
FOREWORD

IEICE/IEEE Joint Special Section on Autonomous Decentralized Systems Theories and Application Deployments

The Autonomous Decentralized Systems (ADS), born in Japan 30 years ago, have technologically evolved in communication networks, information systems, and control systems. It has been applied in many actual systems, and it has progressed in standardization activities. IEICE and IEEE published joint Special Sections on "Autonomous Decentralized Systems" in May 2000, October 2001 and December 2005, cooperating with the International Symposium on Autonomous Decentralized Systems (ISADS). However, after that, ADS technology has been making drastic improvement, and innovative new research is being reported successively.

Recently, assurance systems are widely noticed as new system technology. Assurance system yields synergistic effects by cooperation of heterogeneous systems, which satisfy heterogeneity of requirements and adaptability to change of circumstances. Research meeting on Assurance System has been started in June 2000 under the Technical Group on Dependable Computing. In the United States, IEEE, DARPA, industries and universities established High-Assurance Systems Engineering Symposium (HASE). In July 2002 some members from Technical Group on Information Networks and Technical Group on Dependable Computing founded the International Workshop on Assurance in Distributed Systems and Networks (ADSN). The first ADSN was held in July 2002, and recently, the 6th ADSN 2006 was held in March 2006. In addition, the 8th ISADS 2007, jointly with FTDCS (Future Trends of Distributed Computing System), was held at Sedona, Arizona St. in the US in March 2007. ADS is expected to be promising as the core technology for Assurance Systems substituting conventional technologies.

The objective of this Special Section is to discuss new technologies in the field of Autonomous Decentralized System from both theories and application deployments point of view through papers. The Special Section solicits paper submissions not only from people who presented new technologies in the International Symposium on Autonomous Decentralized Systems (ISADS 2007) in March 2007 but also from people who are interested in this field. Due to the fact that ADS have cross-fielding wide applications, this special section had been planned by coordinating the Societies of IEICE Communications (B), and Information and Systems (D).

There were 48 submissions and editorial committee selected 16 papers and 1 letter with careful and fair review. The editorial committee hopes that these sophisticated papers will make great contribution to the ADS, related technologies and their applications.

As the Guest Editor in Chief, I would like to express my sincere appreciation to all the authors for their contribution, and to all the Editorial Committee members for their devoted review works.

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Isao Kaji, Guest Editor-in-Chief

Isao Kaji (*Member*) received his B.S. degree in Applied Physics, M.S. degree in Nucleus Engineering, and Ph.D. in Information Engineering from Tokyo Institute of Technology in 1968, 1970 and 2001 respectively. From April 1970 to March 1999, he had worked for the International Business Machines (IBM) Japan as a systems engineer and a management, and had engaged in the technical support of large systems hardware, software, and in the education. From April 1999, he has joined Miyagi University as a professor of School of Project Design. His research interests include heterogeneous computing environments in the autonomous decentralized systems. He is a member of the IEEE and IPSJ.

