A BANKING COLLABORATIVE TAGGING SYSTEM

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Abstract

The paper presents the collaborative systems classification by field of application. There are described the collaborative tagging systems and an implementation of this kind of systems is analyzed in a commercial bank. The Collaborative Multicash Servicedesk application is presented in order to implement an auto-complete facility.

Keywords*: collaborative systems, tagging, auto-complete, banking, application.*

1. Collaborative systems classification

Collaborative systems are encountered in several areas, such as business, banking, health and education. These environments offer elements that allow the development of collaborative tools, so as to enrich agents' collaboration. [1]

The collaborative systems are developed based on a set of specifications that were defined in the analysis stage in order to establish the objectives for the development process. A collaborative system must behave and must give the results the agents want and that they have stated at the start. [2]

The agents of a collaborative system represent any entity interacting or exchanging data in the system, be they people or software applications. Every agent's roles can be seen as a group of processes that an agent can execute. A process is one of the ways to use the collaborative system. The whole set of available processes define what the collaborative system is used for and demand a specific configuration. [3]

The collaborative systems are classified in many categories and there are a lot of criteria for collaborative systems classification. Many types of collaborative systems were developed in the practice, some of them being encountered in all activity fields.

Field of application classifies collaborative systems in: collaborative systems in education, collaborative systems of defense, collaborative systems in production, collaborative banking systems, electronic business systems, public administration systems, media software development systems, collaborative functional systems, collaborative micropayment systems, collaborative planning systems, collaborative tagging systems, collaborative writing systems and collaborative medical systems.

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In the knowledge-based society, a very important research subject is provided by the collaborative tagging systems. This kind of systems provides a new means of organizing and sharing resources [4] [5].

2. Collaborative tagging systems

There are many collaborative tagging systems on the web, significant examples being search engines like Google, Yahoo, Bing and others. They offer auto-complete options and suggestions to help the users to quickly find something. If you want to find a video on YouTube, but you do not remember exactly the video name, the collaborative tagging system will help you by displaying video names appropriate with your query string.

If a collaborative tagging system is considered, represented by a service desk application used in a bank that offers technical support for the electronic payments service, then the followings specifications are taken into consideration:

- use tags for ensure the correct search in the database with customers;
- build the application as a collaborative tagging system that offer auto-complete options and suggestions to help the users to quickly find something;
- determine the categories of incidents with the great number of requests;
- involve the simultaneously work of many analysts.

The goal of this application is to store and process the customers' requests, solved by the helpdesk analysts within a commercial bank.

The implementation of this application was made under the requirements of bank management, using the information technology approved by the bank, so that the final software product meets all quality characteristics.

3. Example of a collaborative tagging system in a bank

A bank is a collaborative system with high complexity, with a large number of components and a large variety of links between them. The complexity of the banking system is given by the operations they carry out, but also by the collaboration between different banks from different countries and by the alignment to standards imposed by the regulations in this worldwide field.

All the information systems from a bank are collaborative systems, because they require the cooperation, communication and coordination of many software applications in order to achieve a common goal. This common objective can be represented by the successful processing of a payment order or by the interest calculation of a term deposit.

In a bank that offers helpdesk services for the Multicash application, a collaborative tagging system was implemented, in order to determine the categories of incidents with the great number of requests. This system is represented by an application, Collaborative Multicash Servicedesk – CMS, which is available at http://collaborative.ase.ro/teza.

The Collaborative Multicash Servicedesk application goal is to store and process the customers' requests, solved by the Multicash helpdesk analysts within a commercial bank in Romania.

In the Collaborative Multicash Servicedesk application only authorized users have access based on a user name and password. The application administrator is dealing with the access rights of each user, adding and deleting some users according with the bank security rules.

The CMS application involves three categories of users: customer, bank analyst and administrator. Each user has a different interface depending on its category. The customers have the possibility to post a problem, to view an existing solution from the knowledge database and to view the status of their posted problems. The bank analyst can take a problem posted by a customer and solve it. The administrator has the possibility to generate reports regarding the status of problems solved by each bank analyst. [6]

The fields to be completed or selected by the bank analyst are:

- customer name, based on suggestions from a predefined list of Multicash customers;
- the contact person of the customer who made the call;
- the request category, which was a drop-down list with predefined categories and related codes;
- request description, which is a field for adding the details of the problem;
- the way to solve by selecting the appropriate option.

The application provides a search option of a request in the database and the export of requests table in Microsoft Excel.

The customers have also an interface in which they can fill in a request. This option is used for the non-phone requests solved by the bank analysts.

In figure 1 is presented the manner in which an analyst fills the customer name, using the tagging facility offered by the Collaborative Multicash Servicedesk application. By entering a word or few characters from the customer name, the system automatically search through the clients database the name appropriate to the string entered. The search is realized in a table with 6.000 customers with the help of JavaScript and C# functions.

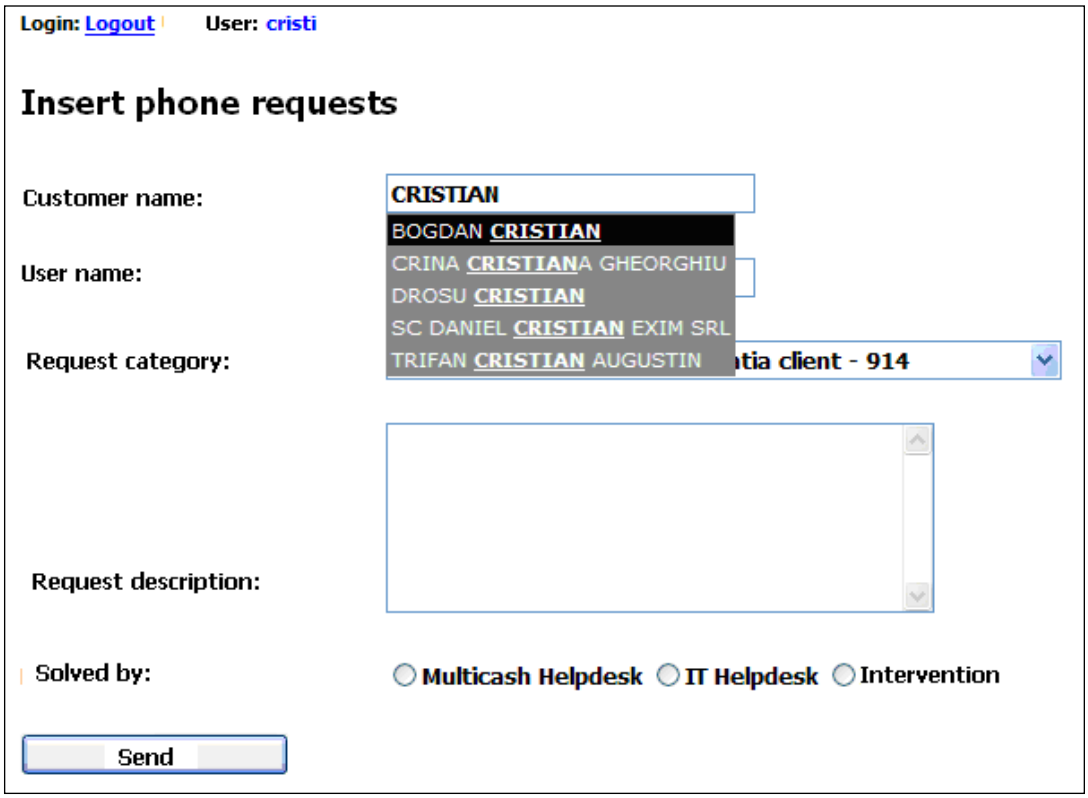

Fig. 1. Tagging facility for customer name

The collaborative tagging system represented by the CMS application offers an auto-complete facility in order to help the analyst to correctly fill and find the name of customers and users which called the technical support.

The CMS application is a collaborative system because involve the simultaneously work of many analysts, which have the possibility to see and find who spoke with a particular customer, which problem had the customer and how it was solved. Being a multi-user application, CMS is collaborative by its goal, meaning the recording and processing of customer requests in a period of time.

In figure 2 is presented the manner in which an analyst fills the user name, meaning the person that called the helpdesk assistance. The database of users contains 12.000 records. The system will search the user name in this database, showing all the records which accomplish the criteria.

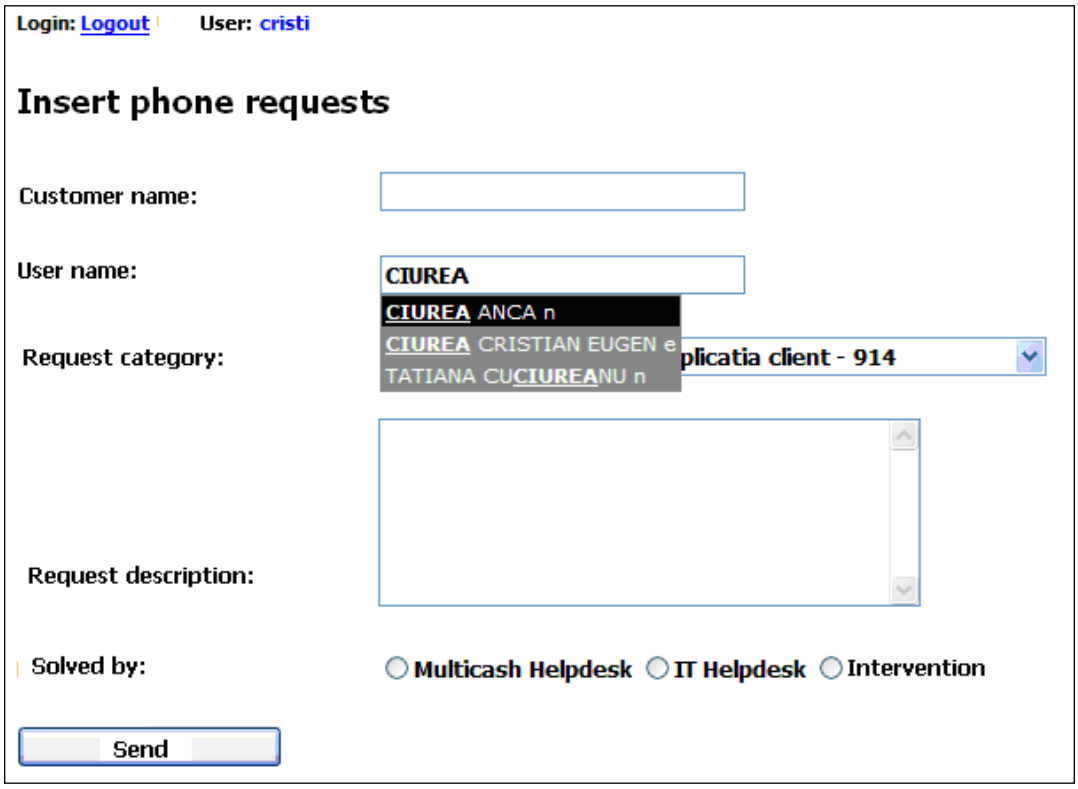

Fig. 2. Tagging facility for user name

A part of the C# code for implementing these searches and selections from the database is presented bellow:

```
string connString;
int i, rec_countClienti, rec_countPers;
connString = "Provider=Microsoft.Jet.OLEDB.4.0; Data Source =" +
Request.PhysicalApplicationPath + "\\files\\baza.mdb";
OleDbConnection objConnection = new OleDbConnection(connString);
objConnection.Open();
string strSqlClienti = "select * from Clienti";
string strSqlPers = "select * from Persoane";
OleDbCommand objCommandClienti = new OleDbCommand(strSqlClienti,
objConnection);
OleDbDataAdapter adapClienti = new OleDbDataAdapter(objCommandClienti);
DataSet dsClienti = new DataSet();
adapClienti.Fill(dsClienti);
rec_countClienti = dsClienti.Tables[0].Rows.Count;
string[] nameClienti = new string[rec_countClienti];
for (i = 0; i < nameClienti.Length; i++)
nameClienti[i] = """ + dsClienti.Tables[0].Rows[i][0].ToString() +""";
string arrNameClienti = "nameClienti";
arrValueClienti = String.Join(",", nameClienti);
```

```
OleDbCommand objCommandPers = new OleDbCommand(strSqlPers, objConnection);
OleDbDataAdapter adapPers = new OleDbDataAdapter(objCommandPers);
DataSet dsPers = new DataSet();
adapPers.Fill(dsPers);
rec_countPers = dsPers.Tables[0].Rows.Count;
string[] namePers = new string[rec_countPers];
for (i = 0; i < namePers.Length; i++)
namePers[i] = "'" + dsPers.Tables[0].Rows[i][0].ToString() +"'";
string arrNamePers = "namePers";
arrValuePers = String.Join(",", namePers);
objConnection.Close();
```

The JavaScript code is combined with C# code to realize the tagging and auto-complete facilities:

```
<script>
var customarrayClienti=new Array(<%=arrValueClienti%>);
var customarrayPers=new Array(<%=arrValuePers%>);
</script>
```

The efficiency of the interaction between Collaborative Multicash Servicedesk application and their users is measured with some indicators such as:

- the necessary time for data introduction in a form: is measured in seconds and it is measured starting the selection or completion of the first field on the form by pressing the button for data transmission;
- the number of data re-input, because of errors: every press of the button for data transmission, a counter is automatically incremented;
- the costs of development and use.

From the CMS application, a situation is generated every month in order to check the situation of the requests and the customers that claim problems.

The results obtained for the March 2010 are shown in the table 1, where are presented the problems that the customers complained to the bank and the number of times they appear.

Table 1. Number of requests by category

Category	**Number of requests**
Add new accounts in the client application	26
Add new users in the client application	14
Other requests	132
User blocked on the communication	41
User blocked at logon	20
Communication initiated	54
Confirm account balance	71
Deactivate payments file	1
Error on starting the application	5

Signature error	46
Error on see statements	20
Statements export	1
Generate electronic signature	20
Index corrupted in database tables	4
Training on using the application	14
Training on see rejected payments	4
Delivery account statements	7
Delivery file with bank codes	12
Delivery files for distributed signature	8
Change communication channel	1
Change number of approvals / amount limits	1
Change name / address of payer	1
Move the application on another computer	13
Please repeat job with AC29	9
Reinstalling the application	7
Setting print parameters	5
Setting communication sessions	1
Training of branches for completing annexes	10
Transmission interrupted	36
Check payments status	162

The bank management check this situation monthly in order to see which are the most frequently problems of the customers and how these problems can be minimized. Also, this report is used by the IT department for establish further improvements of the Multicash software.

4. Conclusions

Collaborative systems are efficient and achieve results accurately and completely if they work the way they are designed to. The development of collaborative systems conduct to increase their complexity and the global character of the economy is designed to determine, also a global character for many of the collaborative systems.

From informatics point of view, software applications collaborate and are integrated into an information system. An electronic payment application works together with the application for transactions processing and settlement and with the application for rejections monitoring. If any of these three applications is not working, then the customers fail to make payments. Collaboration at the level of a banking system is more efficient by integrating several applications of the information system. [7]

A collaborative tagging system is very helpful for the agents to quickly find the records when working with large databases, such as banking databases. A banking information system is thus designed to automate a higher set of current bank operations and provide strategic, tactical and operational information necessary in the decision-making process.

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