



Multi-carrier Wireless internet Local Loop (McWiLL)

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Trends in Wireless Communication: 3G and Broadband Wireless Access (BWA)

- 3G mobile standards were based upon high speed voice frameworks with supplementary data services
- BWA was based upon nomadic broadband data frameworks with supplementary IP voice services.
- The different target applications will end up with different networks
- Telecom carriers need the system which carries not only the mobile voice, but also the wireless broadband data.
- McWiLL (Multi-carrier Wireless internet Local Loop) integrates narrow-band voice and nomadic broadband data into IP based core networks. It is running under regulated frequency spectrum, which makes users accountable and controllable.

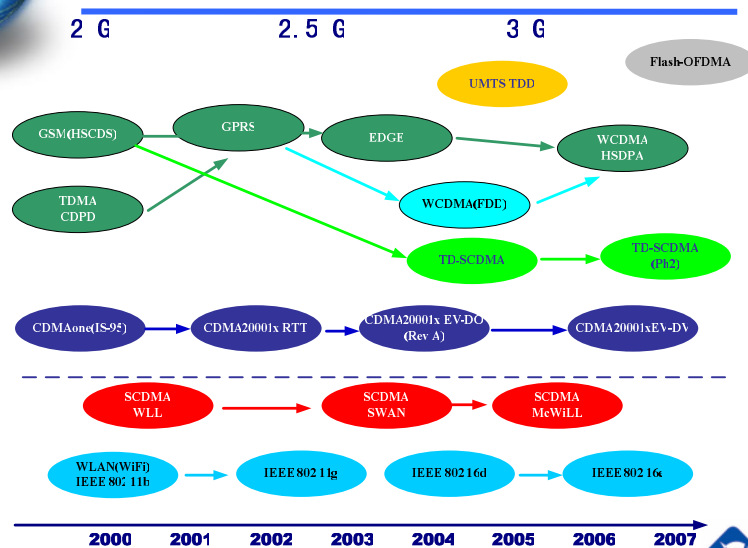


McWiLL Target Market

- McWiLL evolves from Synchronous Code Division Multiple Access (SCDMA) Wireless Local Loop, which was developed by Beijing Xinwei since 1995
- Currently SCDMA limited mobility System (1800 MHz) has more than 2 million subscribers in China and also exports to Sri Lanka, South Africa, and Mongolia. The total 5 million subscribers will be reached at the end of 2005
- SCDMA rural communication system (400MHz) has been recommended by the Ministry of Information Industry (MII) in China as a telecom solution for remote area.
- As a SCDMA family's new member, McWiLL will be applied mainly for rural voice and data communication for those telecom operators who does not have mobile license or mobile frequency



Technology Evolution of Wireless Communications

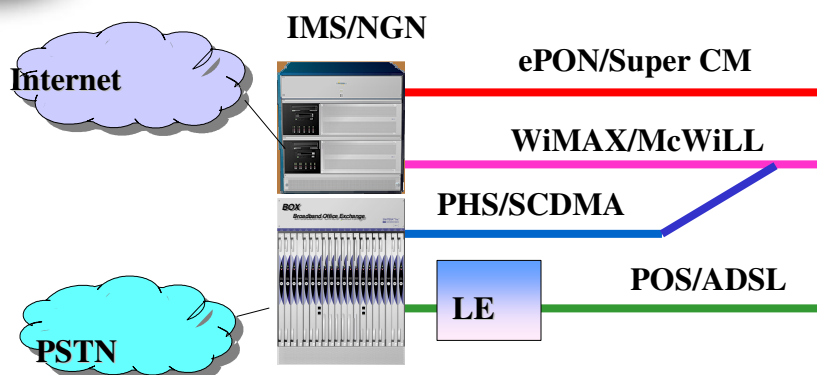


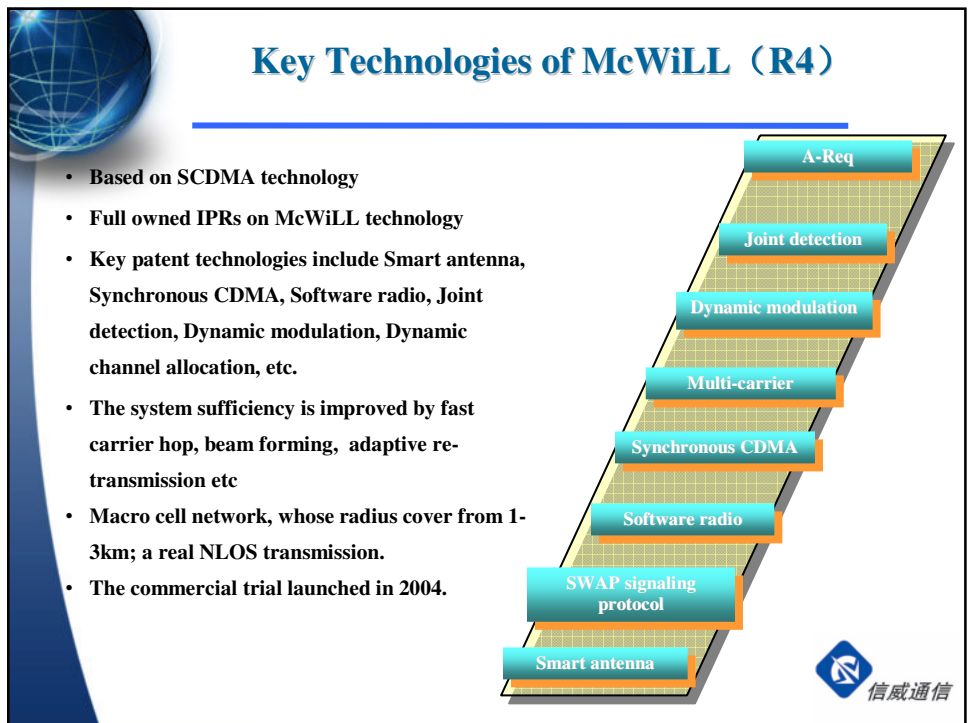
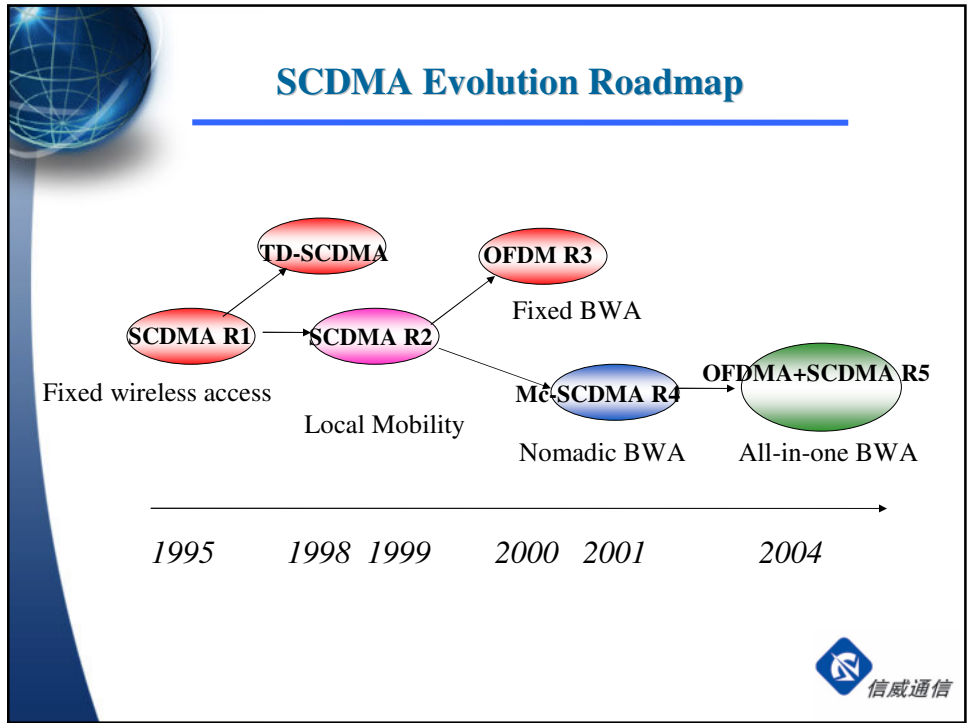
BWA's Positioning in Legacy Telecom Local Access Networks

- The growth rate of mobile phone subscribers has already surpassed the one of fixed phone worldwide
- BWA provides broadband nomadic data and VoIP, it could be one of feasible solutions for fixed phone service providers to find out their competitive edges in the next round race
- BWA could be configured into a 2G mobile networks for higher capacity in an individual sector, but it is unlikely to co-exists with a 3G system due to the cost issue
- BWA best fits into CLICs who does not have any local access means, in this case an independent BWA+NGN networks will be constructed in an economic way

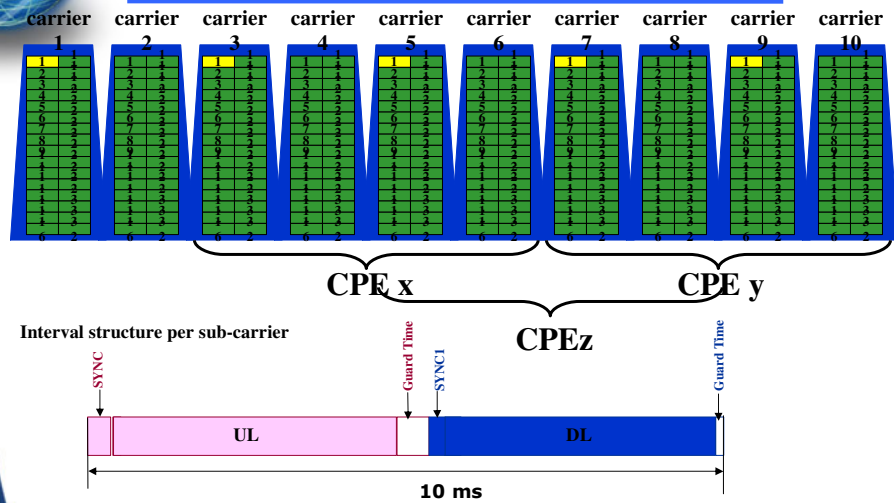


Future Access Network Structure for Fixed Operators

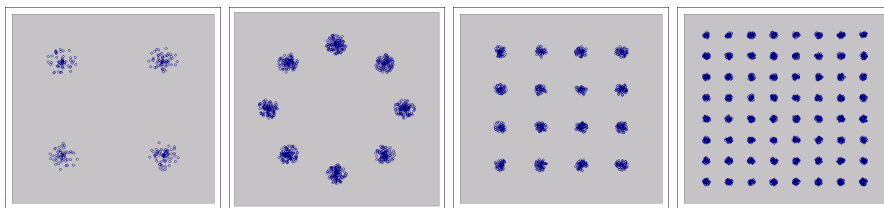




Key Technology – Multi-Carrier

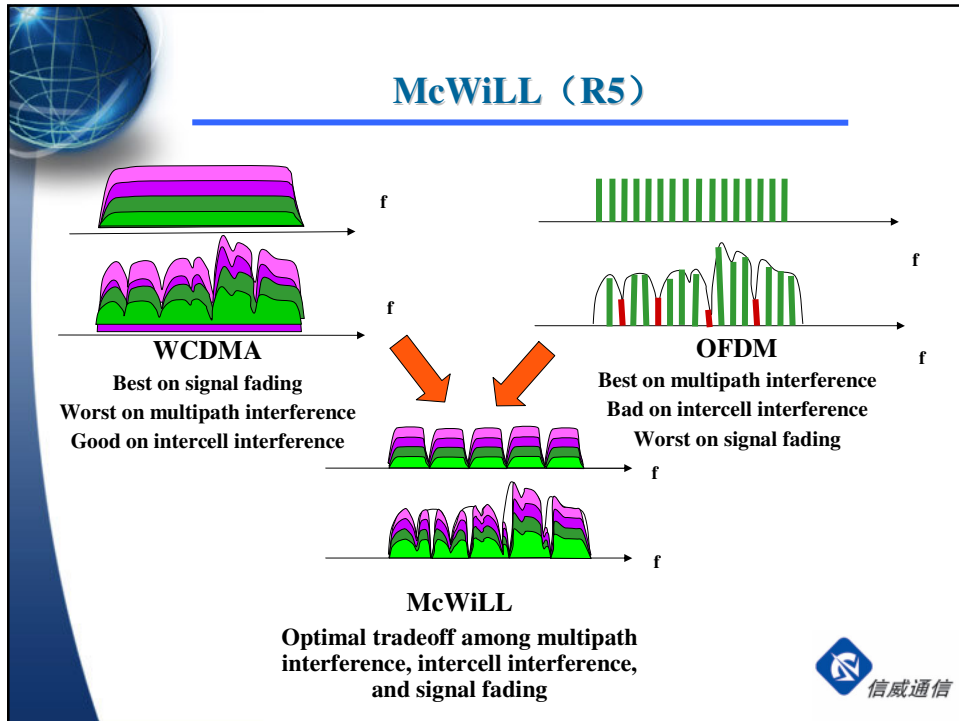


Key Technology-Adaptive Modulation



Modulation modes according to Channel's characteristics and Rx power:
QPSK, 8PSK, QAM16, QAM64





- ### Misunderstandings in BWA System Design
- Unreasonably increased spreading factors result in higher chip rate and co-channel interference.
 - Over expected data bandwidth could be more than 2Mb/s in a single CDMA carrier.
 - Data transmission shall not be sensitive to path-loop delay, a traditional core switching can handle the task.
 - IP packet structure could not be divided into smaller one
 - Re-transmission mechanism could be ensured in layer 3 protocol.
- 信威通信

McWiLL Production-Terminals

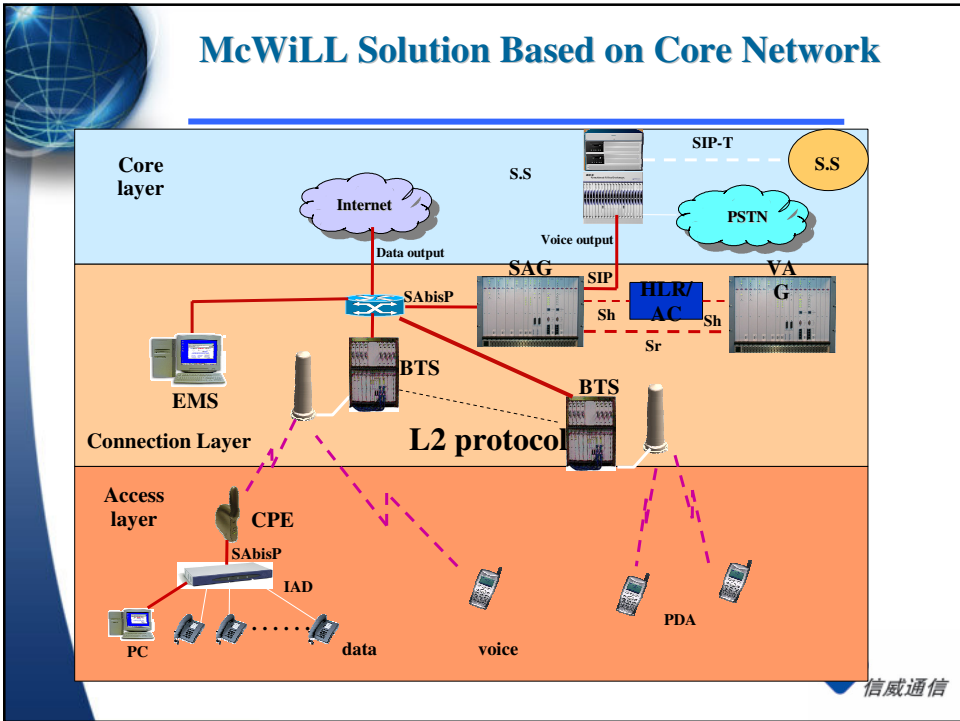
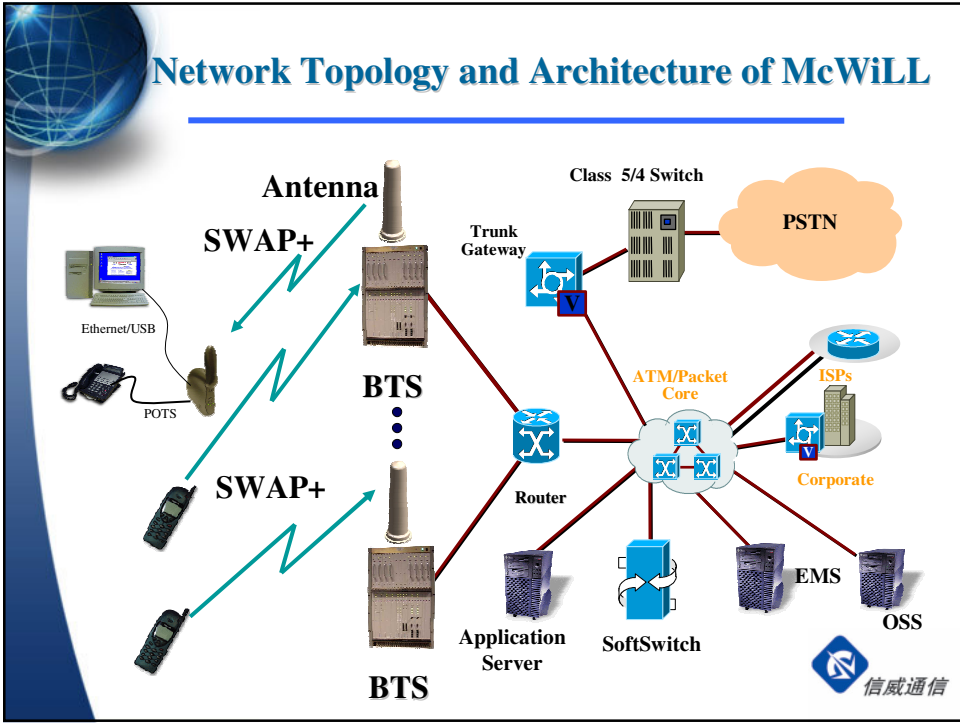
- Broadband wireless modem(CPE) download speed is up to 2Mbps, and PCMCIA card up to 1Mb/s.
- Terminals require zero-installation and are plug-and-play.
- The chip sets including RF and base-band are available from Xinwei
- The cost per line is less than \$300 including system equipment and terminal



Product to be Released

- Dual Mode Wireless PDA with McWiLL module embedded
- Voice/Data integrated CPE (RJ45/RJ11 Interface)
- VoIP phone (Broadband phone)
- Dual Mode PCMCIA card (GPRS/McWiLL、3G/McWiLL)







McWiLL Features

- McWiLL frequency bands: 1.8G, 2.3G, 2.6G and 3.3G
- SCDMA technology ensured the efficient use and security of spectrum usage.
- Good QoS/GoS guarantee.
- The minimum granule is 8kbps, integrates narrow band voice and broadband data services perfectly.
- macro cell networking to reduce the number of BS and the maintenance cost.



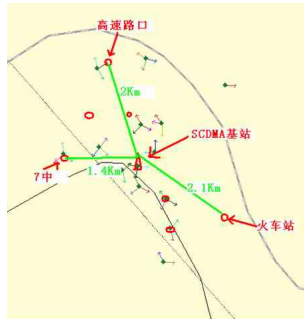
McWiLL Features

- McWiLL system could inter-connected with any standard core network.
- McWiLL system inter-connects with IMS/NGN to realize the intercommunications between fixed or mobile data services and voice services.
- McWiLL Radio Resource Management (RRM) stands by the wireless side of BS, and fast to response to loop delay
- McWiLL system adopt L2 channel protocol, and requires no extra requirement on up layer network
- McWiLL system data transmission close to the PN, greatly reduces the data transmit latency and the blocks on the super converged equipment.
- McWiLL system voice special process greatly improved the voice efficient and handoff speed.



Mobile Application of McWiLL in China Mobile

- NLOS coverage over an area of 2 to 3 km



- Internet Access
- VoIP
- VOD
- Video Conference
- Emergency Communication



Mobile Application of McWiLL in China Mobile



McWiLL Trial Networks in Guangzhou



图例
测试编号 1 基站 ▲ McWiLL trial Map in Guangzhou

Xinwei and Guangdong Netcom jointly tested McWiLL system:

Tested Items: coverage, system capacity, fixed voice and fax services, etc.

The result: Guangdong Unicom was very satisfied.

One CPE carries over 1000 lines voice services; single BS voice service capacity totally overtook 6000 lines.

Terminal speed of CPE reaches up to 2Mb/s, and the tested site was 4 km far away from BS.



Super Application (real photos)



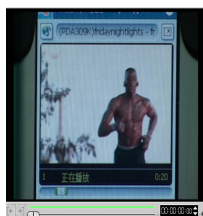
broadband phone



MSN-online



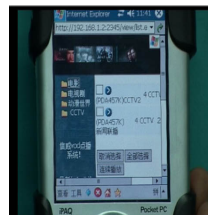
real time stock market



PDA online (309kbps)

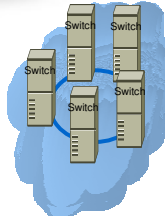


PDA film (457kbps)



McWiLL Comply with IP Networks

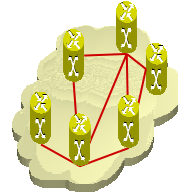
fixed/mobile operators



Phone towards IP

IP network towards mobile wireless

IP net. operators



Break through the switch limitation



Break through fixed connection limitation

General Purpose on the telecom IP network, McWiLL is the true complete IP wireless system.



Investment on 3G and BWA Networks

- The nomadic broadband data in a BWA networks only covers hot spots initially, with increase of subscribers, the coverage will be regional
- The investment on BWA networks could be divided into several phases, since no nationwide roaming is required
- A 3G mobile networks requires nationwide roaming initially, the first phase investment to cover whole nation will be much higher than a BWA networks
- BWA is an economical wireless access system for those countries where broadband services are hard to offer



Summery

1. 3G and BWA networks will coexist and infiltrate each other.
2. With evolution of these two networks, 3G and BWA will become different networks and different market applications.
3. The trend of telecommunications industry is the integration of IP, broadband data and wirelesses into a single device
4. Like other countries, Chinese government has put strong efforts to promote BWA technologies and its applications
5. McWill will be one of BWA technologies grows in China



McWiLL spans the bridge of digital gap

