



SCDMA Broadband Wireless Access System And its Application in Chinese Rural Markets

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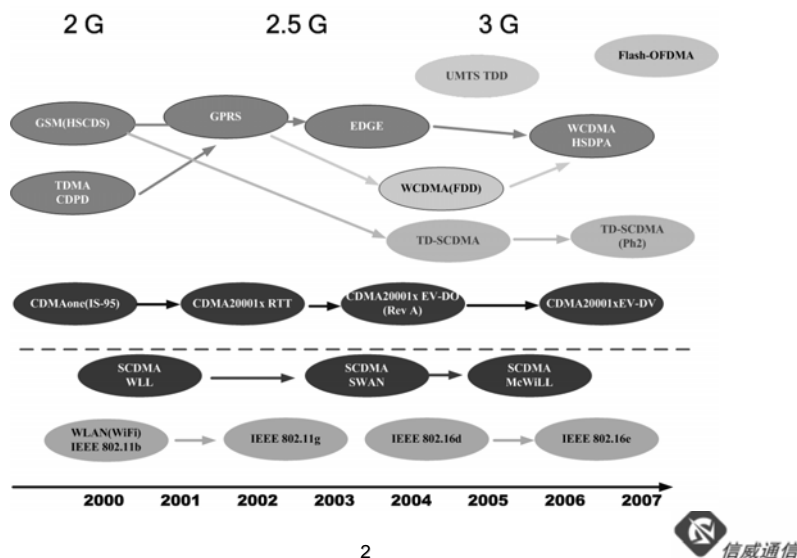
Vice-President

Beijing Xinwei Telecom Technology Inc.

SCDMA/McWiLL Background

- SCDMA is a wireless access technology developed by Beijing Xinwei Telecom Technology Co., Ltd.
- The SCDMA air interface is a national wireless access standard in China.
- The SCDMA products contains a full suite of advanced wireless communication and networking technologies, such as smart antennas.
- The key technologies of SCDMA form the foundation of TD-SCDMA, an ITU Standard for 3G Wireless Communications.
- Earlier SCDMA products are narrowband products focusing on fixed and mobile voice applications.
- A new generation of SCDMA products are broadband products, a.k.a. Multicarrier Wireless Internet Local Loop (McWiLL), focusing on fixed and mobile voice and high speed data applications.

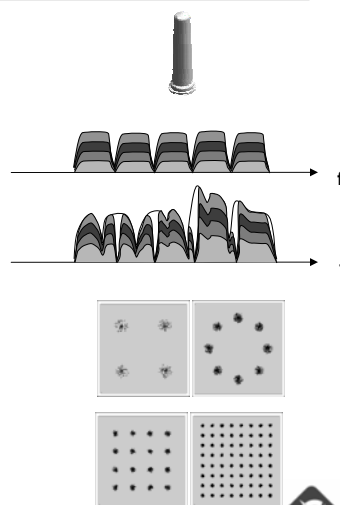
Evolution of Wireless Communication Technologies



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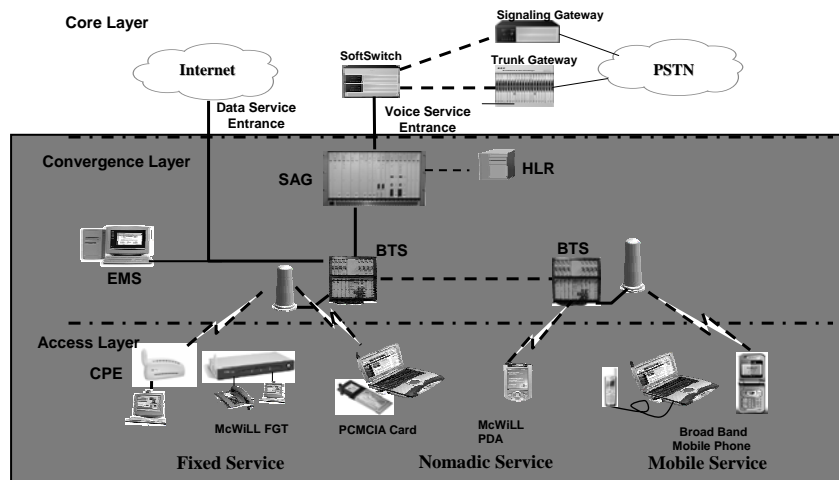
Key McWiLL Technologies

- Smart Antennas
- Synchronous CDMA
- Software Radio
- Multi-carrier
- Joint Detection
- Dynamic Modulation
- QoS/GoS
- Security and Fault Protection
- High Reliability Architecture, ...



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McWiLL Network Architecture



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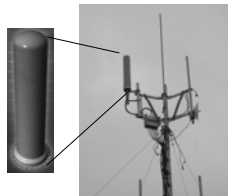


McWiLL Products

1. BTS sector capacity: up to 30Mbps/10MHz (15Mbps/10MHz for current systems)
2. Terminal bandwidth: up to 2Mbps
3. Coverage: 2-3KM urban, 3-5KM suburban, and 10-60KM rural.



Dual Mode Handset
(Voice and 1Mbps Data)



Antenna Array and
TTA



BTS



FGT (support
up to 2Mbps,
32 POTS)



PCMCIA Card
(1Mbps)



CPE
(2Mbps)



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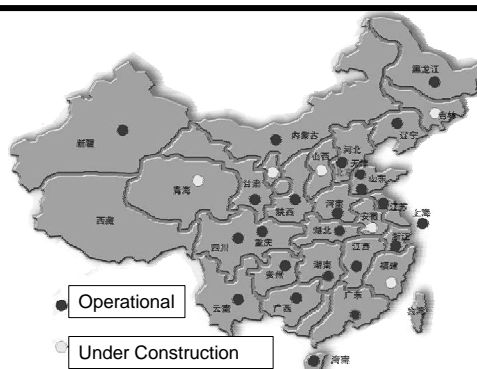
SCDMA Alliance



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SCDMA Deployment in China



Major Customers: China Netcom, China Telecom, Unicom, China Mobile, China Railcom

Deployment: 29 provinces (100+ cities)

Network Capacity: >8 million

Total Number of Subs: >2 million

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Summary of McWiLL Advantages

- **Large coverage (up to 60Km)**

Smart antenna, 400MHz frequency band

- **Low cost**

Already large volume, cost effective architecture, SCDMA ASIC chipset, no royalty fees, low R&D cost, low manufacture cost, multiple vendors due to SCDMA Alliance

- **High capacity**

BTS capacity 24Mbps/10MHz, supporting up to 8,000 voice subscribers

- **One system fits all**

Via flexible configuration, one system can meet the requirements of different user groups (high-end and low-end), services (voice and data), and time (current and future).

- **Product maturity and reliability**

10 years R&D, large scale deployment, redundancy architecture, long time operational networks, an experienced team of installation and customer support.

- **Easy to install and maintenance**

Terminal zero install, easy-to-use tools for customer self debugging, remote access trouble shooting tools for support personnel.

Penetration of Telephone in Chinese Rural Areas

Year	Total Number of Rural Subscribers (Million)	Annual Growth of Rural Subscribers (Million)	Total Number of Subscribers in the Entire Country (Million)	Telephone Penetration in Rural Areas	Telephone Penetration in Urban Areas
2001	68.43	16.72	180.37	8.60%	23.29%
2002	78.43	10.00	214.22	10.02%	27.04%
2003	91.65	13.22	262.75	11.93%	32.67%
2004	101.59	9.94	312.44	13.42%	38.84%

Resources: National Bureau of Statistics of China
<http://www.stats.gov.cn/tjsj/ndsj/yb2004-c/indexch.htm>
http://www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20050228_402231854.htm

Characteristics of Chinese Rural Areas

Challenges:

- Low subscriber density, large separation of villages, far away from urban areas
- Complicated environment (mountainous and hilly terrain)
- Poor facility (backhaul, power supply, etc.)
- Low income

Current wireline/wireless communication systems cannot meet these challenges.

Characteristics of Rural Services

• **Low ARPU**

Less than \$4/month in most areas

• **Busy traffic**

High traffic especially in Chinese traditional holidays

• **Asymmetric traffic**

More incoming calls than outgoing calls

• **Little usage of value added services**

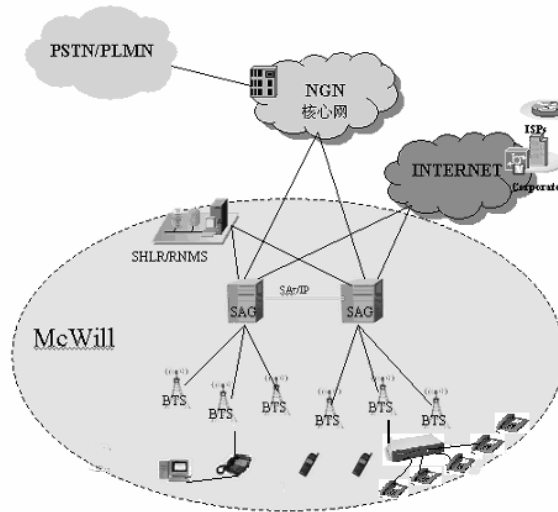
Requirements of a Wireless Solution for Rural Areas

- Large Coverage
- High capacity to handle bursty traffic
- Low per line cost
- Easy installation and maintenance
- Low power consumption and adaptability to power supply irregularity

Existing Solutions for Rural Communications

1. Existing solutions for rural communications include wireline access, GSM/CDMA, microwave access, VSAT, etc.
2. The major problem with the wireline access is the high construction and maintenance costs.
3. Microwave and VSAT solutions have the scalability and installation problems.
4. GSM/CDMA solutions do not have sufficient coverage and are not cost effective for sparse subscriber distribution.
5. All the above solutions cannot support cost effective broadband data services for the current and future rural customers (e.g., schools, village centers).
6. The 3G (e.g., WCDMA) solutions are too costly for rural applications.

McWill for Rural Telecom Market



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McWiLL Fits Chinese Rural Markets

- Smart antenna and 400MHz frequency band allows the McWiLL systems to have large NLOS coverage (up to 60KM).
- Multicarrier BTS can support up to 8,000 voice subscribers having sufficiently high capacity to support bursty traffic in rural applications.
- Cost effective architecture and SCDMA ASICs allow the McWiLL products to have sufficiently low cost per line (\$60-80 overall cost per line including both terminal and infrastructure).
- Zero install of McWiLL terminals and rich tools for self and remote troubleshooting make it very easy to deploy the McWiLL systems in rural areas.
- 10 years R&D, redundancy architecture and large-scale deployment (>2 million subscribers) make the McWiLL products mature and reliable enough to deploy in remote rural areas.
- Integrated voice and data solutions can allow the McWiLL systems to meet both current and future service requirements of rural customers.

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Government Mandate on Universal Services

- Universal services include both voice and data services.
- According to the 2020 Long Term Development Plan by the State Government, China must reach the following objectives:

Stage One: “Phone to Every Village” by 2010

Stage Two: “Phone to Every Family” and “Internet to Every Village” by 2020.

Government Support



- The SCDMA technology is the only recommended wireless access technology for Chinese “Phone to Every Village” project
- 400MHz frequency band was assigned specifically for SCDMA

- In May 2004, “Phone to Every Village” project SCDMA field demonstration by Chinese MII.
- In Feb. 2005, Chinese MII granted SCDMA Product Certificate for universal services



McWiLL Promotes Rural Informationization

McWiLL will help farmers to get rich

- Market information for agriculture products
- on-line trading of agriculture products
- Agriculture technology and policy consulting services
- Weather forecast
- On-line banking
- Tourism



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McWiLL Promotes Rural Informatization

McWiLL will improve education conditions in rural areas

On-line education has no restriction of time and space and provides equal opportunity of education to people in remote and under developed areas.

Internet can provide interactive education which is far more effective than one-way education programs broadcast from TV or Satellites.



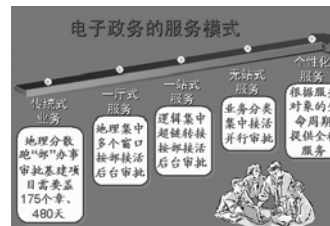
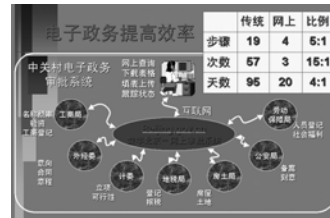
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McWiLL Promotes Rural Informationization

McWiLL enables rural e-government

- Improve government efficiency
- Reduce operation cost
- Relax farmers' tax burden
- Easy access to government announcements, regulations and policies.



McWiLL Promotes Rural Informationization

Internet enables Remote Medicare

- Remote expert diagnosis
- Reduce medicare cost
- Speed up medicine delivery
- Train local medical personnel



McWiLL's Mission to Rural Universal Services

McWiLL will help improve the economic development, education, and living and social conditions of one billion Chinese farmers.

McWiLL will bridge “Digital Divide” in China and worldwide!

