

You Profit Our Goal

You Profit

Our Goal





Wireless

CONTENT

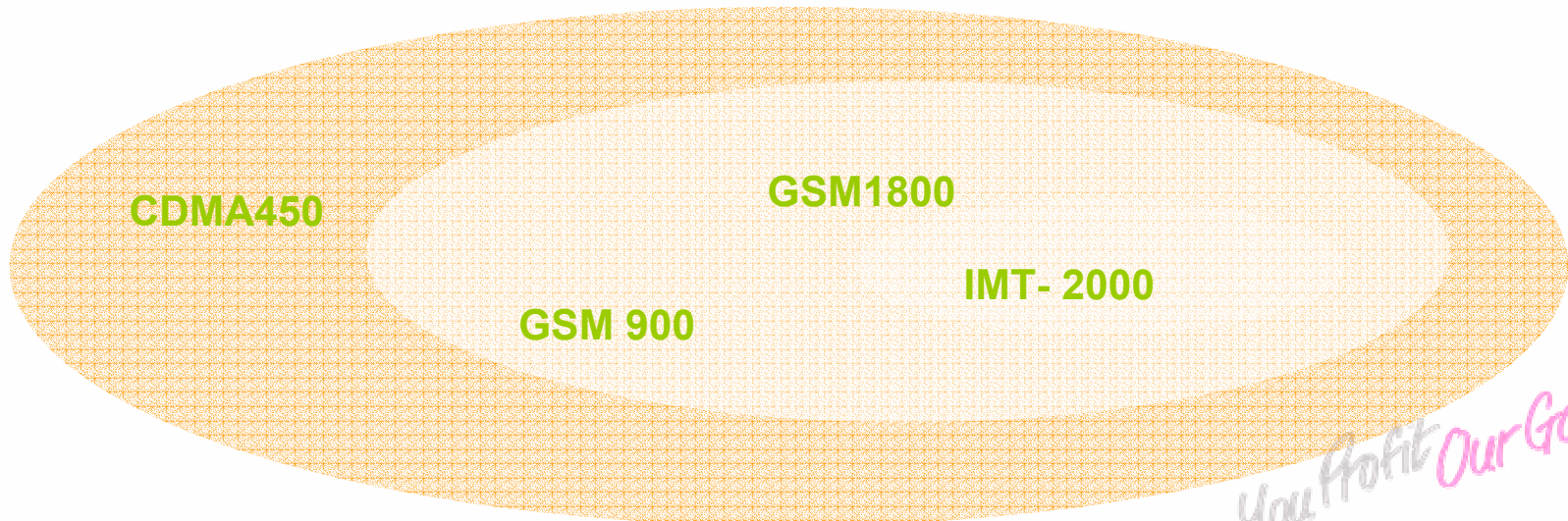
- 
- ❌ **CDMA450 – Best Solution for Universal Services**
 - ❌ **Huawei CDMA application and Case Study**



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- **De-regulation:** *always new ways of Competition needed*
- **Social Trends:** *promoting data applications (e.g., virtual office, Internet, electronic money)*
- **Spectrum:** *continues scarce & expensive*
- **Services & Technologies:** *comes at accelerating pace*
- **Seamless Access:** *from Merging of Wireless & Wireline Services*



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CDMA450, an Noble but Affordable Offering

❑ **450MHz has the best radio propagation for broader coverage; Lower frequencies are the key to reducing cost**

- *Especially suitable for broad, low-density coverage, due to long-range propagation (up to 100 km)*
- *Excellent ability to provide urban coverage due to good “line of sight” propagation characteristics*

❑ **CDMA450 system is a cost-effective 3G solution**

- *CDMA2000 1X, up to 153.6kbps data rate (in average of 80 Kbps),*
- *CDMA2000 1xEV-DO, up to 2.4 Mbps data rate (in average of 800 Kbps)*
- *Lower infrastructure cost results from broad coverage*
- *Low initial investment, then scale capital investment with the subscriber growth*

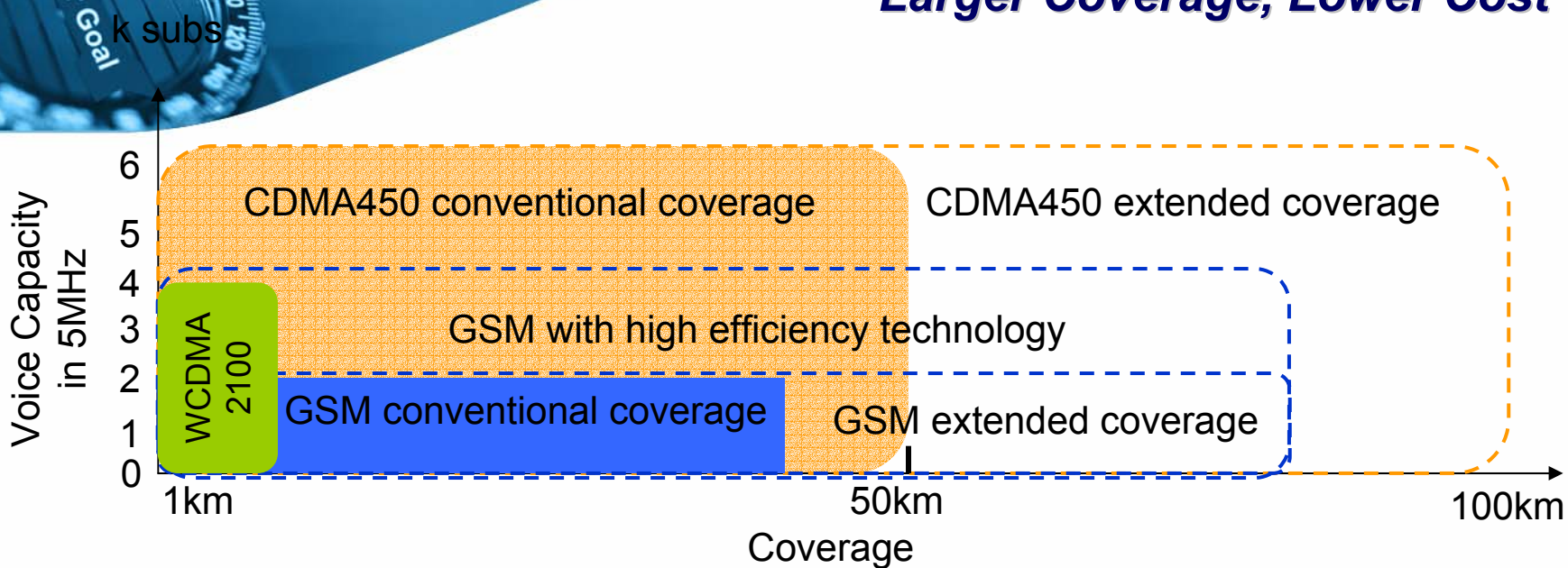
❑ **The 450 MHz range has multiple bands available in many countries**





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Larger Coverage, Lower Cost



Frequency(MHz)	Cell radius (km)	Cell area (km ²)	Relative Cell Count
450	48.9	7521	1
850	29.4	2712	2.8
950	26.9	2269	3.3
1800	14.0	618	12.2
1900	13.3	553	13.6
2100	12.0	449	16.2

450MHz has the best radio propagation

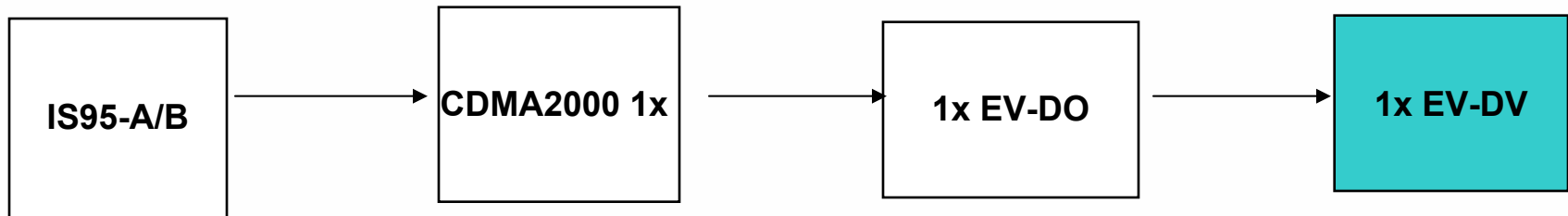


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Clear Evolution



- Voice
- data: 14.4 / 64 kbps

- High capacity voice
- 153 kbps packet data
- RF backward compatible.

- 2.4 Mbps packet data
- RF backward compatible

- Higher capacity voice
- 5 Mbps packet data
- RF backward compatible

Future-oriented platform

- Broadband ATM platforms in BTS/ BSC
- Digital transceiver – high sensitivity

Smooth evolution to 1x-EV

- ◆ Add EV-DO channel processing module
- ◆ Software upgrade in BTS & BSC

Protect operators investment in the most extent

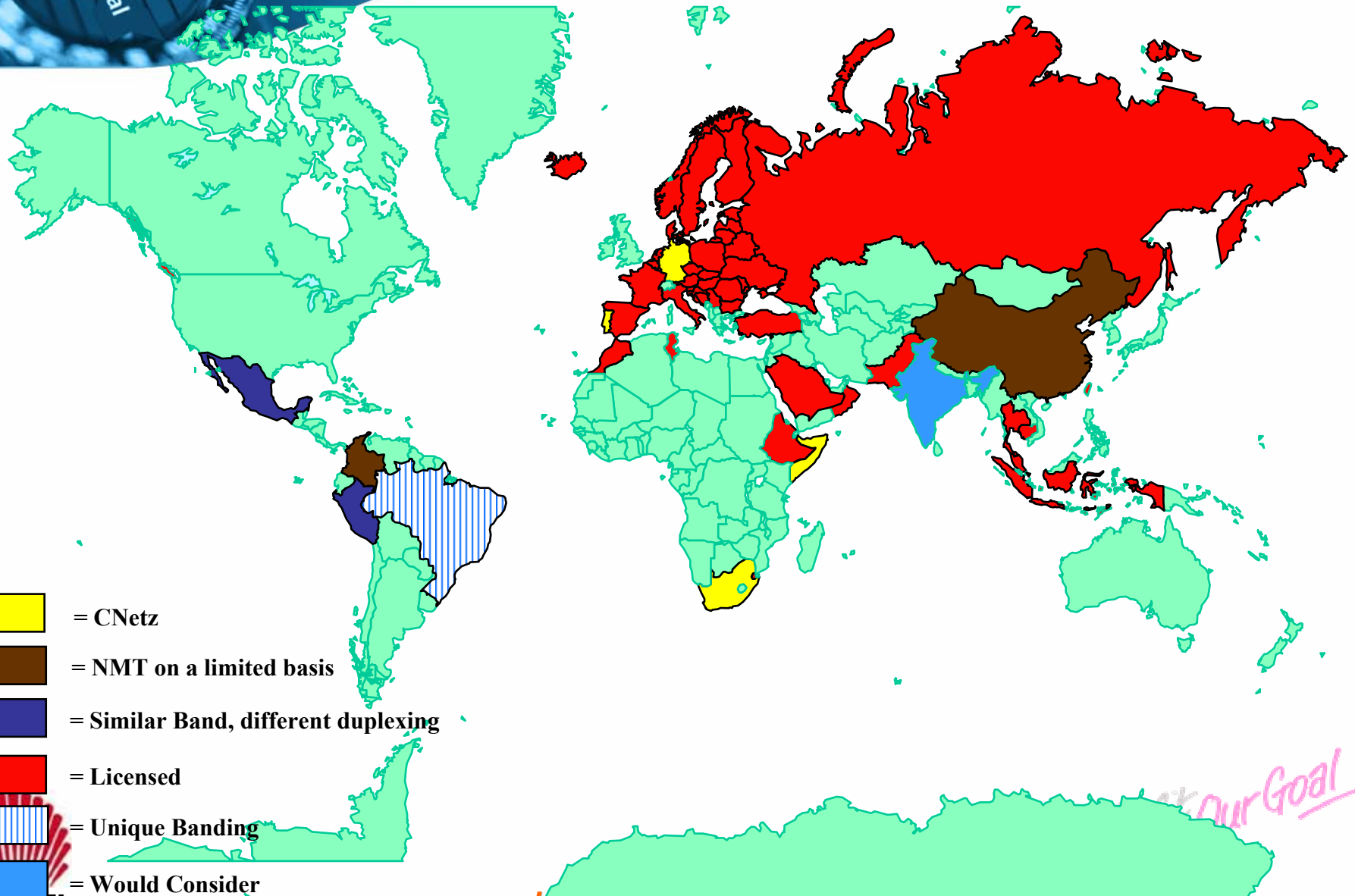
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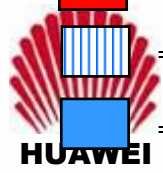


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The 450 MHz Footprint - Past, Present, and Possible



-  = CNetz
-  = NMT on a limited basis
-  = Similar Band, different duplexing
-  = Licensed
-  = Unique Banding
-  = Would Consider

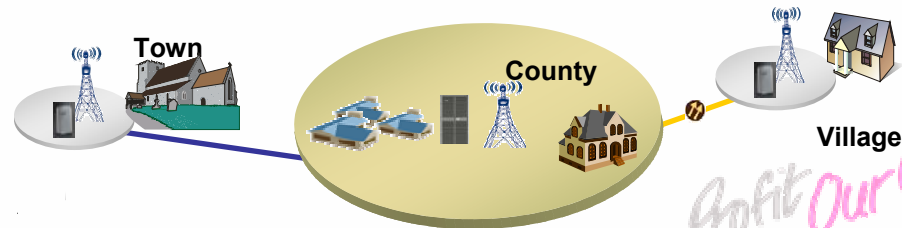
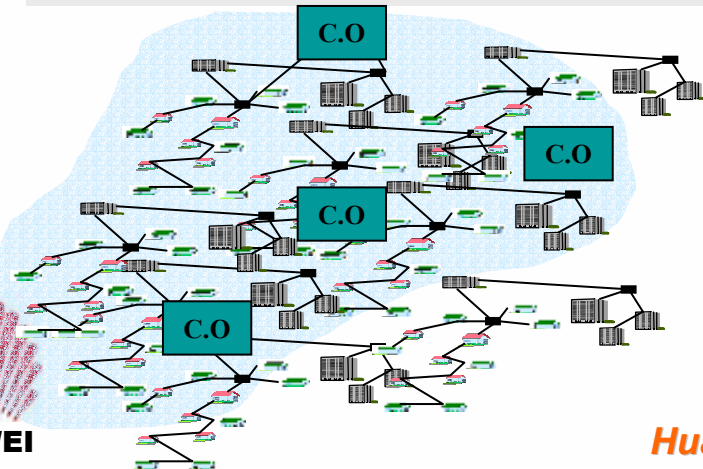


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CDMA450: Best Wireless Means of Universal Service

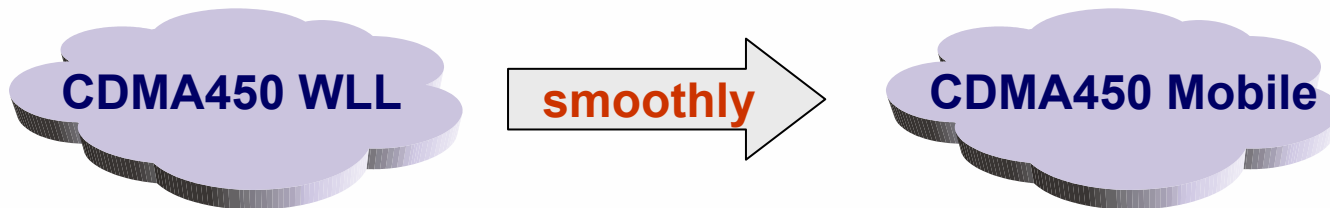
- ◆ Universal service is regulatory requirements, not only business in many developing countries;
- ◆ Quickly deploying and commercial application
- ◆ In rural area, like remote village, mountain area, wired line too expensive!
- ◆ Wireless solution better – Cost-effective: broader coverage, fewer base stations, fewer civil engineering works, ...
- ◆ CDMA450 WLL – the best wireless means to promote penetration rate of telecom with the best radio propagation among 450, 800, 1900, 2100 bands;



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CDMA450: New Ways of Competition

- No mobile license ⇒ **limited mobility WLL to provide wireless services;**
- New point of revenue ⇒ **abundant high data service;**
- WLL to Mobile smoothly ⇒ **Minimized investment with Software upgrade or few NSS equipment addition;**
- CDMA450 ⇒ **The best radio propagation broad coverage in 450, 800, 1900, 2100 bands;**



CDMA450: Better choice for Broadband Access

- It is particularly significant in rural areas where currently Internet access is slow dial-up;
- Remote education, telemedicine, agricultural and industrial support and government services are always accompanied by high data speed internet access requirements;
- CDMA450 is prettily suitable for broad coverage with lower cost vs. other expensive data access solutions;
- Enjoy roaming and “always on” service;
- Excellent feature of urban better coverage, results from the better radio propagation;
- Today 153 Kbps peak value of high-speed data service available, in average of around 70 Kbps, and in EV-DO, provide 2.4 Mbps peak data rates service, in average of 800 Kbps;



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Huawei-CDMA Vendor with Fastest Growth

- CDMA solutions in over **30 countries**, for over **40 operators**
- Network capacity of over **12 million subscribers**
- **Leading** vendor for CDMA450 end-to-end solution
- The **first** CDMA commercial network in Western Europe
- World's **first international roaming**, first live demo of **EV-DO** on CDMA450



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CDMA450 system

Inquam	(Portugal)
BelCel	(Belarus)
CCB	(Russia)
PTCL	(Pakistan)
China Telecom	(China)
ETC	(Vietnam)
Nizhnevartovsk	(Russia)
Uzbektelecom	(Uzbekistan)
China Netcom	(China)
Mobisel	(Indonesia)
TKL	(Kenya)
ETC	(Ethiopia)
LTC	(Laos)
CAMSHIN	(Cambodia)

CDMA1900 system

Starcomms	(Nigeria)
Algeria Telecom	(Algeria)
China Telecom	(China)
Telecom Kenya Ltd.	(Kenya)

CDMA800 system

China Unicom	(China)
MTNL	(India)
CATEL	(Azerbaijan)
AkTel	(Kyrgyzstan)
CST	(Ukraine)
PTC	(Yemen)
Ratelindo	(Indonesia)
ITN	(Nigeria)
Bourdex	(Nigeria)
Mauritius Telecom	(Mauritius)

CDMA Trial system

Egypt	800MHz
STC (Saudi Arabia)	450MHz
VNPT(Vietnam)	800MHz
Brunei Telecom	800MHz
Poland	450MHz
Bulgaria	450MHz
Kazakhstan Telecom	450MHz
Telemobile(Romania)	450MHz
Telefonica (Peru)	450MHz
CTBC (Brazil)	450MHz
TDM (Mozambique)	450MHz

Till March. 2004



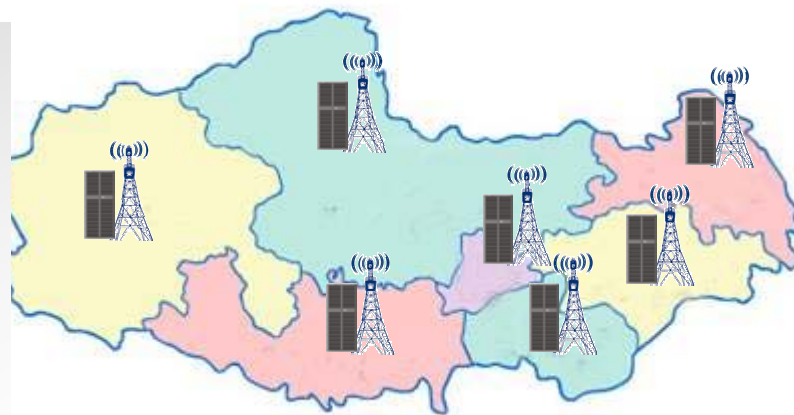
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CDMA WLL for Universal Service in Tibet

- Wide coverage, lower CAPEX / OPEX
 - Maximum coverage of 1 cell: 7500km²
- Rapid business growth
 - About 7,500subs./month Increasing
 - Now over 80,000subscribers totally
- Higher ARPU
 - ARPU higher than that of wired line
 - Much higher than GSM, PHS and CDMA800
- Network capacity
 - 102 BTS, 3 phases deployment already



- ◆ Coverage area: 1.22 million km²
- ◆ Population density: 0.01- 500/km²



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Telecom Penetration in Tibet

Convenient Telecom will stimulate Economy

Fact: Low telecom penetration in Rural Area!

	Subscribers	Penetration
Fixed line	234,000	9.24%
Rural	13,000	0.5%
Mobile	279,000	10.54%
Internet	33,000	1.3%

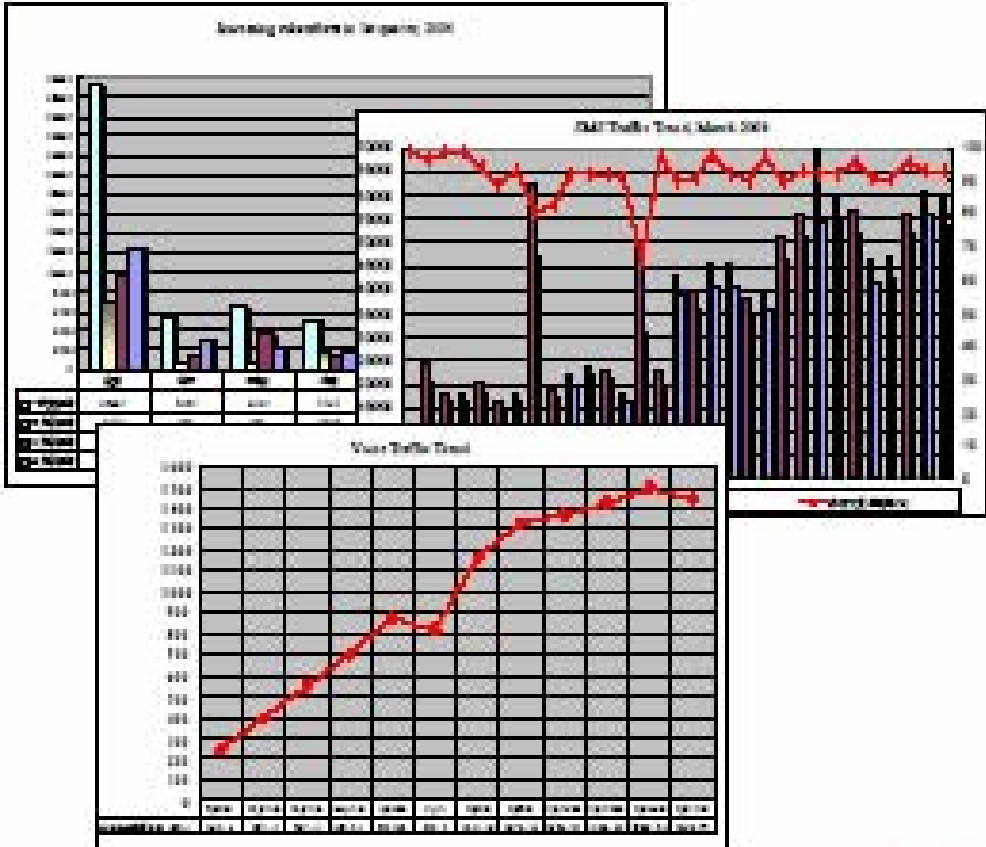
MII (Ministry of Information Industry), China Government report, 2003

*Finding a solution for **Universe Service** !*



Increasing of Subscribers

- Total subscribers:
 - Almost 80k subs
 - (2003.9 - 2004.4)
- Rural area subs: 70%
- 7500subs/month
- Traffic of voice and SMS increase rapidly





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CTBC CDMA450M Trial



- ✓ Anatel-CTBC-Huawei joint trial for CDMA 450MHz
- ✓ Objective: Verify the advantages of CDMA 450MHz for the Universalization of the Services
- ✓ Tests include: Voice and Data Services
- ✓ Current Status: Under implementation
- ✓ Huawei provide end-to-end solution including infrastructure and terminals



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Available Terminal

Terminal - FWT



Phone - FWT



H100



S200



ETS388



ETS668/678/688



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Thank you !



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