



CHINA TELECOMS DEVELOPMENT IN THE GLOBAL CONTEXT

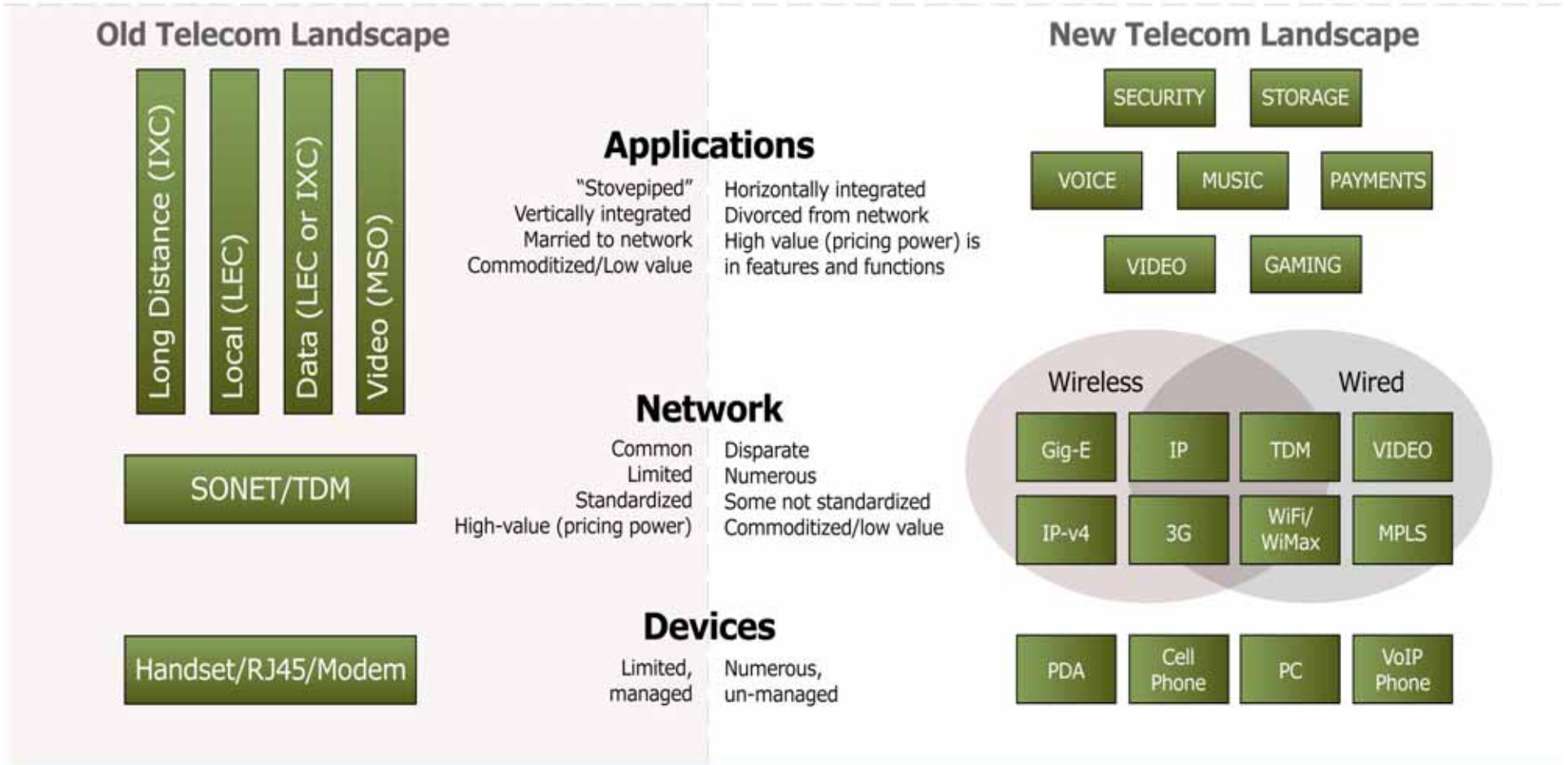
Jack B. Grubman

Magee Group, LLC

www.mageegroup.com

jbgrubman@mageecap.com

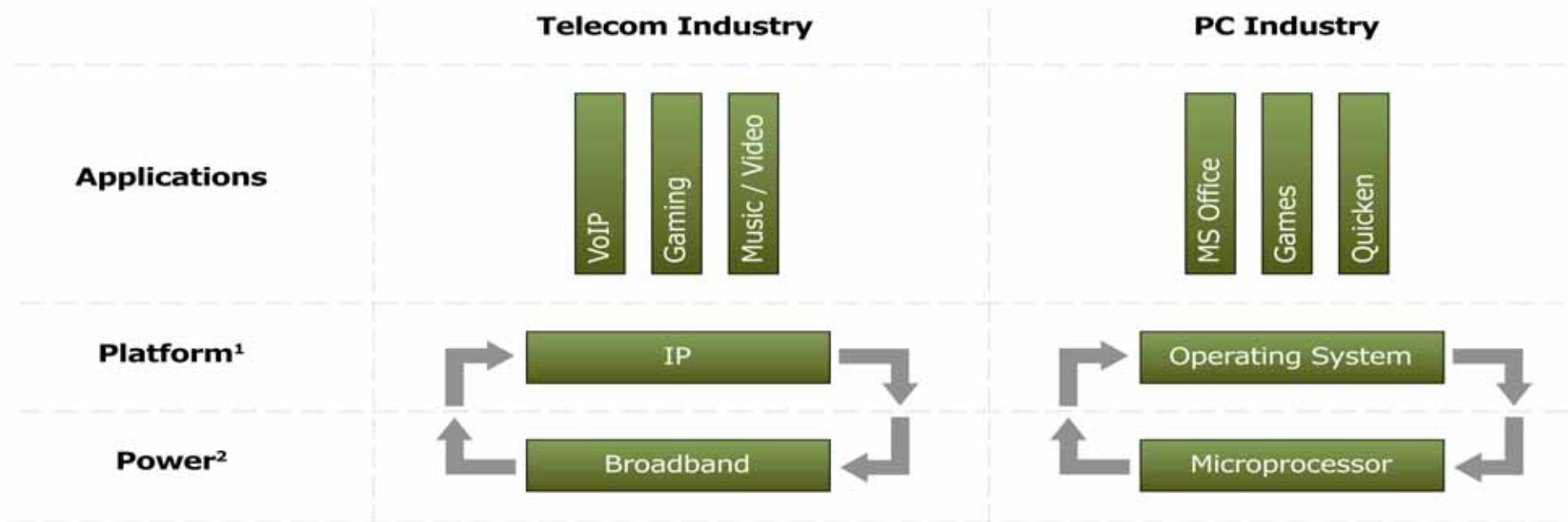
Changing Telecom Landscape



Changing Telecom Landscape

- IP/MPLS core networks with Ethernet Data Link layer pervasive throughout access and metro networks will result in converged networks able to support multiple services over a myriad of devices
- Networks not built around separate applications—applications will be packets riding on a converged network
- Will China be aggressive in deploying MPLS and Ethernet to enable cutting-edge IP-based packet services (e.g. layer 2 VPLS, hosted PBXs, etc.) to attract Global Enterprises AND will China work to increase business line deployment to drive revenue from such services

IP/Broadband Interrelationship



Key Similarities

- ¹ IP and the OS (Windows) both provide a dominant, standardized "platform"
- ² Broadband access and the Microprocessor both provide the "power" element
- The real value in both systems is the resulting applications
- The power and platform became commodities
- Power & Platform drive each other's growth

Key Differences

- In the PC Industry, the Power and Platform elements are dominated by single players
- In the Telecom industry, the Power and Platforms are made up of many players



Jack B. Grubman

Magee Group, LLC

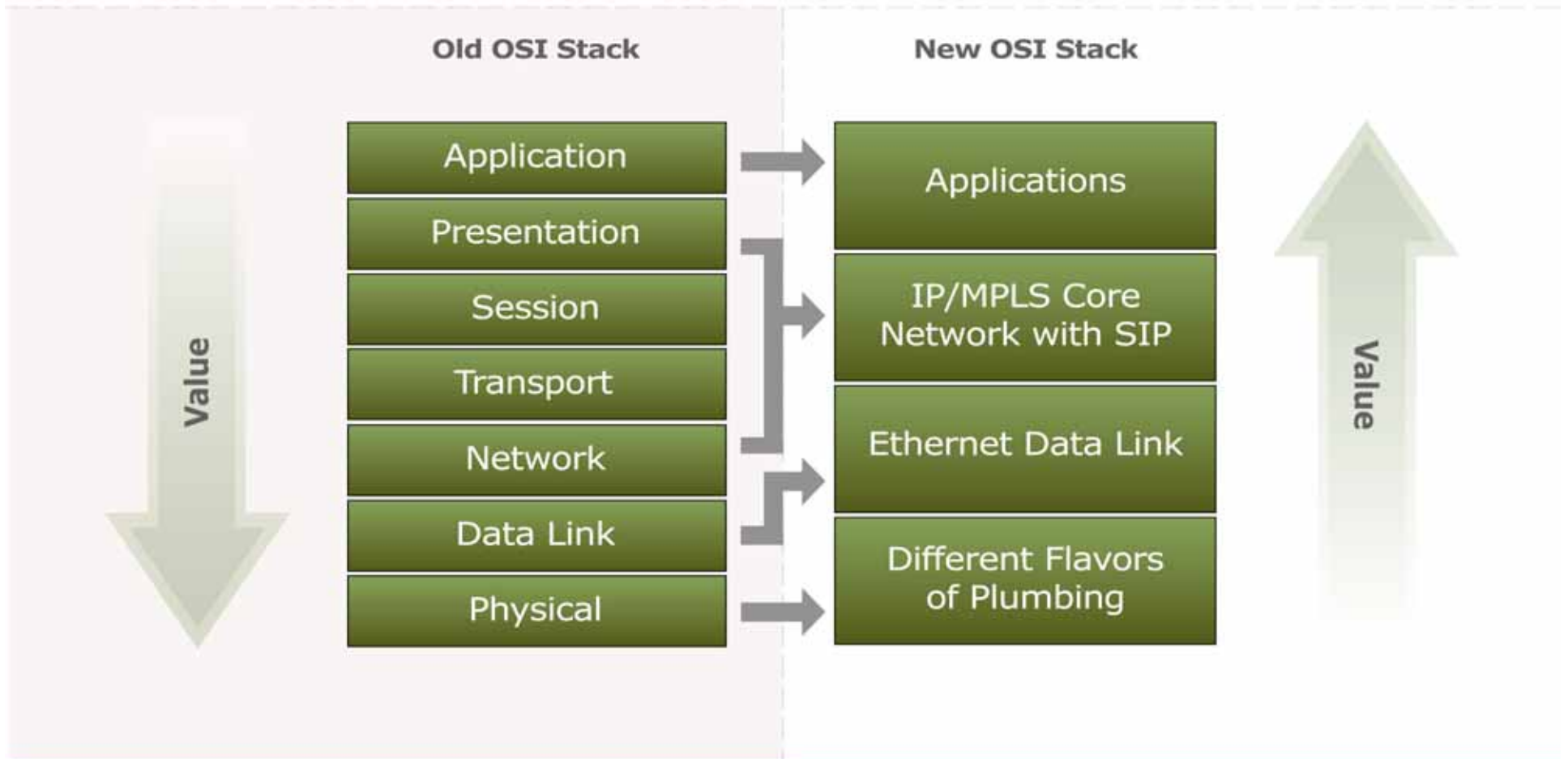
www.mageegroup.com

jbgrubman@mageecap.com

IP/Broadband Interrelationship

- IP/Broadband Symbiotic Relationship will result in flood of new services obliterating lines of demarcation between traditional telecom, media and content players
- China's challenge is to be as creative in content and applications as in infrastructure
 - e.g.: China has a state of the art fiber CATV backbone with 90 channels of digital capacity and virtually no programming

Collapsing of the OSI Stack



Collapsing of the OSI Stack

- Converged Multiservice Networks will drive IP-based/web-centric services and applications versus separate transport networks for distinct services
 - Applications separate from physical layer
 - Horizontal versus vertical competition
 - Infrastructure carriers run risk of being dumb pipes unless they innovate at application layer
 - Virtual network operators could proliferate
- China's challenge
 - Can new three vertically integrated carriers avoid being providers of commodity transport
 - Will China allow innovative application or content developers to compete in marketplace
 - Will MII and SARFT cooperate to maximize consumer benefit from network convergence

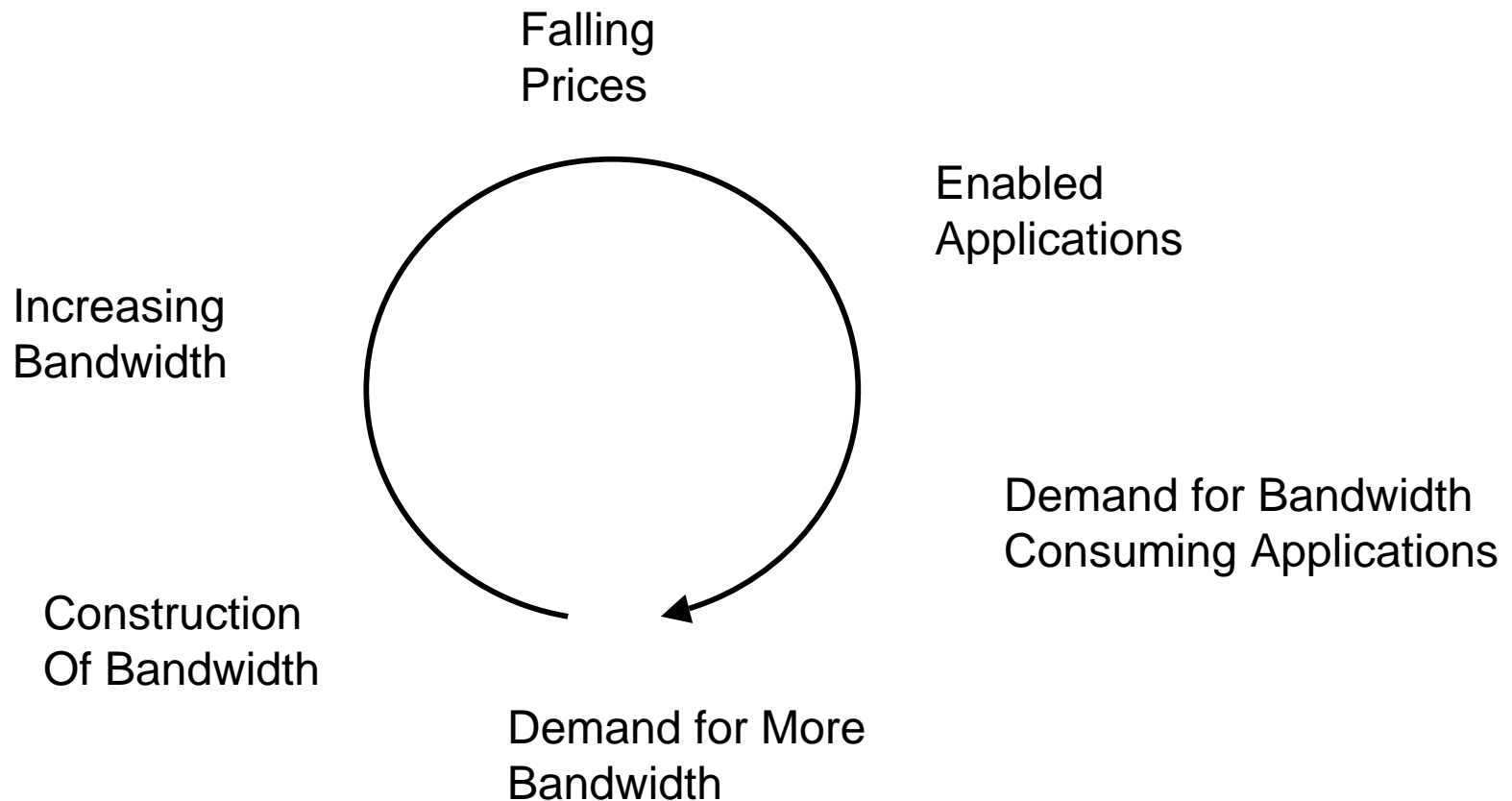
Virtuous Circle of Bandwidth Demand

Jack B. Grubman

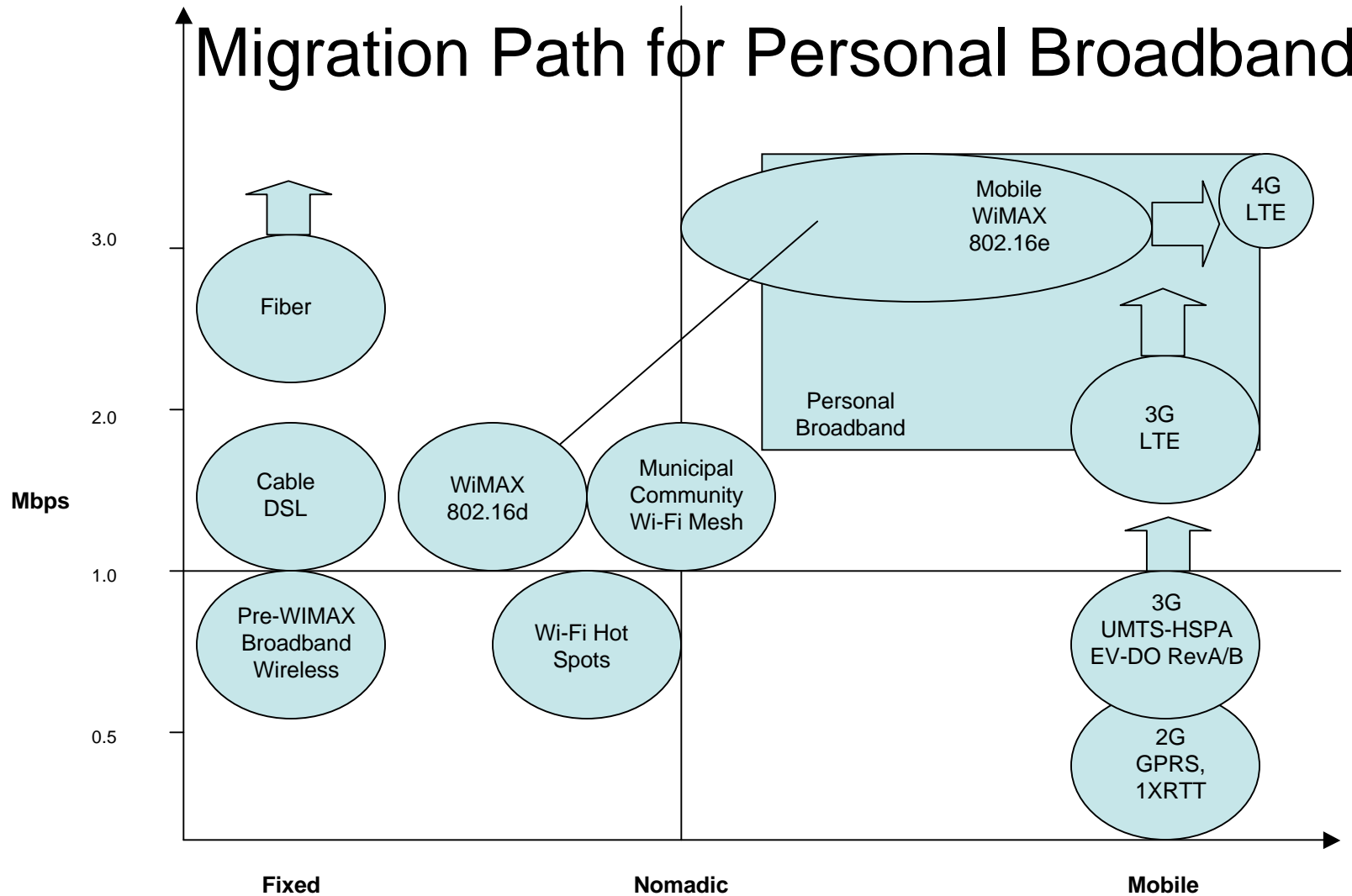
Magee Group, LLC

www.mageegroup.com

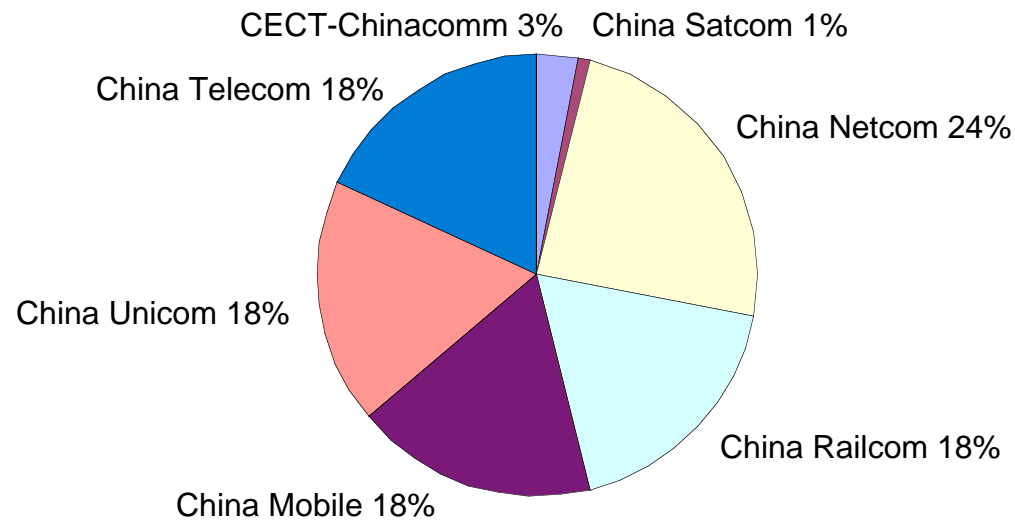
jbgrubman@mageecap.com



As bandwidth reaches mass markets, connected applications which run over network-based services (i.e. social networking, interactive gaming, image and music downloading, content sharing, streaming video, e-commerce, etc.) will proliferate and thus drive the need for more bandwidth



Market Landscape of 3.5-GHz Spectrum in China



Paths to Personal Broadband

- Broadband “always on” will ultimately mean that services that run on it—must be always available
- New broadband wireless technologies are blurring the distinction between wired and wireless. Users will choose service providers that can offer convenient access wherever they are
- Open access is a key theme and progressive service providers (and regulators) will open their networks
 - Italy is the latest example with Telecom Italia having to open both its old copper and new broadband network for access by others
- LTE likely to be dominant 4G standard
- Issues for China
 - Skip 3G and go right to 4G LTE for wireless broadband
 - Utilize 3.5 GHZ WIMAX spectrum already allocated to carriers as tool to do fixed broadband in non-urban areas and provide high-bandwidth redundancy for businesses
 - How quickly to deploy fiber in metro and access networks to narrow China’s “fixed line data deficit”

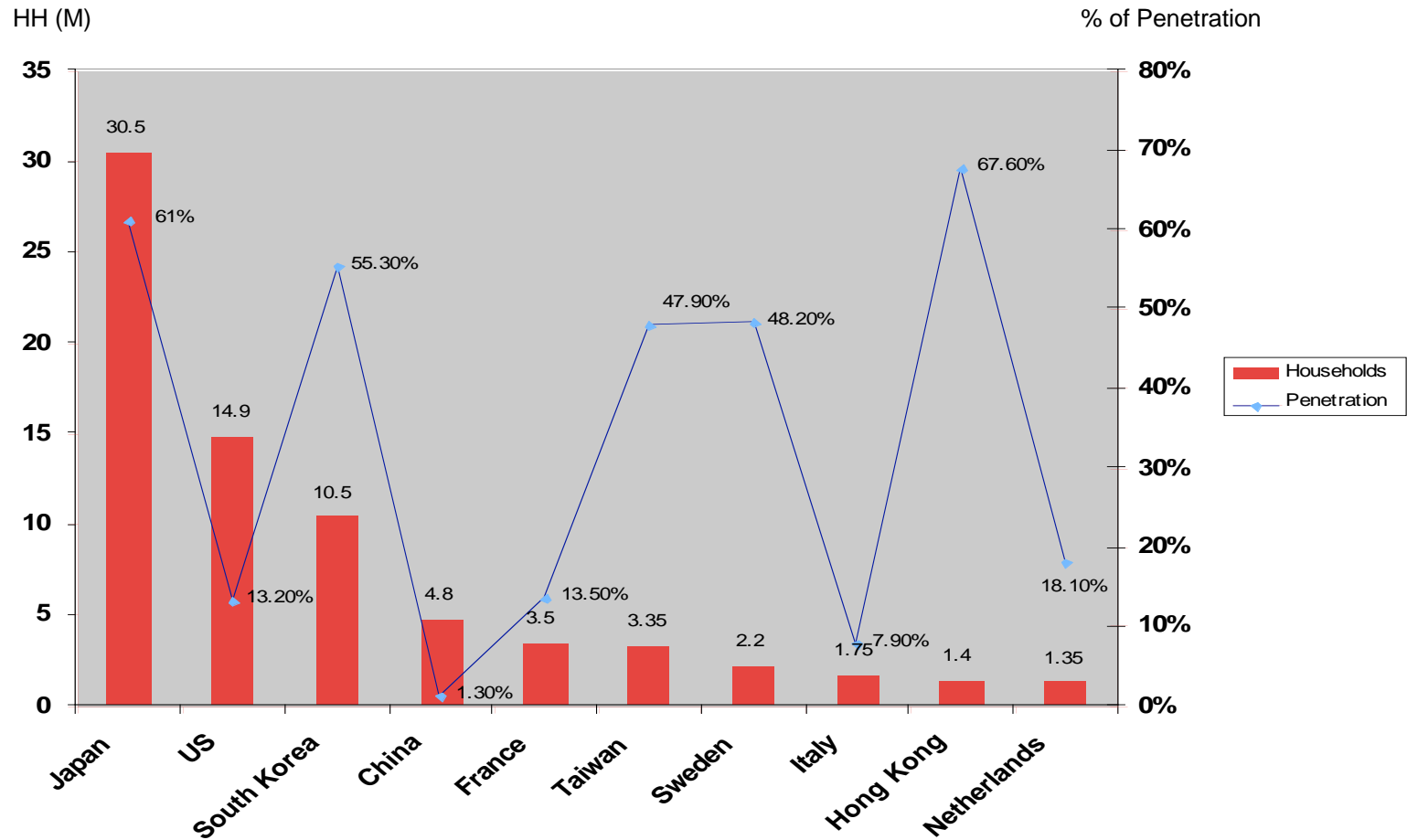
FTTH Households and Penetration, 2012

Jack B. Grubman

Magee Group, LLC

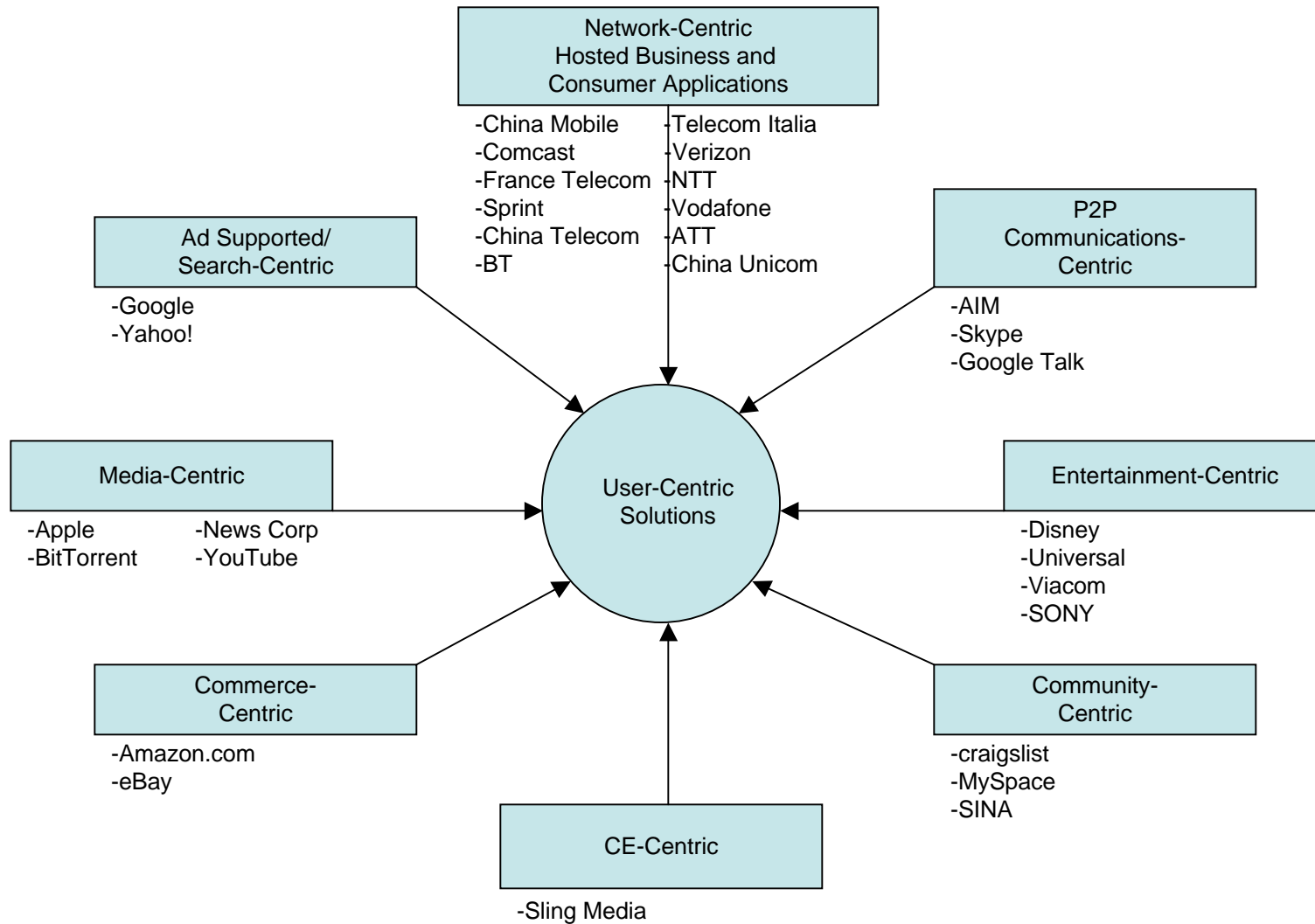
www.mageegroup.com

jbgrubman@mageecap.com



China is forecast to significantly lag in FTTH penetration—especially versus other major Asia-Pacific countries

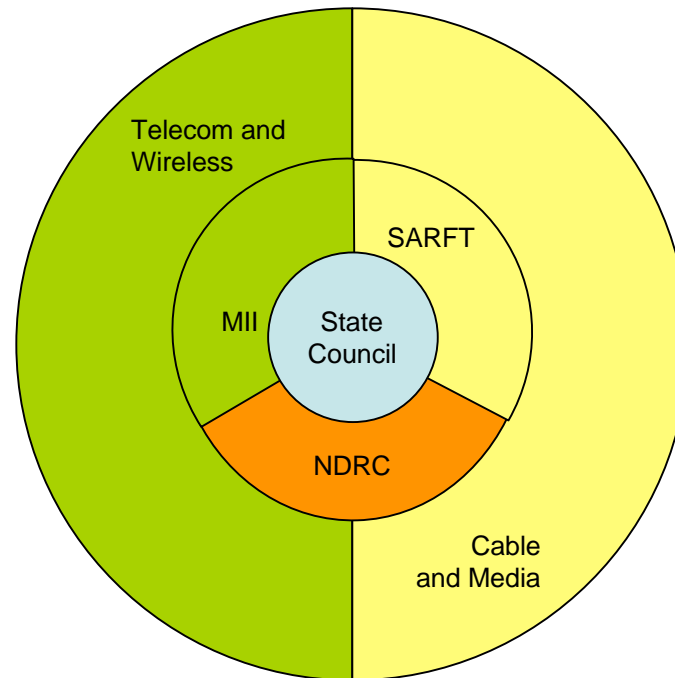
Industry Players Looking to Capitalize on Potential of Converged Next Gen Networks



Converged Next-Gen Networks

- Issues for China
 - Will newly integrated carriers develop applications
 - Will regulators allow VNOs to deliver services over leased facilities to maximize deployment to end users
 - What will interplay look like between China's fragmented MSO landscape and the three large telecoms
 - Will China either allow foreign entities to sell or encourage domestic players to develop programming and content to telecom and CATV carriers

China's Regulatory structure not aligned with future direction of convergence between telecom/media



China's Regulatory structure not aligned with future direction of convergence between telecom/media

- Current China Regulatory Landscape separates telecom/wireless from cable and media under different policy bodies
- This is in contrast to many other major economies which has a single regulator for telecom, wireless, broadcast and media

Many Major Countries Have a Single Regulator for Telecom/Media

- USA—Federal Communications Commission (FCC)
- UK—Office of Communications (OFCOM) (OFTEL former telecoms regulator now part of OFCOM)
- CANADA—CRTC
- Korea—Ministry of Communications and Informations
- Japan—Ministry of Public Mgmt, Home Affairs, Posts & Telecoms
- France—ARCEP-Regulatory Authority of Electronics, Communications and Posts
- Switzerland—Federal Office for Communications

Potential Issues Facing China Given Current Regulatory Structure

- Major decisions on IPTV, VOIP, FTTH, Internet Video, and content licenses face uncertainties regarding regulatory authority since these services can be delivered over both telecom and CATV networks all of which will be IP-based
- Foreign ownership issues are muddled if no single regulator

China's Share of Worldwide Telecom Service Revenues Likely to Remain Stable (\$ Millions)¹

	2006	2007	2008	2009	2010	2011	2012
Mobile	662	782	878	950	1015	1075	1125
China	54	64	72	78	85	90	106
Share	8.2%	8.1%	8.1%	8.2%	8.3%	8.4%	9.4%
Fixed Line	677	708	727	725	723	720	717
China	36	38	38	38	38	38	38
Share	5.3%	5.3%	5.2%	5.2%	5.2%	5.2%	5.3%
Total Telecom	1339	1490	1605	1675	1738	1795	1896
China	90	102	110	116	123	128	134
Share	6.7%	6.8%	6.8%	6.9%	7.0%	7.1%	7.2%

¹ Stable currency exchange—if Renminbi appreciates revenues in dollars for China's telecom sector will be higher than displayed

China has 3 of Top 20 Carriers

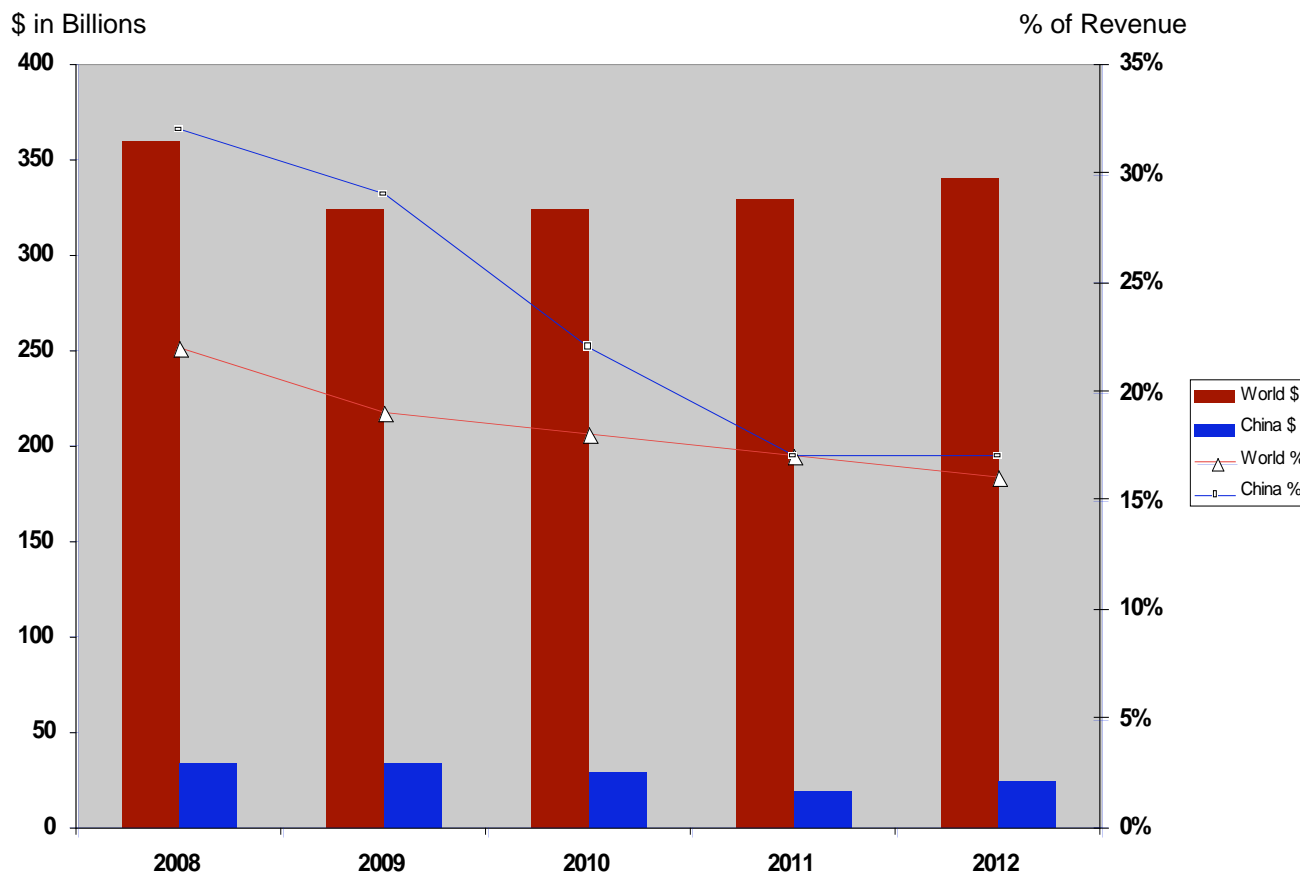
Rank	Carrier	Telecom Services Revenues 2007 (\$ Millions)	Proportion of Global Telecom Services Revenues, 2007
1	ATT	118,928	7.5%
2	Verizon	93,469	5.9%
3	NTT Group	91,212	5.8%
4	Deutsche Telecom	85,581	5.4%
5	Telefonica	77,263	4.9%
6	France Telecom	72,498	4.6%
7	Vodafone	65,041	4.1%
8	China Mobile	46,932	3.0%
9	Telecom Italia	42,834	2.7%
10	British Telecom	41,335	2.6%
11	Sprint/Nextel	40,146	2.5%
12	China Telecom	23,489	1.5%
13	KDDI	21,728	1.4%
14	Telstra	20,534	1.3%
15	KPN	17,058	1.1%
16	Bell Canada	16,697	1.1%
17	Telenor	15,786	1.0%
18	TeliaSonera	14,260	0.9%
19	Qwest	13,778	0.9%
20	China Unicom	13,087	0.8%
	Top 20 Total	931,656	59.0%

Chinese Equipment Suppliers Not a Major Factor Globally Must Find a way to expand beyond home markets

Rank	Vendor	Telecom Equipment Revenues, 2007 (\$ Millions)	Proportion of Global Telecom Equipment Revenues, 2007
1	Nokia	56,893	16.1%
2	Cisco	31,301	8.9%
3	Motorola	30,936	8.8%
4	Samsung	21,068	6.0%
5	Alcatel-Lucent	18,922	5.4%
6	Ericsson	17,087	4.8%
7	Sony Ericsson	16,995	4.8%
8	Huawei	12,560	3.6%
9	LG	11,891	3.4%
10	NEC	9,921	2.8%
	Nortel		
	Top 10 Total	227,574	64.6%

Note: In 2006, Alcatel and Lucent merged to form Alcatel-Lucent (making a combined report only in 4Q06). Alcatel-Lucent results for 2004 to 2006 are shown pro forma. Nortel was ranked in the top 10 in 2004 and 2005.

Worldwide Telecom Operator Capital Expenditures (2008-2012) (\$ Billion)



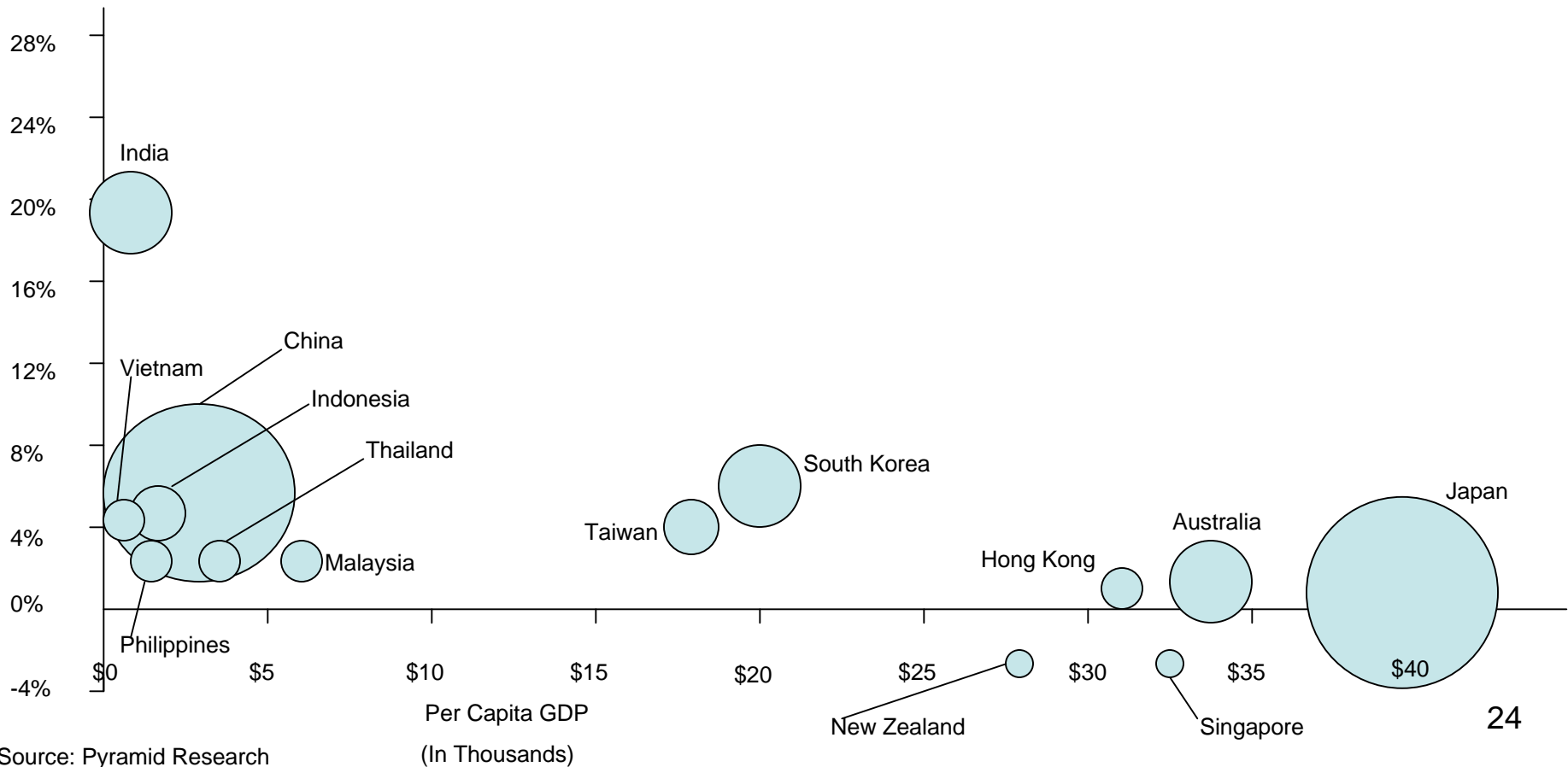
China's Telecom Industry CapEx will converge with Global Averages as growth network builds end and normal maintenance spending occurs

China in a regional context

- At roughly \$100 billion (US), the Chinese market was the second largest in the Asia-Pacific region in 2007, behind only Japan. However, China will overtake Japan in as the region's single largest market over the next several years. Industry restructuring should stimulate network convergence and result in the emergence of new services and applications

The Size of Telecom Services Markets, 2007 (US\$)

Service Revenue CAGR
2007-2012

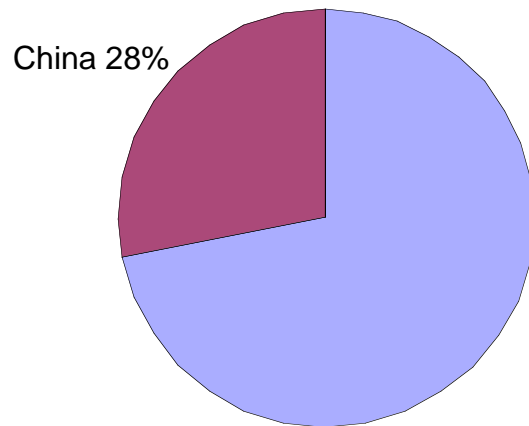


Source: Pyramid Research

China Telecom Industry share of Global Revenue is far less than its proportion of either fixed lines or mobile sales

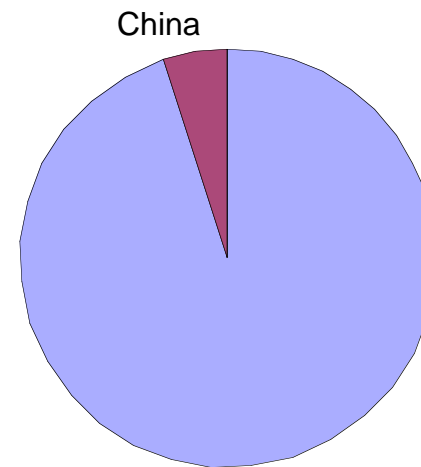
- Lower ARPU for mobile
- Lower line charges for fixed connections
- Percent of Residential lines (75%) of total fixed lines higher than in US and Europe (60%) resulting in lower overall revenue per line

China Telecom Industry Share of Global Fixed Line Units and Revenue



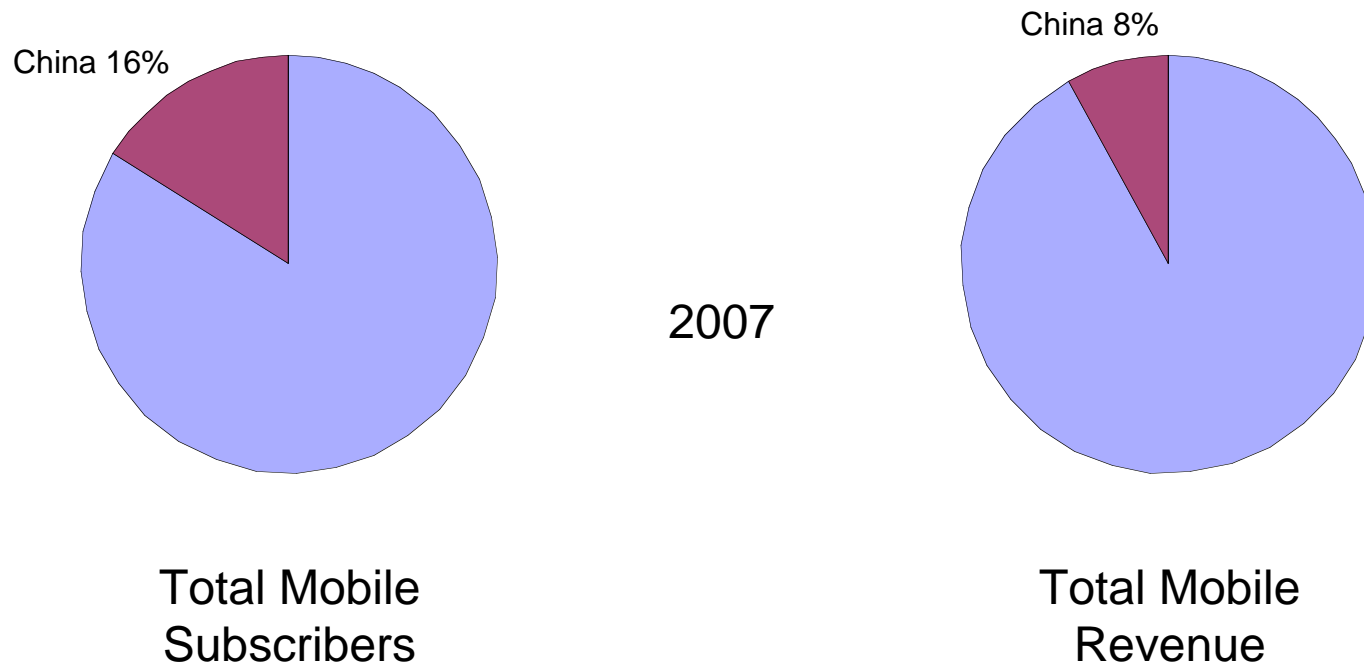
Total Fixed Lines

2007

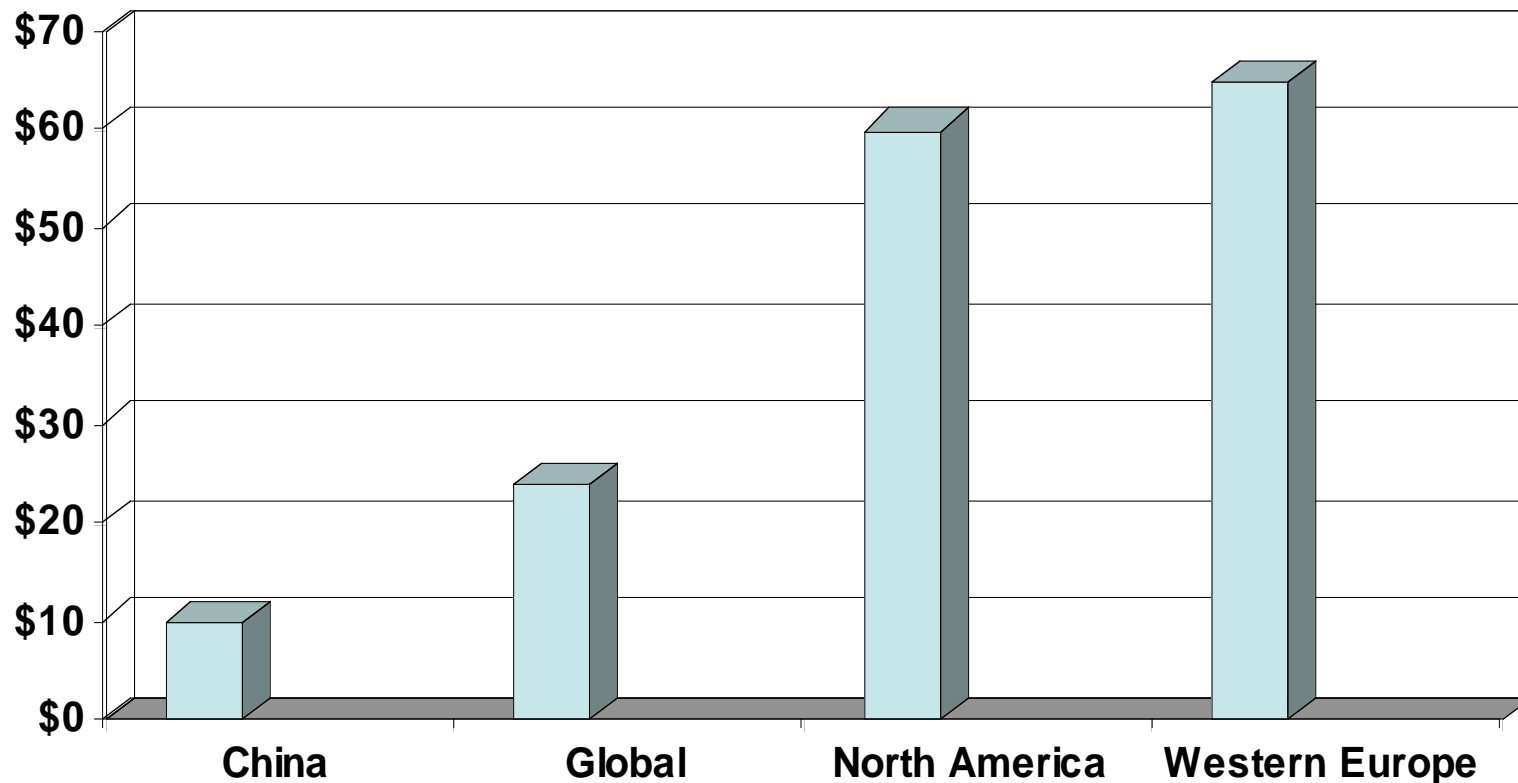


Total Fixed Line Revenue

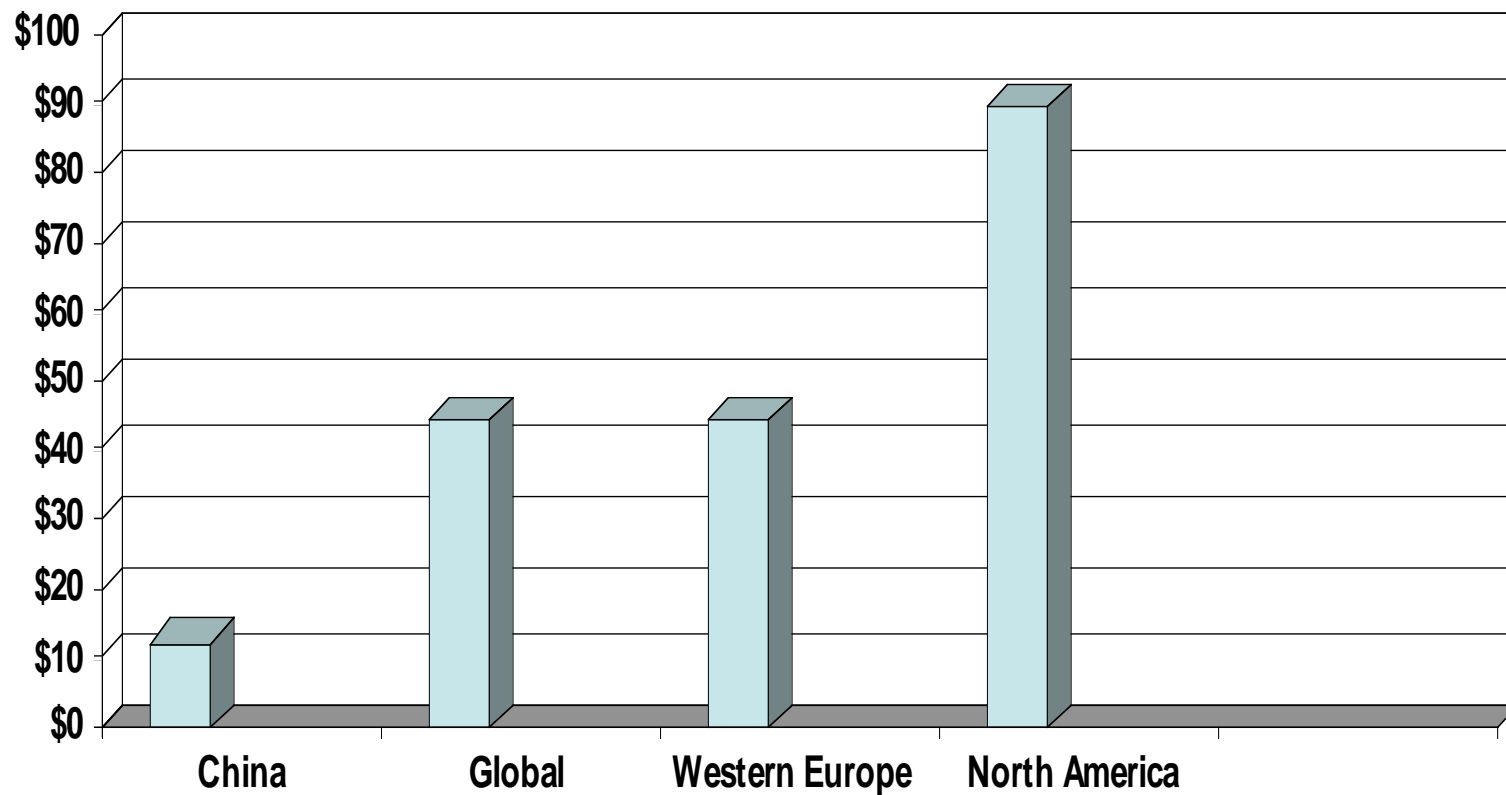
China Telco Industry Share of Global Mobile Subs and Revenue



Monthly Average Mobile Revenue per User (ARPU) by Region



Monthly Average Revenue per Fixed Line¹



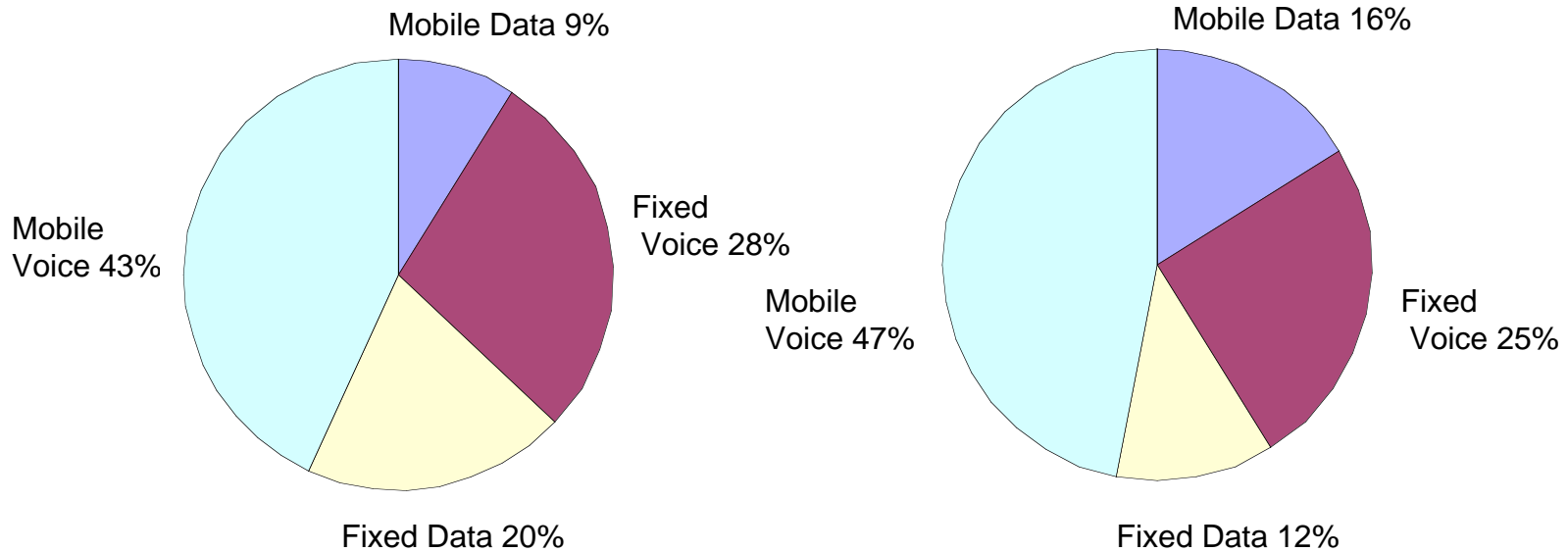
¹ Includes both residential and business

China Revenue Distribution Reflects Nuances of its Market

- China has and will continue to have higher percent of telecom revenue from mobile services versus ROW
 - 2007 63% of China's Telecom Revenue is Mobile rising to 75% in 2012. Globally, it is 52% rising to 63%
- Voice/Data mix more comparable to global averages but China data services for more mobile-centric
 - 2007 China got 28% of revenue from data in line with Global average of 29%. By 2012, 48% of China's telecom revenue will be data versus 46% Global average
 - However, China will continue to be under-represented in fixed data reflecting relatively low proportion of business fixed lines

Telecom Services Distribution

2007

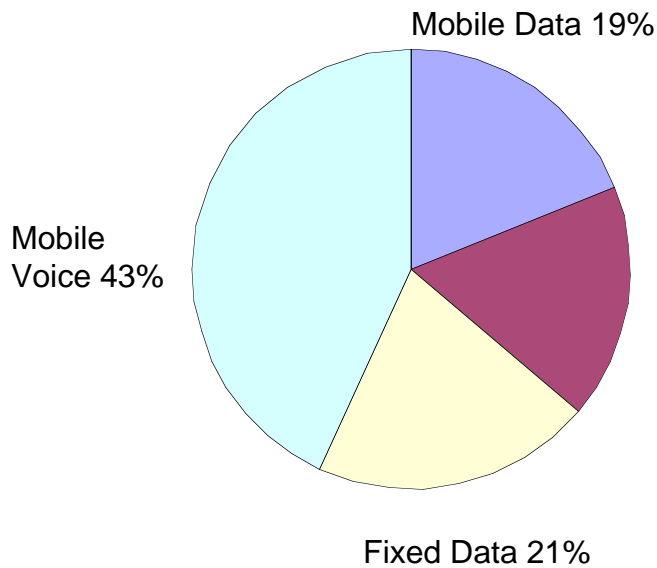


Global

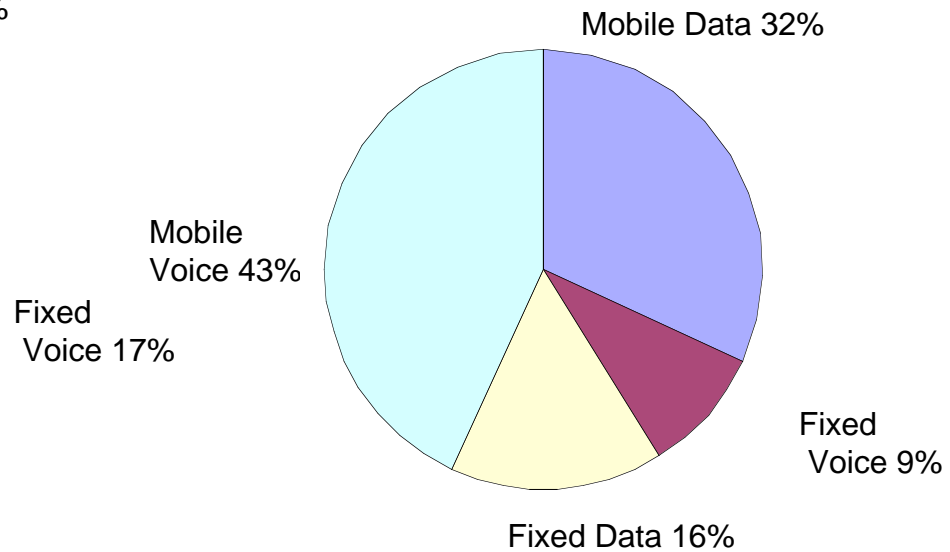
China

Telecom Services Distribution

2012



Global



China

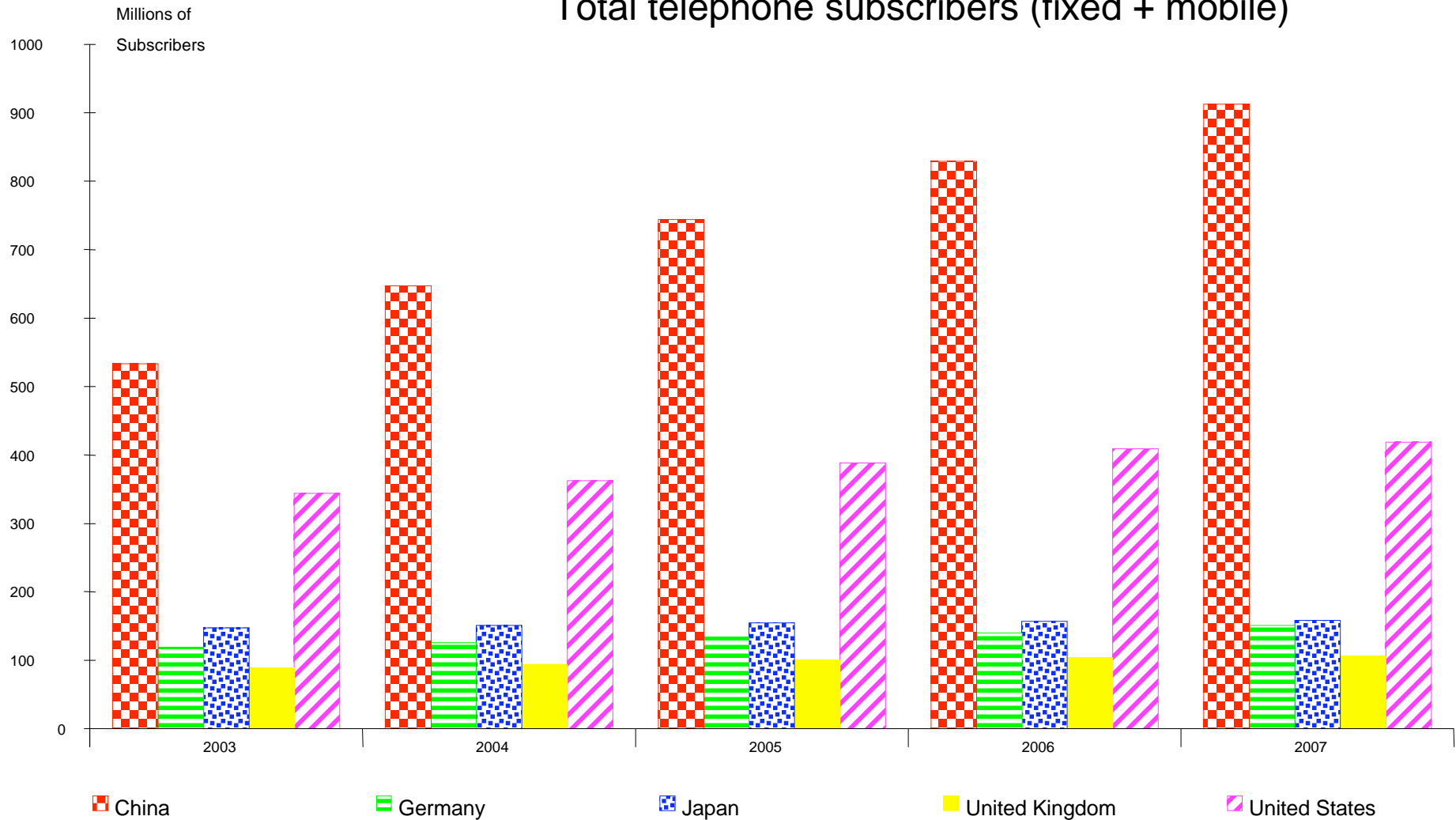
China has significant share of telephony subscribers but relative low share of revenue and below average penetration versus other large economies

- Sheer size of population drive overall units
But...
- Low ARPU and revenue per line means less revenue per user and lower Asset Turnover
- Still developing economy means penetration rates remain low versus other large economies

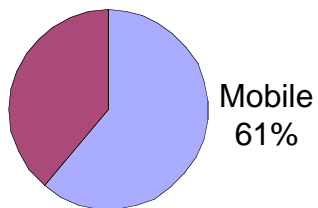
However...

- China Telecom Industry share of GDP in line with other large economies—2-3%

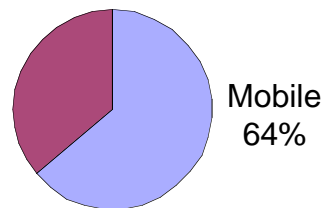
Total telephone subscribers (fixed + mobile)



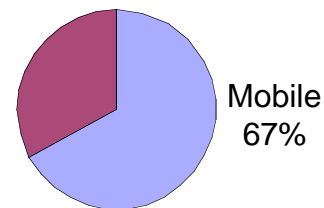
China's Proportion of Mobile Subs to total telephony customers in line with other large economies



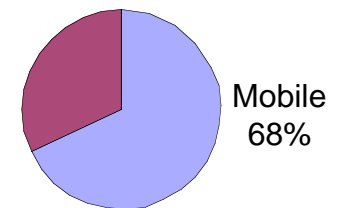
US



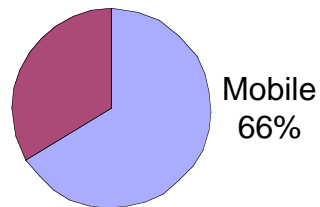
Germany



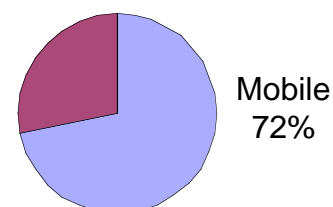
Japan



UK

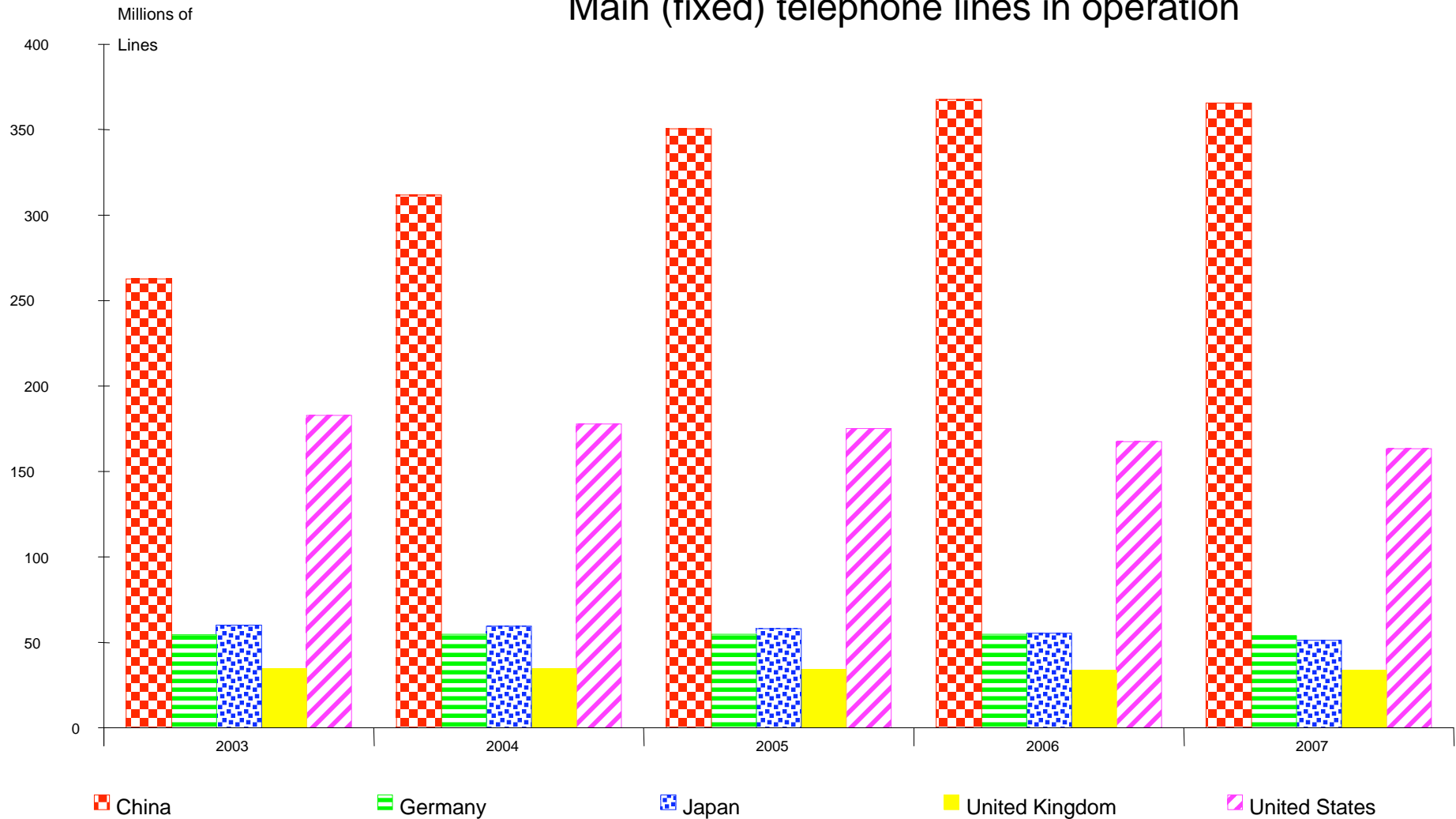


China

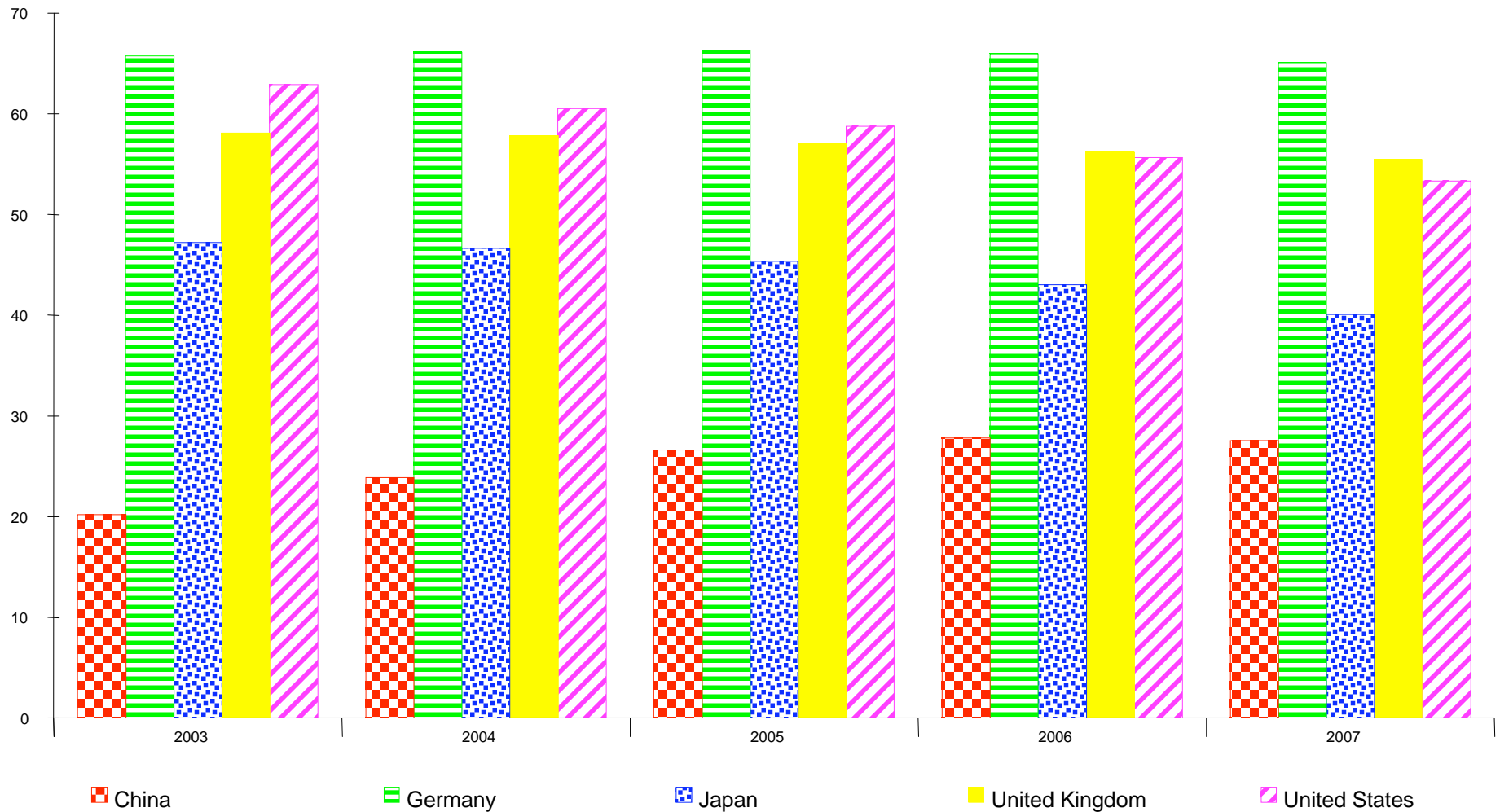


World

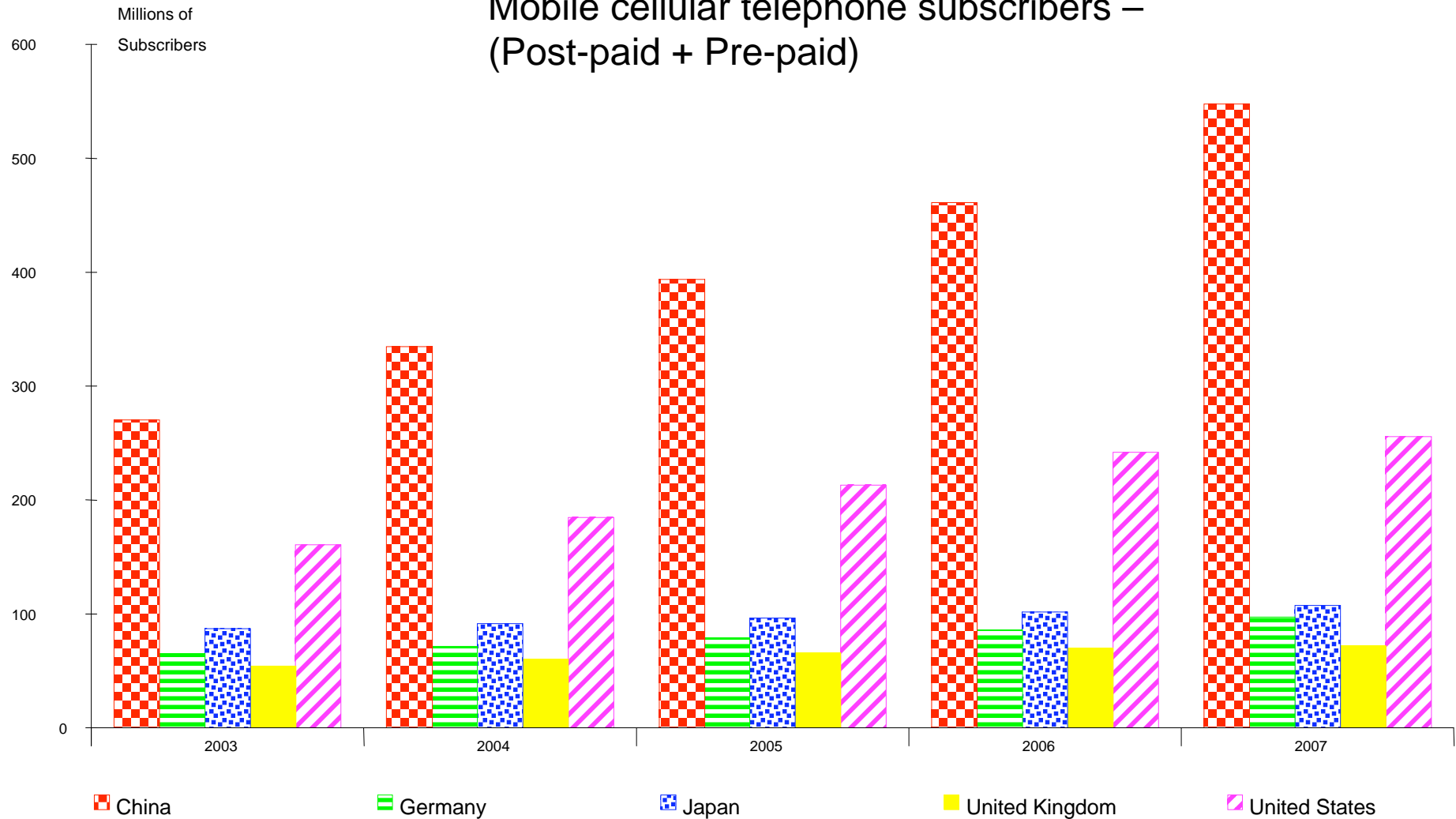
Main (fixed) telephone lines in operation



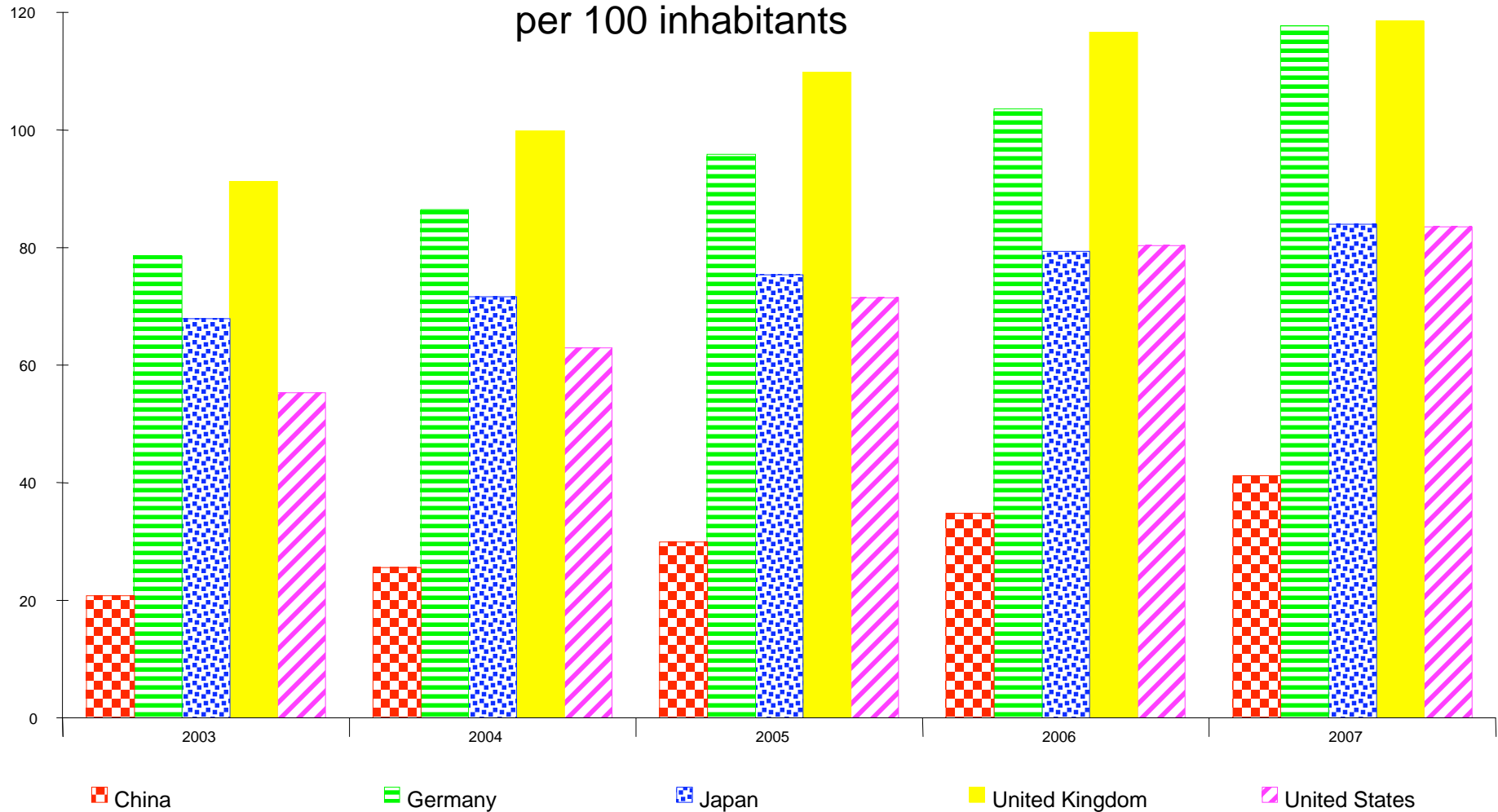
Main (fixed) telephone lines per 100 inhabitants



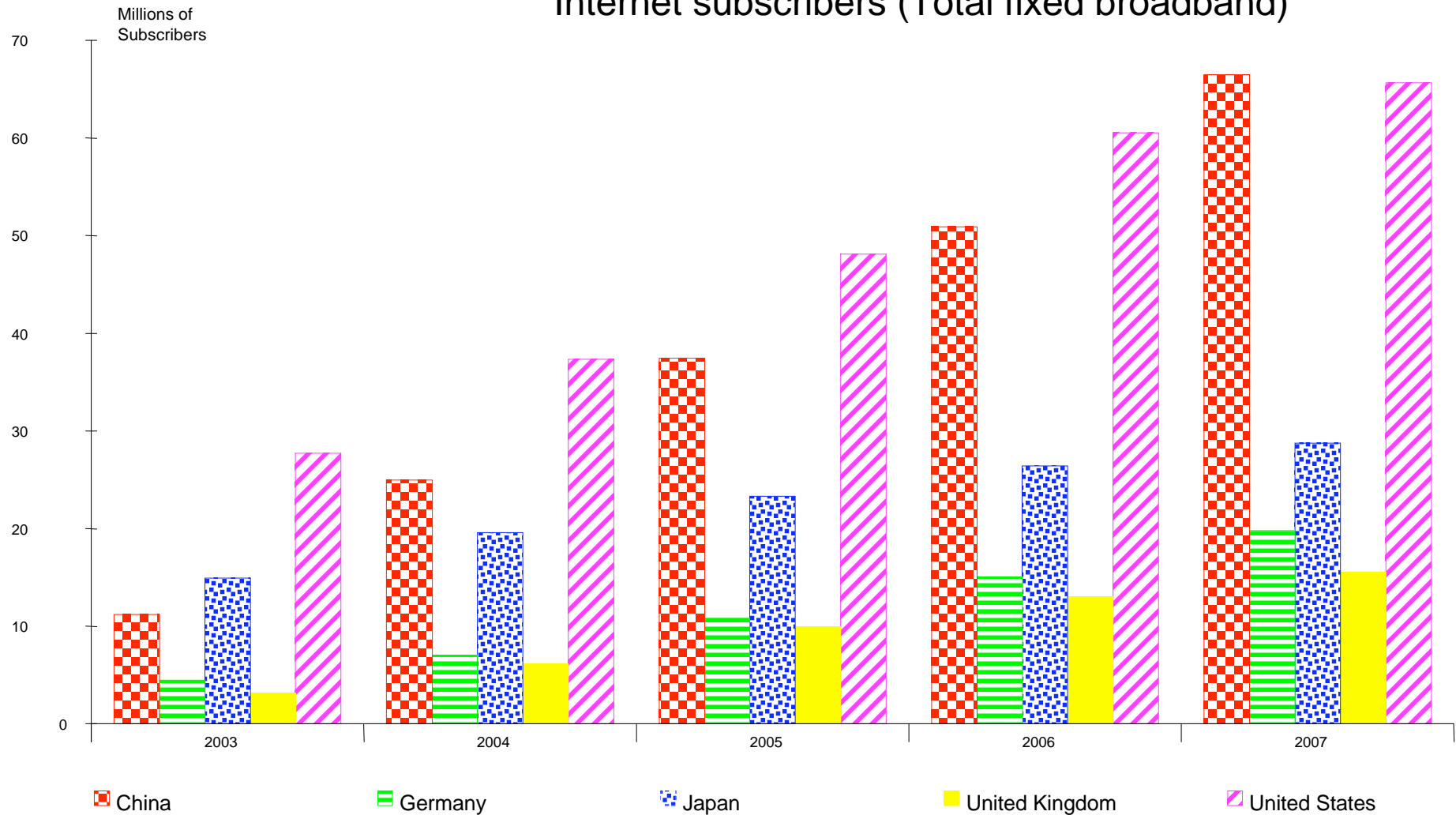
Mobile cellular telephone subscribers – (Post-paid + Pre-paid)



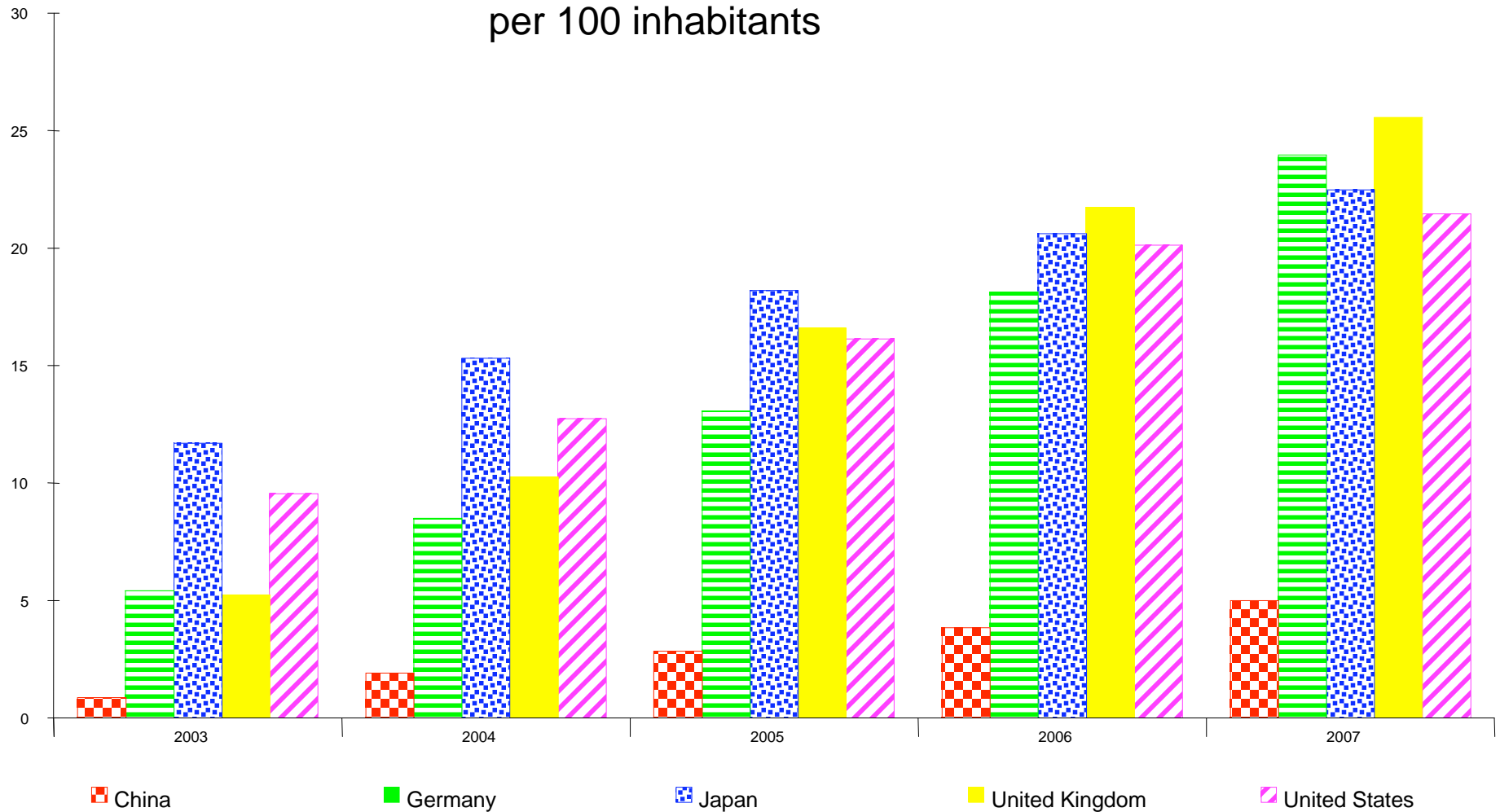
Mobile cellular telephone subscribers per 100 inhabitants



Internet subscribers (Total fixed broadband)



Internet subscribers (Total fixed broadband) per 100 inhabitants



Conclusions

Scale and Scope of China's Telecom Industry Provides Potential for Great Future Benefits to be Realized

- China's telecom market's sheer size should allow China to aggressively deploy new applications and services to the benefit of both consumers and businesses
- China's major telecom carriers and equipment suppliers should work to collaborate with foreign entities which will insure China's industry remains globally competitive
- Further regulatory clarity will result in increased ability to leverage telecom/media convergence into a more fully competitive landscape which will drive multiple services over converged networks



Thank you

Magee Group, LLC

www.mageegroup.com