*

### **Introduction**

Today's leading companies in the field of information technologies begin to create their branches in regions. They are specialized in software development and testing, technical support of software products and information consulting. It is mainly explained by the less cost of labor in regions, than in large towns, and supplying of regions by graduated students with higher education with the high level of preparation in the field of information technologies.

### **Problem Statement**

One of the reasons that decreases effectiveness of the work of such virtual, territorial distributed project teams is a geographical remoteness between participants, divergence of time zones; and in the case of international commands linguistic and social-cultural factors. Problems in providing the effective communications and firmness to the nascent conflicts in IT projects together with inadequacy of project information are three from six major reasons of project failures. That's why the actual tasks are synthesis of communication process organization in IT-project's management by the modern means of business relationship with the use of progressive information technologies and search of facilities of design of situational relations.

## Organization of Project Communication

The Project Management Institute (PMI) identifies nine knowledge areas in The Project Management Body of Knowledge (PMBOK). Project Communications Management (PC) is the most major of them that includes the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval and ultimate disposition of project information. The PC Management processes provide the critical links among project team and information that are necessary for successful communications [1].

Project Communication can be divided by phases and consists of such components as: Communication Planning; Information Distribution; Performance

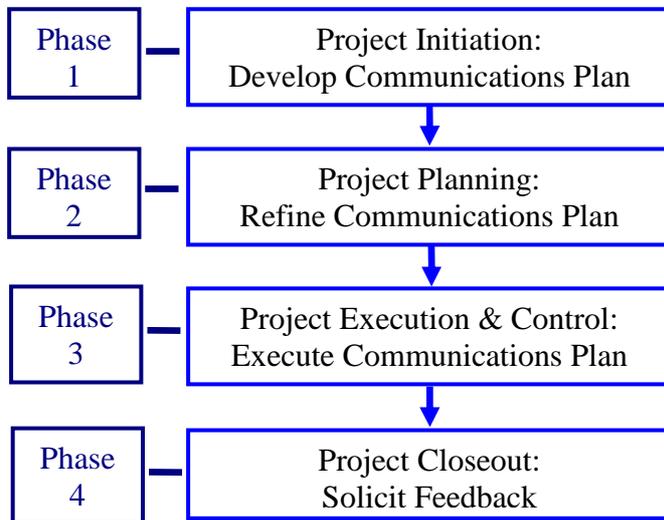


Fig.1. Communications by Phase

Reporting. Necessity of applying communication defined such factors as: IT responsibilities are not consistent; IT relationships with application users are not always consistent; implementation of systems at the local level may require political approval prior to use; funding issues may require

significant lead time; change management can be complex [2].

Fig.2. demonstrates the basic aspects of organization of the IT project communication that provide an effective team work and future success.

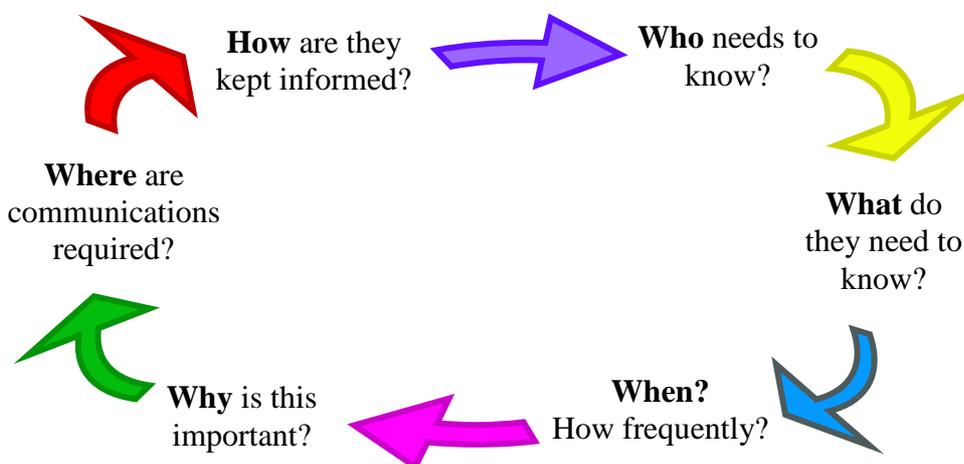


Fig.2. Basic Aspects of Project Communications

The analysis of just defined aspects of project communication and depending on experience of leading IT specialists allow to generate the basic recommendations for organization of an effective project communication.

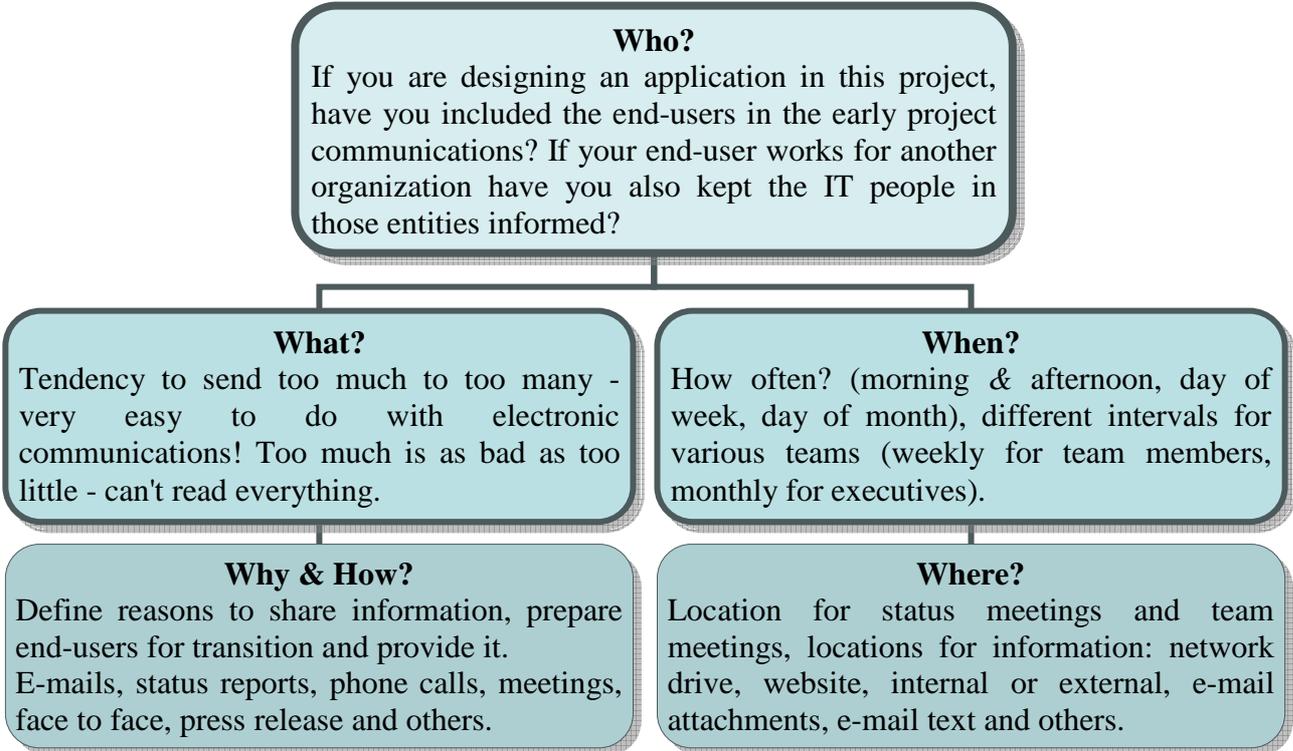


Fig.3. Basic Recommendations to Organize an Effective Communication

The method of creating the communications matrix proved to be efficient for solving a problem of providing the reliable project communications. The communications matrix is a tool of applying above-listed recommendations of organization of an effective communication (Tab.1.).

Table1. Communications Matrix

<b>Audience</b>	<b>Vehicle</b>	<b>Frequency</b>	<b>Medium</b>	<b>Source</b>	<b>Delivery by</b>	<b>Date delivered</b>	<b>Expected result</b>
All, Part of Team etc.	Conversation, Report etc.	Monthly, Scope change etc.	Meeting, Hard Copy etc.	PM, Report etc.	Team, PM, Customer etc.	As needed, monthly etc.	Impact of project etc.

As can be seen in Table 1 the communications matrix defines item, object and assets of IT project communication.

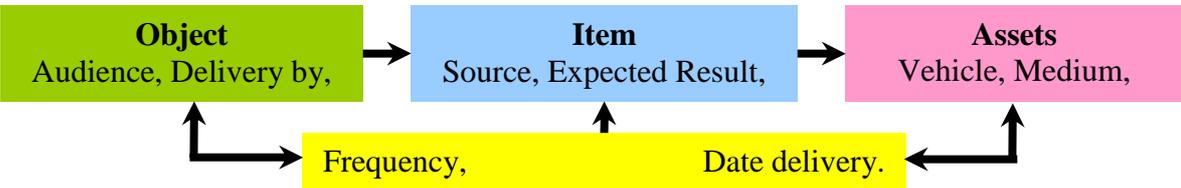


Fig.4. Item, Object and Assets of IT Project Communication

Communication channels are presented in accordance to project communication matrix (see Fig.5).

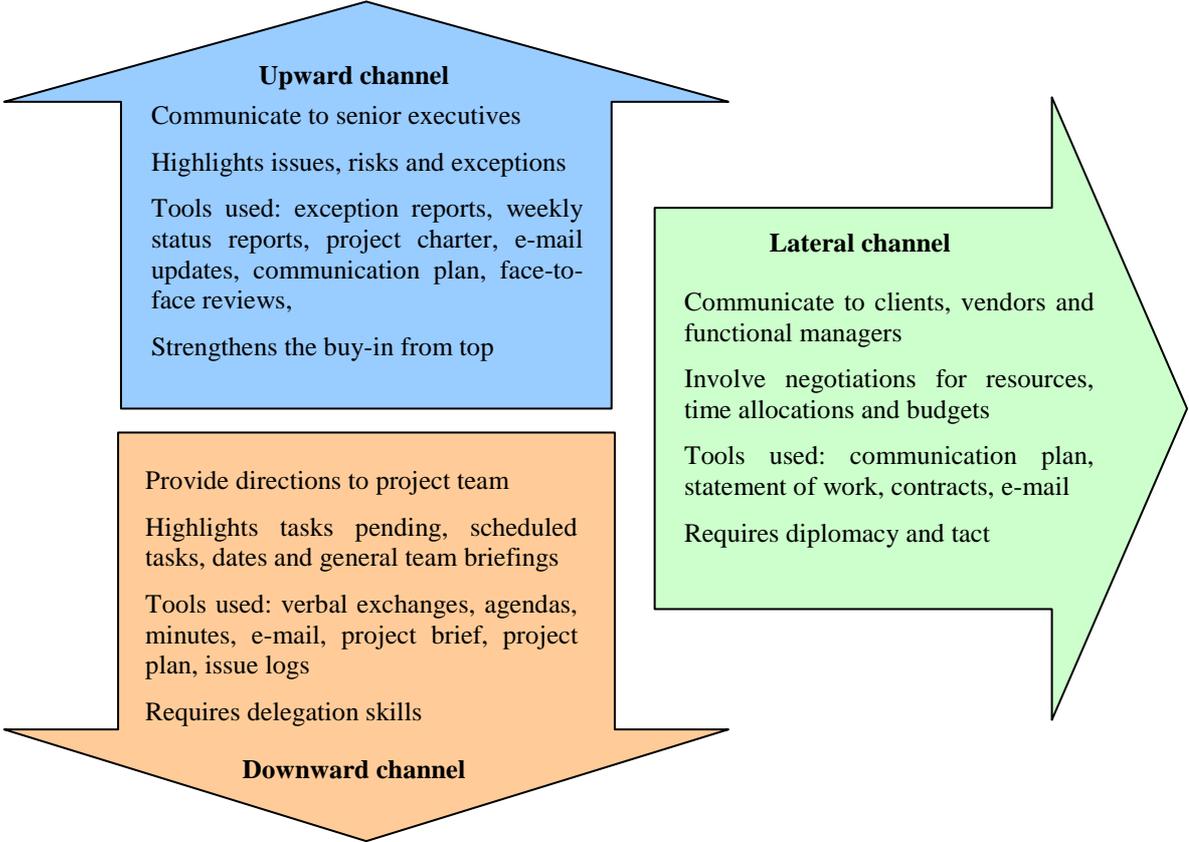


Fig.5 Communication Channels

**Relational Model of Project Communications**

The developed model structure demonstrates the process of organization’s communication of a company’s branch workers with guidance of main office and directly with customers which in the turn can be on other continent. The types of possible models were explored and defined that relational model of organization of communications in the process of IT projects management is the complete visualized state of project and contains consequence relation and determines dynamic changes between the participants of project during its motion.

Wide possibilities of the language of set theory allow describing the presented model which consists of two single sets:  $P_M = \{1\}$  – is a leader of project and  $C = \{1\}$  is a customer. The sets of technical leaders –  $T_L = \{1...K\}$ ; the sets of participants of project –  $P_p = \{1...N\}$ , and  $K \ll N$ ;  $M = \{1...R\}$  are the sets of mediators, and  $R \ll K$ . The main task is providing of connection of the project technical leader

(Tech Lead/Team Lead) which works in the branch of company with the leader of project (Project Manager), which is in a main office and with the customers of software product (Customers) or representatives of customers. It is worth to describe the hierarchy of connections as follows: participants of the project → technical leaders of groups → leader of the project → the representative of a customer → customer.

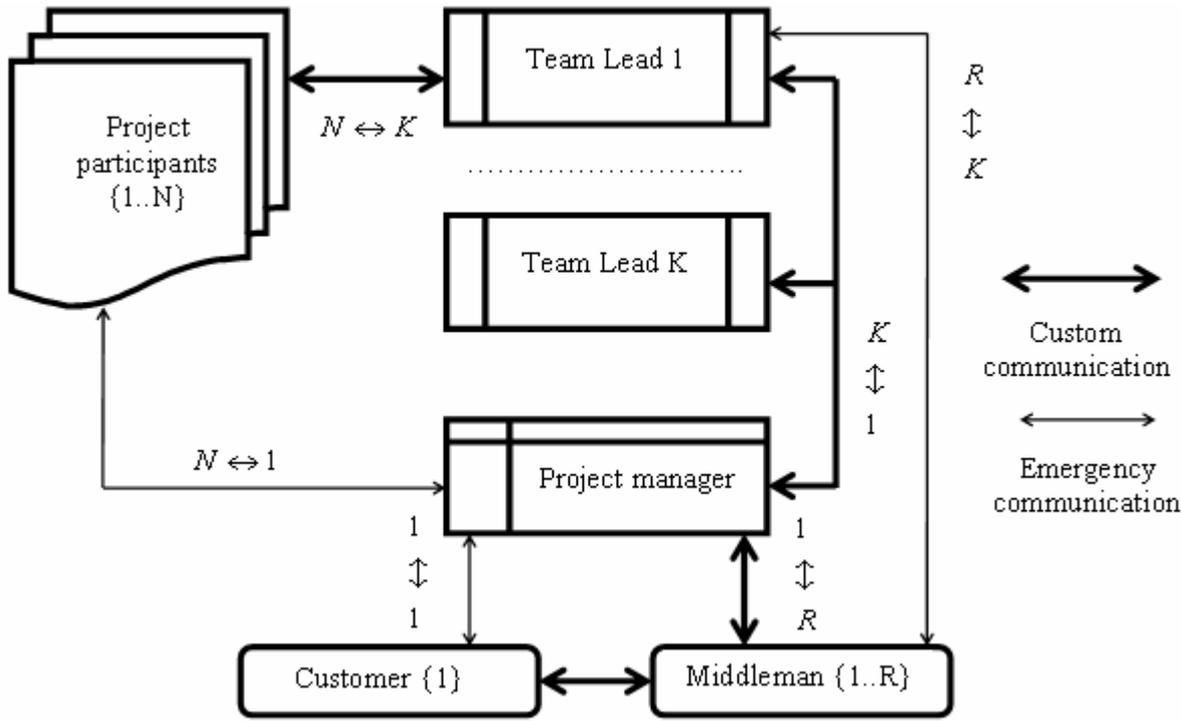


Fig.6. Rational Model of IT Project Communication

Interactive communication and exchange with project documents with data that is updating dynamically is carried out with the use of such software:

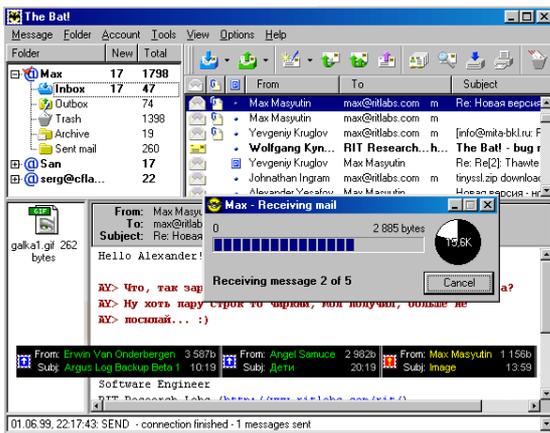
- software testing process control system (TestLink, RUP);
- reporting system about defects (Bugzilla, Trac, Mantis);
- system of accounting of testing results (ProjectLocker, QADB);
- on-line communicational systems (Skype, ICQ, Yahoo);
- system of organization of correspondence (Outlook Express, Bat et al).

**Information Technologies & Effective Communications**

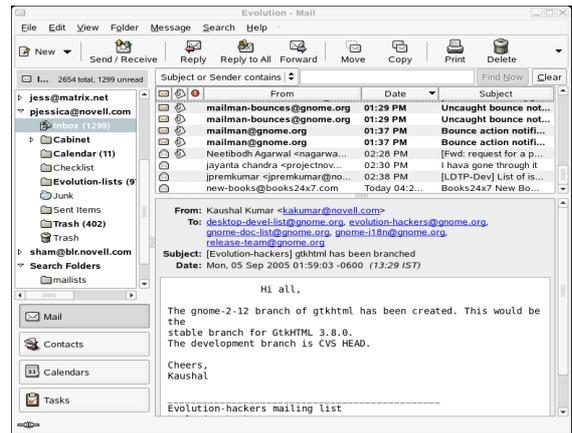
Modern progressive information technologies are able to provide effective communications between the participants of project. For the complete or partial solving of this problem Web-technologies and video conferences can be used. In

addition, organization of interactive intercourse can be carried out with the use of software, presented at the market of progressive informational technologies.

On functionality and principle of work it is possible to divide the programs into the network pagers, IRC-chats, Web-chats and combined programs on-line intercourses which allow holding conferences with the participants of project and communicating with the use of IP telephony.



a) The Bat



b) Evolutional Mail

Fig.7. E-mail Communication Tools

There are the basic recommendations and stages of communication by e-mail such as: a) Create the message timely, accurate and as defined; b) Deliver the message; c) Accept feedback as input. Following just defined characters allow supporting effective e-mail communications on IT project.

In Fig.8. presented the most-used on-line communicators as other tools that can be thoroughly used during managing or participating in IT project.



Fig.8. The Most-Used On-Line Messengers

The basic features of presented messengers are: status indicator, contact list, chat, chat history (Message log), integrity with others, IM-networks (Int), conferences organization, IP-Phoning (VoIP), support of video communications (Web-camera), support of usual telephone calls (PSTN), files transmission (File), sending SMS (SMS), pictures or desktop translation, support of secure connection.

Tab.2. demonstrates the comparison of on-line messengers by most critical functions such as: VoIP, PSTN, Video, SMS, Log, File.

Table2. The Comparison of On-Line Messengers

	VoIP	PSTN	Video	SMS	Log	File
<u>Yahoo Messenger</u>	✓		✓	✓	✓	✓
<u>Windows Live Messenger</u>	✓		✓	✓	✓	✓
<u>AIM Pro</u>	✓		✓			✓
<u>Skype</u>	✓	✓	✓	✓	✓	✓
<u>Google Talk</u>	✓				✓	
<u>ICQ</u>	✓		✓	✓	✓	✓
<u>Gizmo</u>	✓	✓				
<u>Apple iChat</u>			✓		✓	✓
<u>Qnext</u>	✓		✓		✓	✓
<u>Trillian</u>	✓		✓		✓	✓
<u>Gaim</u>				✓		✓
<u>Ineen</u>	✓		✓			
<u>Jabber</u>	✓				✓	✓
<u>Jabbin</u>						✓
<u>Meebo</u>						
<u>KoolIM</u>						
<u>AIM Triton</u>	✓	✓	✓	✓	✓	
<u>Invite</u>	✓		✓		✓	✓
<u>WebMessenger</u>	✓	✓			✓	

There is the list of most effective and functional on-line communicators as can be seen from Tab.2:

- Yahoo Messenger (<http://messenger.yahoo.com>),
- MSN Messenger (<http://messenger.msn.com/>),
- Miranda (<http://miranda-icq.sourceforge.net>),
- ICQ (<http://icq.com>),
- Skype (<http://skype.com>).

It is significant the most popular on-line messengers abroad such as: IRC (<http://www.mirc.com/>), RQ ([www.rejetto.com/&RQ](http://www.rejetto.com/&RQ)) and others [3].

It is necessary to make a conclusion about using different kinds of communication such as: on-line messengers, e-mail, phone and personal contact on IT project. On Fig.9 demonstrates parts of usability of different communications.

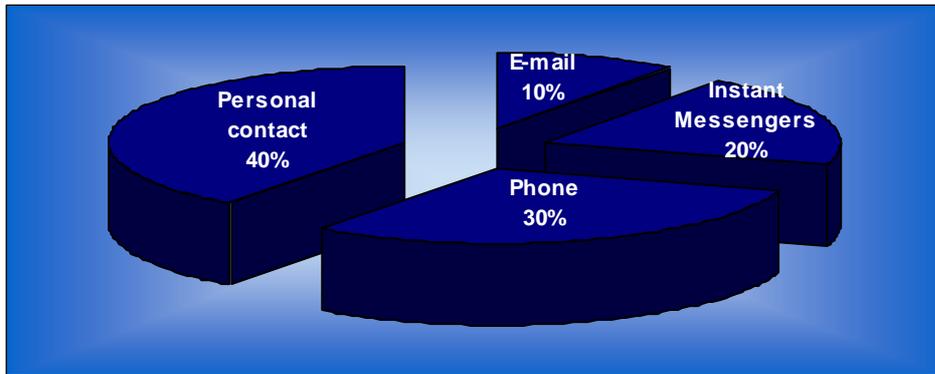


Fig.9. Parts of Usability of Different Communication

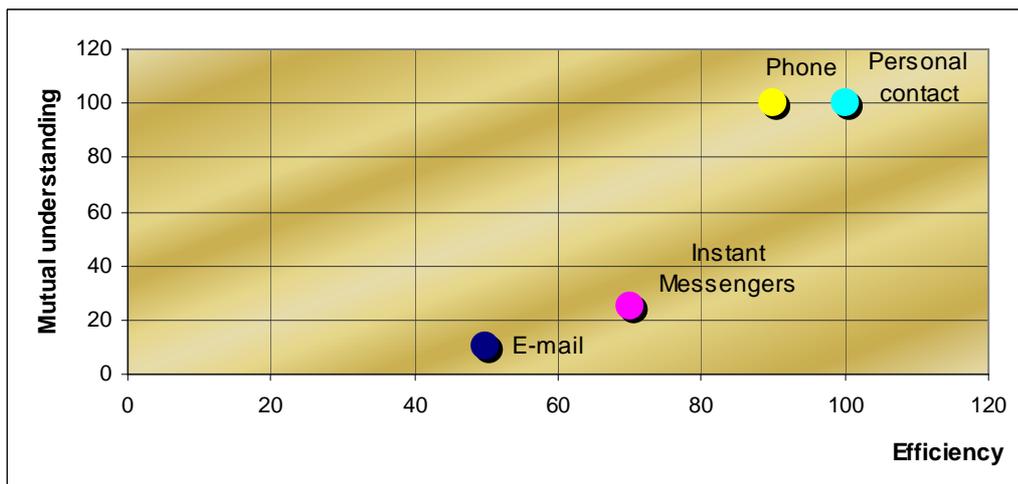


Fig.9. Dependency of the Project Mutual Understanding on Communication

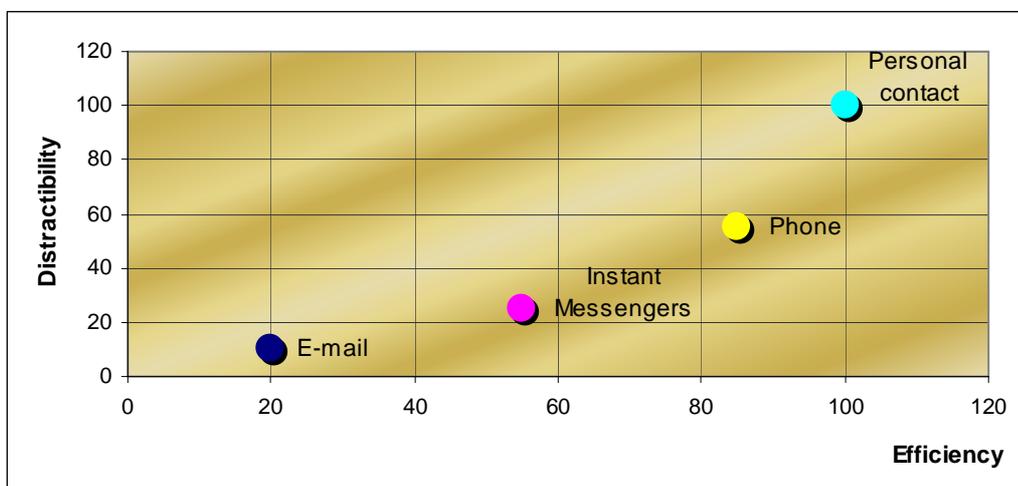


Fig.10. Dependency of the Project Distractibility on Communication

On Fig.9 and Fig.10 demonstrated dependency of the project distractibility and mutual understanding in communication and as can be seen it closely connected with project efficiency.

The mutual understanding between project participants is one of the critical characteristics to producing the successful IT product that directly connected with selection of project communications. As demonstrated on Fig.9, the highest degree of mutual understanding can be provided by phone and personal contact, the lowest – by e-mail.

The distractibility of communications is the next critical characteristic to producing the successful IT product that influences on project efficiency. As can be seen from Fig.10, e-mail is less distractible communication tool than instant messenger and phone, but it provides the least efficiency. Personal contact, compared to e-mail, provides the highest project efficiency, but it has also the highest degree of distractibility of project participants.

Instant messengers are the alternative tool that supplies the effective IT project communications because of the low degree of distractibility and middle degree of mutual understanding.

The data about dependency of the main project’s successful components is classified on Fig.11 and demonstrates critical aspects of applying communications.

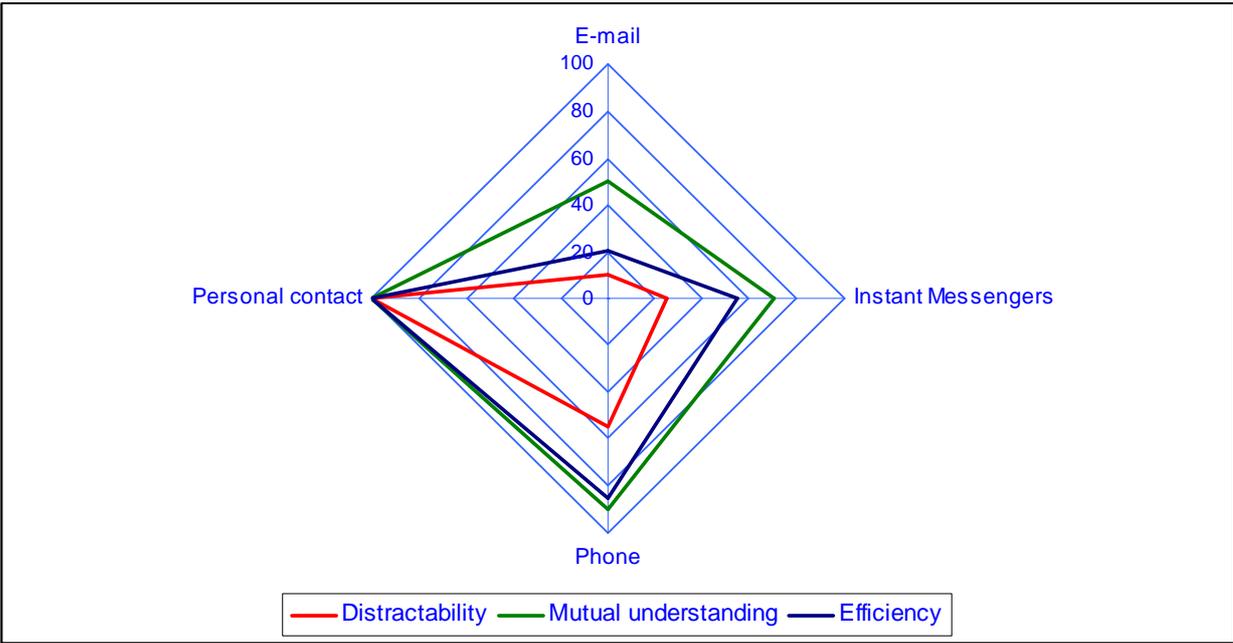


Fig.11. The Impact of Communication to Project Succeed

## **Conclusions**

Organization of the IT project communication is the part of project management process that required ensuring timely and appropriate generation, collection, distribution, storage, retrieval and ultimate disposition of the project information.

The presented method of creating the communications matrix proved to be efficient for solving a problem of providing the reliable project communications. The communications channels in accordance to project communication matrix defines items, object and assets of project communications.

Modern progressive information technologies are able to provide an effective communications between the project team members. The critical aspects of applying different kind of modern communications define dependency of the main project's successful components such as mutual understanding and distractibility. As a result of using different communications the instant messengers are determined as an alternative tool that supplies the effective IT project communications because of the low degree of distractibility and middle degree of mutual understanding.

Developed relational model describes the main principles of organization of the continuous communication in the process of IT-project management and provides the use of modern IT. It also provides the economy of project's facilities and warns of rising conflict situations on project.

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