



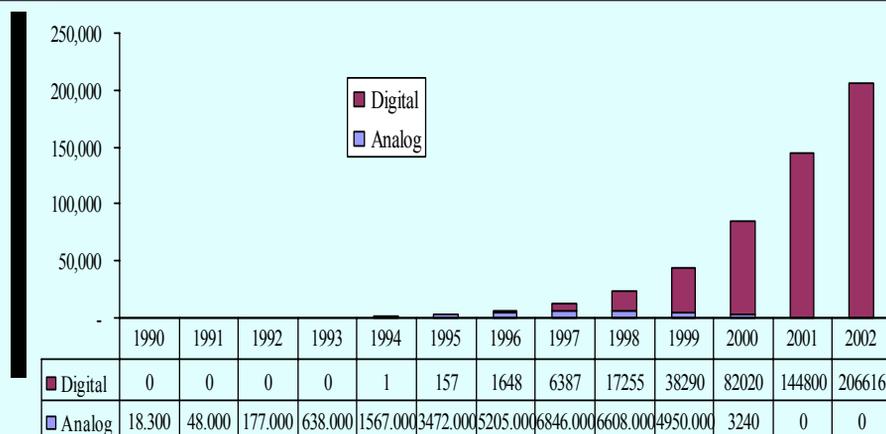
## 3G LICENSING IN CHINA & HONG KONG

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## Growth of Mobile Users in China

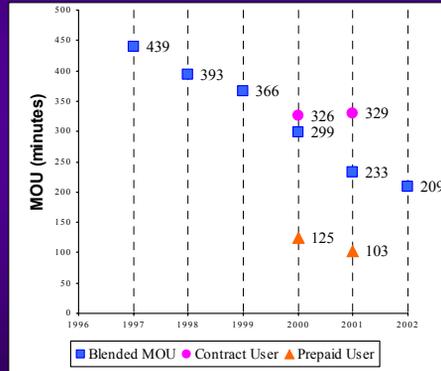
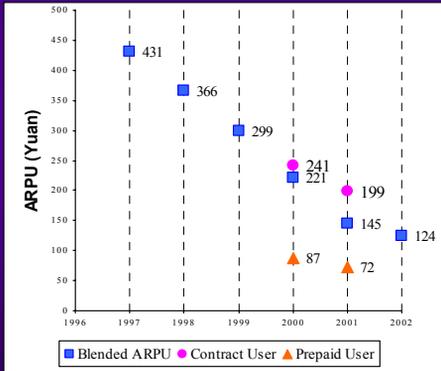


Growth of cellular subscribers in China

(Source: The Ministry of Information Industry)



## Changes in ARPU and MOU of China Mobile (HK)



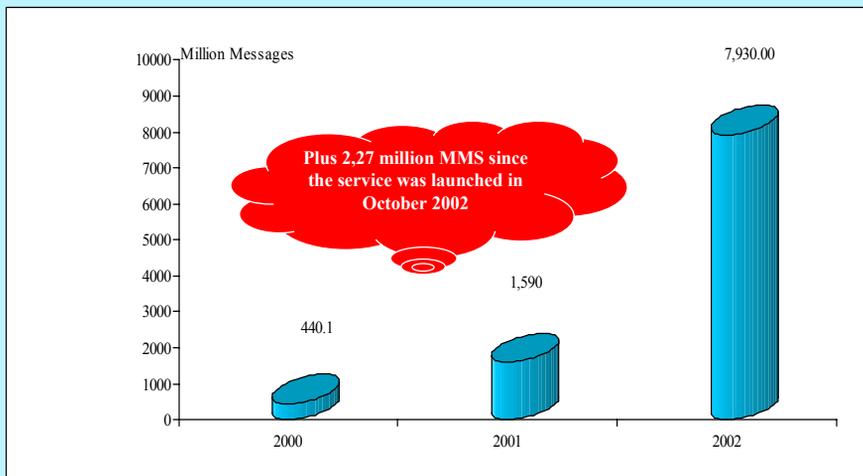
Source: Annual Reports of China Mobile (HK)



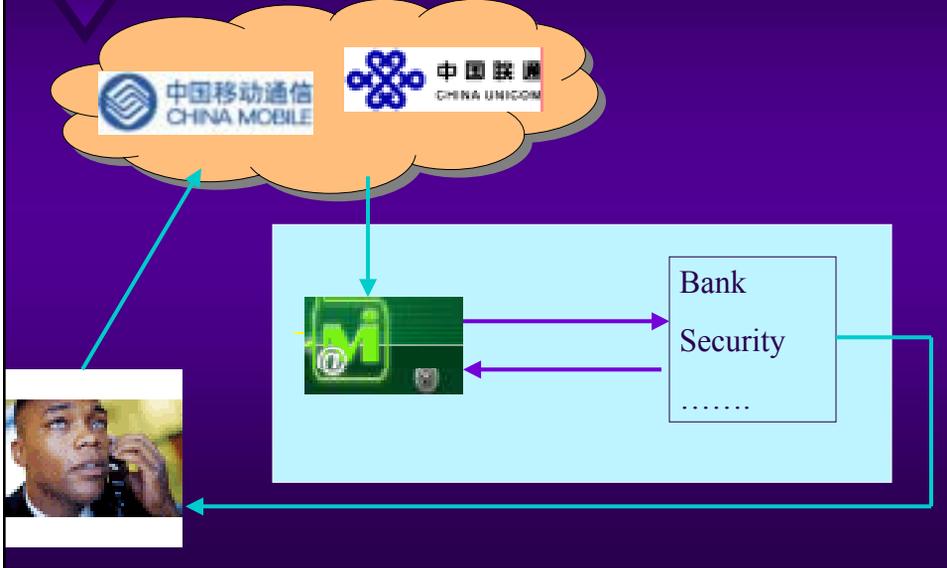
## Explosive Growth of SMS

SMS usage volume of China Mobile (HK) in 2001

Source: China Mobile (HK) Annual Report



## *Model of B2B Mobile Commerce: The Case of Cyber-on-Air*



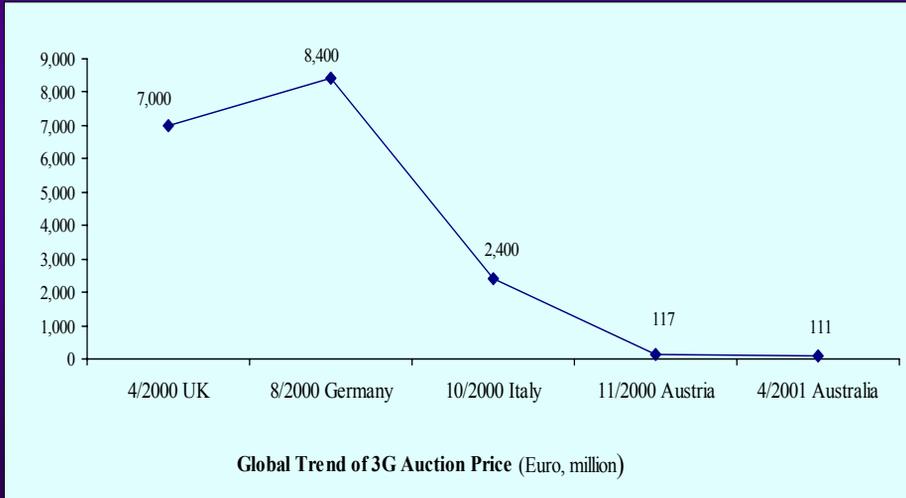
## *China is Calling for 3G*

- Feasibility: SMS shows the demand to mobile data communication is encouraging
- Urgency: The slow speed is currently a bottleneck for the application of mobile data communications





## *Spectrum Auction is not an Option*



## *Spectrum Occupation Fee: US\$6.06 Per Subscriber Per Year*

Department of Radio Administration,  
Ministry of Information Industry





## *New Initiative on Spectrum Fee*

- Operators are asked to pay the spectrum fee directly and spectrum occupation fee will be suspended from 1 July 2002
- Price is defined by regulator in the way of benchmarking
  - 7.5 million Yuan (US\$0.91 million) per MHz in the first year, 11.25 million Yuan (US\$1.36 million) per MHz in the second year, and 15 million Yuan (US\$1.82 million) per MHz in each of the third, fourth and fifth years.



## *Key Question in 3G Licensing: Which Standard to Use?*



**CDMA2000**

**WCDMA**

**TD-SCDMA**



## *FDI in Telecom Manufacturing*

- No digital system before 1982
- Equipment import boom after Fujian installed the first SPC switch of Fujitsu
- Policy of using market in exchange for technology: import, digestion, absorption and creation
- joint ventures were highly encouraged with agreement on technology transference: Shanghai Bell was established in 1984



## *Government's Support To Domestic Vendors*

- assignment of research grant for R&D
- low interest loans
- discounted tax rates
- generous provision of land in high-tech industrial parks
- Operators are encouraged to purchase products of domestic vendors: Supply-demand coordination conference



## *Government Intervention*

- *“Government Guideline for Foreign Investment in Telecommunications”*
- Three categories of FDI (1995):
  - Encouraged: Digital Cellular, SDH, ATM switching system, satellite communications system, digital microwave system
  - Restricted: analogue wireless system, PABX, non-ATM central office switches, TV and Radio Broadcasting systems, Fax machines, low speed digital microwave system
  - Forbidden: Telecom operation



## *Ju Da Zhong Hua: Julong, Datang, Zhongxing (ZTE) and Huawei.*

- In 1992, the first SPC of 10,000 lines was made in China with China-owned intellectual property rights
- In 1998, 98% of the newly increased switching equipment for fixed local networks and 50% of newly increased optical transmission system.
- In 1999, the market share of local vendors in switching equipment rose to over 99%.
- In 1999, the total revenues from exporting telecommunication equipment and systems reached US\$ 46.6 billion

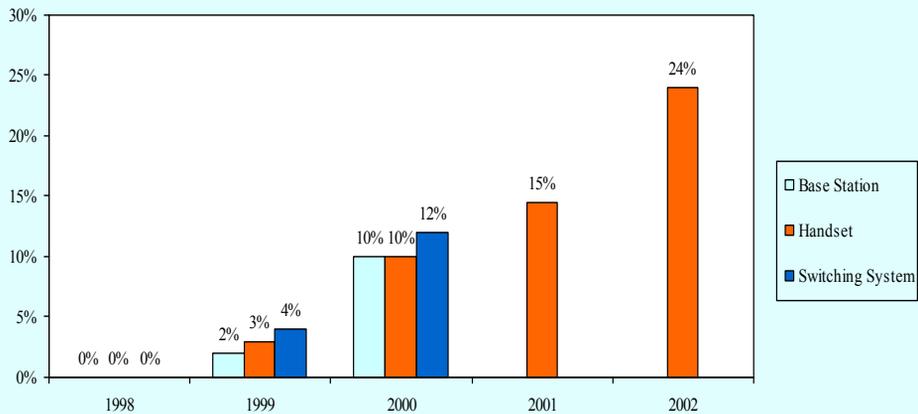
## Chinese Telecom Manufacturing Industry: market or competitor?

In 1999, the total revenues from exporting telecommunication equipment and systems reached US\$ 46.6 billion



## Growth of market share of Chinese domestic vendors in mobile equipment supply

Source: Ministry of Information Industry of China





## *Strategies of Local Handset Manufacturers*

- Good after-sale service quality
- Low price
- Target the urban area from country-side
- High class: diamond handset of TCL999D
  - However, billions were paid for IPR



## *CDMA: A Short-cut?*

- Unicom Horizon: a CDMA network of China Unicom
- ZTE: 7.5% market share.
- Future CDMA2000: avoid the opportunity cost
- Local CDMA handsets: 18 licenses to local vendors (but all have foreign partners) except MOTOROLA



## *TD-SCDMA: Can a Dream become True?*

- What is TD-SCDMA
  - Proposed by Datang
  - One of the three 3G standards of ITU
  - First ITU standard proposed by China
  - Asymmetric transmission
  - Software-defined radio
  - Efficient spectrum usage
  - Smart antenna
  - Smooth migration from 2G to 3G
- Close cooperation with Siemens



## *Implications of 3G Licensing in China*

- ◆ TD-SCDMA is a chance for domestic manufacturers
- ◆ Government is supportive in the way of favorable spectrum allocation
- ◆ However, it remains to see if it will turn out to be a mature technology for commercial application
- ◆ **Time is important**



## *Policy Objectives of Hong Kong Government in 3G Licensing*

- ◆ To promote the development of telecommunications industry;
- ◆ To protect consumers' interests; and
- ◆ To maximise the benefits to the economy as a whole



## *Key Issues in Debate*

- ◆ Choice of technical standards,
- ◆ Allocation of radio spectrum
- ◆ Licensing options
- ◆ Open network requirement



## *Choice of Technical Standards*

- ◆ Technology neutral
- ◆ various technical standards are compatible with each other from the user's point of view
- ◆ Smooth deployment of number portability
- ◆ maximise the ease and practicality of roaming services without having to change mobile terminals

PCCW: Guard band issue



## *Competitive 2G Mobile Market in Hong Kong (January 2001)*

Operator	CSL	Hutchison	Smartone	Mandrine (Sunday)	New World	People's Phone
Market Share	18%	30%	17%	7%	14%	14%
Technology	GSM DAMP PCS	GSM CDMA PCS	GSM PCS	PCS	PCS	PCS



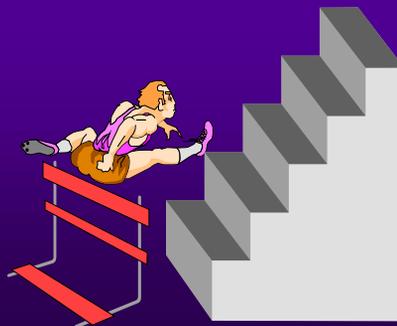
## *Allocation of Radio Spectrum*

- ◆ 2G licensee can use current spectrum for 3G services: technology neutral
  - ◆ Guaranteed 3G license?
  - ◆ High spectrum fee for 3G but low spectrum fee for 2G?



## *Licensing Options*

- ◆ Traditional 2G licensing in HK:
  - ◆ Concerns over 2G licensing
    - ◆ License fee may be undertaken by users finally
    - ◆ Increase licensee's burden
  - ◆ Solutions:
    - ◆ Setting Milestones
    - ◆ Using Performance Bond





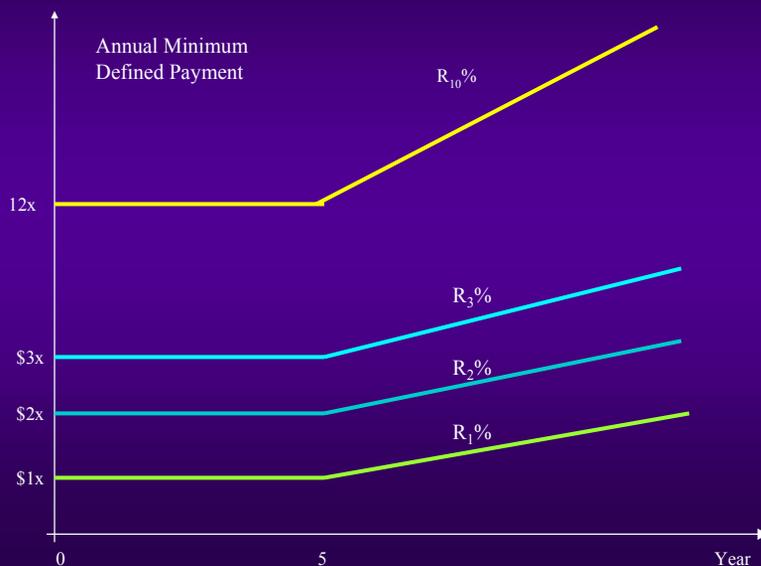
## 3G Licensing

### ◆ Argument

- ◆ Who can set the most appropriate milestone for 3G?
- ◆ User should pay for public resource?
- ◆ Capitalism should at work?
- ◆ Auction but under different condition?
- ◆ Cross subsidization?
- ◆ Government share the risk with investor?

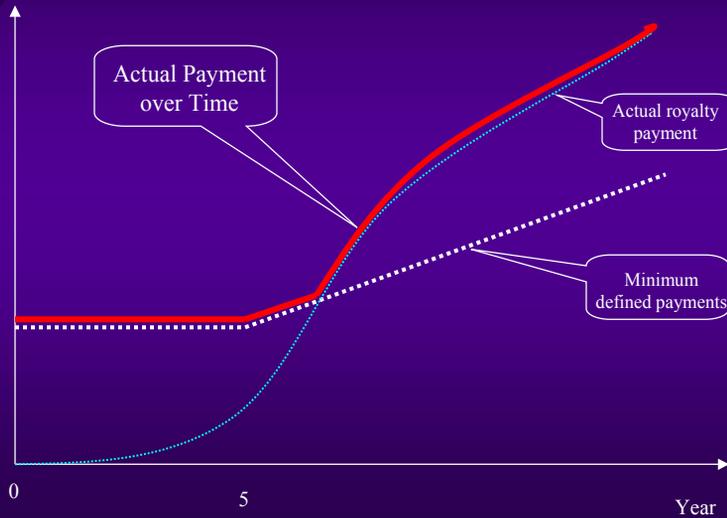


## Royalty Payment





## Royalty Payment Scheme



## Open Network

- Successful 3G service bidders must open up at least 30% of their 3G network capacity for use by unaffiliated companies to operate Mobile Virtue Network and/or content providers.
- **Argument:**
  - Speculation?
  - How to measure the capacity?



## Results of 3G Auction in Hong Kong

- Winners of Mobile Carrier Licenses in Hong Kong
  - Hong Kong CSL
  - Hutchison
  - Smartone
  - Sunday
- Minimum Payment in first five years:
  - HK\$50,000,000 per year.
- Percentage of revenue for licenses
  - 5%



## For more details:

- Xu Yan (2001) 3G Licensing Policy in China and Hong Kong SAR: Research Report for ITU, <http://www.itu.int/3g>
- Xu Yan, Douglas Pitt (2002) *Chinese Telecommunications Policy*, Artech House Books: Boston, London

**Thank You!**

