

## COMMUNICATION ENVIRONMENT DESIGNED FOR PROJECT COOPERATION OF SMALL AND MEDIUM ENTERPRISES

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**Abstract:** This paper is concerned with design and optimization of a suitable communication environment for project cooperation of small and medium enterprises. When more business subjects are cooperating on the same project, it is essential to provide an appropriate environment for effective communication. Commonly used methods of communication are not effective enough for use in projects exceeding a certain number of participants. There is a need to ensure also the monitoring of communication and its management. Fundamental problem in this concept is data security and ensuring that information reaches all interested parties. This is the problem of communication between large number of users across plenty of business subjects.

**Key words:** communication, communication environment, communication management

### 1. INTRODUCTION

Fast, efficient and transparent communication was identified as a basic need for a good co-operation of more companies in various common projects. None of the other known parameters affect the efficiency of cooperation as much as communication does.

The cooperation of several companies on one-off projects such as R & D means a collaboration of a large number of users across a number of totally different business entities. There is none or very minimal possibility that these different entities will unify their enterprise information systems for the short-term cooperation. In the long-term cooperation the idea of unification of corporate information systems in terms of return on investment is also very controversial. Therefore the start of cooperation is threatened by the absence of an effective way of information and data exchange.

Another important question in this concept is traceability and relevance of communication. In terms of trust it is essential that each of the entities is able to monitor and store the communication. That allows reverse analysis of communication back in time (Šimon & Černý, 2009).

Effective communication environment, which would be affordable to small and medium-sized enterprises (SME's) are currently on the market only in very limited quantities. There are already existing similar sophisticated massive server-based communication environments or in a smaller scale, electronic forums. However, these solutions require a central server where all data are stored. Paradox is that the concept of communication through a central server as a data repository is very secure and still it meets with the considerable reluctance of companies to store their data on a server which is not directly under their control (Saaty L. T. & Vargas G. L., 2006).

The proposed environment works on the principle of software client on individual workstations serving the appropriate e-mail account. All data are stored in the client's email account, which is mostly on the well-secured company's server. Therefore there is no need for a central server and transmitting data storage outside the corporate network. We are

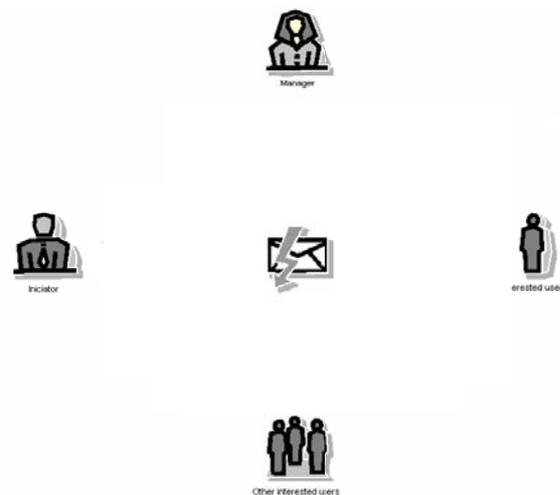


Fig. 1. Communication channels in the communication environment

working on the possibility of integration of the client to MS Outlook. Application is developed in a programming language Java 1.6.

### 2. COMMUNICATION ENVIRONMENT

#### Functions required for communication environment

- Proposed communication for business communication network is made up of two basic functional units providing the following features.

#### The communication and information exchange

- Creation of clear reporting structure.
- Ensuring that the message will get to all interested users.
- Environment allows imposing requirements on individual users.
- Effective feedback.
- Sorting out of already outdated information.
- Registration of new users.

#### Analysis and management of the communication

- Reverse analysis of time connected to the processing of messages (Tupa & Basl, 2006).

### 3. ANALYSIS

Users with the right to have the power can monitor all the timing information related to messaging. This function is essential in order to prove the relevance and to support fulfilling of project deadlines. With the ability to see for example how long it took to the user to respond to the message the manager dealing with the communication analysis is then able to identify

clearly who is responsible for the late response and thus a possible delay of the project. This function can be demonstrated as on of the pre-set functions of user requirements (Stančík, P et al., 2004).

Two companies are working on joint project in research and development, one dealing with design and production of the device cover and the second one dealing with the electronic parts inside the device. In the example should be mentioned that the second company has the limit for development of electronic products for 30 days. It is important to say that this development is controlled by company number 1, which is responsible for the delivery of information on time and for all the approvals. Thanks to this system it is clearly visible, for example, that the company number 2 sent the requirement for approval of scheme addressing internal parts the fifteenth day. In the system is then clearly seen that the report requirement left on the fifteenth day. Employee of company number 1 responsible for approving read it on the eighteenth day, and replied after four days. Therefore, if there was a failure to finish the project on time, due to the proposed environment it is very easy to identify who and how long was working on the project. In the example mentioned above the company number 2 was waiting for an answer for seven days and they should be therefore deducted from the final date of the contract. In the case of the proposed client software this problem is solved by using an auxiliary email which leaves right after opening the message without the user knowing about it.

### **3.1 Specifically, it is possible to monitor and analyze these times:**

#### **When the user sent or received the message**

This time is a normal part of email header.

#### **When the user opened the message**

In this case the client generates and sends supportive email in background for analysis purposes only.

#### **When the user responded to the message**

This time is also a standard part of the header of each message. And it is important for monitoring of how long users run their tasks on the project.

### **3.2 Communication analysis is proposed from three basic aspects:**

#### **From the perspective of specific message**

There is a possibility to select a specific message and to visualize it in the table of two columns who and when read the message. It is possible to determine specifically which user and when responded to the message.

#### **From the perspective of specific user**

There is offered the opportunity to see in two tables, what message the user received, to which of them and when did he respond, or when the user created a topic.

#### **From the perspective of a specific topic**

User can view a specific topic and find out when and which user contributed to this topic or read this topic.

For the time analysis of the project Gantt chart is used. Users can mark important messages and visualize them in a Gantt chart. This chart can be made both in terms of individual users and the level of business entities cooperating on the project. Messages that appear in the Gantt chart can be manually selected to keep the chart transparent.

#### **Data in the communication environment**

In the communication environment possibility to save and export whole communication in appropriate format is required. This can be used as complete project documentation. It also creates a knowledge base, which is possible to use in the future.

Automatically there is a great emphasis on data security.

During cooperation with various companies for example in the research and development organizations have to exchange classified information which can be very valuable (Votava, V et al., 2008).

## **4. CONCLUSION**

The aim of our research is increasing an efficiency of cooperation of small and medium enterprises. Communication was identified as the most critical factor of success during the interviews with representatives of the cluster, and other small and medium companies cooperating in this market segment. For this reason is our research focused on increasing competitiveness by streamlining communication between those entities for this reason. Aim of this research is to create an optimal communication environment and communication methodology focusing on cooperation of SMEs in the virtual network.

In collaboration with managers from cluster initiative the software client is optimized for maximum efficiency in communication between the SME's. It is necessary to ensure the highest possible applicability in real business and therefore sometimes user friendliness and easy control is more important than the complex user functions. Interesting advantages of this concept comparing to the existing solutions is in the easy integration into the company, no need for the central server, high data security and support of large number of users.

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