

SAINT 2004 Workshops

Proceedings



2004 International Symposium on Applications and the Internet Workshops

Table of Contents

Welcome from the Workshop Co-Chairs	
Welcome from the Organizers of Workshop 1	
Welcome from the Organizers of Workshop 2	
Welcome from the Organizers of Workshop 3	
Welcome from the Organizers of Workshop 4	
Welcome from the Organizers of Workshop 5	
Welcome from the Organizers of Workshop 6	
Welcome from the Organizers of Workshop 7	
Welcome from the Organizers of Workshop 8	
Welcome from the Organizers of Workshop 9	

Workshop 1: E-Business

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Session 1: Technologies and Law Enforcement about Electronic Payment Systems

Chair: *Mr. Sugiura*
Co-Chair: *Prof. Sahut*

Electronic Payment: Analysis and Perspectives	1
<i>J. M. Sahut and M. Galuszewska</i>	
How Does Propagational Investment Currency System Change the World?	2
<i>K. Suzuki</i>	
On a Digital Signature Based Cyber Local Money System.....	3
<i>S. Yamasaki</i>	
The Legal Nature of Information Transactions: A Perspective of Information License Contracts in Japan	4
<i>S. H. Seok</i>	
A Perspective of Information License Contracts in Japan.....	5
<i>S. H. Seok</i>	

Session 2: Valorization Policy and Venture Capitals for E-Business

Chair: *Prof. Sahut*
Co-Chair: *Mr. Sugiura*

Do Corporate Funds Promote Innovation Better Than Venture Capitalists?	6
<i>J. S. Lantz</i>	
Valorization Policy of Innovation in Europe.....	7
<i>J. Arlotto</i>	
Management and Information Technology Acceptation	8
<i>J. M. Sahut and M. Jegham</i>	
Technologies of Information and Communication and Networks and Their Responsibility in the Variance of Decision Making.....	9
<i>A. Levy</i>	

Session 3: Technologies and Social Aspects of E-Business Implementations

Chair: *Dr. Uesugi*
Co-Chair: *Dr. Okada*

Suggestions on Supply Chain Management: From the Perspective of the Japanese Business Relations.....	10
<i>K. Kikuchi</i>	

Issues of E-Business Implementation from Enterprise Architecture Viewpoint	11
<i>T. Kamogawa and H. Okada</i>	

On Speculation about Difference and Similarity between a Company, a University, and a Sightseeing City from the Aspect of Business Schemes on Digital Intellectual Assets.....	12
<i>K. Nakano</i>	

A Remote Lecture System with Laser Pointer for the Internet and Broadband Networks.....	13
<i>S. Sugawara and T. Miki</i>	

E-Technologies, Enabler of Innovation Process: Some Cases Studies Based on Government and Local Authorities Policy	14
<i>B. Salgues</i>	

Session 4: P2P Networks Will Change the Community

Chair: *Dr. Okada*
Co-Chair: *Dr. Uesugi*

Legal System and Computer Forensics Business	15
<i>I. Takahashi</i>	

The Evaluation System of Research Findings on the Web.....	16
<i>Y. Sakata</i>	

Model Analysis of Digital Copyright on P2P Networks.....	17
<i>Y. Itakura</i>	

E-Business for Depopulated Areas: Why Not Re-bundling Local Loop?	18
<i>S. Uesugi</i>	

Workshop 2: IPv6: Technology and Deployment

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Session 1: IPv6 Infrastructure

Chair: *Hiroshi Esaki, The University of Tokyo*

IPv6 R&D and Commercial Activities in Europe.....	19
<i>J. Palet and T. Chown</i>	

IPv6 Test-Bed Networks and R&D in China.....	20
<i>H. Ning</i>	
Transition Mechanism in IP-Based Wireless Networks	21
<i>S. Thakolsri, C. Prehofer, and W. Kellerer</i>	
6POWER, How to Reach All the Planet with IP	22
<i>J. Palet</i>	

Session 2: Applications

Chair: *Hiroshi Esaki, The University of Tokyo*

A Tele-Control Project over Ipv6 in Technical High Schools.....	23
<i>Y. Takamori, K. Tsukamoto, T. Nakamura, S. Yamada, T. Yamashita, T. Suetsugu, T. Ogata, M. Mizoguchi, R. Nishimura, M. Otani, H. Egashira, H. Tanaka, and K. Watanabe, and H. Kondo</i>	
An Experiment Using JGN v6 at Tottori University of Environmental Studies	24
<i>M. Imai and R. Atarashi</i>	
Multimedia and Routing Specific Applications on IPv6 Networks.....	25
<i>Yukio Hiranaka, M. Ohnuma, A. Yoshida, and T. Takeda, S. Sugiyama, T. Hosokawa, T. Yamagata, S. Ohkoma and Y. Hirose, T. Yoneda, S. Takeda, T. Arashida, H. akagawa, T. Kudaira, K. Tanaka, and Yukio Hiranaka</i>	

Session 3: Implementation

Chair: *Hiroshi Esaki, The University of Tokyo*

DNS Transport Size Issues in IPv6 Environment.....	26
<i>K. Rikitake, H. Nogawa, T. Tanaka, K. Nakao, and S. Shimojo</i>	
An Evaluation of IPv6 Multicast Routers in the JGN IPv6 Network	27
<i>Y. Mikamo, H. Hayashi, T. Miyake, S. Katsuno, K. Kobayashi, and H. Esaki</i>	
High-Speed IPv6 Router/Switch Architecture.....	28
<i>T. Yazaki, T. Kanetake, S. Akahane, Y. Sakata, K. Sugai, and H. Yano</i>	
USAGI IPv6 IPsec Development for Linux	29
<i>M. Kanda, K. Miyazawa, and H. Esaki</i>	

Session 4: Network Architecture

Chair: *Hideki Sunahara, NAIST*

Design and Implementation of Overlaying Multi-Homing Architecture.....	30
<i>S. Uda, N. Ogashiwa, K. Nagami, K. Kondo, I. Nakagawa, Y. Shinoda, and H. Esaki</i>	
Providing Network Services with Multiple Prefix Delegation	31
<i>S. Suzuki</i>	

Session 5: Mobile

Chair: *Hideki Sunahara, NAIST*

Active Packetization and Priority Description for Scalable Video over Ipv6 Based Wireless Networks	32
<i>C.-C. Lee, S. W. Chen, Y. L. Huang, and P. C. Chgang</i>	
Multihoming in Nested Mobile Networks	33
<i>N. Montavont, T. Ernst, and T. Noel</i>	
Mobile IPv6 and AAA architecture Based on WLAN	34
<i>R. I. Chen, R.-C. Wang, and H.-C. Chao</i>	

Workshop 3: Internet to Support Social Welfare

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Session 1: Healthcare, Tele-medicine and IAA (I Am Alive) System

Chair: *Katsuyuki Yamazaki, KDDI Labs., Japan*

Remote Healthcare Education Based on Synchronous and Asynchronous High Quality Video Applications	35
<i>Y. Sasaki and Y. Shibata</i>	
Experiment of Internet-Based Tele-medicine in Amami Rural Islands	36
<i>A. Isechi, C. Oda, R. Shinkura, S. Akiba, H. Fujikawa, and K. Yamazaki</i>	
An Accessibility Guideline of Victim Information Registration and Retrieval System	37
<i>T. Ebina and H. Ohno</i>	
An Implementation and Evaluation of IAA Registration System Using GPS Mobile Phone	38
<i>M. Nakayama and K. Sugiyama</i>	

Session 2: Emergency and Lifeline Support

Chair: *Hideki Sunahara, NAIST, Japan*

Disaster Information System and Its Wireless Recovery Protocol.....	39
<i>N. Uchida, H. Asahi, and Y. Shibata</i>	
Standardization Activity on Emergency Telecommunication System in ITU-T	40
<i>I. Murase, M. Murano, and H. Ohno</i>	

QoS Support for VoIP Traffic to Prepare Emergency	41
<i>M. Noro, T. Kikuchi, H. Sunahara, and S. Shimojo</i>	
Lifeline Communication System in the Internet.....	42
<i>T. Kikuchi, M. Noro, H. Sunahara, and S. Shimojo</i>	

Session 3: Post ICADI Workshop

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NEED DETAILS HERE

Workshop 4: Metadata Applications on the Broadband Network

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Session 1: Metadata Applications

Chair: *Ray Atarashi, IJ*

A Metadata Framework for Generation of Web-Based Learning Materials.....	43
<i>Y. Shirota</i>	
An XQuery Engine for Digital Library Systems that Support XML Data.....	44
<i>J.-H. Kang, C.-S. Kim, and E.-J. Ko</i>	
A Study on Information Media Symmetry Based on Data Types	45
<i>K. Ohno</i>	

Session 2: Metadata, Communications and Ubiquitous

Chair: *Junichi Kishigami, NTT*

An Approach to Integrated Access for a Variety of Museum Information.....	46
<i>A. Yamada, F. Adachi, Y. Komachi, and R. Atarashi</i>	
Directory Based CDN Management Using Metadata.....	47
<i>M. Kawarasaki and R. Atarashi</i>	
The Design and Implementation of the Conference Support System Using Real Space Network.....	48
<i>Y. Kawakita, S. Wakayama, H. Hada, and J. Murai</i>	

Workshop 5: Service Oriented Computing Workshop

Organizers:

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Section 1: Visions of Future Applications

Chair: *Tomoko Itao, NTT*

Adaptive and Emergent Ubiquitous Computing Applications49
T. Itao

Wearable Computing in Daily Life50
M. Tsukamoto

The Design and Implementation of Context-Aware Services51
H. Morikawa

The Demonstration of Network-assisted Disconnected Operation for Mobile
Communication52
D. Ochi and K. Yamazaki

Section 2: Service Creation Frameworks

Chair: *Hiroyuki Morikawa, University of Tokyo*

Service Emergence Framework for Distributed Network Applications53
T. Itao, A. Yamamoto, S. Tanaka, and T. Suda

The Design of Naming-Based Service Composition System for Ubiquitous
Computing Applications54
M. Minami, H. Morikawa, and T. Aoyama

Service Composition and Service Emergence Framework for Ubiquitous
Computing Environment Manuscripts55
*M. Takemoto, T. Oh-Ishi, T. Iwata, Y. Yamato, Y. Tanaka,
K. Shinno, and S. Tokumoto*

A Service Selection Method Based on Context Types for an Ubiquitous Service
System in Public Space56
H. Kawamichi, S. Sameshima, H. Kato, and K. Kawano

Implementation and Evaluation of Message Delegation Middleware for
ITS Application57
G. Hattori, C. Ono, S. Nishiyama, and H. Horiuchi

A Natural Extension to Current Web Services Framework58
Z. U. Singhera

Section 3: Autonomous Components for Service Creation

Chair: *Katsumi Kawano, Hitachi*

SDO Model and Its Standardization Activity	59
<i>K. Kawakami, S. Sameshima, K. Kawano, J. Suzuki, T. Suda, S. Steglich, and S. Shin</i>	
Component Model with Semantic (CoSMoS): A New Component Model for Dynamic Service Composition	60
<i>K. Fujii and T. Suda</i>	
Towards the Automatic Composition of Co-Business Processes	61
<i>J. Park</i>	
Evolution and Adaptation of Distributed Network Services	62
<i>T. Nakano and T. Suda</i>	

Section 4: Platforms and Middleware for Service Creation

Chair: *Raymond Klefstad, University of California, Irvine*

The Design and Implementation of Service Emergence Platform Software	63
<i>S. Tanaka, T. Itao, A. Yamamoto, and T. Suda</i>	
Middleware Support for Super Distributed Autonomic Services in Pervasive Networks.....	64
<i>J. Suzuki and T. Suda</i>	
Adaptive Information Collection Services for Dynamic Networks	65
<i>Q. Han, N. Venkatasubramanian, and S. Mehrotra</i>	
A CORBA Framework for Distributed Service Location and Creation	66
<i>N. Shankaran and R. Klefstad</i>	

Section 5: P2P Support for Service Creation

Chair: *Hirotoishi Iwasaki, Denso IT Laboratory*

Decentralized PageRank: A Distributed Reputation Model for Open Peer-to-Peer Networks.....	67
<i>A. Yamamoto, D. Asahara, T. Itao, S. Tanaka, and T. Suda</i>	
Distributed and Adaptive Discovery Using Preference	68
<i>R. Egashira and T. Suda</i>	
Adaptable Peer-to-Peer Discovery of Objects that Match Multiple Keywords	69
<i>M. Moore and T. Suda</i>	

Simulation of Information Propagation in Physical Communication Network for Vehicle	70
<i>H. Sasaki and H. Iwasaki</i>	

Workshop 6: International Workshop on Cyberspace Technologies and Societies (IWCTS 2004)

Organizers:

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Session 1: Computing and Networking in Cyberspace

Improving Security for Ubiquitous Campus Applications	71
<i>K. Matsumiya, S. Tamaru, G. Suzuki, J. Nakazawa, K. Takashio, and H. Tokuda</i>	
Smart Furniture for Creating Ubiquitous Applications.....	72
<i>H. Tokuda, K. Takashio, J. Nakazawa, K. Matsumiya, M. Ito, and M. Saito</i>	
The Design of OSPF Extension for Handling Uni-Directional Links	73
<i>S. Fujieda, H. Kusumoto, Y. Ohara, and J. Murai</i>	
Shared Questionnaire System for School Community Management.....	74
<i>H. Kubo, H. Ohashi, M. Tamamura, T. Kowata, and I. Kaneko</i>	
An Automatic Generation Method of 3D Visualization for Holistic and Detail Relationships on e-Learning Environment	75
<i>N. Yoshida, K. Hirata, and J. Miyazaki</i>	

Panel Session 1

Cyber Infrastructure and Governance of Next Decades	75A
<i>H. Tokuda, T. Hagino, K. Kohiyama, T. Kojima, A. Kusano, J. Murai, K. Naemura, Y. Sone, and M. Umegaki</i>	

Session 2: Knowledge and Multimedia in Cyberspace

A Prototype Implementation of Metadata Generation for Image Retrieval.....	76
<i>H. Sasaki and Y. Kiyoki</i>	
Smart-Media Design Process with Scenario Based Modeling.....	77
<i>N. Okude, K. Ochiai, K. Kuroda, and M. Hori</i>	
Smart-Media Applications Created by Scenario Based Modeling	78
<i>N. Okude, T. Matsumoto, Y. Wada, and M. Norimatsu</i>	
Content-Based Filtering System for Music Data.....	79
<i>K. Iwahama Y. Hijikata, and S. Nishida</i>	

An Implementation of a Semantic Associative Search Space for Medical Document Databases	80
<i>M. Kawamoto, Y. Kiyoki, N.Yoshida, S. Fujishima, and S. Aiso</i>	

Panel Session 2

Future Directions for Cyber Knowledge and Databases.....	80A
<i>Y. Kiyoki, H. Fukui, M. Inakage, S. Moridaira, N. Okude, M. Sato, M. Tomita, and K. Uno</i>	

Session 3: Multimedia Applications in Cyberspace

HTTP-Proxy-Assisted Automatic Video Indexing for e-Learning.....	81
<i>Y. Tanaka, T. Itamiya, T. Hagino, and H. Chiyokura</i>	

DACS: Distance Aware Collaboration System for Face-to-Face Meetings	82
<i>H. Egi, N. Ohsuga, A. Nakada, H. Shigeno, and K. Okada</i>	

Meta-Chronicle: A Spatial and Temporal Multidatabase System and Its Application to Histories.....	83
<i>N. Ishibashi and Y. Kiyoki</i>	

A Meta-Level Career-Design Support System for Connecting Educational and Occupational Databases.....	84
<i>Y. Takahashi and Y. Kiyoki</i>	

“e-care Town” Project: New Applications of the Internet to an Aging Society	85
<i>M. Minami, K. Hashimoto, S. Yokoyama, and J. Murai</i>	

Panel Session 3

Cyber Applications for Next Societies	85A
<i>J. Murai, H. Chiyokura, M. Hanada, Y. Hibata, I. Innami, K. Kumasaka, A. Maeda, H. Ohiwa, T. Ozawa, N. Saito, and H. Shimizu</i>	

Workshop 7: Peer-to-Peer Internetworking

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Keynote Speech

Need Title	86
<i>Y. Kawasaki</i>	

Session 1: Routing in Overlay Networks

Chair: *Kenji Saito*

Mitigating Routing Misbehaviour of Rational Nodes in CHORD.....	87
<i>M. Portmann and A. Seneviratne</i>	
Achieving Heterogeneity and Fairness in Kademia	88
<i>Y. Kadobayashi</i>	
Peer Group Rendezvous Using Intersection among Peer Groups on DHT.....	89
<i>Y. Doi</i>	

Session 2: Mobility and Overlay Networks

Chair: *Yusuke Doi*

Scalable Distribution Model for Geographically Dependent Content through P2P Wireless Ad-Hoc Communication.....	90
<i>T. Ishida, S. Hisamatsu, K. Saito, M. Minami, and J. Murai</i>	
P2P Platform Implementation on PDAs organizing Ad-Hoc Wireless Network.....	91
<i>T. Iwata, S. Miyazaki, M. Takemoto, K. Ueda, and H. Sunaga</i>	

Session 3: Collaboration and Trust in Peer-to-Peer Applications

Chair: *Youki Kadobayashi*

Vineyard: A Collaborative Filtering Service Platform in Distributed Environment.....	92
<i>T. Oka, H. Morikawa, and T. Aoyama</i>	
Maintaining Trust in Peer-to-Peer Barter Relationships.....	93
<i>K. Saito</i>	

Workshop 8: High Performance Grid Computing and Networking

Organizers:

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Session 1: Application 1

Chair: *Katsuki Fujisawa*

A Prototype toward Japanese Virtual Observatory (JVO).....	94
<i>M. Ohishi, Y. Mizumoto, N. Yasuda, Y. Shirasaki, M. Tanaka, S. Honda, and Y. Masunaga</i>	
A Proposal of Pipelined Image Processing in a Grid Environment.....	95
<i>T. Akiyama, H. Yamashita, T. Hara, S. Kato, S. Shimojo, and S. Nishio</i>	
The Second Trans-Pacific Grid Datafarm Testbed and Experiments for SC2003	96
<i>O. Tatebe, H. Ogawa, Y. Kodama, T. Kudoh, S. Sekiguchi, S. Matsuoka, K. Aida, T. Boku, M. Sato, Y. Morita, Y. Kitatsuji, J. Williams, and J. Hicks</i>	
A Remote Operation System for the 3MV Electron Microscope with a Both-Direction Conversation Capability	97
<i>H. Mori, K. Yoshida, S. Shimojo, H. Nogawa, T. Akiyama, H. Takahashi, and T. Shibayama</i>	

Session 2: Application 2

Chair: *Satoshi Matsuoka*

High Performance Grid and Cluster Computing for Some Optimization Problems.....	98
<i>K. Fujisawa, M. Kojima, A. Takeda, and M. Yamashita</i>	
Grid-Enabled Applications in Molecular Dynamics Simulations Using a Cluster of Dedicated Computers	99
<i>T. Amisaki and S.-I. Fujiwara</i>	
Heterogeneous Remote Computing System for Computational Astrophysics with OmniRPC	100
<i>K. Onuma, T. Boku, M. Sato, D. Takahashi, H. Susa, and M. Umemura</i>	
The Application-Specific Data Consistency in the DSA Parallel Programming Environment	101
<i>A. Nomoto, W. Kaneko, S. Nakamura, and K. Shimizu</i>	

Session 3: Networking and Tool

Chair: *Toyokazu Akiyama*

On Modeling GridFTP using Fluid-Flow Approximation for High Speed Grid Networking.....	102
<i>H. Ohsaki and M. Imase</i>	

Transport Protocols for Fast Long-Distance Networks: Comparison of Their Performances in JGN	103
<i>K. Kumazoe, Y. Hori, M. Tsuru, and Y. Oie</i>	
Autonomous Configuration of Grid Monitoring Systems	104
<i>K. Shirose, S. Matsuoka, and H. Nakada</i>	
Performance Evaluation of OmniRPC in a Grid Environment	105
<i>Y. Nakajima, M. Sato, T. Boku, D. Takahashi, and H. Gotoh</i>	

Session 4: Task Allocation

Chair: *Hidemoto Nakada*

A New Task Scheduling Method for Distributed Programs Which Require Memory Management in Grids.....	106
<i>H. Koide</i>	
A Comparison among Grid Scheduling Algorithms for Independent Coarse-Grained Tasks.....	107
<i>N. Fujimoto and K. Hagihara</i>	
Logical Cluster Construction in Grid Environment for Similar Protein Retrieval.....	108
<i>T. Ohkawa, Y. Nonomura, and K. Inoue</i>	

Workshop 9: Ubiquitous Services and Networking

Organizers:

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An Evolutionary Approach towards Ubiquitous Communications: A Security Perspective.....	109
<i>A. R. Prasad, P. Schoo, and H. Wang</i>	
Security and Trust Issues in Ubiquitous Environments—The Business-to-Employee Dimension.....	110
<i>T. Walter, L. Bussard, P. Robinson, and Y. Roudier</i>	
Context Spaces Architectural Framework	111
<i>A. Tarlano and W. Kellerer</i>	
A Display Centric Ubiquitous Information System “Dokodemo-Display”	112
<i>T. Sekiguchi, S. Iguchi, M. Ishii, J. Maeoka, A. Ito, and T. Furuhashi</i>	

Author Index	
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Welcome from the Workshop Co-Chairs



On behalf of the organizers of The 2004 International Symposium on Applications and the Internet (SAINT), it is our pleasure to welcome you to SAINT 2004 and all its workshops.

This year we have 9 full-day and half-day workshops, spanning all 5 days of the conference. The workshops address issues related to Internet technology, computing, architecture, software, internetworking, services, business, data representation, social impact, and applications. These workshops are:

- E-Business
- IPv6: Technology and Deployment
- Internet to Support Social Welfare
- Metadata Applications on the Broadband Network
- Service Oriented Computing
- Cyberspace Technologies and Societies
- Peer-to-Peer Internetworking
- High Performance Grid Computing and Networking
- Ubiquitous Services and Networking

The increased number of workshops and workshop papers that SAINT has experienced this year shows the importance of Internet computing, technologies, software, services, and applications, and also indicates the fast pace by which SAINT reached maturity. We believe that the workshop papers provide an interesting and complete view of the state of the art in the research activities in the field of Internet computing and applications, and we anticipate that these papers will be a valuable reference for years to come.

We wish to thank all of those who have contributed to the success of SAINT 2004. In particular, we thank the workshop organizers, program committees, authors, and referees who offered their time and expertise to provide high-quality reviews, within a very tight schedule. We offer special thanks to SAINT General Chairs, Yuji Oie and Sumi Helal; the Program Chairs, Shinji Shimojo and Erich Neuhold; the Publicity Chairs, especially Katsuyuki Yamazaki; the Local Arrangements Chairs, Junichi Shimada and Kazuo Asakawa; and to Takeshi Ikenaga, the Web Master, for their invaluable help and dedication.

We welcome you all to SAINT 2004, and we hope that you will enjoy the program and workshops, as well as Tokyo.

Kenichi Yoshida and Hossam Hassanein
Workshop Co-Chairs, SAINT 2004

Welcome from the Organizers of Workshop 1

E-business is one of the most prominent fields of application of Internet. The life in this century is totally different from what our ancestors came along. The world is smaller than ever, transactions are getting cheaper and cheaper. However, old traditions have not yet wholly been replaced with new technologies. Furthermore, new technologies bring about new problems, which cannot be solved by the old wisdom.

We designed this workshop as a forum where these problems are shared and understood to such an extent that technological solutions are invited to be developed. The issues include such topics as: “emergence and valorization of the innovation,” “patent (law process and evaluation),” “development of innovation (spin off, incubator, corporate venture capital...),” “public research and firms (transfer, collaborative project),” “applications of P2P technology,” “new conceptual framework for SCM,” “proposal for revising regulations.”

This workshop brings researchers and practitioners of E-business together and aims to share worldwide cutting edge issues and open discussions on related areas. The papers presented at the workshop include both new research results and discussions over legal and procedural matters around the world.

We would like to extend our sincere thanks to SAINT organizers, IPSJ, and IEEE staff for their excellent support in preparing the program and the proceedings. The papers appearing in the proceedings are selected after careful review.

We welcome participants to this workshop. We believe that this workshop will be filled with stimulating presentations and discussions that make you discover a new horizon of applications of Internet.

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Welcome from the Organizers of Workshop 2

The digital information and communication infrastructure as empowered by Internet technology has already become a major part of the infrastructure platform of people's daily activities and of working environment. The information and communication networks until the late 1990s has not provided a broadband, always-on communication environment to end users. Recently, a new type of information infrastructure using the native Internet technology, such as ADSL and wireless LAN, has begun to be deployed significantly. The Internet is now mutating toward a new stage, which is a broadband and ubiquitous computing over the native Internet environment. The Internet has been always modified its protocols and experienced some mutations, in the past. However, we well know and realize that we have to preserve the "end-to-end architecture," in order to preserve the development and mutation of the Internet. In order to preserve the "end-to-end architecture," we develop the IP version 6 (IPv6) via the significant technical investigation and discussion since the middle of 1990s. Now, the IPv6 is going to be widely accepted by the industry and to be deployed.

This important feature of IPv6 has been positively started to be realized by major players, such as ISPs, OS vendors, appliance vendors. There were big news in 2003, e.g., DoD information system will be IPv6 ready until 2008. Also, some major vendors or ISPs are going to introduce the production IPv6 services and applications.

It is a pleasure to be able to hold a two-day workshop focusing on the IPv6 technology at the SAINT 2004. The workshop covers the IPv6 R&D testbeds around the world, the development of the infrastructure (e.g., DNS), technical issues around IPv6, and the applications with IPv6.

Finally, the organizer wants to express his great appreciation and thanks to all of IEEE and IPSJ staffs and authors, who arranged the workshop.

Program Committee

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Welcome from the Organizers of Workshop 3

Over the past few years, the Internet has been revolutionizing the way we communicate by technical advances such as fiber optic networks, high-speed IP switching, DSL and CATV broadband accesses, along with the increasing performance of PCs and workstations. This growth has helped to identify the need for the Internet to support a broader scope of communications, particularly for social welfare such as health care medical care, and so on.

Recent events have shown that the way of communication via the Internet can be more effective in natural disasters, power outages, fiber cable cuts, etc. E-mails and WWW-based information exchange can be robust and invulnerable due to the Internet's flexible routing and information transfer. The Internet is also expected to improve lifeline communications. As an example, emergency calls conveyed by e-mails or instant messages can also include locations, based on GPS, and the time they occur, by which ambulance and hospitals may advance their treatment. These features will be of help in further securing our social welfare and infrastructure.

The use of tele-health, tele-rehab, and pervasive computing (e.g., to create smart homes) in support of aging, disability, and independence is another topic of this workshop. A large conference named ICADI (International Conference on Aging, Disability and Independence) was held 4 December 2003 in Washington, D.C., on this topic (See <http://www.asaging.org/icadi/03/index.cfm>). This workshop is to organize a post ICADI Workshop, with the objective of addressing the Asian perspective on the same topic and to also ensure follow-up and continued dialogue.

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Welcome from the Organizers of Workshop 4

Metadata is a key technology to support effective information distribution on the broadband network. Metadata has been applying to content management, knowledge description, distribution management, and network node control, based on the technologies for advanced resource discovery. The explosive development of XML technologies as a syntax requires metadata and related technologies as a semantics for description of resource and policy.

The issue of metadata interoperability on the broadband network is quite important because metadata is developed in each field such as digital library and broadcast, and people who standardized each metadata need a chance to communicate.

At SAINT 2003, many researchers from broadcast, education, and Internet came together to discuss metadata interoperability and applications. We are pleased to hold this metadata workshop again at SAINT 2004. It is important to continue discussions on basic technologies, interoperability, and applications for the broadband network. This workshop is expected to contribute to accelerate the effective information distribution.

The purpose of this workshop is to explore the effective information distribution based on the basic studies in many fields such as library, broadcast, network, model, semantics, and Frameworks. We discuss metadata interoperability, application for the broadband network, and standardization in order to discover new possibilities and applications.

Metadata is one of the basic technologies for ubiquitous network. We are fortunate that Metadata workshop and Workshop 9: "Ubiquitous Services and Networking" are held at the same time.

Organizers

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Welcome from the Organizers of Workshop 5

Welcome to the Service Oriented Computing Workshop 2004, held in conjunction with the 2004 Symposium on Applications and the Internet (SAINT 2004).

This workshop focuses on an emerging area of service oriented computing, an area of creating future applications that are self-organizing, scalable, adaptive and evolvable. The Service Oriented Computing Workshop 2004 consists of the following five sessions, each addressing a set of key research issues in service oriented computing.

The first session, "Visions of Future Applications," focuses on possible future applications that may emerge from service oriented computing and presents various visions on future applications.

The second session, "Service Creation Frameworks," focuses on approaches to creating and supporting future applications in service oriented computing and presents frameworks for centralized and distributed service creation.

The third session, "Autonomous Components for Service Creation," focuses on approaches for designing and implementing distributed and autonomous components of future applications and presents modeling, description and evolution/adaptation aspects of such components.

The fourth session, "Platforms and Middleware for Service Creation," focuses on approaches to support distributed and autonomous service components on a runtime environment and presents design and implementations of platforms and middleware for service creation.

The last session, "P2P Support for Service Creation," focuses on distributed P2P approaches for a service creation and presents techniques such as a service discover in distributed environments.

All presentations are from researchers who have been active in service oriented computing, and the workshop organizers hope that the audience would find them informative and useful.

We would like to thank Dr. Kenichi Yoshida and Dr. Hossam Hassanein, SAINT 2004 Workshop chairs, and members of the Service Oriented Computing Workshop 2004 organizing team for their assistance in making this workshop happen.

Workshop Organizers

Tatsuya Suda, *University of California, Irvine, USA*

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Welcome from the Organizers of Workshop 6

International Workshop on Cyberspace Technologies and Societies (IWCTS2004) provides technical discussion among researchers, developers and users of cyberspace systems from academia, business and industry. This workshop focuses on research in cyberspace technologies, governance, and their advanced applications.

Over the past decade, we have seen the rapid evolution in information technology and its applications, especially in social aspects. The global transition of society demands new prospective technologies, and these technologies introduce new frameworks of the society as cyberspace applications. These cyberspace applications, such as e-commerce, e-government, e-learning or e-community, require new types of knowledge modeling and implementations. Such cyberspace knowledge provides capabilities to manage and compute various types of media resources. For constructing the cyberspace knowledge, further progress of cyberspace infrastructures, which includes the mobile, wearable and secure network technologies, are widely required. This workshop offers the opportunity for in-depth exploration of selected topics and for the presentation of the most recent research and development findings in these rapidly changing fields.

Areas of particular interest include:

- Cyber Infrastructure and Governance
 - Internet Governance
 - Network Societies and Communities
 - Security and Privacy
 - Network Technologies for Smart Spaces
- Cyber Knowledge and Database
 - Knowledge Modeling and Design
 - Multimedia Databases
 - Spatial and Temporal Databases
 - Multidatabases
- Cyber Application
 - Bio-informatics
 - Genome Mining
 - Location Based Service and Applications
 - New Applications

Workshop Organizers

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Naofumi Yoshida, *Keio University*

Jun'ichi Yura, *Keio University*

Welcome from the Organizers of Workshop 7



Welcome to P2PI 2004, the International Workshop on Peer-to-Peer Internetworking 2004, held in conjunction with the 2004 Symposium on Applications and the Internet (SAINT 2004).

This workshop is the occasion to address Peer-to-Peer Internetworking issues widely, and is intended to share latest research results and exchange ideas, thereby promoting research activities in this area.

Peer-to-peer internetworking is going to redefine the way peer-to-peer networks are constructed. Since no single peer-to-peer network can serve universal purposes, functional decomposition among multiple peer-to-peer networks has to occur as peer-to-peer internetworking framework is defined.

Over the past years, a number of peer-to-peer networks have appeared, some with prominent success. Nevertheless, the possibility and potential of interconnecting these peer-to-peer networks have not been explored until recently.

Peer-to-peer internetworking will facilitate the introduction of heterogeneity, internationalization, monetary infrastructure, and various security mechanisms. This workshop consists of three sessions that attempt to cover some of these aspects.

We would like to thank SAINT 2004 Workshop co-chairs, Dr. Kenichi Yoshida and Dr. Hossam Hassanein, and members of the P2PI 2004 workshop organizing team for their assistance in making this workshop happen.

Workshop Co-Chair

Yusuke Doi, *Toshiba Corporation, Japan*
Youki Kadobayashi, *Nara Institute of Science and Technology, Japan*

Workshop Organizers

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Welcome from the Organizers of Workshop 8

The area of Grid research or simply “the Grid” can be regarded in several ways. One is as research effort into technology for middleware and infrastructural platforms that will accelerate scientific activities via the combined use of ultra high-speed networks and extensive network middleware on layered above. Another would be new method in science and engineering that would effectively utilize such an infrastructure. The Grid not only integrates leading-edge research infrastructures, including but not limited to large computational as well as storage resources, but also large-scale experimental and sensory devices located in various institutions, traditionally confined within universities and national labs, via ultra high-speed networks. The Grid is also greatly beneficial in research that involves transfer and storage of large volumes of data across the networks. Moreover, it is increasingly becoming important to make attempts for a particular application area to “Grid-enable” their application suites, in order not just merely to gain Grid experience but also to record, analyze and classify the successes as well as the difficulties in the process, so that they may be shared within the discipline as well as with outside, when the Grid becomes the mainstream infrastructure for computational research.

In collaboration with the Japanese Ministry of Education “A05 Group of Special Priority Area Research Group for Informatics,” this workshop aims to exchange and disseminate the latest research results as well as experiences from Grid computing and its underlying high-performance networking infrastructure. The scope of the workshop includes but not limited to the following topics:

- Middleware for Grid computing
- E-Science application experiences using Grids
- Data (Intensive) Grid middleware and its application
- Grid Infrastructure Building and its Experiences
- High-performance networking for Grids
- Grid Performance Evaluation

A total of 15 papers have been selected for presentation spanning all of the above topics. I hope that the workshop will foster further research results in the still somewhat new and exciting area.

Organizational Committee

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Kento Aida, *Tokyo Institute of Technology*

Shinji Shimojo, *Osaka University*

Susumu Date, *Osaka University*

Hidemoto Nakada, *Advance Institute of Science and Technology / Tokyo Inst. Technology*

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Satoshi Matsuoka

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Welcome from the Organizers of Workshop 9



Given the remarkable development of micro-device technologies such as micro processor-chips, sensors and RF tags (RFID), we will soon see micro computing and communications devices being embedded in the objects around us, and even in the human body itself, for various everyday applications. Under this ubiquitous computing and communications environment, it is expected that an entirely new service class, which we call “ubiquitous services,” will emerge based on “hyper networking”—the connection of real-world context to cyber space. The ubiquitous services of the future should enhance the value of conventional communications services in the support of human life without imposing any stress on the user. The network infrastructure for these services may require capabilities beyond the Internet of today. To build this environment of ubiquitous services, we must overcome various technical and societal issues.

This Workshop is the best opportunity to address this theme in sufficient depth and breadth and is intended to share knowledge and exchange ideas, thereby promoting new studies and research topics in this area.

According to the content of papers, we may consider any collaborative session with Workshop 4, “Metadata Applications on the Broadband Network.”

Organizers

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