



Welcome

to

HUST & WNLO

Research Introduction for Broadband Wireless Mobile Communication System

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National Engineering Lab for Next-Generation Internet Access System

Wuhan National Lab for Optoelectronics

Outline

- General
- Projects Introduction
- Key Patent Technologies



General (1)

■ Major Fields:

- New Generation Wireless Communication System
- WAPI/WiFi、WiMAX & 3G、LTE、LTE-Advanced
- Computer Network & Applications
- Multimedia Information System and Applications
- Computer Graph and Image Process
- Signal Process and identification



General (2)

- Director

- Professor Guangxi Zhu

- Faculty: 58, including:

- Doctoral Supervisor: 6 persons

- Professor: 9 persons

- Associate Professors: 12 persons

- Doctors: 14 persons

- Ph.D Students: 35 persons

- Graduated Students: 100 persons



General (3)

■ Grouping

➤ Executive Experts Group

- Algorithm & Simulation Team
- Protocol & Software Team
- Hardware System Team
- Multimedia and Application Team
- Heterogeneous Network Research Team
- RF Technology Team
- National Defense Project Team





Outline

- General
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Project Introduction (1)

■ 2009 National Significant Sci.& Tech. Projects

	Project Title	Responsible	SN
1	IMT-Advanced Wireless Resource management Research and validation	Y. Liu	2009ZX03003-007
2	TD-LTE Integrated Testing Instrument Developing	Q. Li	2009ZX03002-009
3	IMT-Advanced CoMP	D. Wang	2009ZX03003-003



Project Introduction (2)

■ 2009 National Significant Sci.& Tech. Projects

	Project Title	Responsible	SN
4	IMT-Advanced Spectrum Convergence Technology	D. Qu	2009ZX03003-002
5	IMT-Advanced Key Technology Experimental Platform Development	G. Su	2009ZX03005-009
6	IMT-Advanced New Technology for Wireless Transmission	W. Wu	2008ZX03003-004
7	IMT-Advanced Key Technology Simulation Platform	J. Liu	2009ZX03003-008



Project Introduction (3)

■ National 863 Plan, by Prof. Zhu & Prof. Liu

- Broadband Wireless IP System, 863-317-03-03-99
- Beyond 3G Research Phase I, 2001AA123014
- Beyond 3G Research Phase II, 2003AA12331005;
- Efficient MIMO-OFDM Transmission Technology with Fairness and QoS Guaranteed, 2006AA01Z277



Project Introduction (5)

■ Cooperating with Enterprises

- with Intel, by Prof. Zhu & Dr. Wu
 - Based on TCP Agency technology
 - Based on Partial Window Multi-reject Technology
 - Output 2 Patents
- with CMRI, by Dr. Wu & Dr. Liu
 - LTE Protocol Stack Simulation Platform
 - Evaluating LTE Proposals
 - Output 2 patents



Project Introduction (6)

■ Cooperating with Enterprises

- with Airway, by Prof. Zhu
 - 1.8G Wireless Access Standard Editing
 - Yangzi River WMAN coverage
- with Tecom, by Prof. Zhu and Dr. Tan
 - M16E25G Base station Software Platform
- with Linkair, by Dr. Wu
- with KZTECH, by Dr. Wu



Outline

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Key Patent Technologies

■ System Level Key Patent Technology

➤ PSMA: Packet Statistic Multiple Access

- Building up an efficient multiaddress technique be applied to vary PHY specifications for wireless packet switch systems, terminals could access the packet network using MAC address, so the wireless channel could be multiplexed statistically by all the users.
- Based on the existing broadband mobile communication technique, PSMA utilizes packet switching strategy to maximize the radio resource efficiency fully combining with resource sharing strategy in internet, which making the technique of mobile communication air interface get rid of the bondage of traditional circuit switching.



Key Patent Technologies

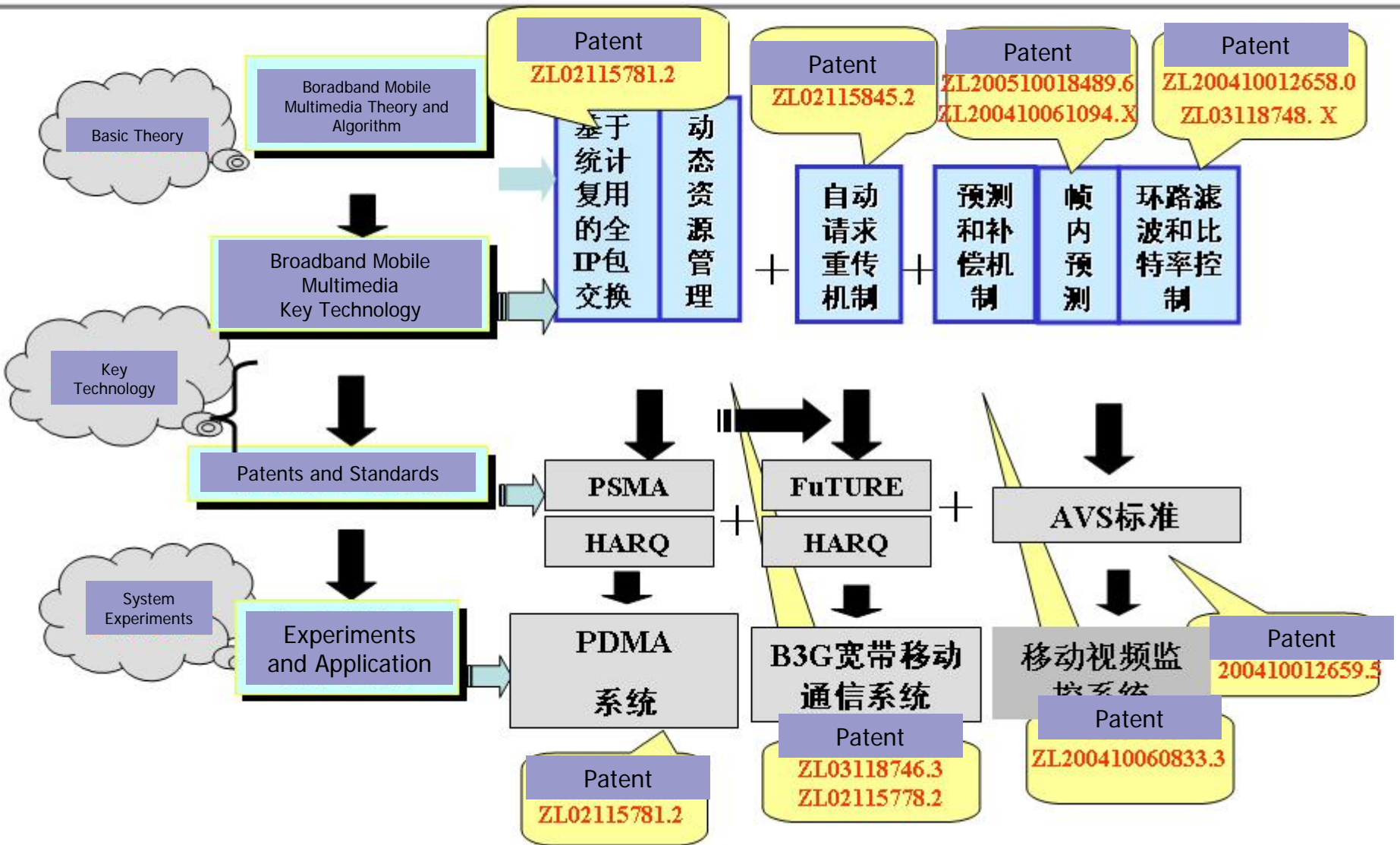
■ System Level Key Patent Technology

➤ Comparison

	PSMA System	Common System
BER Requirement	$\leq 10^{-4} \sim 10^{-6}$	$\leq 10^{-6} \sim 10^{-7}$
BLER Requirement	$\leq 20\% \sim 30\%$	$\leq 1\% \sim 10\%$
Anti-Burst Error Capability	Robust	Weak
Feedback Cost	$\leq 1\text{kbps}/\text{Mbps}$	$> 1\text{kbps}/\text{Mbps}$

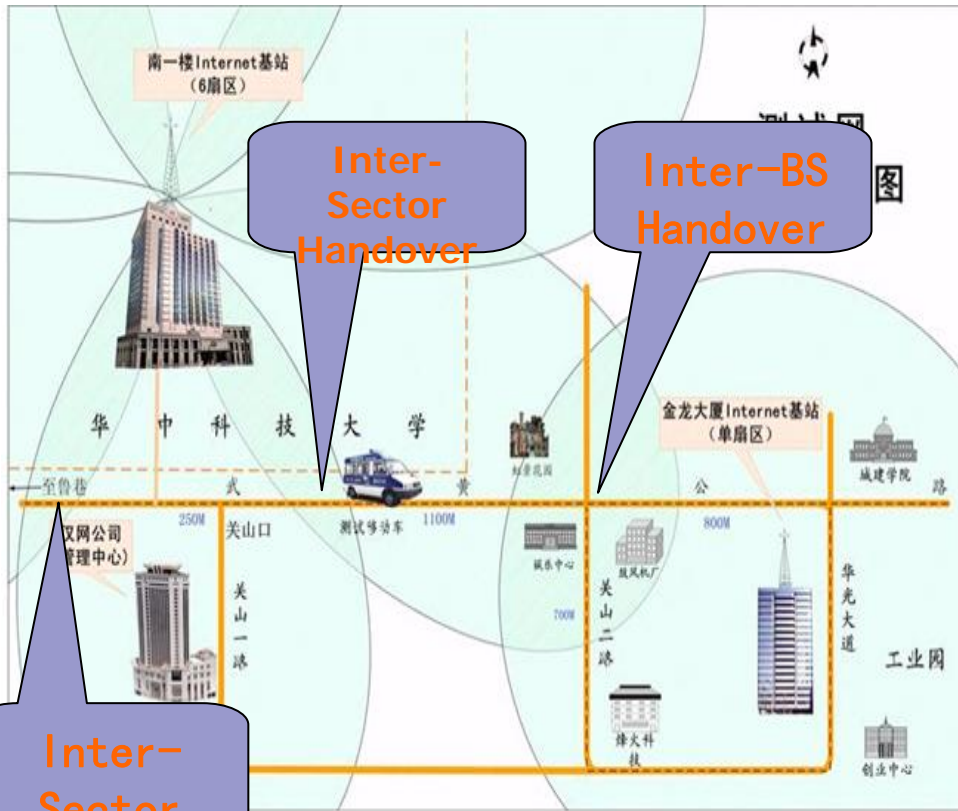


Main Innovations for New IP-Based Broadband Mobile Multimedia Communication Technology



Key Patent Technologies

■ PDMA Experiment Network



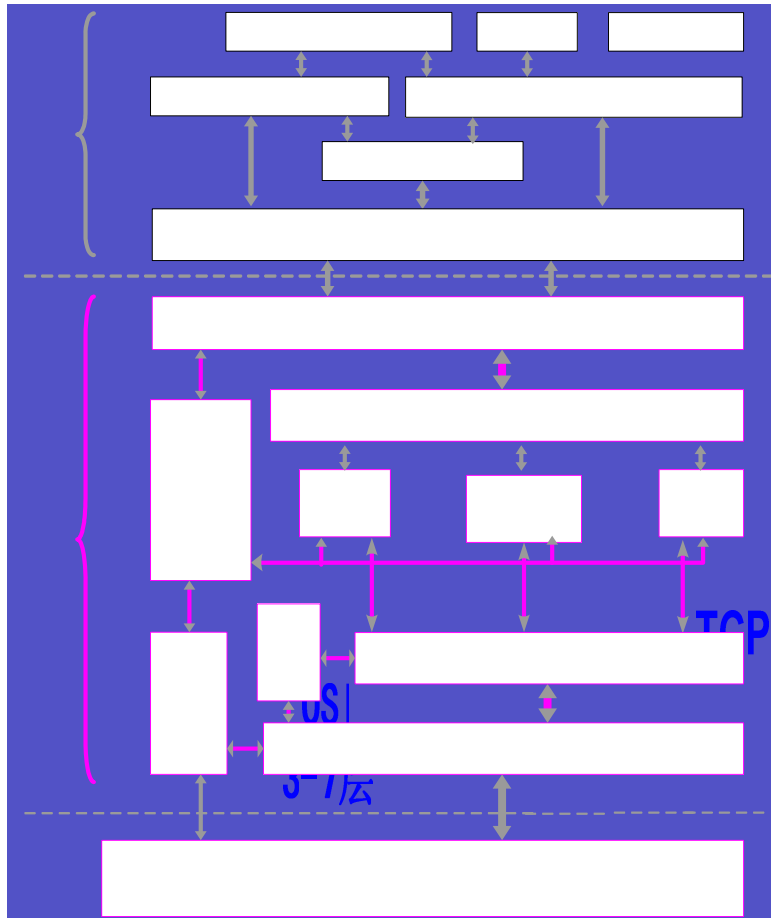
华中科技大学PDMA i3G蜂窝移动通信系统试验网



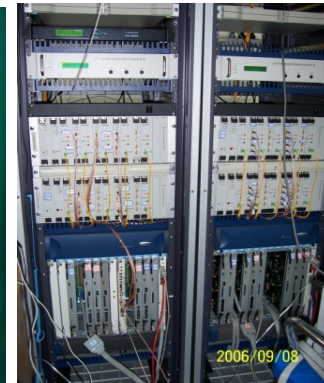
Inter-Sector Handover



Key Patent Technologies



➤ B3G/TDD蜂窝移动示范网



分组数据应用

语音应用

电路数据应用

➤ 东讯宽带无线接入系统

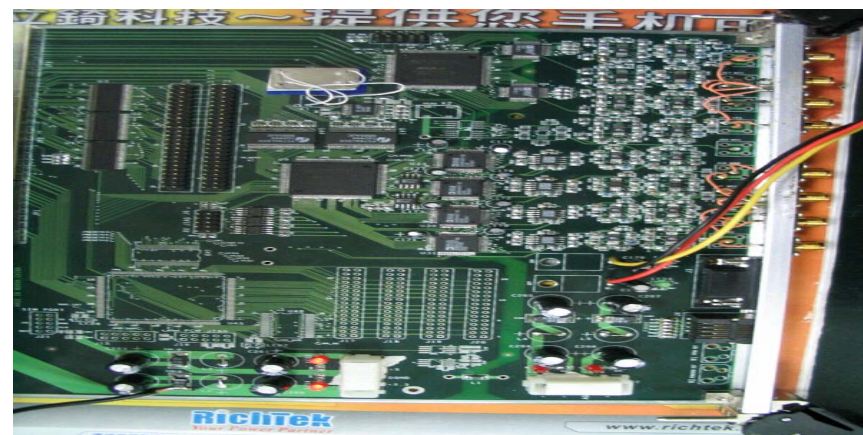


Key Patent Technologies

➤ BWA Product



➤ LAS CDMA Cellular
Communication System Board



Key Patent Technologies

■ B3G Phase II – Experiment Network





Thank You!

Q & A

THE END