Student Software Engineering Projects for the Maemo Platform at Petrozavodsk State University: 
*State-of-the-Art and Perspective*

Yury A. Bogoyavlenskiy, Dmitry G. Korzun

Petrozavodsk State University
Department of Computer Science

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Roadmap

1 Motivation and History

2 Software Engineering at PetrSU

3 PetrSU Maemo Projects

4 Conclusions
Why IT and SE at PetrSU?

Geoeconomical factors

- Karelia is close to Europe Union as well as to St.-Petersburg and Moscow
- International collaboration in industry, education and research
- Karelia and its neighbors need specialists in IT, including software engineers

PetrSU mission

- The key institution at European North of Russia for "forging" such specialists: Innovations and IT park approach
- Active research and development in IT allow focusing on intellectual software (Mathematics, Algorithmics, System analysis)
- ACM programming contests and other competitions in IT
Finnish—Russian Cooperation

University of Helsinki (Department of Computer Science): since 1993
- Annual Finnish Data Processing Week at PetrSU (FDPW): 1997
- Advances in Methods of Information and Communication Technology (AMICT): 2006 (*this year, 19.-20.5, welcome!*)
- Common Core of Working Study Program: 2001
- Joint student SE projects
- Double diploma

Finnish Universities and Institutions
- FDPW and AMICT seminars
- Finnish—Russian Cross Border University (CBU): 2004
- Guest lecture courses
- Helsinki Institute for Information Technology (HIIT): 2005, joint research in networking
Software Engineering Education

Basic educational lines at Faculty of Mathematics
- Information Systems (2001)

Curriculum
- Specialist (5 years), Bachelor+Master (4+2 years)
- University of Helsinki: Common Core of Working Study Program (since 2001)

- Joint project DaCoPan (with University of Helsinki), http://dacopan.cs.karelia.ru/
Basic Scheme

**Introduction**: at school, then 1st&2nd year students
- Linux environment
- SE elements in basic IT courses
- Specialization areas and optional courses
- PetrSU Programmer Club

**Basics**: 3rd year students
- Mandatory course *Software Engineering*
- Autumn semester: theory + miniprojects
- Spring semester: team projects close to real life

**Opening a door to real-life projects**: BSc, Diploma and MSc thesis
- Participation in research (PetrSU Departments)
- Regional Center of Information Technology (Natalia Ruzanova)
- PetrSU IT Park (Anatoly Voronin, Anton Shabaev)
Student SE Project Organization

**Teams** of 4–6 developers
- Rules of the play
- Manager
- 8–10 (wo)man-hours per week, 15 weeks

**Customer**
- Faculty, IT park, Industry
- Software requirements
- Attestation

**Instructor**
- Balancing: education and product
- Progress monitoring, advising and controlling
- Grading
Nokia—PetrSU Collaboration

The idea appeared in 2007–2008 (Sergey Balandin, Anatoly Voronin, Anton Shabaev)

Expert areas for PetrSU
- Maemo programming
- Symbian programming

Goals
- Modern technologies to Russian education, research and industry
- Regular training of students (Faculty and CS Dept.)
- A team of qualified developers and experts (PetrSU IT park)
- Center of Mobile and Wireless Technologies (as a department of the PetrSU IT park)
Russian Maemo Community

http://maemo.cs.karelia.ru
- The All-Russian forum for Maemo developers
- Ideas, experience and software from everyone
- Study materials
- SE Project support

Training
- Summer School, Aug. 2008
- Winter School, Feb. 2009
- Maemo Training at FRUCT, Apr. 2009

- In total: 23 initial student projects
- To the Maemo Garage: 3 projects
Ongoing Maemo SE Projects

Spring semester 2008/09: Feb.–May 2009

- Porting WidSets to the Maemo Platform
- A Client for Social Network Services with Cross-Profile Features
- Distributed blogs for the Maemo Platform
- A Personal Organizer in the Internet event space
- A Maemo Mobile Trade Client for Business Systems
Features (compared with regular student SE projects)

Phases
- This semester: producing a demo prototype
- Summer 2009: Experimenting
- Autumn 2009: Publishing the code in the Maemo garage

Organization
- Instructor integrates some manager functions
- Mixed teams: 1st – 6th year students
- 16–18 (wo)man-hours per week (8–10 for regular projects)
- Personal study plans for 3rd year students
- Regular all-project seminars (Saturdays)
## Modifications to the Curriculum

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
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<tr>
<td><strong>First year</strong></td>
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| 1        | Introduction to C programming  
Introduction to Shell          |
| 2        | C++ and Data Structures  
IA-32 Architecture with GAS Assembler Elements  
User Interface Design with GTK/Qt |
| **Second year** |                                                            |
| 3        | Computer Networks  
UNIX Programming  
Introduction to Java Programming          |
| 4        | Operating Systems  
Basics of Internet Tablet Programming                                      |
| **Third year** |                                                                 |
| 5        | Software Engineering  
Basics of Symbian Programming                              |
Future . . .

- Maemo technology to the educational courses
- SE projects for the Maemo platform
- Smart spaces

from Ian Oliver’s presentation *Towards the Dynamic Semantic Web*