

SPICE Project Document

Scanning the Potentialities for Future ICT Research Collaboration between China & the European Union

SPICE



调料

Minutes SPICE workshop on Leading Wireless Communication Technologies / 4.9.2007, Beijing

WP2

SPICE is a Specific Support Action in the IST Programme of the 6th Framework Programme - Project Contract Number IST-045266. It is part of the project portfolio of DG Information Society and Media, Unit International Relations.

The project duration is from 1st November 2006 to 31st July 2008.

The SPICE project partners are:

- | | | |
|---|----------|--|
| 1 | eutema | eutema Technology Management GmbH, Austria |
| 2 | CSTEC | China S&T Exchange Center, P.R. China |
| 3 | Skillnet | Skillnet GmbH, Germany |
| 4 | CATR | China Academy of Telecommunication Research of
Ministry of
Information Industry of P.R.China, P.R. China |
| 5 | CHTF | China Hi-Tech Transfer Center, P.R. China |
| 6 | Skill Sh | Skillnet Consulting (Shanghai) Co., Ltd., P.R. China |

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Minutes SPICE Workshop on Leading Wireless Communication Technologies

Date: Tuesday, September 4, 2007
Time: 9:00 – 16:30
Venue: China Academy of Telecommunication Research of MII (CATR)
52 Huayuanbeilu, Haidian District, 100083, Beijing
Second Floor, Conference Hall

8:30-9:00 Registration

9:00 Short introduction by Lin Hui (CATR)

9:10 Short self introduction by all participants

9:20 Welcome address by Xu Weiling (CATR)

9:27 Welcome address Erich Prem (eutema)

9:29 Welcome address Shi Youyan (Future Forum Secretariat)

9:32 Welcome address Alison Birkett (European Commission)

9:34 Keynote: B3G cellular Mobile Communication Wireless Network Experiment System

Wang Xiangyang (Southeast University)

http://www.europe.ict-china.eu/fileadmin/filesharing/WS2_Documents/040907_WangXiangyang_SoutheastUniv.pdf

Dr. Wang Xiangyang presented the GMC/OFDM FDD System R&D Report of the National Mobile Communication Research Lab at Southeast University. As partners in this project he listed Tsinghua University, Univ. of Sci. & Tech. China and Huawei Technology. He explained the overall framework, the key techniques used in the study and the R&D of the testbed and system experiment. He concluded:

- 4G / IMT Advanced - ITU
- Cooperation of Tsinghua Univ., Univ. of Science & Technology of China, Southeast Univ. and Huawei Technology Ltd., etc
 - Defined GMC/OFDM FDD system overall technical framework
 - Broke through key technologies, such as distributed ROF, wideband multi-carrier transmission & multi-access, environment adaptive MIMO transmission, iterative receiving, etc.
 - Implemented multi-cell multi-user GMC/OFDM FDD experiment system with 100Mbps in both uplink and downlink
 - Evaluated by Simulation & field experiment



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10:13 Keynote: An Overview of EU R&D in the field of Leading Wireless Communication Technologies

Erich Prem (eutema)

http://www.europe.ict-china.eu/fileadmin/filesharing/WS2_Documents/040907_Prem_Beyond3G.pdf

Erich Prem presented an overview on EU wireless research activities in FP6. He introduced in the list of identified research challenges. The topic is also addressed in the eMobility technology platform. An overview of aims, structure, and research topics of the eMobility platform is given. In FP6 the topics related to wireless communication technologies were mostly related to "Mobile and wireless systems and platforms beyond 3G". A list of funded projects in FP6 in this area is presented. Erich Prem also explains the next steps in FP7, in particular the open call 2 on "New paradigms and experimental facilities".

10:35-10:50 Coffee Break

10:52 Opportunities and Challenges for EU-China IT&T Collaboration

Zhang Tiechen (Alcatel)

http://www.europe.ict-china.eu/fileadmin/filesharing/WS2_Documents/040907_ZhangTiechen_Alcatel.pdf

Mr. Zhang Tiechen mentioned the following opportunities and challenges for EU-China IT&T Collaboration:

Opportunities

- Global technological convergence and Telecom-media convergence in the world of IT&T
- Environment of regulatory development and governmental support for EU-China cooperation
- Best wishes and good experiences of the cooperation in IT&T field

Challenges

- Market Access for Telecom Services
- Independent Regulator
- Standards and IPR
- Certification Procedures
- Research
- Telecom-Media Convergence

He then presented concerns and wishes concerning four topics:

1) Standards and IPR

- **Concern:** The lack of license agreements for the majority of technologies and the attendant lack of royalty payments for



technology actively used in existent national, though protected by national valid IPR; Overly detailed specification in standards for mobile phones; Reciprocity in access to and involvement in Chinese standardisation bodies; The lack of a transparent approach to initiating new standardisation items.

- **Wishes:** Further anchor Chinese standard setting in the work of international standards groups through greater reliance on market mechanisms and the voice of industry; Encourage Chinese companies to negotiate and enter into patent license agreements with patent owners; Reduce standardization items that have the potential to restrict the ability of Chinese consumers to access the range of technologies currently on offer elsewhere; Encourage reciprocity and greater industry involvement in both national and industrial standardization work by allowing full voting rights for European companies and encouraging greater involvement from domestic industry; Institute a more transparent and inclusive approach for the initiation of new standardization items.

2) Certification Procedures

- **Concern:** Current certification procedures are arduous, costly and time consuming (TA, NAL, CCC). This creates a number of unnecessary obstacles preventing the rapid deployment of new technologies and depriving Chinese consumers of access to the latest technologies.
- **Wishes:** Designate one authority to oversee the granting of one compliance label reducing confusion and creating a fast and effective certification system. Negotiate an EU-China MRA facilitating the recognition of test reports from accredited laboratories on both sides.

3) Research

- **Concern:** In light of increasing global technological convergence, one country should enhance its efforts to foster an environment that can further encourage international research collaboration in the field of IT and Telecom.
- **Wishes:** China should encourage greater reciprocity in the field of IT&T research and engage in further collaboration with European organizations with a view to developing mutually beneficial international standards.

4) Telecom-Media Convergence

- **Concern:** Limited cooperation between regulatory bodies overseeing China's telecommunications and media sectors is delaying the development of converged services such as IPTV and mobile TV and preventing benefits to Chinese consumers and industry participants.

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- **Wishes:** Promote the cooperation/integration of regulatory bodies involved in telecom and media sectors.



**11:12 Experiences/challenges in Int. Research Collaboration,
Adaptive Non-Orthogonal Frequency Division Multiplexing for Future
Broadband Wireless Access**

*Wu Gang (University of Electronic Science and Technology of China,
Chengdu)*

http://www.europe.ict-china.eu/fileadmin/filesharing/WS2_Documents/040907_WuGang_Chengdu.pdf

Mr. Wu Gang presented the research activities on future broadband wireless access at the University of Electronic Science and Technology of China (UESTC) situated in Chengdu, the capital of Sichuan province. He held a talk on behalf of

Prof. Li Shaoqian, Director of National Key Laboratory of Communication University of UESTC.

Mr. Gang shortly introduced the National Key Lab of Communication at UESTC:

- Funded in 1994
- Director: Prof. LI Shaoqian
- 42 academic and research staffs
 - 8 Professors
 - 20 Associate Professors and senior Research Fellows
 - 35 Ph.d. students (current)
 - More than 300 M.S. students
- One member of FuTURE Forum
- Webpage: <http://www-ncl.vicp.net/>

He concluded:

- NOFDM/BFDM has higher reliability and spectral efficiency, however, need innovative and efficient equalization design.
- Adaptation of pulse shapes with respect to different channel conditions need be designed via cross-layer approach
- Extension of NOFDM/BIFDM to MIMO/Multi-user scenarios challenge designers.

11:35 Experience/challenges in Int. Research Collaboration

Chen Yuxing (T-Systems)

Individual States versus EU (conglomerate of countries) as governmental part

Question of how to match EU and individual-countries interests

Three Cs:

- communication
- continuity
- common understanding

It is about trust, respect and people.



11:46 EU-China R&D Cooperation in FP7 ICT

Erich Prem (eutema)

http://www.europe.ict-china.eu/fileadmin/filesharing/WS2_Documents/040907Prem_FP7andBeyond.pdf

Erich Prem presented a general introduction into FP7 and the relevant parts of the work programme.

12:07 The Procedure for Chinese Partners to Join FP7 Projects

Li Ning (CSTEC)

Li Ning explained the procedure for Chinese partners to join FP7 projects in Chinese language.

12:32-14:00 Lunch

14:10 Introduction of the expert panel methodology

Ursula Eysin (eutema)

Ursula Eysin explained the methodology of the expert panel which aimed at doing an adapted version of a SWOT analysis.

14:18 Short Introduction; Some Tips on EU FP Projects

Jorge García Vidal (Computer Architecture Department, Technical University of Catalonia (UPC))

Professor Vidal shortly introduced his institute and gave some tips on projects in the EU Framework Program:

- Formed around a consortium of companies, universities and research centers
- Different instruments:
 - STREP: small and focused projects, mainly to demonstrate new technologies
 - IP: Large project with ambitious goals
 - NoE: Form a network of research groups
 - Other: SSA, etc
- Different thematic areas and calls
- Other projects:
 - EUREKA: Industry focused projects
 - COST: Network of research group

14:36 Enhancing Cooperation between CATR and EU Partners

Zhu Yutao, Communications Standards Research Institute of CATR

http://www.europe.ict-china.eu/fileadmin/filesharing/WS2_Documents/040907_ZhuYutao_CATR.pdf



Mr. Zhu Yutao presented cooperation between the China Academy of Telecommunication Research of the Ministry of Information and Industry (CATR of MII). He first and foremost talked about the China-EU project WINNER (**W**ireless **W**orld **I**nitiative **N**ew **R**adio).

- 2004-2005 European Project WINNER I
- 2006-2007 European Project WINNER II
- The key objective of the WINNER project is to develop an innovative concept in radio access in order to address high flexibility and scalability with respect to data rates and radio environments.
- A consortium of 41 partners co-ordinated by Siemens working towards enhancing the performance of mobile communication systems.

Mr. Yutao describes the win-win strategy within the WINNER project with the following points:

- Win-Win strategy with the partnership companies
- Partnership companies closely interact and learn from each other
- Reduced resistance from competition and promotion of innovative alternatives
- Generate, identify, and promote research areas and technical trends for mobile and wireless systems
- Identify and assess the potential of new technologies and trends for the wireless world
- Cooperation based on mutual interest and benefit

Zhu Yutao describes the cooperation between CATR and the EU as successful and enhancing and sees a great potential for future Science & Technology cooperation. He sees the ongoing and past experience as good reference for future FP7 co-operative projects.

He wishes to maintain and develop long-term cooperation ties to put forward the comprehensive bilateral partnership.

14:43 Experience in Int. Research Collaboration

Su Gang, Huazhong University of Science and Technology, Wuhan

http://www.europe.ict-china.eu/fileadmin/filesharing/WS2_Documents/040907_SuGang_Wuhan.pdf

Dr. Su Gang presented research done on the topic of Flexible Packet Access over Wireless Broadband Network done at the Huazhong University of Science and Technology located in Wuhan.

Dr. Gang explained that Wuhan extends eastbound to Shanghai, westbound to Chengdu, southbound to Guangzhou, and northbound to Beijing, each within a distance of 1,000km and that so, as the capital of Hubei Province, the city is the economic, cultural and transportation hub of central China.

As international cooperation projects he presented:

- Sino-US Project: WiMAX II



- Sino-EU Project: A Large Ion Collider Experiment, CERN (European Organization for Nuclear Research, The world's largest particle physics laboratory)
- Sino-Korea Project: WiMAX
- Sino-Japan Project: Heterogeneous Interworking

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14:54 Wireless Research Activities in SJTU

Gan Xiaoying (Shanghai Jiaotong University)

http://www.europe.ict-china.eu/fileadmin/filesharing/WS2_Documents/040907_GanXiaoying_IWCT.pdf

Ms. Gan Xiaoying from the Institute of Wireless Communication Technology (IWCT) of the Department of Electronics Engineering at Shanghai Jiaotong University shortly introduced her institute (<http://iwct.sjtu.edu.cn>). Then she gave an overview of the R&D activities at IWCT which thereafter were explained in detail. The named research topics are:

- Digital mobile cellular communications: since 1990s
 - IS-95 , GSM ,CDMA systems (1990s)
 - Chinese 3G (C3G)---WCDMA /w Turbo Coding (1998-2001)
 - China B3G/4G FDD mode 20Mbps trial system (2001-2003)
 - China B3G/4G TDD mode 100Mbps trial system (2003-2006)
 - IMT-Advanced (2007-)
- Digital TV terrestrial broadcasting system: since 1998
 - Digital TV Terrestrial Broadcasting such as ADTB-T (Chinese standard) and DVB-T (1998-2006)
 - Handset Mobile TV: DVB-H CMMB (2005-)
- Wireless Data Access Systems : since 2001
 - IEEE 802.15 Bluetooth (2001-2002)
 - IEEE 802.11 WiFi (2002-2003)
 - IEEE 802.16d/e WiMax (2003-2006)
 - IEEE 802.16m/j Advanced WiMax Phase II (2006-)
 - IEEE 802.15 MBAN (2007-)
 - IEEE 802.22 Cognitive Radio (2007-)
- Other Wireless/mobile Communication Technologies: since 2002
 - High-end channel codec implementation (1998 -)
 - Wireless Sensor Network Critical Issues (2003-)

15:04 Open Innovation Empowers "FuTURE"

Xu Xiaodong (Beijing University of Posts and Telecommunications)

http://www.europe.ict-china.eu/fileadmin/filesharing/WS2_Documents/040907_XuXiaodong_FuTURE.pdf



Dr. Xu Xiaodong from the Wireless Technology Innovation Institute at the Beijing University of Posts and Telecommunications presented his vision of “Beyond 3G/4G Mobile Communication” and promising techniques for the future in the fields of Radio Transmission Technologies, Media Access Control Technologies and Radio Resource Management. He presented the cooperation activities of his institute in open innovation:

For Basic Theory and Fundament Research

- MOE: Key Lab of Universal Wireless Communication
- MOST, MII: 863 High-Tech Projects, Gbps Transmission
- NSF: Nature Science Foundation

For Promising Tech. and Industrial Implementation

- European, Sweden, Canada, German, Japan ...
- Siemens, Motorola, Ericsson, DoCoMo, KDDI ...
- China Mobile, Huawei, ZTE, DaTang Mobile ...

For Standardizing work of ITU, 3GPP, 3GPP2, WWRF...

- Research Institute of Telecomm. Transmission
- CATT, Huawei
- Qualcomm, Nortel, Samsung

He concluded:

4G is coming...

- From Evolution to Revolution
- From 3GPP LTE/3GPP2 AIE/UMB to IMT-Advanced
- From WiMAX / IEEE 802.16m to IMT-Advanced

For China

- FuTURE 4G TDD/FDD Framework
- From TD-SCDMA to FuTURE 4G TDD

Open Innovation Empowers Future

- Worldwide Standardizing Work
- Strengthening Industrial Collaboration
- Focus on User Requirements and Services
- Open Innovation in Key Technologies

15:14 Guided Discussion

Opportunities

- Having Chinese end-users involved in projects
- Large scale experiments/testing (standards etc.)
- Learning from each other
- Higher chance to become an international standard through collaboration
- Chinese research organisations are not only researching, but implementing as well
- Stay in contact with industry



Strengths

- Detailed know-how of Chinese standards
- Size of the market and market power
- Powerful Chinese manufacturers
- Many R&D resources
- Chinese vendors have much influence in the world

Challenges

- How to bring Chinese and European knowledge together
- Find a suitable partner
- Find a balanced consortium (eu-china, academia-industry-government)
- Making Chinese innovation known to the world
- Difficulties for Chinese organisations to join EU projects in key areas (e.g. military)
- knowledge of research focus of European/Chinese institutes at the other side
- IPR-protection

Requirements

- Topics of mutual interest (e.g. medical wireless)
- More FP7 promotion in China
- Joint office for information, partner search etc. + PR office
- Continuity in collaboration
- Long term links to build trusted networks of institutions
- Mutual trust and respect



Participants

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