Report
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Managing Pervasive Computing and Ubiquitous Communications: A Report on APNOMS 2003

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The 7th Asia-Pacific Network Operations and Management Symposium (APNOMS 2003) was held during October 1–3, 2003 in Fukuoka, Japan. APNOMS 2003, which was organized by IEICE TM (The Institute of Electronics Information and Communication Engineers, Telecommunication Management Committee) and KICS KNOM (The Korean Institute of Communication Science, Korean Network Operations and Management Committee) with support from IEEE CNOM (Committee on Network Operations and Management), IEEE APB (Asia Pacific Board), IEEE ComSoc Japan Chapter and TMF (TeleManagement Forum), has continued to play an important role in exchanging and discussing all aspects of telecommunications management among academics and telecommunication industry at large in the Asia-Pacific region. As in the previous symposia [1–5], APNOMS 2003 was a great success, attracting about 250 researchers, practitioners, operators, and vendors from 10 countries. Its program included keynote speeches, tutorials, special sessions, technical sessions, poster sessions, a distinguished experts panel, and exhibitions.

The theme of this symposium was "Managing Pervasive Computing and Ubiquitous Communications." The concept of "ubiquitous society" frequently appears in mass media, and it spreads a roseate dream and image to the future human life. Application examples include, inventory management, product tracking and tracing, home automation, home and community security management, and environment protection. Governments are trying to push research and development in ubiquitous-related areas. Industries are seeking business opportunities in the near future. In the coming ubiquitous society, it will be hard, or in some cases

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impossible, to manually handle, configure, or manage immense tiny computer chips as well as sensor nodes embedded in our environment. To support the development of technical solutions to this problem, self organized, ad-hoc, and secure networking technologies are anticipated. Managing these emerging computing and networking paradigms still contains a lot of issues. Novel network operations and management concepts and frameworks need to be discussed and proposed. With this background, this symposium focused on the theme of managing pervasive computing and ubiquitous communications.

The first day of the Symposium consisted of six tutorials covering different aspects of management technologies. Youngtak Kim (Yeungnam University, Korea) gave a tutorial on "Management of MPLS-based VPNs." Chris Kurt (Microsoft, USA) gave a tutorial on "XML Web Services: A Consolidated Overview." Marcus Brunner (NEC Europe, Germany) presented a tutorial on "QoS Management in the Internet." Shiro Sakata (NEC, Japan) gave a tutorial on "Ubiquitous System Technology." Ken'ichi Sato and Satoru Okamoto (NTT, Japan) presented a tutorial on "Photonic Networks." Graham Chen (EPAC Technologies, Australia) gave a tutorial on "Wireless LAN: From Technology to Business." They attracted many discussions on the new issues of managing those technologies and services.

Four keynote speakers shared their visions on the second and third days of the symposium. Tadanobu Okada (NTT, Japan) delivered a speech on "Enhancing IP Networks to Support Consecutive Killer Applications" and mentioned that SIP(Session Initial Protocol) will play a key role in the networks. Jong-Rak Lee (KT, Korea) gave a speech on "New Operations Support Systems Architecture for High Speed IP Networks" and introduced a concrete deployment plan of the new system. Graham Chen (EPAC Technologies, Australia) presented a speech on "Managing Pervasive Computing and Ubiquitous Communications—Challenges Ahead" and addressed new technical and social issues in that area. Greg Fidler (Practical Enterprise Architecture, Australia) delivered a speech on behalf of Keith Willetts (Mandarin Associates Ltd, UK) on "The Lean Operator—The Telecom Fitness Regime" and encouraged to be a lean operator following TMF guidelines and technologies to overcome cost issues of operation support systems.

The main body of the Symposium consisted of eight technical sessions and two poster sessions. From a total of 86 paper submissions, 40 were selected for presentations in the 8 technical sessions and 21 were selected for poster session presentations. These papers represented the latest results of research and development in integrated management for telecommunication solutions covering major research areas including: Optical and Access Network Management, Architecture and Modeling, IP and MPLS Network Management, OSS Implementation and Testing, Policy-based and Security Management, Mobile Network Management, Performance and QoS Management, and Service Management. It is the new trend that many manuscripts focus on QoS Management of concrete services.

The special sessions were held on the second and third days of the Sympo-sium. "Network management and plan of commercial networks" was discussed by 10 representatives of various countries from Asia-Pacific and Europe. Joong-Goo Song (KT, Korea) and Satoshi Hasegawa (CTCSP, Japan) chaired these sessions and the speakers presented their views, experiences, and future expectations. Kenji Nakanishi (NTT, Japan) gave a talk on "Standardization of OSS-IF (Operation Support Systems Interfaces) for B-PON (Broadband Passive Optical Networks)—Report of FSAN OAM-WG (Full Service Access Network Operation Administra-tion and Management Working Group) Activities." Makoto Takano (NTT West, Japan) gave a talk on "Development and Introduction of OSSs—Dreams, Reali-ties and Expectations." Myeong-Hwan Park (DACOM, Korea) presented a talk on "Back Office Support System (BOSS) of High Speed Internet Services." Mun-Jo Jung (KT, Korea) gave a talk on "KT NGN and its Management Plan." Satoshi Oyamada (NTT DoCoMo, Japan) gave a talk on "Overview of DoCoMo's Present Network Operations and Introduction of Developing Network Operation System." Shih-Chiang Tsao (Chunghwa Telecom., Taiwan) gave a talk on "Supporting CQM/SLA(Customer Quality Management/Service Level Agreement) on Leased Line and IP/VPN Services." Stephane Moriceau (Leapstone Systems Inc., France) presented a talk on "Service Brokering: an efficient infrastructure to achieve con-sistent service integration, delivery, and management for converged IP Network." Takafumi Chujo (Fujitsu, Japan) gave a talk on "Modeling Internet Application Traffic for Network Planning and Provisioning."

The exhibition program provided an opportunity for vendors and service providers to exhibit their latest technologies, tools, platforms, products and sys-tems to support integrated management. This program also provided an excellent environment for operators, researchers and academics to interact with vendors. Ten companies including ETRI, Hewlett-Packard Japan, ILOG Co., Korea Telecom, Mitsubishi Electric Corporation, NTT Advanced Technology Corporation, SL Japan Corporation, Sumisho Electronics Co., CTSSP, and KTF participated in the exhibition program.

APNOMS 2003 ended the three-day event with a very exciting distinguished experts' panel on the topic of "Managing Pervasive Computing and Ubiqui-tous Communications" chaired by Mitsuhiro Azuma (Fujitsu Laboratories Ltd., Japan). The five panelists, James Storey (Rocket Software, USA), Jong T. Park (Kyungpook National University, Korea), Greg Fidler (Practical Enterprise Archi-tecture, Australia), Marcus Brunner (NEC Europe, Germany), Shigeki Yamada (National Institute of Information, Japan), discussed and debated a large range of issues on the APNOMS 2003 theme. These issues included security, privacy, self-management, problem fixing, coverage and synchronization of ubiquitous devices and fusion management between electrical cyber space and smart real space in the proactive embedded computing and device invisible environment of pervasive computing and ubiquitous communication. The audience also participated in the

discussion and debated actively throughout the panel. Through the discussions and debates, the panelists and audience offered different views on future important issues towards the real goal of managing pervasive computing and ubiquitous communications.

APNOMS 2003 was a very successful symposium. It was well attended and the feedback on all aspects of the symposium organization, in particular, on the technical program was very positive. It contributed to the growth of APNOMS into a very important international symposium. The audience's feedback reinforced the positive aspects of the symposium: the wide participation from industry in technical contributions and in the organizing and program committees; the tradition of special sessions focusing on experiences and lessens learned by different countries in this region; and the overall collaborative, interactive and friendly atmosphere of the symposium.

For further information, please visit the official symposium site: http://www.apnoms.org/2003. APNOMS 2004 is not planned since NOMS 2004 (www.noms2004.org) will be held in April 2004 in Seoul, Korea. APNOMS 2005 will be held in September 2005 in Okinawa, Japan. For more information, please visit http://www.apnoms.org/2005.

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