



*IC-BNMT 2007*

**Proceedings of  
2007 International Conference on Broadband  
Network & Multimedia Technology**

Sept. 18-20, 2007, Beijing, China  
<http://ic-bnmt2007.bupt.edu.cn>



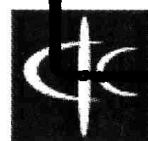
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## **Welcoming Message from the Chair, IC-BNMT 2007**

International Conference on Broadband Network & Multimedia Technology has been opened this year. During these years, we have seen tremendous growth in broadband network and in multimedia technology. Technological progress in these fields is increasing to match and fulfill the economic growth in many countries.

China has demonstrated again its emergence into the group of nations at the higher level of technical excellence. China's growth in broadband network and multimedia fields has been significantly. No wonder then, that people from many parts of the world love to come to international conferences in China to meet Chinese colleagues and build working relationships.



**Chair IC-BNMT 2007**  
**Prof. Junlinag Chen**

IC-BNMT2007 has received a number of technical papers this year. We look forward to listening to these papers to the extent possible in such a big conference. I congratulate and thank every one involved in making this happen. In particular, we thank Beijing University of Posts and Telecommunications to hold this Conference.

I offer my best wishes to all participants and delegates for a very interesting and productive conference in the three days ahead of us, and sincerely hope the Conference to be a very successful one.

**Prof. Junliang Chen**

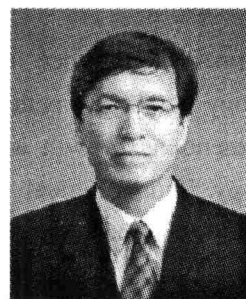
**Chair**

**International Conference on Broadband Network & Multimedia Technology (IC-BNMT 2007)**



## **Welcoming Message from the Chair, IC-BNMT 2007**

On behalf of the Technical Program Committee of the 2007 International Conference on Broadband Network & Multimedia Technology, I have a great pleasure to welcome you to the 2007 International Conference on Broadband Network & Multimedia Technology, IC-BNMT2007. We have received over 160 papers from China, Korea, Japan and other countries. After carefully reviewing the papers by the experts from both home and abroad, 91 of them are finally accepted. Moreover, around 10 percent of the papers submitted are selected as the best papers, which will be indexed by EI.



Chair IC-BNMT 2007  
Prof. Jong-Tae Park

The conference could not be organized without the support and hard work of many people. We would like to thank all contributors who submitted manuscripts, as well as the technical program committee who diligently handled the review process, and reviewers for providing their valuable feedback in a timely manner. In addition, we are grateful to all sponsors of IC-BNMT2007 for their support.

We hope this conference will contribute to the further advancement of broadband network and multimedia technology. We also hope that you will find the conference exciting and valuable, and that the program will stimulate many new ideas. Enjoy IC-BNMT2007!

Prof. Jong-Tae Park

Chair

International Conference on Broadband Network & Multimedia Technology (IC-BNMT 2007)

## **Greeting from the Technical Program Committee**

Dear Colleagues and Friends,

On behalf of the Technical Program Committee of the 2007 International Conference on Broadband Network & Multimedia Technology, IC-BNMT2007, which is to be held from 18<sup>th</sup> to 20<sup>th</sup> of September, 2007 in Beijing, China, I would like to extend to you the warmest greeting and welcome.



TPC Chair IC-BNMT 2007  
Prof. Fangchun Yang

As is well understood, broadband network and multimedia technology nowadays play a crucial role in all aspects of economic and social life, in bridging the gap between the developed and developing countries, and in maintaining sustainable development worldwide and in implementation of the global information society.

Having realized the significance of network and multimedia technology, the Call For Papers of IC-BNMT2007 has received very encouraging responses from professionals worldwide. Over 160 papers were received from China, Korea, Japan and other countries. Among all the fields, broadband networking, network management and measurement, Peer to Peer, optical networks, multimedia, etc., have been the most active ones. After carefully reviewing work by the experts both home and abroad, 91 of them are accepted. Moreover, around 10 percent of the papers submitted are selected as the best papers, which will be indexed by EI.

It is our honor and pleasure that distinguished personnel Prof. Tetsuya Miki from The University of Electro-Communications as well as other distinguished guests will be with us as keynote speakers, making the conference an even more exciting event.

Thanks to all authors, keynote or invited speakers, paper reviewers, the Organizing and Advisory Committee of IC-BNMT2007, that the conference program presents rich content covering most subjects of our current interests. We believe the conference will be very exciting and rewarding.

It is our sincere hope that all colleagues and friends have a beneficial and unforgettable experience at the conference, while enjoying their time in Beijing.

Prof. Fangchun Yang  
TPC Chair of IC-BNMT 2007

## **Conference Chair**

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Jong-Tae Park (Kungpook National University, Korea)

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## Program Guide

	<b>18 Sept. Tuesday</b>	<b>19 Sept. Wednesday</b>	<b>20 Sept. Thursday</b>
<b>08:30-10:00 Parallel Session</b>	<b>Registration</b>	<b>Opening Ceremony &amp; Keynote Speech</b>	<b>Parallel Session</b> <ul style="list-style-type: none"> <li>■ Network Applications &amp; Services</li> <li>■ Optical network and system</li> <li>■ Graduate Student Session</li> </ul>
<b>10:00-10:30</b>		<b>Coffee Breaks</b>	
<b>10:30-12:30 Parallel Session</b>	<b>Registration</b>	<b>Keynote Speech</b>	<b>Parallel Session</b> <ul style="list-style-type: none"> <li>■ Security</li> <li>■ Wireless &amp; Mobile Communication</li> <li>■ Others</li> <li>■ Graduate Student Session</li> </ul>
<b>12:30-14:00</b>		<b>Lunch Time</b>	
<b>14:00-16:00</b>	<b>Registration</b>	<b>Parallel Session</b> <ul style="list-style-type: none"> <li>■ Broadband network</li> <li>■ Multimedia</li> <li>■ Graduate Student Session</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>Keynote Speech</b></li> <li>■ <b>Graduate Student Session</b></li> </ul>
<b>16:00-16:30</b>		<b>Coffee Breaks</b>	
<b>16:30-17:30</b>	<b>Registration</b>	<b>Parallel Session</b> <ul style="list-style-type: none"> <li>■ Network management and measurement</li> <li>■ Intelligent Systems</li> <li>■ Graduate Student Session</li> </ul>	<b>Closing Ceremony</b>
<b>18:30-20:30</b>		<b>18:30-20:00 Welcome Reception</b>	<b>Dinner</b>

## Technical Program Overview

Conference Venue: BUPT High-Tech Mansion 4<sup>th</sup> Floor

	Multifunction Room	No. 2 Meeting Room	No. 3 Meeting Room	No. 8 Meeting Room
Wednesday 19 Sept. 08:30-12:30am	Opening Ceremony & Keynote Speech I			
Wednesday 19 Sept. 14:00-16:00pm		■ Broadband network	■ Multimedia	■ Graduate Student Session- I
16:30-17:30pm		■ Network management and measurement	■ Intelligent Systems	■ Graduate Student Session- II
Thursday 20 Sept. 08:30-10:00am		■ Network Applications & Services	■ Optical network and system	■ Graduate Student Session-III
10:30-12:30am		■ Others	■ Security ■ Wireless & Mobile Communication	■ Graduate Student Session-IV
Thursday 20 Sept. 14:00-16:00pm	Keynote Speech II & Closing Ceremony			■ Graduate Student Session- V
16:30-17:00pm				

# Recent Advances of Broadband Network Technology in China

Junliang Chen

Beijing University of Posts and Telecommunication, China

## Abstract

Broadband network technology has been experiencing tremendous growth in China in recent years. In this talk, we mainly introduce the recent advances of broadband network technology in China, including current situation, prospect and challenge of communications networks, optical transmission systems, 3G and 4G mobile communication systems, next generation Internet and next generation networks.

## Biography

Junliang Chen is a professor of the Beijing

University of Posts and Telecommunications (BUPT), China. He graduated from the Shanghai Jiaotong University in 1955 and obtained a doctor of engineering degree from Moscow Telecommunications Engineering Institute in 1961.

Now he is a Member of the Standing Committee of Chinese People's Political Consultative Conference (CPPCC), and both a member of China Academy of Sciences (CAS), and China Academy of Engineering (CAE).



# On the Management of Ubiquitous Multimedia Communication

Jong-Tae Park

Professor, Kyungpook National University, Korea

## Abstract

Recently, the ubiquitous multimedia communication receives much attention due to its promising new business opportunity in IT and other related areas. In a ubiquitous environment, the surrounding contextual information acquired from sensors, GPS, and people plays very important role for the intelligent decision making process. Ubiquitous multimedia communication is characterized by the invisibility of objects, proactive context-awareness and adaptation, mobility and (broadband) near field communication technology in addition to conventional QoS management for effective multimedia communication. There have been lots of research works going on throughout the world. In this talk, we introduce the issues, current research efforts, and outcomes in the management of ubiquitous multimedia communication. The ubiquitous environment requires a new paradigm of management which may include ubiquitous multimedia interface management, surrounding context management, network/media/service convergence management, seamless mobility management, location management and power management in addition to the traditional network management technologies.

## Biography

Prof. Jong-Tae Park is a professor of the School of Electrical Engineering and Computer Science at Kyungpook National University, Korea. He received

Ph.D. degree in Computer Science and Engineering from the University of Michigan, Ann Arbor, and previously worked at AT&T Bell Labs in the United States.



He has founded the Committee of Korean Network Operations and Management (KNOM) in the Korean Institute of Communication Sciences, and served as chair of the Technical Committee on Information Infrastructure of IEEE Communication Society. He is currently on the editorial board of International Journal on Network and Systems Management, and China Communications. He was a general chair for APNOMS97, a general chair for ICC 2002 Symposium and a co-chair for Globecom2002 Symposium on Global Service Portability and Infrastructure. He has also served as a standing committee member for APNOMS, and a committee member or advisory board member for IEEE/IFIP NOMS and IM. He has published more than 100 journals and articles in the areas of computer communication networks, network management, and distributed systems. His current research interests include issues related to the convergence and management of next generation information networks including ubiquitous sensor network, mobile ad-hoc network, MPLS/GMPLS, WLAN, and 4G wireless networks. He is an IEEE senior member.

# Ubiquitous Networking: Motivations and Challenges

Weijia Jia

Department of Computer Science, City University of Hong Kong, Hong Kong SAR, China

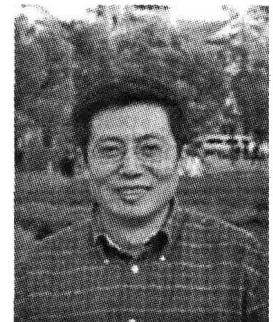
## Abstract

Ubiquitous communications require wireless networking and infrastructure network support. The first step is to look at how the different available technologies will integrate and work with each other. One of the next steps is to seek solutions for connecting “ubiquitous devices” to such “integrated and heterogeneous networks”. These two steps together form the evolutionary approach towards ubiquitous networking. This talk introduces our currently implemented ubiquitous transmission system for “ubiquitous devices/terminals/handset”, called AnyServer with Intelligent Multi-mode Nodes (IMN). AnyServer is an intelligent platform running on 3G, WiMAX, WiFi and Internet to provide the IMNs with smooth QoS connections/communications, synchronization and roaming over the heterogeneous networks (3G/GSM/WiFi, Sensor net, Internet) which is open, scalable, and compliant with IEEE/IETF standards to support IMNs routing and roaming in the networks. AnyServer enables IMNs to setup/maintain the real-time video/audio connections among the networks, facing the mobility in the heterogeneous networks. I will particularly introduce the challenging issues encountered during our research and implementations.

## Biography

Weijia Jia received his BSc, MSc, from Center

South University, China and PhD from Polytechnic Faculty of Mons, Belgium, all in computer science. He joined German National Research Center for Information Science (GMD) in St. Augustin in 1993 as a research fellow. Since 1995,



he joined the Department of Computer Science, City University of Hong Kong as an associate professor. His research interests include wireless communication and networks, distributed systems, multicast and anycast QoS routing protocols for Internet. In these fields, he has published more than 200 papers and books/chapters in the international journals and conference proceedings. He has been the Principal-Investigator of more than 20 research projects supported by RGC Research Grants, Hong Kong and Strategic Research Grants, CityU. Currently, he is in charge of a HK\$11 millions ITF project supported by Hong Kong Government for the development of Next Generation Ubiquitous Communication Platforms. He has served as PC co-chairs and PC members for various IEEE international conferences. He is a member of IEEE.

# **Communications everywhere supporting the global economy**

Laurie Cuthbert

Dept. of Electronic Engineering, Queen Mary University of London, UK

## **Abstract**

This talk considers the importance of communications in the global economy: how modern society would not exist without broadband and multimedia. It looks forward to developments in the area and how the future world will be shaped by broadband.

Particularly important now is communications to the individual and this talk will consider how aspects of personalisation and delivering information to the end user are likely to change.

## **Biography**

Professor Laurie Cuthbert is currently Head of the Department of Electronic Engineering at Queen Mary, University of London. In the late 1980s he founded the Telecoms Research Group with its main

emphasis being on research into broadband communications, but since then it has broadened its interests to include the intelligent control of networks. In this area he has led UK Research Council and

EU funded projects concerned with intelligent agents controlling broadband and wireless networks.

Laurie is a Fellow of the Institution of Engineering and Technology and has been active in the Professional Groups of the Institution. He is a Visiting Professor at BUPT and Dublin City University.





# Optical Network Research for Next Generation and Beyond Networks

Tetsuya Miki

Department of Information and Communication Engineering, The University of  
Electro-Communications, Japan

## Abstract

The development of broadband IP (Internet Protocol) networks and services are giving a strong impact to telecommunication, mobile and broadcast services. Today, broadband mobile services are rapidly increasing their data rate by Wi-Fi, HSDPA (High Speed Downlink Packet Access) over WCDMA, WiMAX, and so on. FTTH (Fiber To The Home) is getting popular in some countries. In Japan, the GPON-FTTH subscribers are reaching 10 million, and expected to reach 30 million by 2010.

NGN (Next Generation Networks) enabling every existing services with IP is under-development and expected to be commercialized in many countries from around 2010. NGN is going to converge all kind of communications. Various network services over Next Generation Networks may require higher and higher speed access capability. How to cope with skyrocket traffic throughput requirement for backbone networks is one of the fundamental issues for Next Generation and Beyond Networks. Optical network technology must be only way to cope these future requirements. Researches on advanced WDM (Wavelength Division Multiplexing), photonic network systems using optical switching, FTTA (Fiber To The Antenna) for broadband mobile systems, and related optical signal processing technologies are strongly required to apply to commercial network systems for the evolution of Next Generation and Beyond Networks.

## Biography

Prof. Tetsuya Miki received the B.E. degree from the University of Electro-Communications (UEC), Tokyo, Japan in 1965, and M.E. and Ph.D. degrees from Tohoku



University, Sendai, Japan, in 1967 and 1970, respectively. He is currently a Professor at the Department of Information and Communication Engineering, UEC. His current research interests include photonic networks, broadband communication networks, and dependable network architectures. He joined the Electrical Communication Laboratories of NTT in 1970, where he was engaged in the research and development of high-speed digital transmission systems using coaxial cable, optical transmission systems, SDH and ATM transport networks and network operation systems. He was the Executive Manager of the NTT Optical Network Systems Laboratories from 1992 to 1995. In 1995, he moved to UEC. He is a Fellow of IEEE and IEICE. He was a Vice-President of IEEE Communications Society in 1998 and 1999, and a Vice-President of IEICE in 2003 and 2004. He is also members of several educational and research organizations in Japan, including Japan Accreditation Board for Engineering Education (JABEE), and Center for Research and Development Strategy of Japan Science and Technology Agency (JST).

# IT 839 Strategy: A Korean Information Technology Development Strategy

Minho Kang

Information and Communications University, Korea

## Abstract

In this presentation, we introduce the IT839 Strategy for dynamic u-Korea by explaining the Korea's ICT status, IT 839 Program, 8 services, 3 infrastructures, and 9 growth engine technologies, launched successfully in 2004 by Korean Ministry of Information and Communications.

IT839 is the most significant strategy that encompasses Korea's overall IT industry policy. It is expected to shape the future of IT industry and is making great contribution to laying the foundation for new growth that will leap the ubiquitous IT. The IT839 Strategy has successfully created new growth engines-such as WiBro, DMB, and RFID- that did not exist a few years ago, but which will have generated a production worth 60 trillion KRW by 2010.

By fully exploiting the IT839 strategy, Korea will continue to be a world-famous IT growth model country that leads the digital convergence and ubiquitous age.

## Biography

Prof. Minho Kang graduated from the University of Texas at Austin with Ph.D. degree in Electrical

Engineering in 1977. In 1978, he visited the Optical Electronics Department at AT&T Bell Laboratories, Holmdel, New Jersey as the visiting member of the Technical Staff. From 1978 to 1985, Prof. Kang



worked as the researcher of Optical fiber communication laboratory of ETRI. Subsequently, Prof. Kang worked at the position of Vice president in Telecommunication and Information Division in ETRI, Executive vice-president in Research and Development Center of Korea Telecom (KT), President of MIDITEL from 1985 to 1998. He joined Information and Communications University (ICU) in 1999 and worked at the position of full professor, Director of Optical Internet Research center (OIRC) and Dean of Academic and Student Affairs. Presently, Prof. Kang is the professor of School of Engineering of ICU, Chairman in Optical Internet Forum and Chairman in ICACT2006, COIN 2006. His research interests are Optical Internet Theory, Broadband Convergence Networks and Next Generation Network Technology.

## Network after 2020: Post-NGN

Jintong Lin

Beijing University of Posts and Telecommunications, China

### Biography

Professor LIN Jintong graduated from Peking University in physics. He pursued his studies in Electronic Engineering and got MSc degree from Beijing University of Posts and Telecommunications (BUPT), China, and PhD degree from Southampton University, U.K.

After eight years of working experience in the Education Bureau of local government, he started his teaching and scientific research at university in 1978. Since then his research interest has been shifted to technologies in optical fibre and optical communications, with productive findings embodied in 148 research papers in different Journals and conference presentations. He also wrote two academic books published in China and USA, respectively. Because of his active and innovative work in his research field, he has been invited to deliver speeches and presentations many times at various international conferences in Europe, USA, Japan, Korea, as well as in China.

He also won different honours and fellowships later in his career. Early in 1980's, he was awarded the Science & Technology Achievement Prize of City Beijing for his study on optical fibre communication systems. He joined the Optical Fibre Group of Southampton University in 1985, and took a research fellowship of SERC, U.K. at King's College London in 1990. During his eight-year stay in England, he won the Electronic Divisional Board Premium for Best Electronic Letters by Institution of Electronic Engineers, U.K., for his contribution

to the invention of Fibre Laser/Amplifier, which is popularly regarded as "a Revolution of Communication Technologies". His other research findings were honored with prizes awarded by Ministry of Information Industry, Ministry of Science & Technology and other Chinese academic bodies.

Prof. LIN is active in international academic exchanges and social activities. He was the Chairman of China's Scholars & Students Association U.K. (CSSA, U.K.) from 1991 to 1992. In recent years, he took part in organizing different international conferences, such as ICCT (International Conference on Communications Technology), APCC (Asia-Pacific Conference on Communications), OECC (Optic-Electronics & Communication Conference) and ICT (International Conference on Telecommunications), working as TPC chairman or Conference chairman. His other chairmanships and memberships are found in Standing Committee of China Institute of Communication (CIC), Beijing Information & Telecom Association (BITA) and Beijing Institute of Telecommunication.

Since 1993, right after he returned from England, he has successively held positions as director of the Department of Radio Engineering, dean of the School of Telecommunication

