



## Computer Engineering Group

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Field of study: Heterogeneous Network Topics, Mobile Application/System Design

Key words: Heterogeneous Network, Mobile Application/System

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### 1. The Subject and Aims of Research

1. Heterogeneous Network Related Topics: Focus on the application and integration over heterogeneous networks.
2. Mobile Application/System Design: Focus on the challenges of designing mobile services and system architectures.
3. Peer-to-Peer Networking Related Topics
4. Music Information Processing Related Topics

### 2.Recent Research Topics

#### (a) Heterogeneous Network Related Topics:

To offer a more efficient wireless data access service, disparate wireless networks complement each other to provide a higher wireless accessibility. For example, the WLAN network inter-works with the cellular network. Incorporating heterogeneous networks into the network service group could make interactions in-between more complicated. We focus on the challenges while integrating heterogeneous networks.

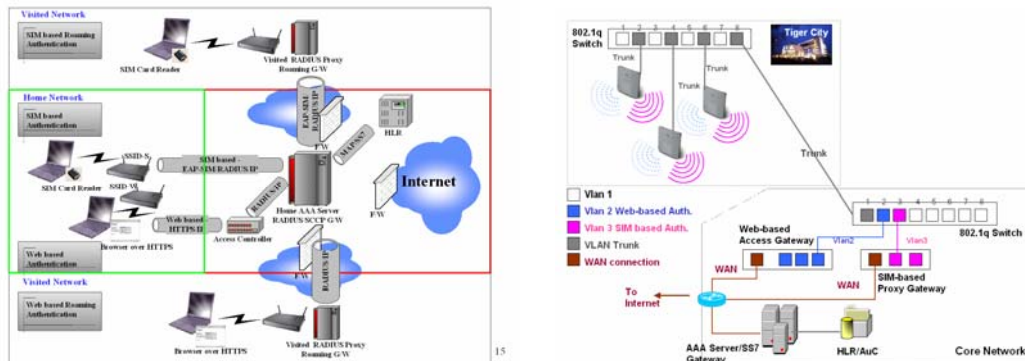


Fig.1 Heterogeneous Network Integration Architecture

#### (b) Mobile Application/System Design:

Thanks to the advancement of wireless technology, mobile services increasingly catch more attention in the post era of the booming voice service. A typical mobile wireless service comprises three parts: services, user devices and networks. Creating mobile broadband services over heterogeneous bearers (2.5G, 3G, WLAN or WiMAX) may face the problem about a great diversity of combinations in service flows. We focus on the challenges while designing mobile services and architectures.

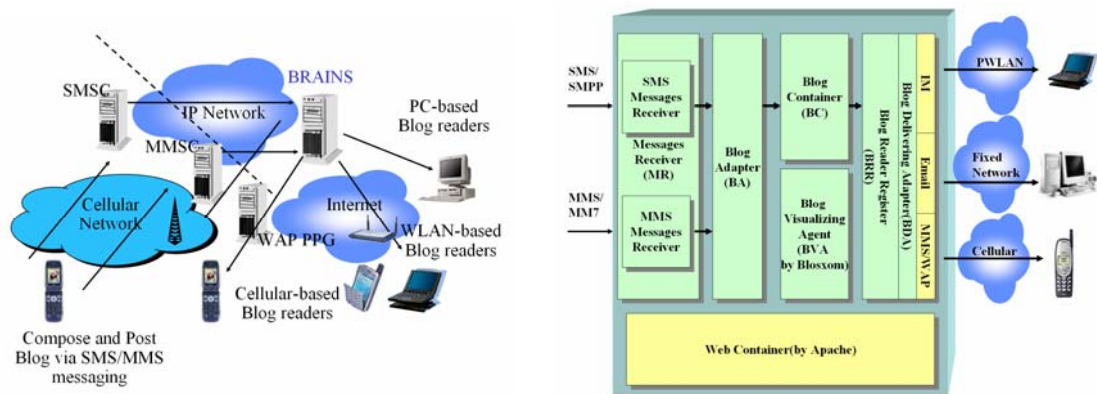


Fig. 2 Mobile Service Architecture (Take BRAINS as an example)

### 3. Selected Publications and Projects

#### 1. Journal Papers :

- [1] **J.-S. Leu**, "A Lightweight Brokering System for Content/Service Charging in a Cellular Network Centric Business Model", accepted by Computer Communications, Elsevier, Jan. 2008 [SCI,EI]
- [2] **J.-S. Leu**, Y.-P. Chi and W.-K. Shih, "Design and Implementation of Blog Rendering and Accessing Instantly System (BRAINS)," Journal of Network and Computer Applications (JNCA), Elsevier, Vol. 30, Issue 1, pp. 296-307, Jan. 2007. (SCI, EI)
- [3] **J.-S. Leu**, R.-H. Lai, H.-I. Lin and W.-K. Shih, "Running Cellular/PWLAN Services: Practical Considerations on Cellular/PWLAN Architecture supporting Interoperator Roaming," IEEE Communications Magazine, Vol. 44, Issue. 2, pp. 111-122, Feb. 2006. (SCI, EI)

#### 2. International Conference Papers :

- [1] **J.-S. Leu**, "Design and Implementation of A Lightweight Brokering System for Content/Service Charging in a Cellular Network Centric Business Mode," The 66th IEEE Vehicular Technology Conference (IEEE VTC 2007 Fall), pp.1990-1994, Baltimore, MD, USA, October 1-3, 2007. [EI]
- [2] **J.-S. Leu**, W.-K. Shih and Y.-P. Chi, "Improving AAA Message Forwarding Lookup Latency for WLAN Roaming in Cellular/PWLAN Environment," the 2006 IEEE Consumer Communications and Networking Conference (CCNC 2006), Las Vegas, NV, USA, Jan. 8-10 2006. (EI)
- [3] **J.-S. Leu**, Y.-P. Chi, S.-C. Chang and W.-K. Shih, "BRAINS: Blog Rendering and Accessing Instantly System," IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (IEEE WiMob 2005), Vol. 4, pp. 1 - 4, Montreal, Canada, Aug. 22-24 2005.(EI)
- [4] **J.-S. Leu**, R.-H. Lai, H.-I. Lin and W.-K. Shih, "Practical Considerations on End-to-End Cellular/PWLAN Architecture in support of Bilateral Roaming," the 2005 IEEE Wireless Communications and Networking Conference (IEEE WCNC 2005), Vol. 3, pp. 1702 - 1707, New Orleans, LA, USA, Mar. 13-17 2005. (EI)

#### 3. Projects :

- [1] A Lightweight A.A.A. Brokering System for Valued Added Services in a Network Centric Model