

# **Finnish-Russian University Cooperation Program in Telecommunications (FRUCT) program description**

Lecture summary for FRUCT seminar in Turku

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## ***Background and motivation***

The distinctive feature of modern IT and Telecommunications industries is a dramatic shortening of the period when technology remains commercially viable. On one hand it happens due to competition between the key market players, which is pushing all manufacturers to accelerate innovations; on the other hand, technological progress speed up by the growing expansion of intellectual resource invested into R&D and design activities. This trend is an important call and challenge for the leading educational and research institutions around the globe. At the moment the USA is a clear world leader in adopting university education to the new industrial trends, which makes crucial for EU countries and Russia a need to combine forces in order to follow up the competition. In our view the first logical step on this way is to build a bridge between Russian and Finnish academic worlds, increase visibility of involved research teams in both countries and help in establishing direct personal contacts between academic and industrial experts.

First, the program is targeted in creating an international group of talented and self-motivated students supervised by academic and industrial experts. The group will be divided to a number of research teams, where each team addresses most interesting and challenging problem related to the advanced information technologies. The project problems can be defined in two modes:

1) “Initiative comes from top”, when some challenging problem is provided by the industrial and academic experts involved in the program. In this scenario the initiating experts guaranty that the problem is interesting and challenging and take an obligation to be tutor of the project team.

2) “Initiative comes from bottom”, the team can come up with own problem proposal, which is evaluated by the experts. The idea is to promote project-based training that should help to young specialist be more creative and know how to balance high-risk “blue sky” research with real contribution to the concrete outcome.

As the eventual result of the project are not only particular deliverables like novel algorithms, signal structures, architectural solutions, etc., but what is even more important is creation of the “competence incubation” infrastructure and a set of well-prepared teams capable of continuing challenging research and design work independently. The recommended outcome from each individual project is a publication in most suitable well-recognized journal or conference, but of course depending on the project nature the other types of outputs are also appreciated.

In the first phase the program is primary targeted in participants from Russia and Finland, but later other European countries are expected to join. Involvement into the projects students and supervisors from several countries (Finland, Russia, Germany, Sweden, etc.) is considered promising as to the widening scope of topical telecommunication issues concerned with during the training term. At the same time, the role of mutual intellectual enrichment and cultural exchange accompanying active international cooperation can hardly be argued, too.

## ***Participation in the program***

### ***University membership***

The program assumes two levels of university involvement: full-member and observer. Full-member universities are seen as main contributors to the program content and each member has a right to be presented in the steering committee and must provide at least one expert to the advisory board. Observer members can follow program progress by attending open seminars and having representatives in the advisory board.

#### Current full-members are:

- University of Turku / TUCS, <http://www.tucs.fi>  
Contact person: Alexey Dudkov, [alexey.dudkov@utu.fi](mailto:alexey.dudkov@utu.fi)
- St. Petersburg University of Airspace Instrumentation, <http://suai.ru>  
Contact person: Sergey Semionov, [simon@vu.spb.ru](mailto:simon@vu.spb.ru)
- St.-Petersburg Electrotechnical University, <http://www.eltech.ru/english/index.htm>  
Contact person: Dmitrij Gaivoronskij, [dvgaivoronschi@rambler.ru](mailto:dvgaivoronschi@rambler.ru)
- University of Oulu, <http://www.cwc.oulu.fi/>  
Contact person: Behnaam Aazhang, [aaz@rice.edu](mailto:aaz@rice.edu)
- Helsinki University of Technology, <http://www.tkk.fi/English/>  
Contact person: Natalia Ermolova, [natalia.ermolova@hut.fi](mailto:natalia.ermolova@hut.fi)
- St. Petersburg State Polytechnic University, <http://www.unilib.neva.ru/>

#### Current observers are:

- EVTEK university of applied sciences (Espoo, Finland), <http://www.evtek.fi/en/>  
Contact person: Ingmar Tollet, [Ingmar.Tollet@wise.evtek.fi](mailto:Ingmar.Tollet@wise.evtek.fi)
- Bonch-Bruevich St.-Petersburg State University of Telecommunications,  
<http://www.sut.ru/about.en.html>  
Contact person: Alexey Grudin, [grudin@sut.ru](mailto:grudin@sut.ru)

### ***Industrial membership***

Nokia is the only industrial co-founder and key contributor to the program, but in the future the industrial participation in the program is not limited by Nokia. To become the industrial member, the candidate company should send the corresponding email request to the industrial coordinator. The new industrial members can be introduced into the program only after approval by all current industrial members. Each industrial member company has a right to be presented in the steering committee by one official representative and must provide at least one expert for the

advisory board. As a program co-founder Nokia has a priority vote comparing to other industrial members in case of conflict of interests.

Current industrial full-members:

- Nokia's universities cooperation program in Russia, [www.nokia.com/research](http://www.nokia.com/research)  
Contact person: Sergey Balandin, [Sergey.Balandin@nokia.com](mailto:Sergey.Balandin@nokia.com)

### ***Requirements to each individual project***

As a first step the new team should formulate a research proposal, make research plan and submit them to the local coordinator for a first formal review (no content review is performed at this phase). If the proposal meets all formal requirements, the local coordinator forwards it to the distribution email list of the advisory board. The local coordinator is responsible for facilitating the related discussion in the advisory board and communicates all wishes and comments back to the team. After processing all comments and identifying project supervisor, the local coordinator submits full project proposal to the steering committee, which finally decides whether to register a new research project and corresponding team.

Clearly, the success of this initiative is the more likely the more potentially attractive is the specific topic of the abovementioned project. In this light among other telecommunication-related problems, the one of outlining philosophy of 4G interface looks both appealing and encouraging project domain.

The registered project teams can ask FRUCT board for professional advices, results reviews and other types of help and support, including different types of donations (books, devices, etc).

The list of currently on-going research projects can be found from the program's webpage: [http://www.fruct.org/index.php?morus\\_itemid=3&morus\\_langsel=en](http://www.fruct.org/index.php?morus_itemid=3&morus_langsel=en).

### ***Internal communications and face-to-face meetings***

Most of the internal communications are performed via local program coordinators. The project team should work directly with the team advisors and tutors and most of other communications with the FRUCT experts should be performed via local coordinator. This is done to prevent overflowing experts in low-quality and not well studies requests from the teams. When some project identifies long-term need in certain competences, the team leader can ask FRUCT board for a new tutor in certain area and this request should go via local coordinator. If there is need only in short-term input, the corresponding help request can be sent by the team leader directly to the advisory board mailing list.

Yearly the program organizes two information sharing and educational seminars. The current agreement is that spring seminars are held in St.-Petersburg, Russia and autumn seminars are held in Helsinki, Finland. The seminar is a place where teams can present their project progress and results as well as learn more about their subject of research from invited lectures given by the top industrial and academic experts. The next seminar is scheduled for May 2008 in St-Petersburg, Russia.

### ***Benefits for the participants***

Benefits for the participating universities

- Easy way for internationalization as well as obtaining contacts to possible research and project partners.

Benefits for the industrial partners

- A way of promoting new telecommunication technologies and industry-oriented way of operation at universities from both sides of the boarder.

Students participating in the program are entitled to the following benefits:

- Getting in touch with the best academic and industrial experts in their area of professional interest. Getting a possibility of making MSc and PhD under industrial supervision.
- For small industry-oriented research projects, the corresponding industrial partners may provide scholarships to support students in their activities.
- If an article made by the project team is accepted to a conference recommended by the advisory board, the industrial members may provide financial help for traveling and presenting the article at the conference.
- Based on mutual agreements between universities, Russian students may be offered position in two-year Master's Degree program in Finland (preliminary negotiated with University of Turku, Helsinki University of Technology and University of Jyvaskyla).

### ***Administrative structure of the program***

*Steering committee* is the highest authority, performing the general supervision of the program. The steering committee performs strategic management of the program. Under normal circumstances the committee interfere program projects as little as possible, limiting its function to administrative issues only, e.g. setting program meetings, organizing new research groups and so on. Steering committee consists of representatives of university and industrial full-member organizations. The full-member organization can execute program steering rights via their official representative in the committee. Each representative has one vote. In addition the steering committee might be temporarily or permanently be extended by other members without vote right, e.g. in some cases it might be useful to invite local coordinators and advisory board members to take part in the steering meetings, so that they could share their vision, but will not have additional vote.

*Advisory board* is an expert body consisting of representatives from the industrial and economic sectors within the field of Information Technology, the public sector and the universities. The advisory board is responsible for tactical management of the projects executed within program's scope. The main purpose of the advisory board is to produce an expert opinion of the students' research plans, articles, research topics and proposals and so on. The staff of the advisory board is not constant; an external expert from the industry or academic areas may be enlisted if necessary.

*Local coordinator* is assigned by each full-member university participant of the program. The coordinator is responsible for monitoring progress of all projects run by the university, audit stick

to the original project scope and when needed communicate team-originated change requests of the project scope to the advisory board and steering committee. The coordinator takes care of presenting new teams and their proposals to the advisory board and steering committee. Also he/she is responsible for collecting, reviewing, combining and optimizing financial support requests from the local teams and communicating this information to the steering committee.

*Project supervisor* is an official head of each project executed within program's scope. Each research team has high degree of freedom, limited only by the definition of the project scope and project execution timelines originally accepted by the steering committee. Within the team, scientific leadership belongs to the group supervisors, who have the last word in making research choice (as long as it fits into the original project scope).

When a student want to join a team, he or she should contact the project supervisor and discuss all practical matters, including role in the team, personal research topic and other formalities of participation in the team work.

Any student or a group of students may come up with a proposal for a new research team, which must be submitted following the defined procedure and format. The new team might come up with a new project topic (as long as it meets general quality standards of the program) or it is also possible to ask the advisory board for a topic. In the first case the team must first make justification of relevance and importance of the project and insure support from at least one member of the advisory board, who in this case will come a project supervisor. In the second case the advisory board may propose to the team take one of the topics from the pool open topics generated by the members of the advisory board. In this case the topic originator is expected to become team supervisor or find some other relevant supervisor for the team.

### ***Contact Information***

For more information about the FRUCT program you are welcome to visit program's webpage [www.fruct.org](http://www.fruct.org) or send email to official FRUCT help mail [fruct.info@gmail.com](mailto:fruct.info@gmail.com). Another alternative is to contact your regional local coordinator:

<i>Coordinator in Finland:</i>	Alexey Dudkov	<a href="mailto:alexey.dudkov@utu.fi">alexey.dudkov@utu.fi</a>
<i>Coordinator in Russia:</i>	Sergei Semionov	<a href="mailto:simon@vu.spb.ru">simon@vu.spb.ru</a>
<i>Industrial coordinator:</i>	Sergey Balandin	<a href="mailto:Sergey.Balandin@nokia.com">Sergey.Balandin@nokia.com</a>