Distributed Social Network Services for the FRUCT Community

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Abstract

FRUCT Community is a cooperation of European and Russian academy and industry institutes. The aim of the program is to develop the international collaboration between company engineers, university students and stuff. Due to highly distributed and plural society, standard ways of communications does not feat the FRUCT structure well. Therefore, a set of social services, approaching to solve some interaction problems, is proposed. The basic concepts of the FRUCT social network are described in this paper.

Index Terms: Social Network, FRUCT, Communication, Working Group, Management.

I. INTRODUCTION

The nature of communication has undergone a substantial change in the past two decades, and modification is not completed. High-speed Internet covering almost all the planet [1] provided the possibility to replace reliable but expensive phone calls with much more flexible and scalable services, such as Skype [2], ICQ [3] and GTalk [4]. Plenty of text, voice and video chats and blogs are now preferable to the traditional web page, when fast and cheap information spread is required. Social networks, including Facebook [5], VKontakte [6] and Twitter [7], obviously play an extremely important role in interpersonal communications today. Moreover, all of these services, both centralised and distributed, do not only decrease the cost of existing ways of communication, but even suggest new ones [8].

Companies and organisations are able to use these services in order to simplify their employee interaction and consider customer wishes more precise. The set of services to use depends on the particular case. Generally speaking, all social services could be roughly divided into two big groups: public and private. Of course, the overwhelming majority of public social networks provides a possibility of access restriction to some content. But, anyway, the public social network is designed for an average user. So, sometimes the company structure can not be approximated well by an existing service. It comes to a necessity of internal social network development. Finnish-Russian University Cooperation in Telecommunications (FRUCT [9]) Program is exactly that case.

Therefore, considering the present solutions, the new essence development called "FRUCT Social Network" is proposed. In this paper the basic concepts of the network are described. The proposed solution is illustrated with very few technical details, as the aim is different. The main goal is to summarise major organisational issues and to present their solution with the assistance of social services.

II. FRUCT MEMBERS INTERACTION ISSUES

FRUCT is a cooperation involving top academy and industry institutes from Russia, Finland, Denmark and other European countries. The main feature of the program is not being a company, nor a traditional community. On the one hand, there is no clear internal structure, that comes to the impossibility of making and implementing sole decisions. On the other hand — FRUCT is a plural society, and the "fair" democracy is unsuitable either. Therefore, it is difficult to promote new activities and control the existing ones. Such kind of contradictions are partly solved by rather formal structure of university labs and working groups, but this is not a "Silver Bullet", for sure. It occurs, that working groups and laboratories has completely different view on a particular topic, and their decisions are weakly correlated. So some ways of sharing ideas between all the working groups and labs have to be proposed.

Even more serious difficulty is community members diversity. Up to now there are more than 15 universities involved in the program, and the number of compulsory "face-to-face" meeting is limited by two per year, that is too rare. So the task of combining all the member's activities (projects, working groups, conferences, etc.) into one single picture is topical.

The absence of a clear structure rapidly increases the workload of the community administration. Manual micro-management spends lots of resources inefficiently, so some automatically updated overview of all the society activities should be announced.

FRUCT is a good advertisement for students, attending conferences and projects. But to let the system work, some methods and metrics to evaluate the particular member activity should be developed. And the possibility to consider all the activities in a convenient way (e. g. a CV) is extremely necessary.

Lots of projects could be initiated by the community nowadays. Most of them requires the strong set of knowledge and skills in different areas. So there must be an easy way to share experience between groups. Unfortunately, the overwhelming majority of Russian universities do not have IEEE Xplore [10] or similar subscription. Therefore, even the publications exchange is a topical problem by now. Moreover, calls for papers or internships announced for one FRUCT member might be useful for others. But to let this happen, a user-friendly service is required either.

To summarise all mentioned before, the current size of the community makes the manual management inefficient. And the absence of the formal structure and lack of interaction prejudice the management process automation. In this case, the set of social services might not only provide a new area for discussions, but also makes the current structure more controllable and more reliable consequently.

III. COMMUNITY SOCIAL NETWORK

Mentioned problems are going to be solved by the following steps.

1) Personal member web page creation, including all the information about one's education and work experience, community projects and working group participation, conference attendance and areas of competence. There should be no doubt about the personal page necessity, because of the great amount of advantages. Such page might be useful for different groups. First of all, the holder can save all one's achievements online and share the link while applying for a job. Moreover, the group leader has the possibility to look for a competence required for ongoing or initiating project by observing the network. Finally, the automatically updated overview of current activities is provided to the community leaders. Additionally, it should be possible to create/upload a CV on the

the personal member web page, store and share the publications. Due to the simplicity, a paper, submitted by any of the authors, instantly appears on all other author's web pages.

2) Achievements evaluation system development. Fixed methods and metrics should be used to value activities of each and every community member, in order to compare them and encourage outstanding results. Projects and competitions participation, conference and working group meetings attendance, news and articles publishing on the FRUCT web pages — all of this could be transferred to a number of bonus credits. High credits sum in a fixed time period could be further converted to awards or benefits.

3) News sharing system proposal and integration. The purpose is to let each and every user send a link and short description with some fixed fields (e.g. type, place, date/time, etc.) to the social network. And provide the possibility to subscribe for different channels or customise incoming filters in order to get only the announcements, member is interested in. This should come to the increased number of internships and conference papers, invitation talks and general visits. As the result, again the competence increase is expected in a while.

Moreover, some technical problems, e. g. common authentication for all the FRUCT web resources, should be solved. Considering the tasks above, the following road map is proposed:

- *FRUCT 10, November 2011*. Personal member web page draft presentation (during the conference demo session).
- *FRUCT 11, April 2012*. Personal member web page release with the possibility to create/upload a CV and publications. The community structure presented in a way, that allow some management and easy "competence search".
- *FRUCT 12, November 2012*. Rating system implementation and knowledge base announcement.
- *FRUCT 13, April 2013*. The current version of social network testing and verification. Additionally, some adoption results could be estimated.

Definitely, the resources limits should be considered. Therefore, the real timetable depends on plenty of factors, including that all people involved in the project have their own work tasks connected to everyday support of the FRUCT major site fruct.org. It is foreseeable even on such early steps of development that a lot of considerable tasks for the Web Working Group, responsible for the social network development, could appear. It is quite hard to speak about the precise terms of implementation of each step of the project's plan, but the general view of the deadlines is mentioned above.

The proposed solution could be extended into many directions. And to make the management of the social network implementation easier and to make the project fits into the proclaimed deadlines, it is crucially important at first to distinguish some general use-cases.

A. Project work-team collaboration

The work-team of most of FRUCT projects consists of one tutor from the industry, a university mentor and 1-2 senior developers. Additionally, 2-3 other persons (usually, M. Sc. students) could be involved as developers, designers, testers, etc. Due to such a various structure, different services are going to be provided to these roles.

First of all, developers team requires a version control system (e.g. SVN [11] or Git [12]), testing and debugging software. The current approach is to use Mantis [13] as a primary bug-tracker and mail-lists or Wiki [14] for documentation writing. Such a set of services is common in software development, so there is no need to invent a new one. The only point,

that should be considered is a trade off between flexibility when maintaining own server and distribution benefits when using external one (like Maemo Garage [15] or Gitorious [16]). Making such a chose is the project leaders responsibility.

Moreover, the tutor is in charge of project planning and following all the deadlines. Therefore, one should have a possibility to create the project plan and check it's realisation. And some project management could assist in this scope. Right now, considering small project teams size (up to 5 persons), even "Tasks" in Mantis [13] might be used. And the necessity of maintaining a project management software is not obvious and should be discussed during "Face-to-Face" meetings.

The university mentor of the project is mainly responsible for checking the developers progress and preparing articles and demos and for conferences or workshops. And again some version control system for collaboration is required. Additionally the web site provides the easy upload of papers and presentations and putting links to them to the project web page.

Currently the work progress is reported during the regular Skype conferences and mailings between the participants of the team developing the project. It is certainly more convenient to make a project/status page where the progress is shown and team members report on their work done and this approach will be applied in the nearest future, when the first draft will come out.

B. Working groups conferences

The main aim of the community working groups is to share experience in the field of study, promote new activities and control the existing ones in the field of study. Therefore, the working group web page has to provide all the information about active and graduate projects, group members are involved in. Two major services are required for the working group, except the web page. Firstly, a solution for making VoIP conferences has to be considered (link quality, provided by Skype, is not supposed to be good enough anymore). And secondary, the strong advantage is to support the voice conference by sharing a document online with all the members. So the service, similar to Google Docs [17] or Etherpad [18] should be integrated with the web site infrastructure. And this, by-turn, comes to some content organisation changes.

C. University lab development

In order to encourage new students, any lab has to advertise itself. One of the FRUCT advantages is the ability of easy creation of a laboratory web-page or even a web-site (Open Source Linux Lab site [19] is a good example). The further direction is to combine all the information from the personal and project web-pages to the lab site. This comes to decrease of resource usage for the site administrator.

Lab engineers are able to publish their results in R&D on such a web site. Team leader could easily enumerate and describe just and ongoing projects, while writing a proposal. And applicants may find all the contacts and make a meeting request.

D. Social network interface

One of the main points of this project is to design a social network in the way of maximum informatively and minimum complexity from the viewpoint of the user. Interface should be clear and understandable, so, it won't take much time to complete the registration form. Almost quarter of all one's information should be peeked up from the fruct.org site and if one's wishes from social network that simplify the work with this social network too.

The necessity of increasing the level of collaboration is obvious. Therefore, some elements of the network proposed in this paper are going to be implemented anyway.

IV. Conclusions

The main issue of the FRUCT members interaction is highly distributed and plural society, So far, present solutions do not feat such an unusual structure well. Therefore, some new services, specified to the program peculiarity, are being developed. Needless to say, that ways of communications can change substantially. So, it is useless to propose any technical details of the solutions going to be implemented next year. But the basic concepts of the essence called "FRUCT Social Network" are clear enough and described in this paper. These solutions should assist in increasing the level of interaction and making the current (and future) community structure more precise, reliable and efficient.

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