

# Integration of the FRUCT Social Network with Other FRUCT Web Resources

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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 staff. Due to highly distributed and plural society, standard ways of communications does not feat the FRUCT structure well. That is why FRUCT Social Network, approaching to solve some interaction problems, was proposed and developed. The prototype was presented at FRUCT 11 Conference. Therefore, a set of social services, approaching to solve some interaction problems, is proposed. The social network developing and integration with other FRUCT web resources are described in this paper.

**Index Terms:** Social Network, FRUCT, Communication, Integration, Management.

## I. INTRODUCTION

FRUCT is an international program which connects universities and academic laboratories with technological companies and industry leaders in Computer Science [1]. One of the goals of this program is ensuring of the interaction between education and industry. It involves members living and working in 22 countries including Northern Europe region and Russian Federation. They are students, master students, PhD students, engineers and researchers. FRUCT Members are united by common interests and professional competence in different working groups. Each working group has its leader called Chair and his assistant called Secretary. Within working groups members work on the research and development projects. The joint work on complex tasks allows to achieve great results in comparison with the work of a single persons. All projects are supervised by creditable experts who push forward students work and help them to solve different problems. Such collaboration allows to increase educational level in whole and to prepare students to work in companies not only with pure university knowledge but still with practical experience.

Geographically, the participants are situated in different cities far away from each other that creates the set of certain problems. Firstly the number of the face-to-face meetings is strictly limited to two per year. This fact creates some difficulties for members interaction and conversation, because some project may be handled by people from different cities and even different countries. Usually they use email or skype, but for the successful work they need a tool, which will make their interaction simpler. Secondly members diversity makes members search very difficult, because if you want to find new worker for your project, you have to ring round all laboratories and ask if they have necessary person. Third FRUCT issue is absence of the united updated

overview which would have allowed to look at all of the community «from the top» and represent statistic about people, universities, laboratories, companies and so on. Due to the unavailability of the clear community structure FRUCT administration spends a lot of time and resources inefficiently because of micro-management. The number of community members increases rapidly, so it is a serious problem. FRUCT is a good advertisement for students, it provides conferences and projects for them. But there are no any metrics to evaluate members activities and gather it in one convenient place. There must be an easy way to share experience between members and working groups. Even the publications exchange is a topical problem by now [2].

So due to FRUCT issues and lacks the internal FRUCT social network developing was started. It is oriented to solve existing problems via building clear structure, simplification the management of the community, removal the members diversity and increasing the visibility. It has to be new powerful instrument which makes the current structure more controllable, and convenient way to evaluate the particular member activity, skills and knowledge, to share experience between groups and members [3].

This social network has already had a wide set of the following features, including personal web page creating, associating it with universities, organizations, FRUCT working groups and projects. Other useful features are CV generating, publications sharing and competence search.

## II. PERSONAL PAGES UPDATES

Each FRUCT member can create his own profile in social network (see example: <http://social.fruct.org/vkirkizh/>). He can share personal and contact information, education and job experience, professional interests, FRUCT activities, publications and photo. Basic functionality was presented at FRUCT 11 Conference. [3] Nowadays we provides additional possibilities for social network users. For example, now you can specify not only one phone number or email address but as many as you want. Also you can add custom fields in you contact information section. [4]

The section «Publications» was completely redesigned. Now you can add and edit your publications without page refreshing due to AJAX technology. You can specify your coauthors and with drag-and-drop method choose their order. You have a possibility to mark which publications you want to show at your page and in your CV. Also now you can write an abstract for your article and upload a file. It is necessary for further development of this section: publication storing system will become publication sharing system. It will allow you to have common publications with other FRUCT members in social network and choose who can download article file. It is also worth to noting a possibility to download publications list in one of the following formats: txt, tex, pdf, rtf and docx. [5] For generating documents in \*.pdf and \*.rtf formats external Perl [6] scripts tex2pdf [7] and tex2rtf [8] were used.

Another new feature of the FRUCT social network is automatically FRUCT position generation. A robot generates the set of positions based on the information about working groups and laboratories in which the user is a member. Each member can choose his position among the proposed. For example, if you are chair of the Web Working Group, one of proposed positions will be «Web WG Chair». Also there are the same positions for members and secretaries. Advisory board and FRUCT administration members get special positions, e.g. «General Chair». The position is usually shown near the user name at his page, in his CV, in user list and so on [9].

No	Authors	Title	Conf/Journal	Year	Lang	Page	CV	Abs.	File	Ctrl
5	V. Kirkizh ⊗ V. Petrov ⊗ <a href="#">+ add</a>	Associated File System	All-Russian Competition of Scientific-Research Works in the Field of Informatics and Information Technologies, NRU BelSU	2012	RU	✓	✓	+		
4	V. Kirkizh ⊗ V. Petrov ⊗ M. Komar ⊗ P. Shishkina ⊗ <a href="#">+ add</a>	Personalization of the FRUCT Social Network	11th FRUCT Conference	2012	EN	✓	✓	+		
3	V. Kirkizh ⊗ E. Dashkova ⊗ V. Petrov ⊗ <a href="#">+ add</a>	Distributed Social Network Services for the FRUCT Community	10th FRUCT Conference	2011	EN	✓	✓			
2	V. Kirkizh ⊗ E. Linsky ⊗ <a href="#">+ add</a>	The Cross-Platform Implementation of Game Draughts	2nd Finnish-Russian Mobile Linux Summit	2011	EN	✓	✓			
1	V. Kirkizh ⊗ E. Linsky ⊗ <a href="#">+ add</a>	Multi-threaded Branch and Bound Algorithm on the Example of Artificial Intelligence for the Game Draughts	SPbSUAI Students Conference	2010	RU	✓	✓	+		

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Fig. 1. Publications editor section

The new entity called Laboratory was created in social network. FRUCT laboratories are important attributes which characterize members affiliation and location. Today there are following laboratories in FRUCT:

- Embedded Networks lab at State University of Aerospace Instrumentation.
- Wireless & Mobile Technologies lab at Petrozavodsk State University.
- Mobile Software & Services lab at State University of Aerospace Instrumentation.
- Smart Spaces team in St-Petersburg R&D center of Russian Academy of Science.
- Open Source Software lab at St. Petersburg State Electrotechnical University [10].
- Network Technologies lab at Nizhniy Novgorod State University [11].
- Mobile Healthcare lab at Moscow State University.
- Mobile technologies team at Yaroslavl State University [12].

The new profile field «Affiliation» is also automatically generated on the basis of information in which laboratory member works. Any lab has to advertise itself to encourage new students. There is a personal page for every laboratory where you can see list of its members, the latest news and some useful information for newbies and guests. The head of the laboratory can edit information at its page. The further direction is to combine all the information from the personal and project web-pages to the lab page or even 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 this 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 [2].

In future there will be created new other entities connected with different organizations such as universities and companies. It will allow to build big FRUCT map and imagine how members and organizations are connected with each other.

Since FRUCT 11 Conference a lot of feedback reports have been received. A lot of bugs and remarks have been fixed. Different new features have been developed. Of course, social network services cannot exist independently and their integration with other FRUCT web resources was a top priority task for community.

### III. SOCIAL NETWORK INTEGRATION

One of important social network features is its deep integration with other FRUCT web resources including [www.fruct.org](http://www.fruct.org) website. First important modification is united user authorization at all FRUCT web resources. If you log in at [www.fruct.org](http://www.fruct.org) you will be logged in social network and vice versa.

FRUCT social network was integrated with [www.fruct.org](http://www.fruct.org) by projects and working groups. All the information about groups and projects is stored at main website. So social network site is connected to main database and can get necessary information from it. It allows to show in which working groups and what projects user is a member in real time. You can see the screenshot at Fig. 2 [13]. Also the special plugins for Drupal Content Management System [14] were developed to provide backward integration for [www.fruct.org](http://www.fruct.org). It enabled to show at project or working group page members list with such information from social network as photo, affiliation, location and other. You can see the screenshot at Fig. 3 [15]. When administrator edits the project or working group page and tries to find and specify its members this information will also be shown.

**FRUCT Working Groups:**

- [Mobile Healthcare WG](#) (Chair)
- [Qt and Open Source Working Group](#) (Chair)
- [Web Working group](#) (Chair)

**FRUCT Projects:**

- [Protection against unapproved copying](#)  
Graduate, deadline: 30.04.2010
- [SmartDiet - personal diet planner](#)  
Active, deadline: 05.11.2012
- [UniPro Power Estimation Model](#)  
Graduate, deadline: 02.11.2009
- [Verified communication modelling of embedded systems in SystemC](#)  
Graduate, deadline: 27.04.2009
- [Virtual telescope on mobile device](#)  
Graduate, deadline: 30.04.2010

Fig. 2. Projects and WG membership

In the nearest future it is going to create extended working group pages. The main aim of the community is to share experience between working groups and its members in the field of study, promote new activities and control the existing ones. Therefore, the working group web page has to provide all the information about active and graduate projects, group members are involved in [2]. 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 [16], is not supposed to be good enough anymore). And secondly, 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] should be integrated with the web site infrastructure. And it, by-turn, will come to some content organization changes.



Fig. 3. Project members list

#### IV. MEMBERS STATISTICS

One more new feature of the FRUCT social network is a statistics module. It is a set of diagrams, which visually show you some distributions, such as distribution of FRUCT social network members by sex or by age. It is important possibility for FRUCT administration, because there you can see a lot of useful information. Also you can investigate these diagrams and find some mechanisms of development, for example, events and trends prediction. At present there are four statistics items: members statistics, regional statistics, working groups statistics and projects statistics [18]. FRUCT Members statistics page consists of 2 diagrams: members distribution by age and by sex. One of the examples is presented at Fig. 4. Also there you can see total number of FRUCT members who have registered in social network.

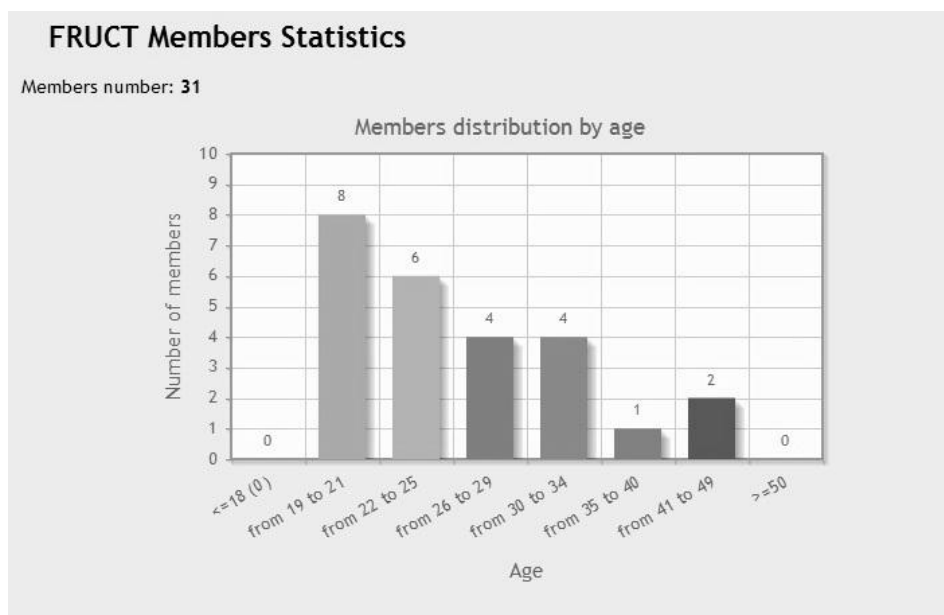


Fig. 4. Members statistics – distribution by age

FRUCT Regional statistics page also consists of 2 diagrams: members distribution by countries, where you can see location of FRUCT social network members by current location countries, and members distribution by languages they spoken. Project statistics page shows you dependence between number of projects participants (per project) and number of projects. FRUCT working groups statistics page show you how many participants works in every working group. [18] The PHP language [19] is used to get information from databases and process it, and jqPlot javascript library [20] to show information as bar or pie charts. jqPlot was chosen because it is light but powerful library and also it is open-source software.

## V. CONCLUSION

In conclusion, FRUCT social network let members increase their visibility, share their experience, find the information about each other, and also it let administration see clear community structure, search and choose members in line with their competence. During last six months a lot of new features were added. They are new personal pages possibilities, contact information manager, publications manager, integration with other FRUCT web resources, affiliation and FRUCT position auto generation and many others.

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