Workshop on Cooperative Supports for Distributed Software Engineering Processes

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Introduction

Convergence between telecommunications and computing and the explosion of the Internet have opened the way to new ways of conceiving, designing, and running businesses and enterprises. More and more companies are moving towards a virtual organisation model, where independent institutions, departments, and groups of specialised individuals converge in a temporary network with the aim of utilising a competitive advantage or solving a specific problem. Information and communication technology (ICT) is a primary enabler of virtual organisations, as peoples and institutions in a network make substantially more use of computer-mediated channels than physical presence to interact and cooperate in order to achieve their objectives.

The software industry is not immune from this movement towards globally distributed processes. In addition to classical motivations, such as achieving market differentiations, focussing on core competences, and reacting faster on changes in the environment, in the case of software a sensible push in the direction of distribution and virtualisation of the production processes derives from the skill shortage that characterise the ICT field. In fact, due to this shortage, the knowledge and skills needed in a large project often cannot be found within a single organisation and in one location, thus forcing the creation of virtual enterprises for a specific project and the geographical distribution of the software processes.

The open-source movement is often cited as a winning example of distributed software processes. Open source is software for which the source code is distributed without charge and limitations on modifications and future distribution by third parties. Most open-source projects challenge the traditional way of developing software as they involve individuals from all over the world, which contribute code, documents or knowledge, mostly on a voluntary base, using the Internet as the primary means of communication. Linux, a Unix-like operating system, and the Apache web server are two well known examples of open-source software projects that leverage basic Internet and software engineering tools, such as WEB sites and FTP to share documentation, mailing lists and archives to manage communication, GNATS for bug tracking, and CVS for configuration management and versioning of both source code and documentations.

While successful, the open-source experiences show the limitations of the tools exploited by the open-source community and suggest the need for exploiting modern communication and cooperation tools for the support of the software processes in a virtual organisation. As an example, the use of mailing lists as a primary communication channel among the developers has often the consequence that huge amounts of messages are exchanged and automatically archived for later browsing, and this highlights the inadequacy of basic reply-treading mechanisms. Also, these experiences usually lack of development plans and design documents and there is no tracking of the progress of the development status and of the related effort.

Globally distributed software development challenges traditional techniques of software engineering and new approaches to solve communication, collaboration and coordination problems are to be sought. This workshop intends to gather practitioners and researchers from academia, industry, and government, to review the current state of the practice, to report on, and to present issues and solutions in the general area of computer supported cooperative methodologies and technologies applied to software engineering processes. Aspects that we would like to address during the workshop are:

- Theories and models for cooperation in distributed software engineering processes;
- CSCW and workflow management technologies for distributed software engineering processes;
- Configuration management and artefact management technologies for distributed software engineering processes;
- Web technologies for cooperation in distributed software engineering processes;
• Technologies for tool interoperability in distributed software engineering processes;
• Process modeling languages for distributed software engineering processes;
• Case studies and experiments in introducing enabling technologies for cooperation in distributed software engineering processes.

Workshop organisation

The workshop is a one-day workshop, with a mixture of presentations, discussion and tool demonstrations. More specifically, the position papers accepted for presentation have been distributed in two sessions: session 1 concerns “methods and tools for process modelling and management”, while session 2 is more oriented to discuss “methods and tools for artefact, resource, and knowledge management”, although some of the papers deal with both issues. The final session is devoted to tool demo presentations, final discussion and follow-up.

Process modelling is an important issue in software development and maintenance. One of the papers in session 1 addresses the issues of integrating process modelling notations used by different organisation involved in global software development projects. Other papers mainly present technologies supporting coordination and cooperation in distributed software engineering processes. In particular, issues concerning software maintenance conducted by distributed software teams will be discussed together with the application of workflow management technologies to industrial environments in the context of the Virtual Software Factory research project. Another important aspect of distributed software engineering processes is the availability of technologies supporting collaborative tasks. In particular a tool supporting collaboration in distributed code inspection is presented in session 1.

One of the goals of this workshop is to present preliminary results from on-going research projects. Three papers, two in session 1 and one in session 2 will discuss different aspects of the European project GENESIS (GEneralised eNvironment for procEsS management in coopeRatIve Software engineering). The two papers in Session 1 will discuss aspects related to managing coordination and collaborative work of distributed teams: the first paper will present the main features of the distributed architecture of the GENESIS open source environment, while the second paper will discuss the architecture of a distributed workflow management system for the coordination of the activities of teams spread on different sites. The third paper in session 2 will present a distributed artefact management system included in the GENESIS Environment.

Other papers in session 2 discuss issues related to the use of open source peer-to-peer technology for the management of information distributed across different workflow management systems, the coordination of distributed workspaces for the management of collaboration and concurrent changes, and the use of actor and agent-oriented approaches to build distributed product management systems. The session also includes papers discussing models to select CSCW technologies for distributed software maintenance teams and to formalise the experience made in conducting projects distributed among several sites to be used to make decisions on whether future software engineering projects should be implemented according to distributed or centralised models.

The final session of the workshop will include tool demonstrations and a final discussion and follow-up. Among the others, two tools will be in particular demonstrated: MILOS (Minimally Invasive Long-term Organizational Support for software development) and MOTION (MObile Teamwork Infrastructure for Organization Networks). MILOS is an open source process-support environment that addresses project coordination, information routing, team communication, pair programming and experience management, in particular by helping software development teams to maintain eXtreme Programming (XP) practices in a distributed setting. MOTION is a platform developed within an EU IST project that addresses the issue of enabling peer-to-peer mobile teamwork and provides a generic teamwork services Application Programming Interface (API), TWSAPI, that can be used to build organisation-specific collaborative applications.

Advisory Committee

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