



GRL2020

A Vision for a Global Research Library

GRL2020 Asia Position Papers



24-25 February 2009 - Taipei, Taiwan
www.grl2020.net

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1. Welcome

Dear Friends,

It is our great pleasure to welcome you to the second GRL2020 Asia in Taipei, Taiwan.

This the third GRL2020 Workshop will build on the progress made at the previous two GRL2020 workshops - GRL2020 US, Redmond, Washington US in 2007; and GRL2020 Europe, Pisa, Italy in 2008 – in defining a research environment enabling collaborative work across disciplines and geographical boundaries for Digital Libraries with particular emphasis on Asia. The workshop is co-hosted by Academia Sinica and Microsoft Research.

GRL2020 is pleased to welcome experts from around the world to showcase best practices, case studies and pioneering work, with the aim of fostering innovative approaches supported by global research libraries. Focused and lively discussions will offer the possibility of all participants to play a part in evolving a GRL2020 research agenda and chart a course that clearly defines next steps.

Position papers from the participants at this event may be found in this booklet which offer different perspectives on the state of the art of digital libraries today. The outcomes of the discussions that will take place over the following two days will be reflected in a GRL2020 Workshop Report which will be published after the event. This Report will set out a long-term agenda to progressively move towards Global Digital Libraries developed to sustain the work of researchers and to speed up new advances in knowledge and the transfer of this knowledge.

The post-event report from GRL2020 Europe is also available for participants.

Finally, we would also like to take this opportunity to express our sincere gratitude to Nick Ferguson and the staff of Trust-IT Services Ltd. for their dedicated work to make this GRL 2020 Asia possible.

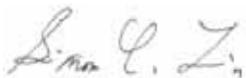
We hope that this workshop will continue the drive for a consolidated effort to achieve a long term agenda on Global Digital Libraries for the future. We trust that your participation to GRL2020 Asia and stay in Taipei is both productive and enjoyable.

Simon Lin

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Lee Dirks

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4.3. Han-Chieh Chao

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Dr. Chao is a jointly appointed Professor of the Department of Electronic Engineering and Institute of Computer Science & Information Engineering, National Ilan University, Ilan, Taiwan. He also holds a joint professorship of the Department of Electrical Engineering, National Dong Hwa University, Hualien, Taiwan. His research interests include High Speed Networks, Wireless Networks and IPv6 based Networks and Applications. He received his MS and Ph.D. degrees in Electrical Engineering from Purdue University in 1989 and 1993 respectively. Dr. Chao is also serving as an IPv6 Steering Committee member and Deputy Director of R&D division of the NICI Taiwan, Cochair of the Technical Area for IPv6 Forum Taiwan. Dr. Chao is an IEEE senior member, IET and BCS Fellows.



GRL2020 Position Paper

As we have entered the electronic age in the last decade, both the technologies enabling e-library and e-learning have increased the flexibility of information retrieval. Advances in wireless communication technologies have also recently provided the opportunity for creating new interactive library models. With the rapid growth of the Internet and wireless communications, people are making extensive use of portable wireless devices to access information such as voice, data and multimedia resources and can enjoy ubiquitous services, anytime anywhere. The future library is not only physical in existence but must also provide the virtual capacity of being everywhere at the same time. This paper outlines the most relevant concepts and features of ubiquitous library (U-Library) with next generation networks.

From a wireless communication technologies viewpoint, in the third generation cellular system (3G) environment (such as Universal Mobile Telecommunications System, UMTS), the data rate could reach 2Mbps while the user is standing and 384Kbps while the user is moving slowly. Such bandwidth is not sufficient for these increasingly popular applications and would be the major challenge for wireless networks. In the future, the 4th generation mobile communication system (4G) will provide more bandwidth and flexibility to facilitate ubiquitous purposes. It can be expected that the next generation communication network will be an integrated All-IP network based on the IPv6 technology. Many research institutes are devoted to finding how to deploy IP protocols in mobile communication core networks and services.

The IMS (IP Multimedia Subsystem) is a network subsystem proposed by 3GPP. The IMS concept is to combine telecommunication technology, wireless and wired networks under the All-IP environment to provide a more extensible, real-time, interactive multi-media service in 3G and future 4G networks. IMS can be regarded as the trend for future wireless communication networks. The architecture of UMTS can be divided into circuit-switched network (CS), packet-switched network (PS) and IP Multimedia Subsystem (IMS). The services on the UMTS can be roughly divided into voice service, data service and packet-based multimedia service. When UMTS integrates with these heterogeneous wireless network technologies, such as the 802.11

series wireless network (WLAN) and 802.16 series (WiMAX), it could offer ubiquitous service any time, any place and even at movement. Through this way, it can reach the FMC (Fixed-Mobile Convergence) goal of the next generation communication network.

IMS uses the modified IETF SIP (Session Initiation Protocol) to establish the service session. It provides a flexible architecture to build added-value services on top of the common signaling infrastructure. The contents are not limited by the access medium but become more extensible to offer more optional services to users. Currently, many standard-based services have been proposed, such as instant messaging, Presence Service, Push to talk Over Cellular, Conferencing, and Group management. Service providers can integrate voice, video, and data services and provide them on a single platform. Because IMS is a highly modular architecture, service providers can integrate different applications or services from different providers into the same system. Furthermore, IMS provides access to a user's specific set of services, independently from their network-access serving operator, access network type, and user end platform. Finally, IMS incorporates integrated QoS (Quality of Service), security, and flexible charging mechanism, making it a complete service delivery platform (SDP) for U-Industry to provide its services and resources.