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Distributed Development of Information System

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Global Software Development (GSD), also known as Distributed Software Development (DSD), as a discipline has grown substantially richer through practice influencing research and proven practices themselves. Due to its growth over the past decades, the software industry in the industrialised world is characterised by a shortage of qualified labour, and thus high level of wages. The software industry in industrialised countries tried to move parts of its software development work to countries that have a large pool of cost effective talent available there. Thus, the distribution of software development enables the optimum use of capability regardless of geographical location. The main expected benefits from DSD are improvements in development time efficiency, being close to the customers and having flexible access to greater and less costly resources. Companies need to use their existing resources as effectively as possible, and they also need to employ resources on a global scale from different sites within the company and from partner companies throughout the world. The increasingly complex and competitive market situation places intense demands on companies, requiring them to respond to customer needs, and to deliver more functionality and higher quality software faster.

Further, DSD has emerged as an interdisciplinary research arena, bringing together social science researchers and software researchers in investigating various aspects of how globally distributed software teams function while developing such kind of information system. Despite the fact that DSD is widely being used, the project managers and professional face many challenges including communication, collaboration, co-ordination and trust with key stakeholders. Therefore, global software development has brought with it several challenges due to increased complexity and cultural as well as various technological issues. However, there is a

number of problems that still remain to be solved before the full potential of GSD can be achieved. One of the main constraint is that development technologies are insufficient to support for distributed development. There is still a significant understanding to be achieved, methods and techniques to be developed, and practices to be evolved before it becomes a mature discipline.

This Special Issue on distributed development of information system of the international Journal of Universal Computer Science includes papers received from a public Call for Papers and extended and improved versions of those papers that were selected from the best submissions of the International Workshop on Information Systems in Distributed Environment (ISDE 2010). The aim of this workshop has been to serve as a forum for academics, researchers, practitioners and students in the field of distributed or global software development, by presenting new developments and lessons learned from real world cases, and to promote the exchange of ideas, discussion and development in these areas.

The Distributed Software Development involves various challenges, many of which are related to the lack of trust experienced by team members since they often do not know each other personally. Other problems are related to communication, coordination and collaboration. Bearing in mind that providing information about co-workers may increase both the team spirit and the team members' confidence in each other, José Luis Hernández et al. have carried out surveys to discover what information might be useful in attaining this objective, and to reduce those problems related to the three 'c's. The results of this analysis have helped to obtain the requirements required to design a tool to support global software development.

Research in virtual teams and distributed work argues that the lack of collocation places an overhead on the performance potential of large, globally distributed teams. In this paper, George M. Giaglis and Diomidis Spinellis revisit this principle through a case study of Free/Libre Open Source Software (FLOSS) development to demonstrate how globally dispersed FLOSS communities manage to overcome the problem of geographic separation of their members.

Today's globalization of software development has its advantages, but also its limitations. Software project managers often lead the production of new software versions and their release on the market. Ricardo Colomo-Palacios et al. in their paper analyzed the main challenges faced by software product managers in release planning with regard to the adoption of Global Software Development (GSD) practices for developing packaged software. To achieve this objective, two qualitative techniques are used in this study, namely, Focus Group and Delphi Study and observed that GSD is found to be highly influenced by issues concerning personnel and human resources management.

Luis Iribarne et al. reported an interactive, structural metamodel for user interfaces based on component architectures as a way to abstract, model, simplify and facilitate implementation. Their work also presents a case study based on an Environmental Management Information Systems (EMIS), where three actors (a politician, a GIS expert, and a technician) cooperate in assessing natural disasters.

In Distributed Software Development (DSD) in spite of increase productivity and cost reduction there are some challenges such as temporal distance, geographical dispersion and the socio-cultural differences. Specifically added new requirements

related with the communication, coordination and control of projects. Among these new demands there is requirement of a software process that provides adequate support to the distributed software development. Gislaine Camila Lapasini Leal et al. in their paper presented an integrated approach of software development and test that considers distributed teams peculiarities. The approach purpose is to offer support to DSD, providing a better project visibility, improving the communication between the development and test teams, minimizing the ambiguity and difficulty to understand the artifacts and activities.

Anuradha Mathrani et al. observed that Knowledge Management (KM) strategies are applied to create knowledge consistent with client requirements, project specific features and chosen design methodologies. Further, building on existing KM theories with empirical evidence from ten case studies in the Asia Pacific region, within two country contexts (New Zealand and India), their research reported the KM initiatives for enabling knowledge transfer in the Offshore software development (OSD) process at the operational, design and strategic level. This work also provides insights on how software vendors build organizational knowledge repositories as they streamline distributed tasks in different country contexts.

On-line inspection reduces paperwork, makes the latest material available to participants and thus facilitates in meeting. Material used in inspection includes the target material, the inspection-criteria list (check list), individual fault lists, the merged fault list, the action-item list, and the status report. Deepti Mishra et al. have presented global software inspection process in the distributed software development environment towards software quality assurance and management.

The objective of this special issue has been to make available recent research and reports in-progress in global and distributed software development and we hope that this issue will become an important source of reference to researchers working in this field. As guest editors, we would like to express our sincere thanks to the Editor-in-Chief, Prof. Christian Gütl, and Prof. Hermann Maurer for providing us with the opportunity to host this special issue in J.UCS. We are much indebted to Mag. Dana Kaiser (assistant editor) for her continued support and helpful guidance throughout all the phases of preparing the special issue. We also thank the authors for their contributions, including those whose papers were not included. Last but not least, we express our devout gratitude for the prudent work of the reviewers who provided invaluable evaluations and advice that have helped maintain the quality of the papers.

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