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Preface

The design of complex artifacts and systems requires the cooperation of multidisciplinary design teams using multiple commercial and proprietary engineering software tools (e.g., CAD, modeling, simulation, visualization, and optimization), engineering databases, and knowledge-based systems. Individuals or individual groups of multidisciplinary design teams usually work in parallel and separately with various engineering software tools which are located at different sites. In addition, individual members may be working on different versions of a design or viewing the design from different perspectives, at different levels of detail.

In order to accomplish the work, it is necessary to have effective and efficient collaborative design environments. Such environments should not only automate individual tasks, in the manner of traditional computer-aided engineering tools, but also enable individual members to share information, collaborate, and coordinate their activities within the context of a design project. CSCW (computer-supported cooperative work) in design is concerned with the development of such environments.

A series of international workshops and conferences on CSCW in design started in 1996. The primary goal of the workshops/conferences is to provide a forum for the latest ideas and results on the theories and applications of CSCW in design, research on multi-agent systems, Grid-/Internet-/Web-based applications, electronic commerce, and other related topics. It also aims at promoting international scientific information exchange among scholars, experts, researchers, and developers in the field. The major topics of CSCWD workshops /conferences include:

- Techniques, methods, and tools for CSCW in design
- Social organization of the computer-supported cooperative process
- Knowledge-intensive cooperative design
- Intelligent agents and multi-agent systems for cooperative design
- Workflows for cooperative design
- VR technologies for cooperative design
- Internet/Web and CSCW in design
- Grids, Web services and Semantic Web for CSCW in design
- CSCW in design and manufacturing
- Cooperation in virtual enterprises and e-businesses
- Distance learning/training related to design
- Applications and testbeds

The 1st International Workshop on CSCW in design (CSCWD 1996) was held during May 8-11, 1996 in Beijing, China and the second one (CSCWD 1997) was held during November 26-28, 1997 in Bangkok, Thailand. After the two successful workshops, an international working group on CSCW in Design was created and an International Steering Committee (ISC) was formed in 1998. The ISC then coordinated two workshops (CSCWD 1998, July 15-18, 1998 in Tokyo, Japan and CSCWD 1999, September 29 - October 1, 1999 in Compiègne, France). During the annual ISC

meeting held at CSCWD 1999, the ISC decided to change the name from the "International Workshop on CSCW in Design" to the "International Conference on CSCW in Design". The Fifth International Conference on CSCW in Design (CSCWD 2000) was then held from November 29 to December 1, 2000 in Hong Kong, China, followed by CSCWD 2001 during July 12-14, 2001 in London, ON, Canada; CSCWD 2002 during September 25-27, 2002 in Rio de Janeiro, Brazil; CSCWD 2004 during May 26-28, 2004 in Xiamen, China; and CSCWD 2005 during May 24-26, 2005 in Coventry, UK.

The 10th International Conference on CSCW in Design (CSCWD 2006) was held during May 3-5, 2006 in Nanjing, China. It was a milestone for the CSCWD Working Group. Two volumes of conference proceedings were published with 260 papers selected from about 600 submissions. This book includes 76 articles that are the expanded versions of the papers presented at CSCWD 2006. The book is organized in topical sections on CSCW techniques and methods, collaborative design, collaborative manufacturing and enterprise collaboration, design methods and tools, agents and multi-agent systems, Web services, Semantic web, and Grid computing, knowledge management, security and privacy in CSCW systems, workflow management, and e-learning.

With the rapid development of Internet- and Web-based technologies, the application of CSCW technologies to design is becoming more and more promising. In the area of application of collaboration technologies to engineering design, the depth and width of such applications go far beyond the traditional definition of concurrent engineering. In fact, a new field called collaborative engineering has emerged. Collaborative engineering has been applied not only to design, but also to manufacturing (or construction in civil engineering), enterprise collaboration, and supply chain management. Collaborative design is carried out not only among multidisciplinary (product development) teams, but also across the enterprise boundaries (including customers and suppliers).

However, when CSCW technologies are used to implement applications in industry, security and privacy issues become critical. The number of papers on this topic submitted to CSCWD conferences has increased significantly during the past years. This will continue, particularly with more practical techniques and applications.

We have seen a great potential of applying Web services, Semantic Web and Grid computing technologies to collaborative design, although traditional CSCW techniques including context awareness and synchronized communication are still required.

Agent technology is still one of the most important technologies for implementing collaborative design systems. However, it is important to combine with other technologies adopted by industry, particularly Web Services. With the combined efforts of IEEE and FIPA (Foundation for Intelligent Physical Agents) and the availability of IEEE standards on software agents, agent-based collaborative design systems will be widely developed and deployed in industry. Agent-based cooperative workflow is becoming an active research topic, with applications for the coordination of highly distributed collaborative design systems, as well as collaboration and coordination among various departments or among collaborating enterprises.

CSCWD conferences will continue to be a focused international forum for researchers over the world working on the foundations and applications on CSCW in design, manufacturing, and other related areas.

March 2007

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