### **Proceedings**

# International Symposium on Applications and the Internet Workshops

January 23 – 27, 2006 Phoenix, Arizona

Co-sponsored by the IEEE Computer Society (IEEE-CS) and The Information Processing Society of Japan (IPSJ)

In cooperation with

Communications Society (CS) and Information and Systems Society (ISS) of
The Institute of Electronics, Information and Communication Engineers (IEICE)







Los Alamitos, California

Washington • Tokyo

#### All rights reserved.

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries may photocopy beyond the limits of US copyright law, for private use of patrons, those articles in this volume that carry a code at the bottom of the first page, provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Other copying, reprint, or republication requests should be addressed to: IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, P.O. Box 133, Piscataway, NJ 08855-1331.

The papers in this book comprise the proceedings of the meeting mentioned on the cover and title page. They reflect the authors' opinions and, in the interests of timely dissemination, are published as presented and without change. Their inclusion in this publication does not necessarily constitute endorsement by the editors, the IEEE Computer Society, or the Institute of Electrical and Electronics Engineers, Inc.

IEEE Computer Society Order Number P2510 ISBN 0-7695-2510-5 Library of Congress Number 2005937743

Additional copies may be ordered from:

IEEE Computer Society Customer Service Center 10662 Los Vaqueros Circle P.O. Box 3014 Los Alamitos, CA 90720-1314 Tel: + 1 800 272 6657 Fax: + 1 714 821 4641 http://computer.org/cspress

csbooks@computer.org

IEEE Service Center
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 08855-1331
Tel: +1 732 981 0060
Fax: +1 732 981 9667
http://shop.ieee.org/store/customer-service@ieee.org

IEEE Computer Society
Asia/Pacific Office
Watanabe Bldg., 1-4-2
Minami-Aoyama
Minato-ku, Tokyo 107-0062
JAPAN
Tel: +81 3 3408 3118
Fax: +81 3 3408 3553
tokyo.ofc@computer.org

Individual paper REPRINTS may be ordered at: <reprints@computer.org>

Editorial production by Bob Werner Cover art production by Joe Daigle/Studio Productions Printed in the United States of America by The Printing House





IEEE Computer Society

Conference Publishing Services

http://www.computer.org/proceedings/

### **Table of Contents**

## International Symposium on Applications and the Internet Workshops — SAINT 2006 Workshops

Welcome from the Workshop Co-Chairs	ix
Workshop — IPv6: Deployment of Technologies and Applications	
Workshop Message_	X
IPv6 R&D Activities in WIDE Project  H. Esaki, A. Kato, and J. Murai	2
An Operational Demonstration of a Mobile Network with a Fairly Large Number of Nodes	6
An L3-Driven Fast Handover Mechanism in IPv6 Mobility  K. Gogo, R. Shibui, and F. Teraoka	10
Mill: An Information Management and Retrieval Method Considering Geographical Location on Ubiquitous Environmet  S. Matsuura, K. Fujikawa, and H. Sunahara	14
JGN II (Japan Gigabit Network II)	18
Compressed High Definition Televsion (HDTV) over IPv6  J. Lee and K. Chon	22
An Application Gateway to Deploy High-quality Video Communications in Various Network Environments  T. Kishida, K. Maeda, E. Kohno, and Y. Kakuda	26
An Implementation and Evaluation of IPv6 End-to-End Secure Communication System for Closed Members  Y. Hei, S. Katsuno, and S. Ano	30
A Translation Method between 802.15.4 Nodes and Ipv6 Nodes  S. Sakane, Y. Ishii, K. Toba, K. Kamada, and N. Okabe	34
Problems on IPv4-IPv6 Network Transition	38
Fixing DNS Misbehavior Hindering IPv6 Deployment	43

## Workshop — RFID and Extended Network; Deployment of Technologies and Applications

Synchronization of RFID Readers for Dense RFID Reader Environments  K. Leong, M. Ng, A. Grasso, and P. Cole	48
Experimental Study on UHF Passive RFID Readability Degradation  J. Mitsugi and H. Hada	52
Positioning Analysis of Multiple Antennas in a Dense RFID Reader Environment  K. Leong, M. Ng, and P. Cole	56
Design of Low-power Baseband-processor for RFID Tag	60
Low Cost Object Identification in RFID via Dynamic Markov Chain and Two Time Scale SPSA	64
Anti-collision Performance of Gen2 Air Protocol in Random Error Communication Link  Y. Kawakita and J. Mitsugi	68
Product Specific Security Features Based on RFID Technology	72
Extendable Product Traceability System from Small Start  S. Wakayama, Y. Doi, S. Ozaki, and A. Inoue	76
Design and Implementation of an Active RFID System Platform	80
Towards an Enterprise Location Service	84
HiQ: A Hierarchical Q-Learning Algorithm to Solve the Reader Collision Problem  J. Ho, D. Engels, and S. Sarma	88
Comparison of Transmission Schemes for Framed ALOHA Based RFID Protocols  C. Floerkemeier and M. Wille	92

### Workshop - Next Generation Service Platforms for Future Mobile Systems

Workshop Message	xi
Context-Aware, Ontology-Based Recommendations	98
Content-Based Hierarchies in DHT-Based Peer-to-Peer Systems	105
Evaluation of Method for Multiple Path Distribution Based on Delay-Jitter	109
The μJini Proxy Architecture for Impromptu Mobile Services	113

### $f Workshop - Ubiquitous \ Networking \ and \ Enablers \ to \ Context-Aware \ Services$

#### Session 1: Network Technologies for Ubiquitous Era

Author Index	150
Y. Teranishi, J. Kamahara, and S. Shimojo	
MapWiki: An Ubiquitous Collaboration Environment on Shared Maps	146
Y. Yokohata, Y. Yamato, M. Takemoto, and H. Sunaga	
Ubiquitous Communication Networks	142
Service Composition Architecture for Programmability and Flexibility in	
Y. Nakatani, T. Tokunaga, H. Yamaguchi, and T. Itoh	
Proposal of a Method for Protecting Private Information in User Context	138
HI. Yang, E. Jansen, and S. Helal	13.
A Comparison of Two Programming Models for Pervasive Computing	134
Session 2: Service Applications for Ubiquitous Era	
P. Eren, D. Stewart, and J. Wodka	
Home and Person Focused Event Framework	130
Y. Murata, T. Inaba, H. Takizawa, and H. Kobayashi	120
A Distributed and Cooperative Load Balancing Mechanism for Large-Scale P2P Systems	126
M. Matsumoto and T. Itoh	
Study of Server Processing Load Evaluations in Ubiquitous Communication Environments	122
T. Tsuchiya, H. Yoshinaga, K. Koyanagi, A. Honda, and A. Minami	
STARCast: Streaming Collaboration Platform Using the Overlay Technology	118