Background and Mission

SPIRAL (Software Process Improvement Research Action Laboratory) is a joint research group formed between the Department of Information Processing Science of the University of Oulu and VTT Electronics, focusing on software process improvement.

The group develops and disseminates new software process improvement approaches that

- link product quality factors to process characteristics,
- combine and enhance the strengths of process assessment, goal-oriented measurement, process modelling and technology transfer,
- can be applied in practice, and
- are tailored especially to embedded software development.

Scientific Progress

A new project, KESSU, that is planned to last for three years, started in the beginning of 2000. The project has continued the work that was started in the earlier KÄYPRO project. The main result of the first year is an improved method for assessing the capability of the software process from the usability point of view. The method was developed to be applicable in organisations where user-centred design is still a relatively new thing. As a part of the method, a more precise model of the processes of user-centred design, called the KUCA process model, was developed. Development of methods for improvement of the usability capability of organisations has started.

The KUCA Process Model of User-Centred Design.
The TARJOUS project ended in 2000. The partner companies in the project have been Nokia Networks, Sonera New Media and CK&TM, Rautaruukki Tietotekniikka and MSG Software. The research in project focused on tailoring inspection to company’s needs. The research approach was mainly technology-dependent, although also new types of inspection were introduced and experimented on in partner companies. Inspections, such as inspection without logging meeting, inspection with limited logging meeting, pair inspection and web-based inspection, differ in the degree of flexibility and discipline. Due to emphasis on flexibility, the major activity focused on web-based inspection, i.e. development of the process and supporting tools.

The phases of web-based inspection.

The web-technology provides an useful infrastructure for web-based inspection with new activities such as monitoring the process (work-flow planning), document handling (browsing documents on-line) and data and improvements collection (statistics and improvement suggestions). Two inspection prototypes called WiT (Web inspection Tool) and Inspection Window have been developed in the project. The main feature of these prototypes is their ability to inspect any HTML document. The inspector may mark a suspect item with a vertical line on the left, which follows the metaphor of correcting paper documents.
The MIKKO-project aims to provide comprehensive support to software measurement based on industrial needs. The project is developing a comprehensive and tailorable measurement framework for the industrial software process, providing support for data collection process and full utilization of data at the project and organizational level. The framework includes processes, methods, and tool support recommended in measurement definition, data collection, analysis and packaging.

The MIKKO-project will produce a measurement handbook that covers different aspects of software measurement. The handbook is aimed at people who design and develop software measurements for industry. The project will also further develop a measurement automation and presentation tool - MetriFlame - originally developed by VTT, which makes it possible to automatically analyze and present data from several different sources. More information can be found at http://www.vtt.fi/ele/research/soh/projects/mikko/new_page.htm and http://www.vtt.fi/ele/research/soh/products/metriflame/index.html.

**Exploitation of Results**

The nature of the research carried out in the KESSU project is experimental. This means that all the results have been developed and extensively tested in close cooperation with industry. The KUCA usability capability assessment method has been developed in experiments at Buscom, Teamware, and Nokia Networks. Development of the usability capability improvement method has begun together with Nokia Networks and Buscom.

The new types of inspection such as web-based inspection and pair inspection as well as supporting prototypes for web-based inspection developed in the TARJOUS project have been experimented on in university courses and partner companies. The project also studied the interoperability of software development tools (including for example tools for inspection, version control, change request, project management and reporting) and proposed a framework for the easy integration based on XML technology. This framework and other results of the project were presented in the seminar “Challenges, ideas and experiments in reorganising software inspection”. The material of the seminar and the papers published in the project are available from the web page http://www.tol.oulu.fi/projects/tarjous.

The MIKKO-project partners include VTT Electronics, TEKES and case companies Nokia Mobile Phones and NetHawk. In addition, two European subcontractors and five follow-up companies in Finland participate in the project. The results will be tested and exploited first in case companies as well as in follow-up companies.

**Future Goals**

The future plan is to widen the focus of the group’s research to the following closely related fields:

- SPI planning and implementation
- SPI with improved measurement and assessment practices
- Essential research areas to support SPI
  - Inspection process improvement
  - Learning from experience and knowledge management (KM) activities
- Definition of new SW development practices

The MIKKO Approach to software process and product measurement.
Personnel

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External Funding

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Doctroal Theses


Selected Publications


