Chinese Telecommunications

The 25 year history of Informatization "Xin xi hua" in China

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Structure

History

- First Internet Connection
- Let the Son's Compete
- Social Media
- Supply Chain & Electronic Guanxi

State Management &Control

- Internet Control in a Historical Context: Control on Writing
- Great Firewall & Internet Control

Technology

- China's Emergency Response Team (CNCERT)
- Leveraging Information Technology Standards
- China and Cloud Computing

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China's First Internet Connection

From the IHEP (Institute of High Energy Physics) to SLAC (Stanford Linier Accelerator Center)

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- in 1993, a 64k DDN connected China to the world of Internet.
- From the IHEP (Institute of High Energy Physics) of CAS to SLAC (Stanford Linier Accelerator Center)
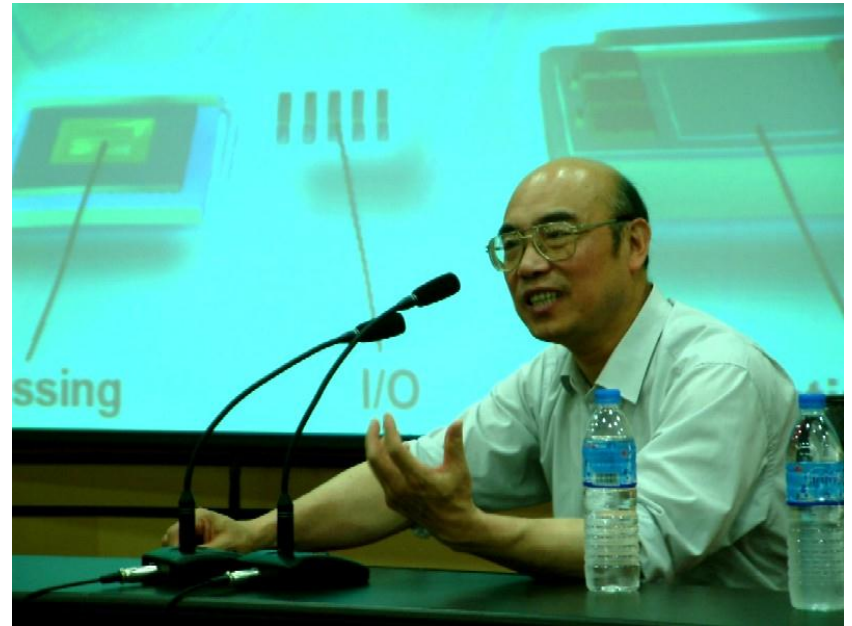
Mr. **Xu Rongsheng**, the then depute of IHEP computing center responsible for the connection project. He is a PhD who graduated from University of California Santa Cruz

The Connection Project: A Story

- **How did the Internet become an idea for Chinese scientists?**

- *"When Chinese scientists came back to China, they had to carry data and software by disks and tapes along with their luggage. 'China was in great need of these software and data exchange with those developed countries, but they had to be carried by hand, what an irony' Said Dr. Xu".*

(*Mark Yang, *The Birth of Internet in China*, published on *Singapore Times* in 1995 in Chinese. Translated into English partly by Yuan Xu. Article provided by Dr. Xu Rongsheng)

The Connection Project: A Story

- China and United States has a cooperation on a new experimental equipment called BEPC and hold conference every October.

- On the conference in 1988, establishing an international computer network in China has been suggested first time.

- An economic consideration: Establishing a 64k DDN least line from IHEP to SLAC instead of international IDD was proposed by SLAC scientists. (the cost of DDN was $7000 while that of international IDD was at least $150,000)

(*Mark Yang, *The Birth of Internet in China*)

The Connection Project: A Story

- On the annul high energy physics conference of 1991, Professor Walter Toki, as the representative of the United States, again, brought this topic up to the desk.

- He had organized many famous scientists to support establishing internet link between China and US, most of them were Noble Prize winners. He had these scientists signed their names on the proposal to the US government.

(*Mark Yang, *The Birth of Internet in China*)
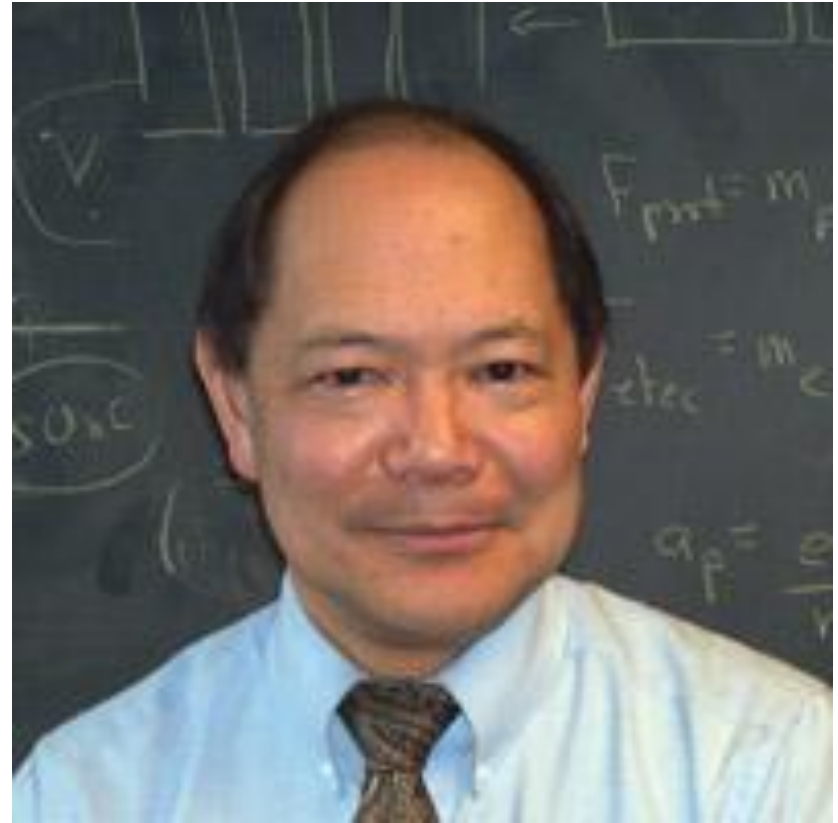
Professor Walter Toki, from University of Stanford, was director of the China-US Cooperation Group on High Energy Physics at that time.

Professor Wolfgangk. H. Panofsky, from Stanford University, foreign academician of CAS, negotiated with the US government for approval of building the connection.

The Connection Project: A Story

DDN connection

China

U.S.

IHEP
Bureau of Telecommunication
Chinese Nature Science
Foundation (support)

SLAC
AT&T (provided Skynet satellite)
US government

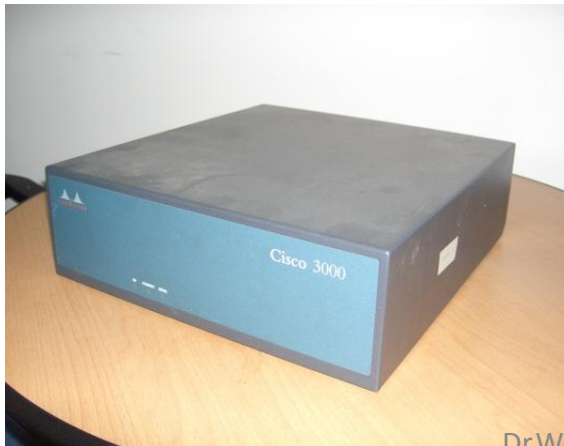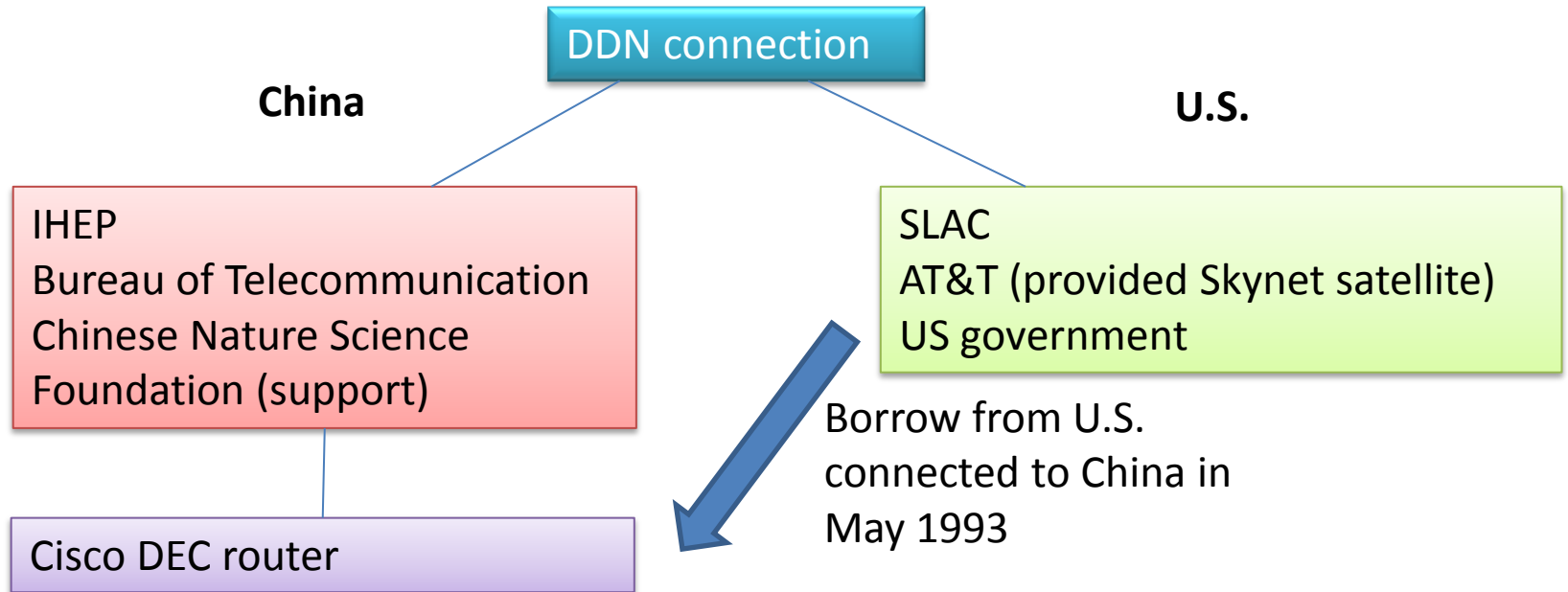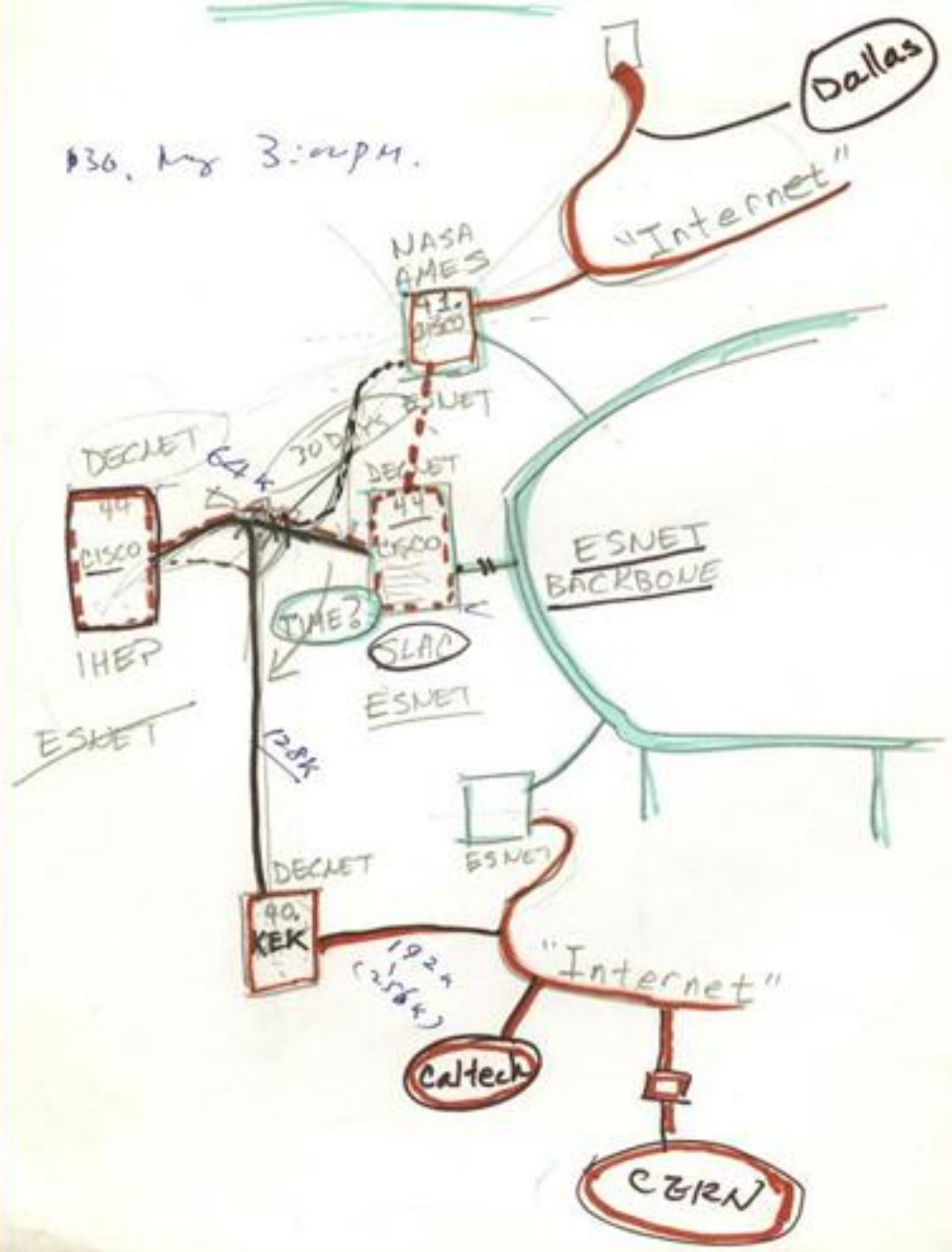Borrow from U.S.
connected to China in
May 1993

Cisco DEC router

图2 国内的第一台Cisco路由器。

*Mark Yang, *The Birth of Internet in China*
*Dr. Xu Rongsheng, "Birth of the First World Wide Website in China", *Xiandai Wuli Zhishi* (Modern Physics), 2009, Issue 3. Article provided by Dr. Xu

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A draft of the expected Internet connection, designed by scientists from both countries in 1992.

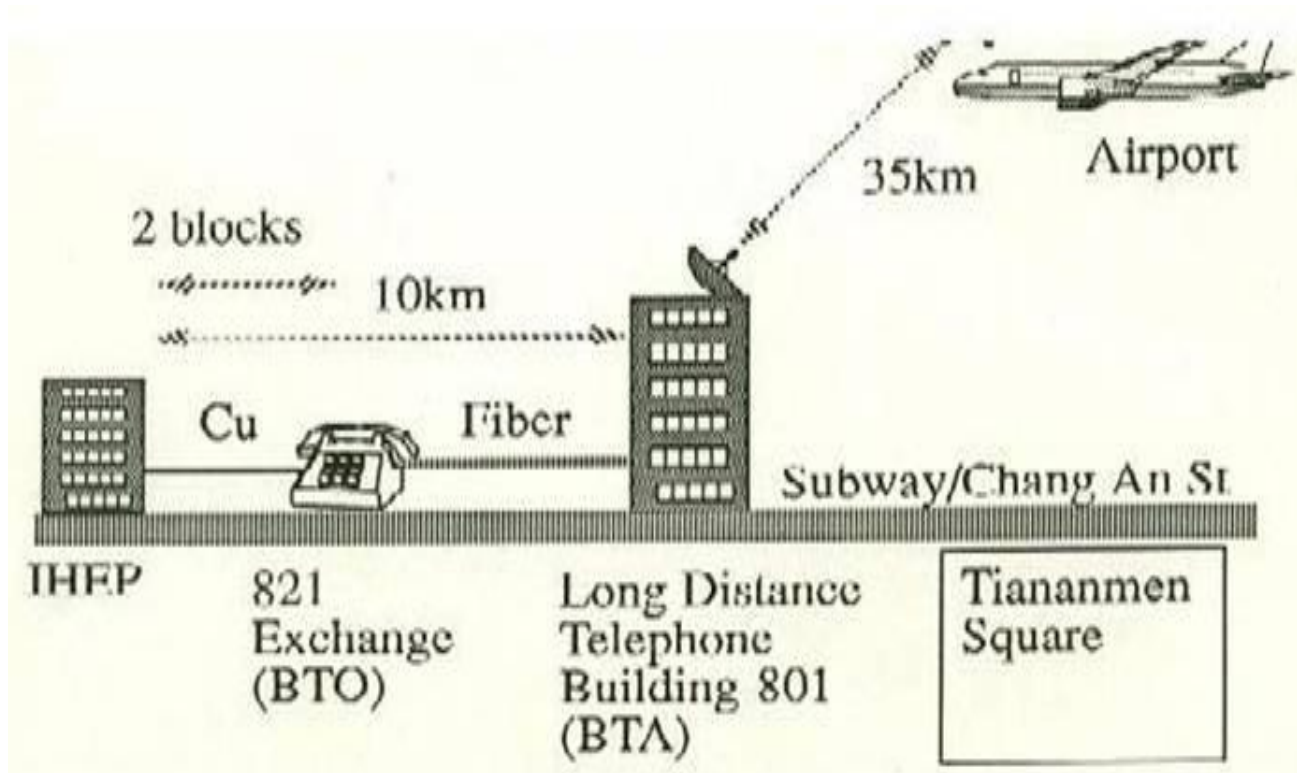(*Dr. Xu Rongsheng, "Birth of the First World Wide Website in China")

图3 美国人当年留下的一张工程示意图

An engineering drawing left by American scientists working on the connection project (provided by Director of Computing Center of SLAC, Les Cottrol). (from Dr. Xu Rongsheng, "Birth of the First World Wide Website in China")

The Connection Project: A Story

- To finally connect to internet by TCP/IP, the California senator, Mr. Brown came to IHEP to give a speech and promised to give help on fully connect to internet.

- Few Months later, Chinese State governor Song Jian had this problem solved on his visit to America. In February 1994, China and America started the discussion of technical solution for the internet.

- In April 1994, China finally connects to internet with TCP/IP.

(*Mark Yang, *The Birth of Internet in China*)

The First World-Wide Website in China

- Dr. Xu Rongsheng: *"The IHEP attended the [First International Conference on the World-Wide Web](#) in Geneva in April, 1994. I found that not many websites had been set up yet in the Asian-Pacific area. I informed Beijing to have our technology staff in the network group construct the website of our institute, **[www.ihep.ac.cn](#)**, which was the first World-Wide Website in China."*

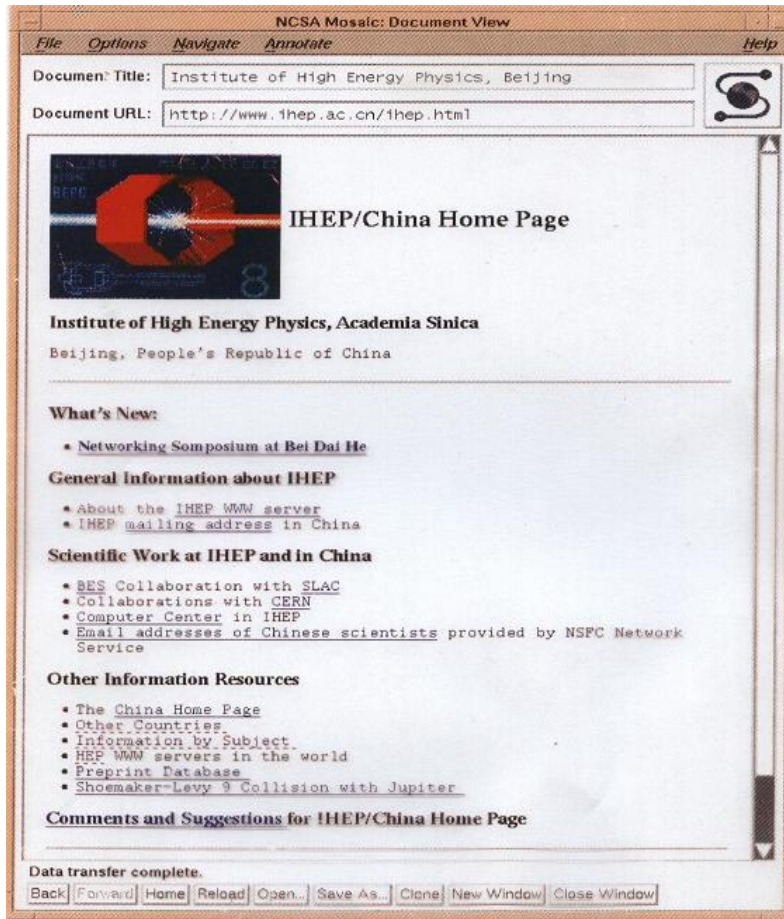*Dr. Xu Rongsheng, "Birth of the First World Wide Website in China"

图1 国内第一套网页—高能所网页，英文版面。（由高能所计算中心1994年设计）

The first world wide website in China – the home page of the Institute of High Energy Physics in English

图6 中国第一台网站，486机器，Linux 2.0.30版本（高能所计算中心网络组保存，今在国家电信博物馆借展）

the first Internet server in China: a 486 computer operated with linux 2.0.30 system (kept by the network group in Computing Center of IHEP).
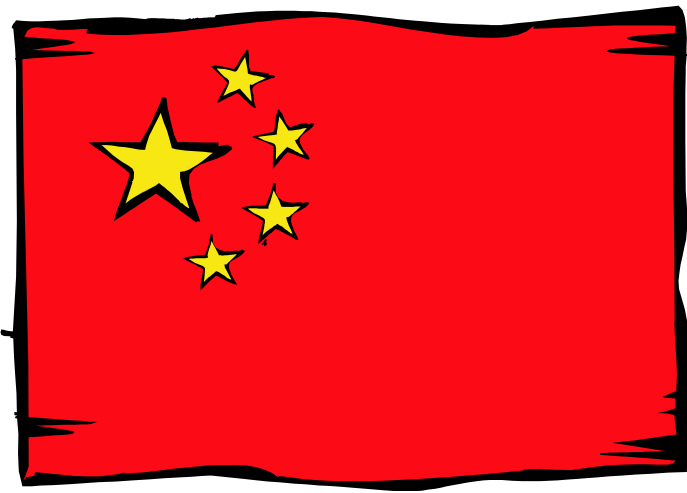
*Dr. Xu Rongsheng, "Birth of the First World Wide Website in China"

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Let the Son's Compete

China's Interconnecting Networks and China's State Coordinated Competition Regime

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Ministry of Post and Telecommunications

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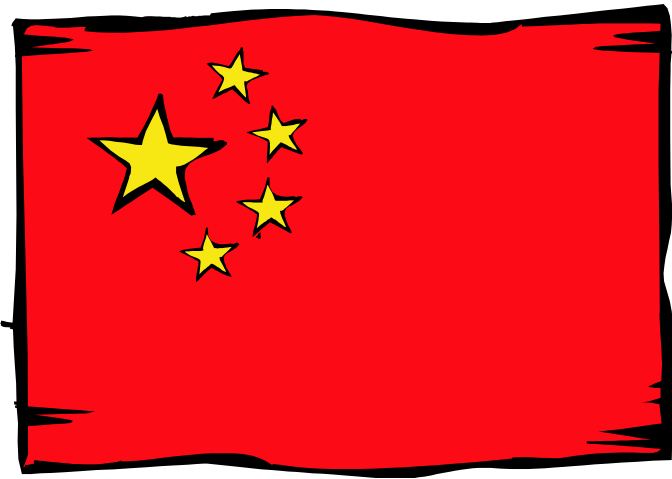
China's

Ministry
of
Electronic Industries

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China National Information Infrastructure Policymaking

- For an elaborated analysis of policy-making in the telecom and electronic industries in China between 1990-1996 see:

  Peter Lovelock, "The Evolution of China's

  National Information Infrastructure (NII)

  Initiative: A Policy-Making Analysis," PhD

  Dissertation, University of Hong Kong,

  1999

China Telecom

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China Unicom

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China Mobile

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MEI's Networking Initiatives

Premier Zhu Rhongji

- China Golden Bridge Network (public economic information network) established by Premier Zhu Rhongji in 1993 through MEI.

- Ji Tong was an Internet Service Provider under the authority of the MEI

Chinese Academy of Science (CAS)

- Chinese Network Information Center (CNNIC) founded first informal then as a <u>non-profit organization</u> on June 3, 1997 as part of the Chinese Academy of Science and then MII.
    - CNNIC is responsible for operating and administering China's <u>domain name registry</u>.
    - CNNIC manages both the ".<u>CN</u>" country code top level domain and the <u>Chinese Domain Name system</u> (Internationalized domain names that contain <u>Chinese characters</u>).
- Chinese Academy of Science developed its own research network CSTNet.

China Education and Research Network (CERNET)

- The CERNET project is funded by the Chinese government and directly managed by the Chinese Ministry of Education. It is constructed and operated by Tsinghua and other leading Chinese universities.

Li Xing, Deputy Director of the CERNET Center

Wu Jianping, chairman of (CERNET) Technical Board and director of the CERNET Center

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Li Xing (left) and Wu Jianping (right) in the conference room of CERNET headquarter at Tsinghua, with their colleague.
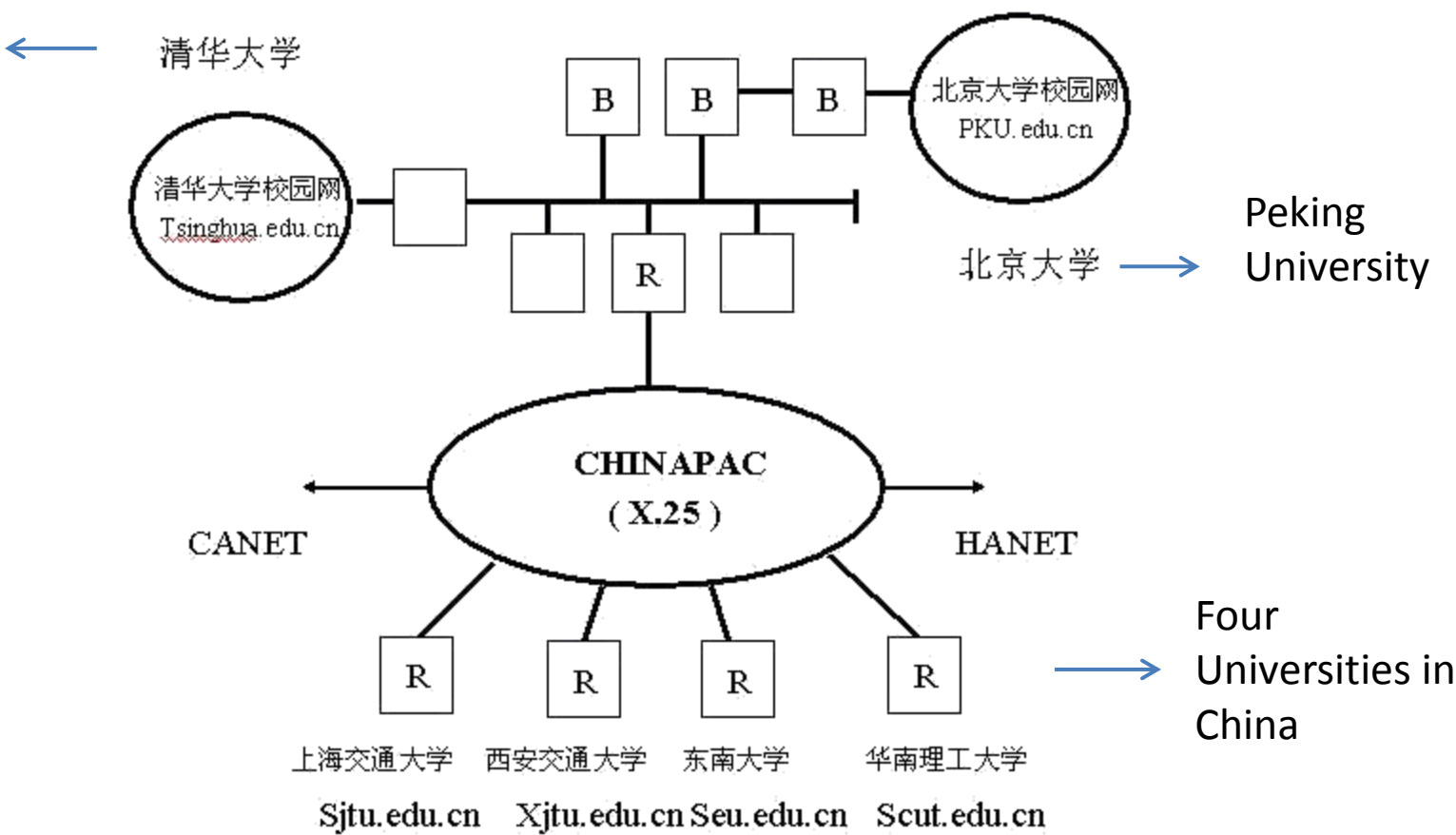* *China Scholars Abroad*,
http://2003.chisa.edu.cn/newchisa/web/0/2005-01-05/news_559241.asp

Evolvement of CERNET

CERNET试验网 （ 1994 ）

Tsinghua University ←

清华大学

清华大学校园网
Tsinghua.edu.cn

B   B   B

北京大学校园网
PKU.edu.cn

R

北京大学 → Peking University

CHINAPAC
（X.25）

CANET

HANET

Four Universities in China →

R   R   R   R

上海交通大学   西安交通大学   东南大学   华南理工大学

Sjtu.edu.cn   Xjtu.edu.cn Seu.edu.cn   Scut.edu.cn

CERNET test network (1994)

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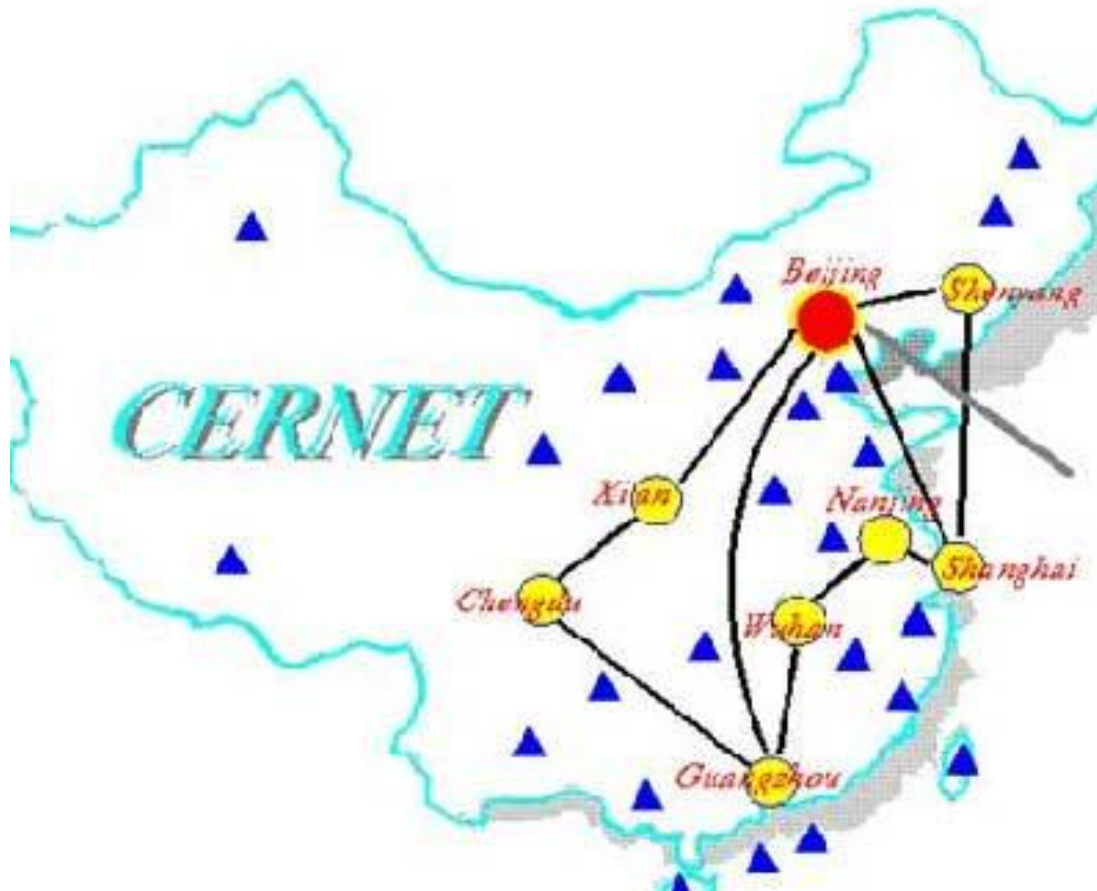
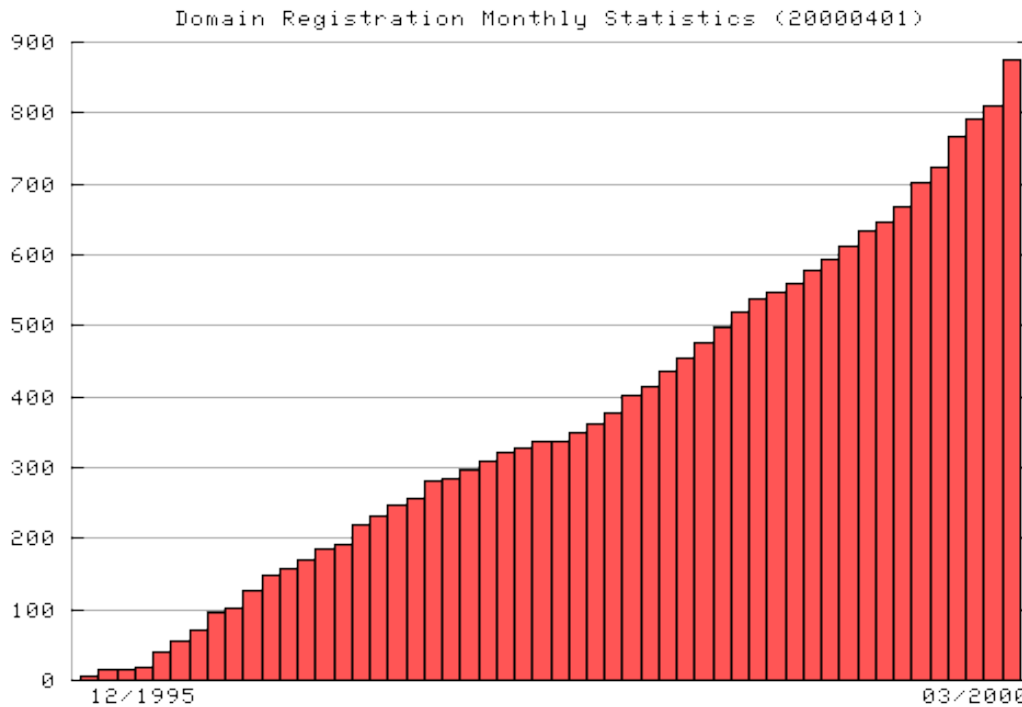CERNET network (1995), with several provincial nodes and nationwide backbone network
*Source: CERNET
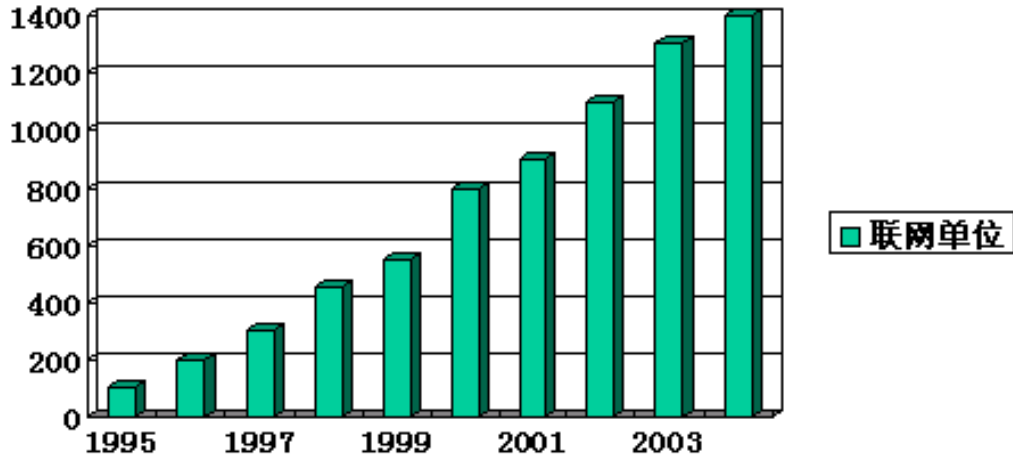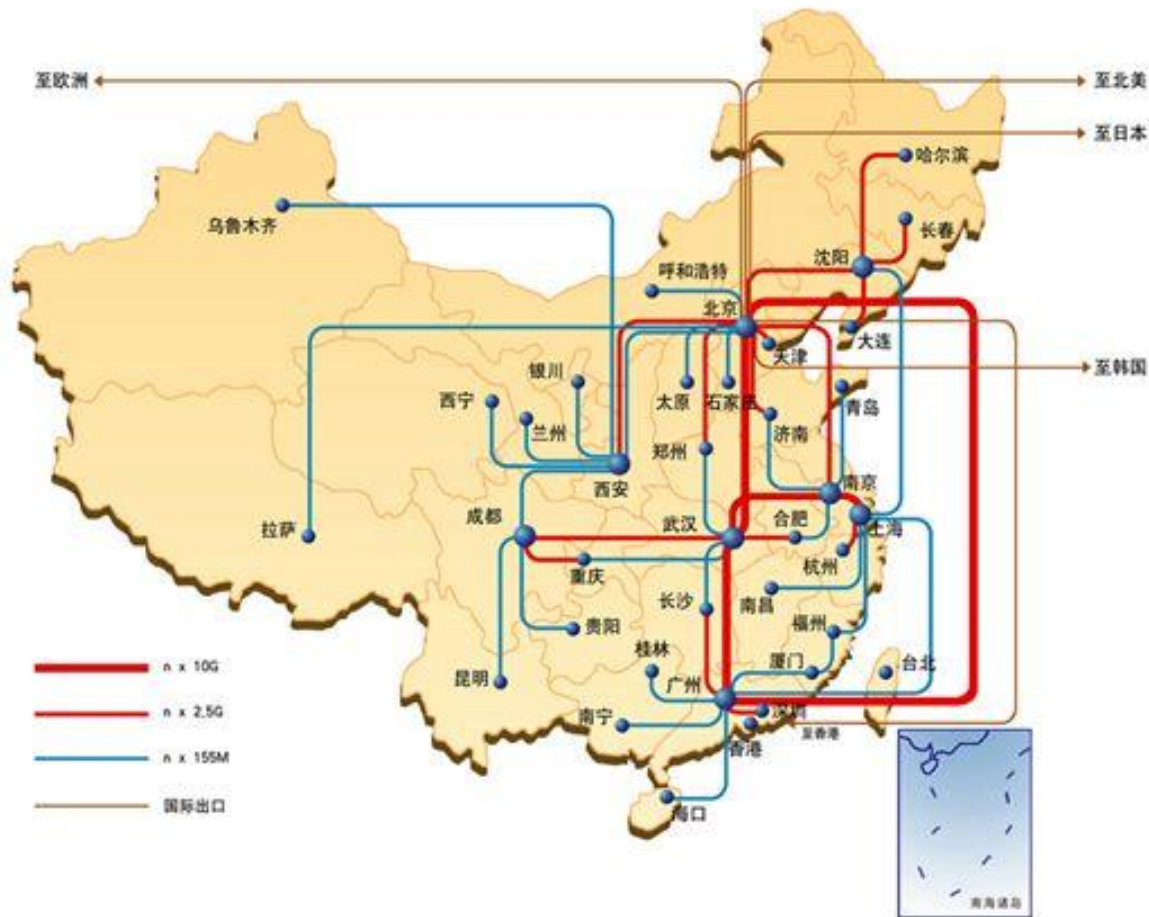
Number of CERNET organization users (1995-2004)
*Source: Celebrating the 10th Anniversary of CERNET

Domain Registration Monthly Statistics (20000401)

CERNET domain registration monthly statistics (1995-2000)
*Source: CERNET Report, 2000 Summer

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CERNET network in 2009, with nation-wide backbone, regional networks, provincial networks and campus networks, involving 38 provincial nodes
*Source: CERNET

State Council's Steering Committee on National Information Infrastructure

- The State Council set up a Steering Committee on National Information Infrastructure to coordinate Internet policy.
- According to the State Council's Notice on April 16, 1996, the Steering Committee was fully responsible for every major issue relevant to informatization in China. Its major responsibilities included:
16
    - Formulation of the policies, regulations and laws;
    - Development of strategic plans of China's NII and monitoring the implementation;
    - Coordination of the large and cross-ministry projects;
    - Coordination of and power over major issues regarding China's Internet;
    - Coordination of the technology R&D and developing standards related to China's NII; and
    - Performance of other functions assigned by the State Council.

Leading Group, Steering Committee

- The Steering Committee was chaired by Vice-Premier, Zou Jiahua. The first deputy-chair was MEI's Minister, Mr. Hu Qili.
- Other deputy-chairs were:
  - Wu Jichuan, minister of the MPT
  - Liu Qibao, deputy general secretary of the State Council
  - Zen Peiyan, deputy commissioner of the State Planning Commission
  - Xu Penghang, deputy commissioner of the State Economic and Trade Commission
  - Zhu Lilan, deputy commissioner of the State Science and Technology Commission
  - Chen Yuan, deputy director of the People's Bank of China

Zou Jiahua, Vice-Premier, Chair of the National Information Infrastructure Steering Committee

Hu Qili, MEI's Minister, first deputy-chair of the National Information Infrastructure Steering Committee

Leading Group, Members

- Members of the Steering Committee consisted of high-ranking officers from all the ministries and agencies who had a stake in China's Internet. They were:
    - Wei Yu, deputy commissioner of the State Education Commission (SEC)
    - Lu Xinkui, deputy minister of the MEI
    - Liu Shengzai, deputy minister of foreign trade (MOFTEC)
    - He Dongcai, deputy minister of Broadcasting (MBMT)
    - Liu Wenjie, deputy director of Customs
    - Xiang Huachen, deputy director of Taxation
    - Li Bin, deputy director of the State Council's News Office
    - Lu Yongxang, deputy director of the Chinese Academy of Science (CAS)
    - Li Zhuanshen, assistant minister of the Ministry of Public Security (MPS)
    - Li Rui, deputy director of China's Technology Bureau
    - Yun Banggen, director of the telecommunications division of the Peoples Liberation Army (PLA).

Leading Group
decides to embrace the Internet

- As part of a strategy for integrating China into the world economy, China will connect to the global Internet, but will do so through state controlled Interconnecting Networks.

- Though there is the potential inherent in Internet technology to allow users to connect to a wide array of international transit points, such connectivity would be designed out of the Chinese Internet.

Leading Group (beginning of 1996) decides

- Only 4 Interconnecting networks (can connect to the global Internet): China Telecom, China Ji Tong, CERNET, and CSTNet. Each will be responsible for international firewall.

- Peoples Liberation Army (PLA)can not be a ISP or interconnecting network despite owning significant fiber optic cables across the country.

- Ministry of Broadcasting can not be an interconnecting network.

- The over 20 agencies that had started to offer Internet service had to do it through one of the 2 commercial Interconnecting networks.

Debate between Wu and Zhu

- With the merger of MPT and MEI into MII, some argued that China would be stronger if it had one dominant telecommunications company. Wu, the new minister of MII, was a strong advocate for this position. He argued one company could better "control" communications for the State and compete with foreign companies under WTO.

- Others led by Premier Zhu Rhongji argued that competition was needed to drive China's telecommunications companies to rapidly innovate and change business models (DWDM was used as an example).

Wu Jichuan, Minister of MPT and later MII, one of the deputy-chairs of the National Information Infrastructure Steering Committee

Ma Junsheng, former leader of the Post Bureau of China, and later a member of leadership of MII. He is a strong advocate for a China Telecom monopoly.

1998: China's Nationally Organized Rollout of Voice over IP

- Premier Zhu Rhongi had MII orchestrate the national rollout of Voice over IP.

- Four Interconnecting Networks were funded to rollout national IP networks that supported voice: China Telecom, China Netcom, China Unicom, and ChinaGBN.

- Four equipment manufacturers were selected to bid on the networks, a different four for each Interconnecting Network.

Interconnection of the four interconnecting networks in China Jun. 1998
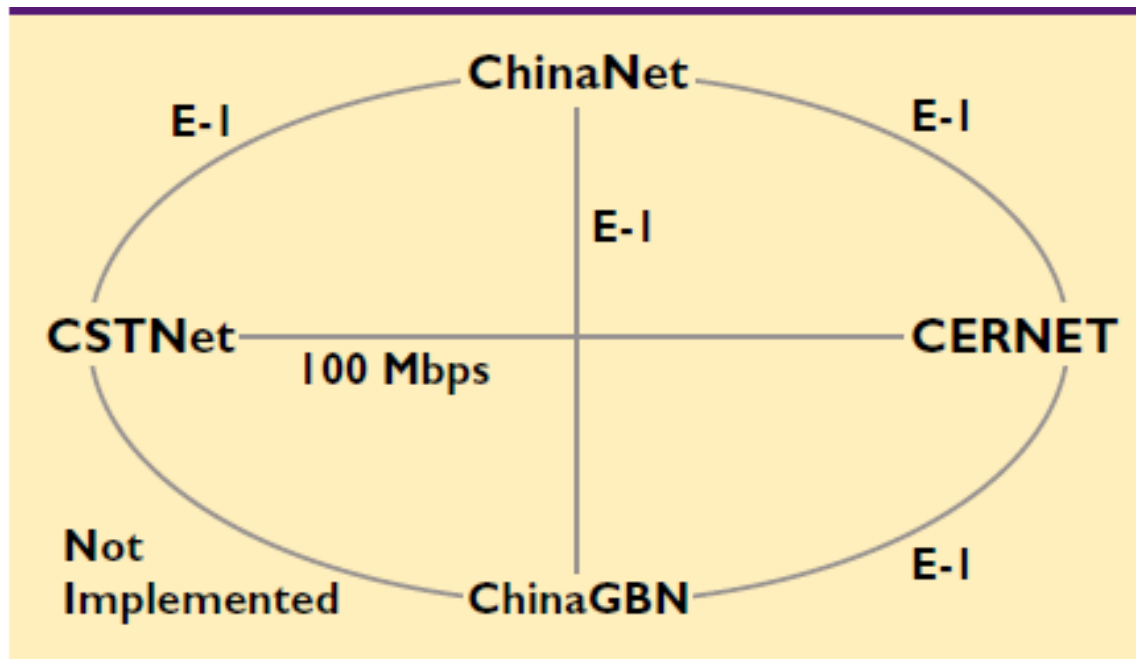
*Source: Tan, Foster, Goodman, 1999

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In 1998, The world's biggest Voice over IP rollout.

- Non-Chinese software and hardware providers could not ignore this RFP, which was the biggest ever.

- Foreign software and hardware vendors had to team with Chinese vendors on terms very favorable to the Chinese companies.

- MII pushed the development of interconnecting standards for Voice over IP that made China the world's leader in such standards.
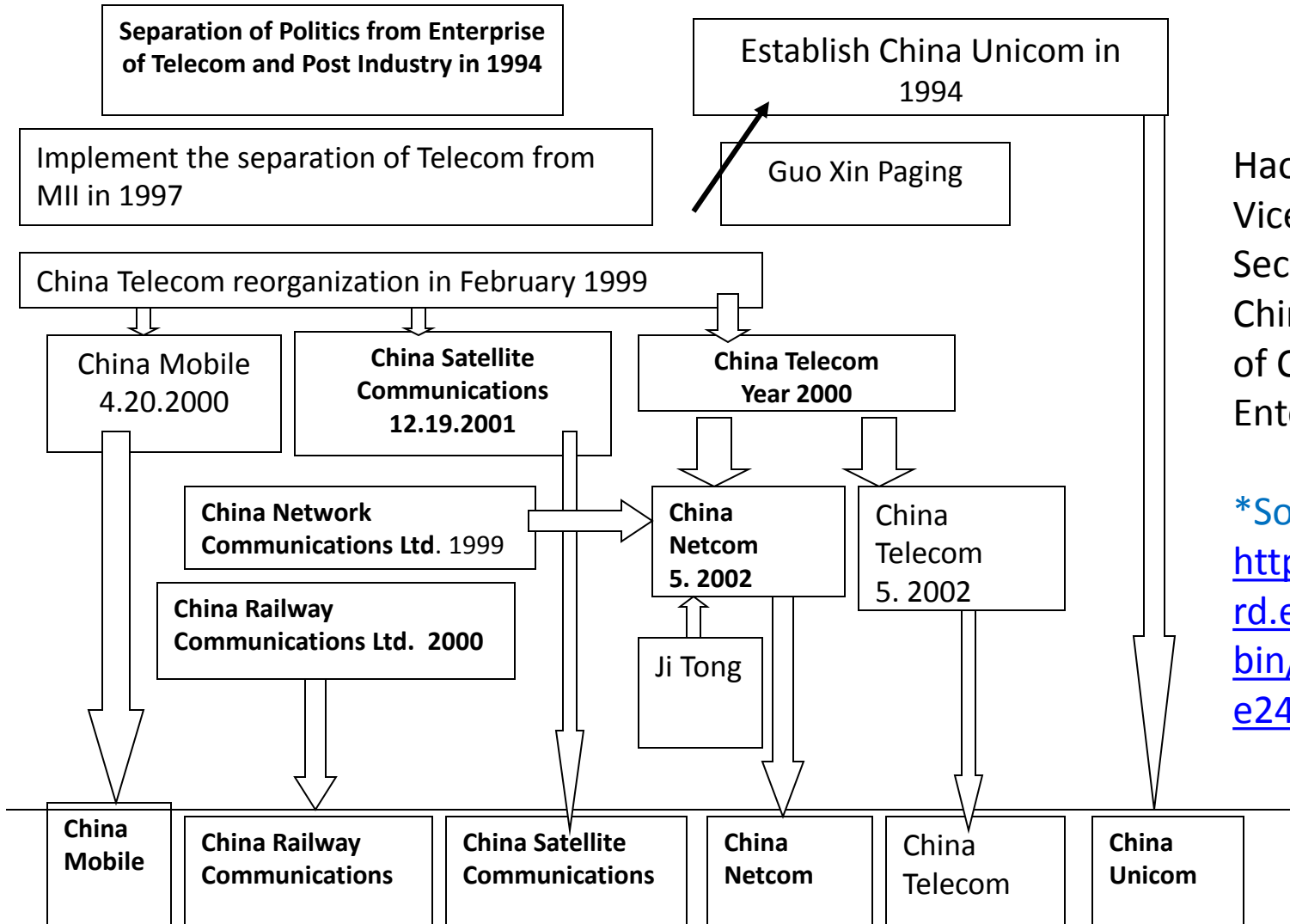
Chinese Telecom Manufacturers and the rollout

- The 1998 Chinese Voice over IP rollout played a critical role in the adoption of Chinese equipment in the Chinese telecom infrastructure and the future success of Chinese telecom manufacturers such as Huawei, ZTE, and Datang Telecom.

- The real proof that the "let the son's compete" strategy was working.

State Controlled Competition

- Over the past 15 years, China has sought to create competition while driving technical innovation in telecommunications:
  - China Mobile was created out of China Telecom in 1999.
  - Ji Tong was merged into China Netcom in 2002.
  - The PRC government gave China Netcom a third of China Telecom's assets.[2] Most of those assets are located in the northern provinces. China Netcom and China Telecom were supposed to compete against each other nationally.
  - On June 2 2008, Netcom announced its intention to merge with **China Unicom**, after the latter sold its CDMA network to China Telecom. The combined company has all the assets of China Netcom, plus Unicom's nationwide GSM network with 125 million subscribers, as well as its smaller dial-up and ADSL ISP business.[4]

From 1994 China Telecom Industry re-organization sample list

Separation of Politics from Enterprise of Telecom and Post Industry in 1994

Establish China Unicom in 1994

Implement the separation of Telecom from MII in 1997

Guo Xin Paging

China Telecom reorganization in February 1999

China Mobile 4.20.2000

China Satellite Communications 12.19.2001

China Telecom Year 2000

China Network Communications Ltd. 1999

China Netcom 5. 2002

China Telecom 5. 2002

China Railway Communications Ltd. 2000

Ji Tong

Hao Weimin
Vice Chairman,
Secretary General
China Association
of Communication
Enterprises

*Source:
https://ccnet.stanford.edu/cgi-bin/course.cgi?cc=ee244...id...

China Mobile

China Railway Communications

China Satellite Communications

China Netcom

China Telecom

China Unicom

2008

China Mobile leaders

General Manager: Zhang Ligui

President, CEO: Wang Jianzhou

President: Xi Guohua

China Unicom Presidents

1994   1999   2001   2004

Zhao Weichen   Yang Xianzu   Wang Jianzhou   Chang Xiaobing
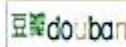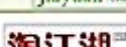
Social Media in China

China's Social Media Development: Business and Management

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China Social Media Landscape 2011

* Source: CIC (China Internet Conference)

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China's Top 15 Social Networks

		Type	User Demographics	Active Users (millions)	Reg. Users (millions)	Alexa CN Rank
1	Qzone (Tencent)	Nickname SNS	Teens	190 [2]	481 [3]	#12 (Qzone only est.)
2	RenRen	Real-name SNS	Students, white-collars	95 [1]	170 [1]	#16
3	Pengyou	Real-name SNS	Students, white-collars	80 [2]	131 [3]	#36
4	Sina Weibo	Microblog	White-collars	70	90	-
5	Kaixin001	Real-name SNS	White-collars	40 [1]	95	#19
6	51.com	Real-name SNS	Lesser-tier cities, rural users	40	178	#51
7	Douban	Nickname SNS	Urban youth	20	40	#22
8	Taomee (Seer, Mole, etc.)	Children's SNS / Games	Children, mothers	20 [2]	180	-
9	Tencent Weibo	Microblog	Lesser-tier cities	20 [2]	100	-
10	Jiayuan	Dating SNS	White-collars	11 [2]	30	#43
11	Tao Jianghu (Taobao)	E-commerce SNS	All	10 [2]	1200 (all Taobao)	-
12	Bai Shehui (Sohu)	Real-name SNS	White-collars	5 [2]	30	-
13	Zhenai	Dating SNS	White-collars	3 [2]	26	#370
14	Baihe	Dating SNS	White-collars	2 [2]	23	#412
15	iPartment	Avatar / dating SNS	Urban youth	1 [2]	20	#514

1 - iResearch iUserTracker   2 - TechRice Estimate (via reports, traffic, experts, and guesswork)
© TechRice March 2011

*Source: TechRice, March 2011

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Four Steps of Social Media Development

YEAR **2005\2006** **2008\2009**

| BBS\Blog\Instant Message | Social Network | Micro-message | Vertical SNS |

Tianya\Mop\Xici

RenRen\Bai Shehui(Sohu)\Kaixin001

Weibo (Sina)\Tencent microblog\WeChat

APP\API\mobile equipment
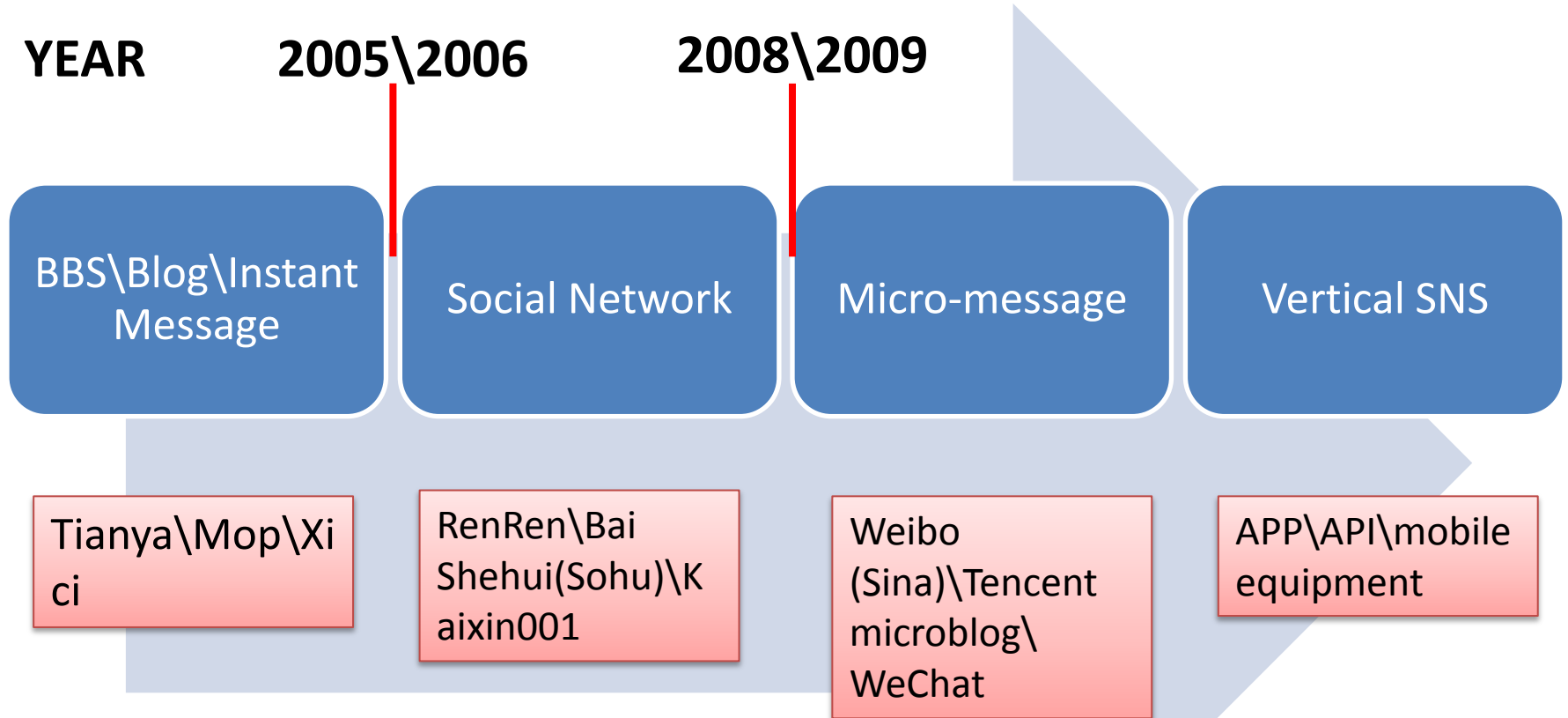
Video: Social Media with Chinese Characteristics

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SNS: Number of Users & Coverage

million people

	2009.12	2010.12
Number of Users	175.87	235.05
Market Coverage Rate	45.8%	51.4%

* Source: CNNIC

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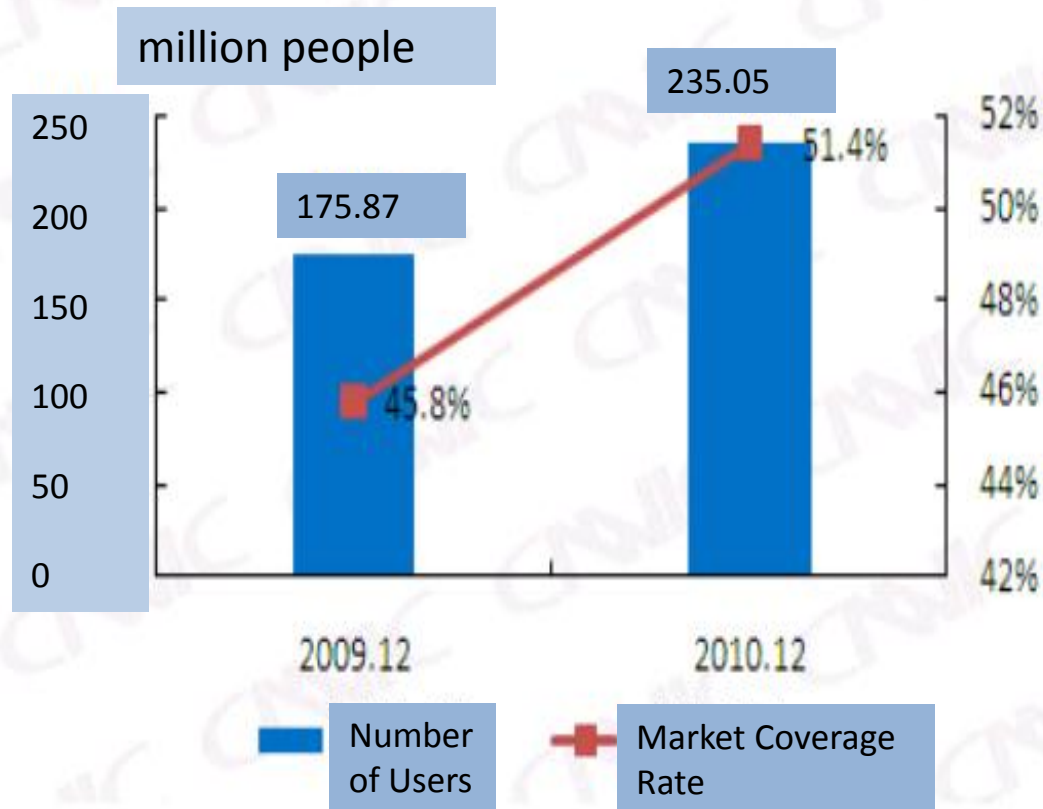
Weibo: Sina microblog

History:

- Aug. 14, 2009: tested version launched by SINA Corporation

- Sep. 25, 2009: message/ private message, comment, re-post function added

- Jul. 28, 2010: A Sina Weibo-compatible API platform for developing third-party applications launched

- Mar. 23, 2011: t.cn used as Sina Weibo's official URL shortening domain name

- Apr. 7, 2011: new domain name *weibo.com*
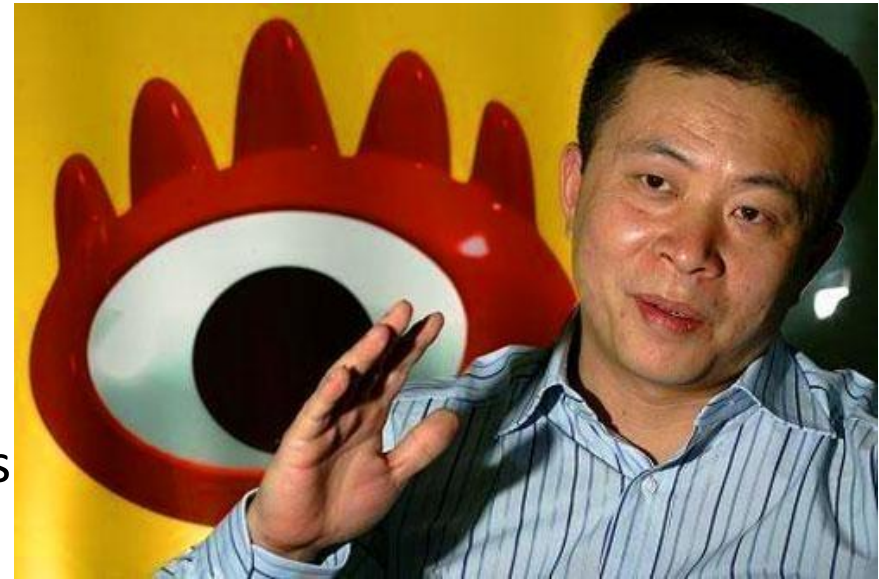
Charles Chao, CEO/President/Director, SINA Corporation

Functions and Services:

- Post with a 140-character limit; insert graphical emoticons or attach own image, music, video files in every post
- Comments to a post can be shown as a list right below the post
- Mention or talk to other people using "@UserName" format
- Add hashtags with "#HashName#" format
- Follow other people to make his/her posts appear in users' own timeline; secret following
- Re-post with "//@UserName"; put a post into one's favorite list; send a post by private message

- Verification program for celebrities: unregistered users can only browse a few posts by verified accounts
- Official and third-party applications make users able to access Sina Weibo from other websites or platforms
- Weibo Events: a place to gather people's thoughts and get together

Functions:

Official and third-party applications/ Mobile device

Verification for celebrities/Medal Reward System

Weibo Events/ Campaigns

Posting (Rich Media)

Hashtags/Micro-topics (##)

Mention/ talk to other people (@)

location-based social networking website

Follow

Weiqun: micro-group/ Community
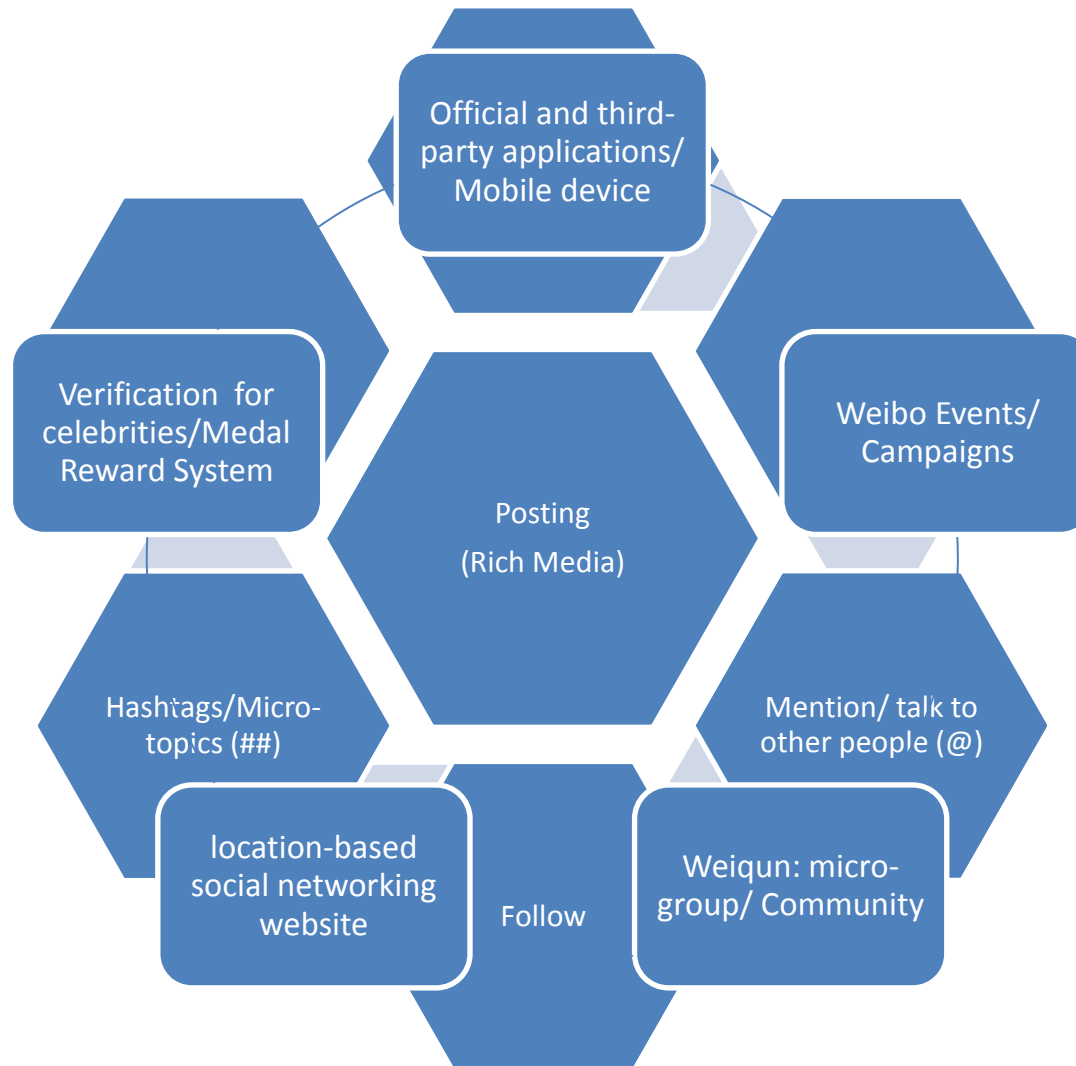
Video: How to Use Sina Weibo – A Guide

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Users' Page

Log-on Page

Weibo Events

Statistics:

- Mar. 2012: Registered users: 300 million; verified users: 300 thousand; number of posts per day: over 100 million

- The top 100 users had over 485 million followers combined

- More than 130 thousand companies and organizations users. More than 5,000 companies and 2,700 media organizations in China

- 56.5% of China's micro-blogging market based on active users

Censorship:

- Weibo: a freer place to criticize the government

- Internet censorship in China: Sina sets strict controls over the posts on its services.

- Posts with links using some URL shortening services (including Google's goo.gl), or containing blacklisted keywords, are not allowed on Sina Weibo.

- Posts on politically sensitive topics are deleted after manual checking.

- Mar. 31, 2012, the comment function of Sina Weibo was shut down for three days

- May 2012, Sina Weibo introduced new restrictions: sanction users for spreading false news, divulging private information or launching public attacks.

- Video clip: [Chinese Regime Intensifies Censorship of Sina Weibo](#)

Baidu: Search Engine

History:

- Jun. 2000: Baidu began provide background service for portal websites in China
- Oct. 22, 2001: Independent search engine launched

- Nov./ Dec. 2002: Domestic and international enterprises such as Lenovo, Coca Cola started entering the Baidu online brand promotion program
- Dec. 2003: Online Community construction (local searching, discussion forum); timeline searching
- Mar. 2004: Baidu was reported to monopolize Chinese-language searching engine market

- Nov. 2004: First WAP/PDA Chinese website searching engine launched
- Aug. 5, 2005: successfully listed on the NASDAQ Stock Market.
- May 2007: Cooperation with Hunan Satellite TV and other multimedia corporations
- Dec. 2007: the first Chinese company to be included in the NASDAQ-100 index.

Statistics:

- Aug. 2012, ranked 5th overall in the Alexa Internet rankings.
- China's internet-search revenue share in second quarter 2011 by Baidu is 76%.

Robin Li, Founder, Chairman and CEO, Baidu Inc.

Mr. Li (Robin) says Baidu's model is working supremely well and that the company has built a loyal base of users who value its search capabilities. "At the end of the day, if a user finds relevant information, they'll come back," he says.

—— New York Times, Sep. 17, 2006

"Our purpose is to make search easier." —— Robin Li

Daily Reach (percent)
baidu.com
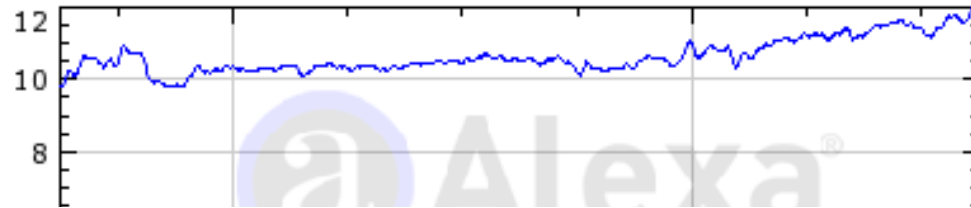
Bounce Rate (percent)
baidu.com
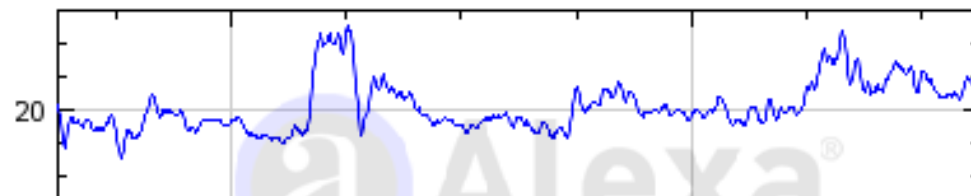
Search Visits (percent)
baidu.com

Estimated percentage of global internet users who visit baidu.com:

	Reach %	Change
Yesterday	11.81%	+0.8% ⬆
7 day	11.9%	+1.9% ⬆

Estimated percentage of visits to baidu.com that consist of a single pageview:

	Bounce %	Change
Yesterday	21.8%	-4% ⬇

Estimated percentage of visits to baidu.com that came from a search engine:

	Search %	Change
Yesterday	3.1%	+3% ⬆
7 day	3%	+3% ⬆
1 month	3.5%	-5% ⬇
3 month	3.5%	0%

*Source: Alexa, retrieved on Aug. 18, 2012

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Functions & Services: 57 search and community services

❖ **search engine**

an index of over 740 million web pages, 80 million images, and 10 million multimedia files

General Searching

- website
- news
- audio/ image/ video
- map/ weather
- travelling

Community Searching

- Baidu Post-bar (searchable keyword-based forum)
- Baidu Baike (collaboratively built encyclopedia)
- Baidu Knows (Q&A)

Vertical Searching

- location-based
- Professional/ industry info
- Government/ education/ legal information search
- Statistics analysis/ report

❖ **services**

- Digital storage: Digital files storage, Online photo album

- Social network: Social commerce, Baidu Space,

- Knowledge/ info: Baidu Encyclopedia, Baidu Bookmarks, Baidu Library/ Documents, statistics research

- Software: Baidu Internet TV, Baidu Reader, Baidu Internet browser

- Mobile service

Administration and control

- First Chinese search engine to receive such a license.

- April 2009, documents leaked from an employee in Baidu's internal monitoring and censorship department, showing a long list of blocked websites and censored topics on Baidu search. (http://chinadigitaltimes.net/2009/04/baidus-internal-monitoring-and-censorship-document-leaked/)

- May 2011, pro-democracy activists sued Baidu for violating the constitution by the censorship it conducts.

- Keyword-bidding pay per click (PPC) model: companies pay for select keywords that will link to the company's website through Baidu search engine, and buy the ranking position in the search result. In August 2011, China Central Television revealed that against the official internet policy.

- Video: Robin Li's view on China's censorship

Alibaba Group

Alibaba Group and its subsidiaries and affiliated entities:

- Alibaba.com - the world's largest online business-to-business trading platform for domestic and international small businesses.
- Aliexpress - Alibaba for single orders, a transaction-based wholesale platform for fast shipment, B2B and B2C
- Tmall - business-to-consumer (B2C) online retail marketplace for quality, brand name goods in China
- Taobao Marketplace – China's biggest consumer-to-consumer (C2C) online shopping platform
- eTao - the most comprehensive shopping search engine in China designed for online shoppers
- Alibaba Cloud Computing - advanced data-centric cloud computing services platform
- China Yahoo! - one of China's leading internet portals
- Alipay - third-party online payment platform, the biggest market share in China

- Taobao: more than 370 million registered users as of the end of 2010.
- Alipay: more than 650 million registered accounts as of the end of 2011.
- Alibaba.com: serves 79 million members from more than 240 countries.

Rising in the east
China's internet users, m

Total

Taobao

Alibaba.com

2007   08   09   10
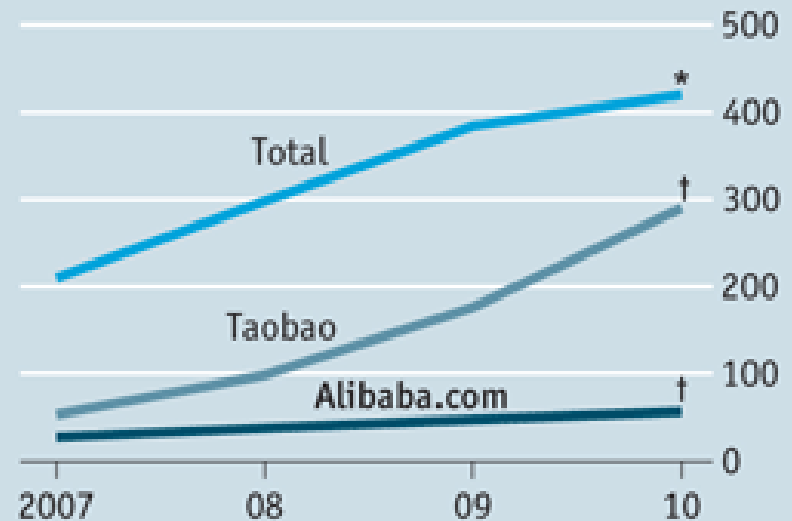
Sources: Alibaba Group;
China Internet Network
Information Centre

*June 30th
†September 30th

[Jack Ma, Founder, chairman and CEO of Alibaba Inc.](#)

History:

- Dec. 2001, Alibaba.com achieved profitability
- May 2003, Taobao founded
- Dec. 2004, Alipay became an independent business out of the Taobao platform
- Oct. 2005, Alibaba Group formed a strategic partnership with Yahoo! Inc and acquired China Yahoo!
- Nov. 2007, Alibaba.com successfully listed on the Hong Kong Stock Exchange.
- Apr. 2008, Taobao established Taobao Mall to complement its C2C marketplace.
- Sep. 2009, Alibaba Group established Alibaba Cloud Computing
- Oct. 2010, Taobao beta-launched eTao
- Jul. 2011, Alibaba Cloud Computing launched its first self-developed mobile operating system, Aliyun OS over K-Touch Cloud Smartphone

EBAY INC REVENUE
Unit: $billion

A

ts
ers,
m

8.72 2009

9.15 2010

11.65 2011

on
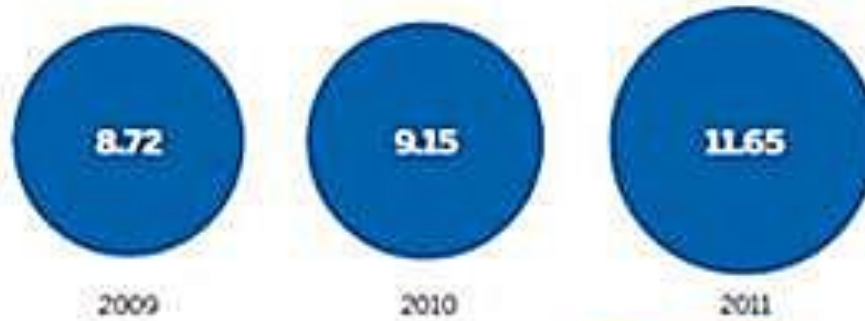
VALUE OF TRANSACTIONS ON TAOBAO.COM
Unit: $billion

lues

157.48 estimated

ls.

6.29 2007

15.74 2008

31.49 2009

62.99 2010
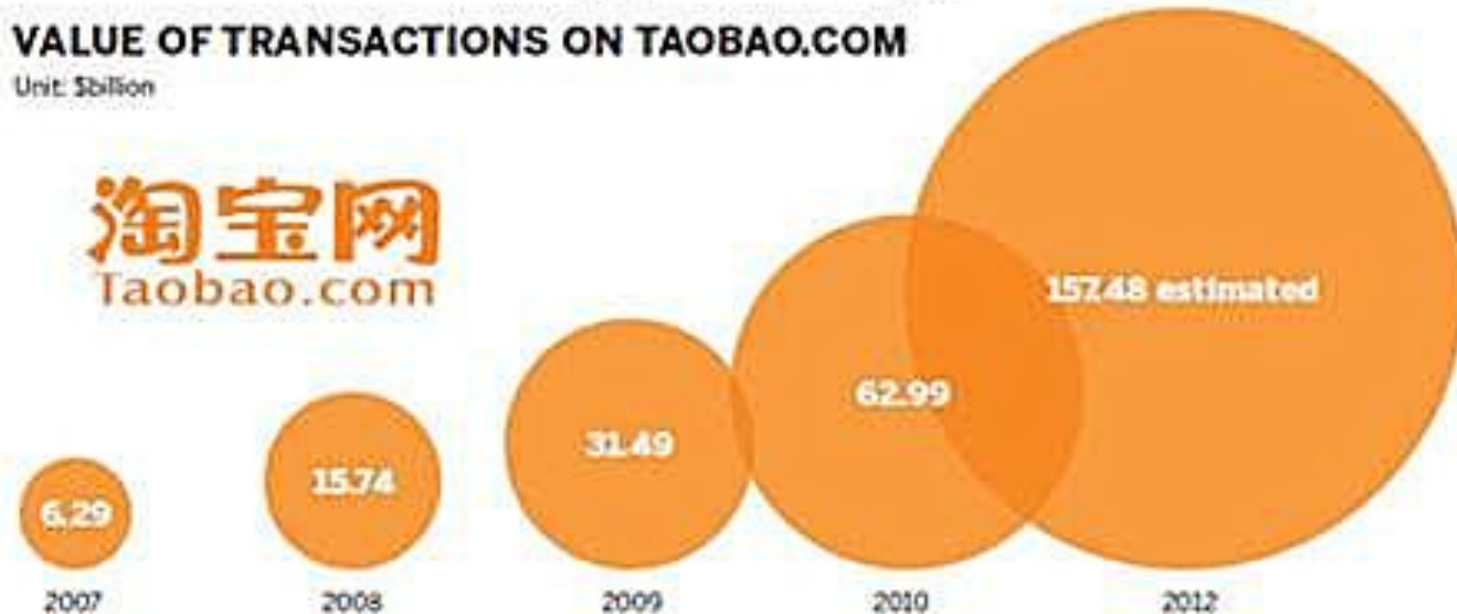
2012

Source: ebay and Taobao

CHINA DAILY

Q1 2011- Q1 2012 Revenue of Alibaba

Source: The financial results of Alibaba.

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- ✓ Revenue increased from over the same period last year, yet it dropped by 4.2% compared to Q4 2011.
- ✓ The YoY and QoQ growth in this earnings season slowed down.
- ✓ Reasons: re-adjustment since 2011, focus on the construction of a credible and secure platform and improve the quality of information and its members; Pay less attention to some marketing measures.

Q1 2011-Q1 2012 Revenue Structure of Alibaba
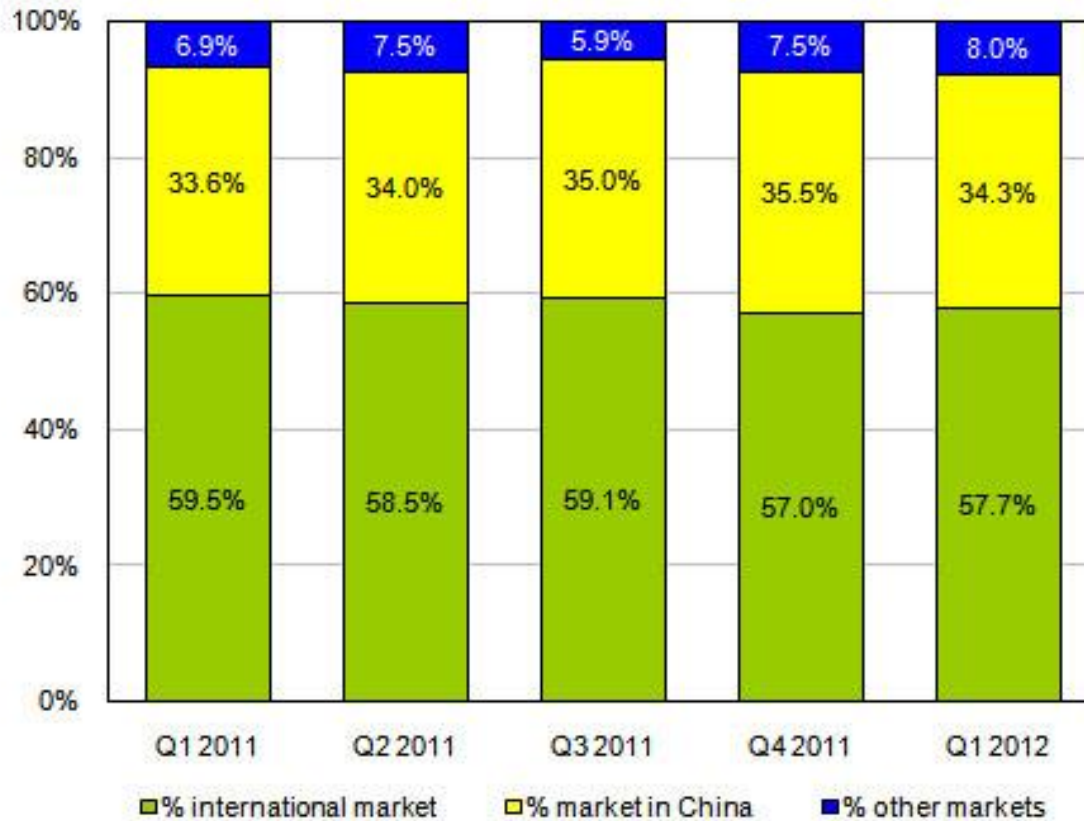
	Q1 2011	Q2 2011	Q3 2011	Q4 2011	Q1 2012
% other markets	6.9%	7.5%	5.9%	7.5%	8.0%
% market in China	33.6%	34.0%	35.0%	35.5%	34.3%
% international market	59.5%	58.5%	59.1%	57.0%	57.7%

Source: The financial results of Alibaba.

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✓ On the international market, value-added services maintain its contribution to the revenue of China's Gold Suppliers at 30%.

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Q1 2011-Q1 2012 The Premium Users' Proportion of Registered Users of Alibaba

	2011Q1	2011Q2	2011Q3	2011Q4	2012Q1
registered users (thousand)	6,503,400.0	6,890,000.0	7,277,725.5	7,633,216.3	7,978,670.0
premium users (thousand)	83,246.9	81,537.8	78,765.3	76,536.3	75,395.5
% the proportion of PU	1.28%	1.18%	1.08%	1.00%	0.94%
Source: The financial results of Alibaba.					
©2012.5 iResearch Global Inc.					www.iresearchchina.com

- ✓ Overseas users grew by 38.6% year-on-year, while register users in China increased by 15.7%.

- ✓ The number of premium members was 754,000, declining 9.4% year-on-year and 1.5% quarter-on-quarter.

- ✓ The substantial increase of overseas users proves that measures targeting at overseas buyers have been effective.

Supply Chains in China
and
Electronic Guanxi

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Guanxi and Automation?

- It is through the give and take of selling, bidding, ordering, fulfilling, and adjusting that Chinese "guanxi" is traditionally developed.

- Does having the sales and fulfillment process fully automated undermine the Chinese guanxi way of doing business?

| | | B2B | business process |
Firm	Tier	Standards	Standards
Global Distribution			
Firm A	Tier1	Y-Y	Y-Y
Firm B	Tier1	Y-Y	Y-Y
Firm C	Tier1	Y-Y	Y-Y
Firm D	Tier3	Y-Y	Y-Y
Regional Conglomeration			
Firm E	Tier2	Y-N	Y-N
Firm F	Tier2	Y-N	
Firm G	Tier2	Y-Y	Y-N
Firm H	Tier1	Y-N	Y-N
Firm I	Tier2	Y-N	Y-N
Firm J	Tier2	Y-N	Y-N
Firm K	Tier3	Y-N	
Firm L	Tier3	Y-N	
Firm M	Tier3	Y-Y	
Firm N	Tier3	Y-Y	
Firm O	Tier3	Y-N	
Firm P	Tier3	Y-Y	Y-N
Firm Q	Tier3	Y-Y	
Firm R	Tier3	Y-N	Y-N
Firm S	Tier3	N-Y	
Firm T	Tier3	Y-N	
Firm U	Tier3		
Firm V	Tier3	Y-Y	Y-N

Note: (1) Y: means that there exist such digital networks. N means no such digital networks; (2) Y-Y stands the firm has both electronic linkages. Y-N stands the firm has electronic linkage to customers only. N-Y stands the firm has electronic linkage to suppliers only. Blank means no such linkage in both ends.

China's Control on Writing Media : A Historical Perspective

Dr.William Abbott Foster,Sam Nunn School of Int'l Affairs,Georgia Tech
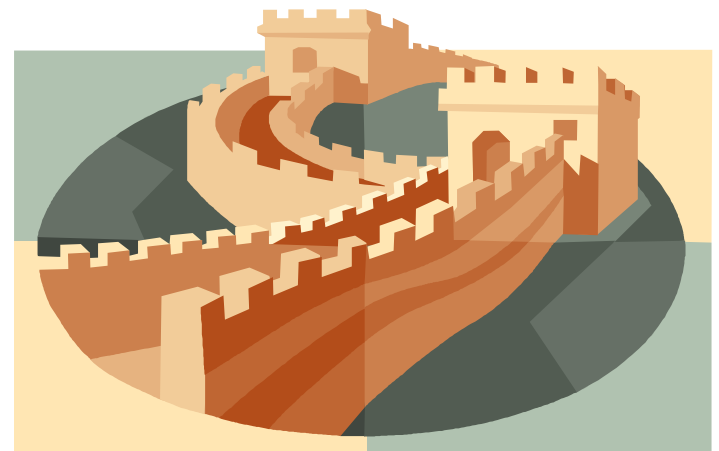
Writing– key to ancient governing

Writing

- Recording
- Communication/ Media
- Official Selection

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of Int'l Affairs,Georgia Tech
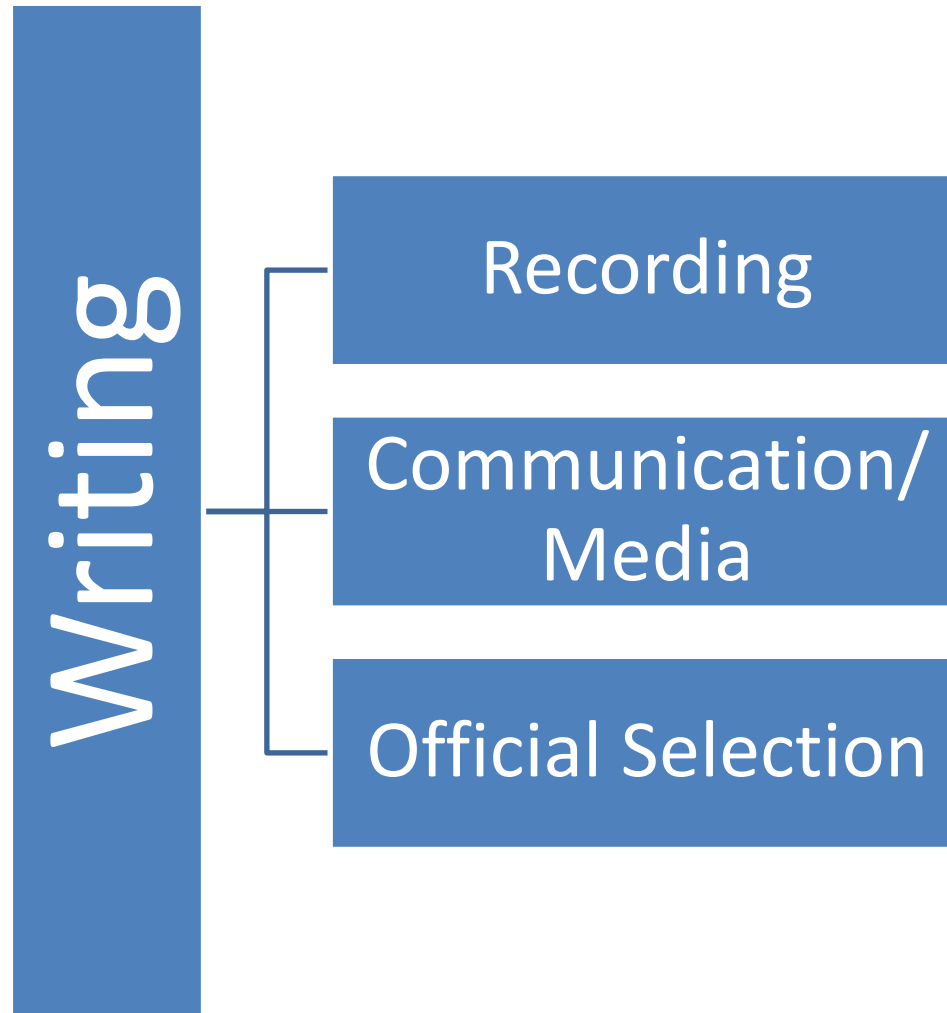
Chinese Characters-- a long history

Cangjie, (倉頡, c. 2650 BC), is claimed to be an official historian of the Yellow Emperor and the inventor of Chinese characters. (Legend has it that he had four eyes and four pupils.)

Chinese Characters-- a long history

Qin Shi Huang (秦始皇, 259 BC – 210 BC) was the king of the Chinese State of Qin from 246 BC to 221 BC. Then he first unified China's territory under his empire. During his reign, he unified and standardized the character system.

Chinese Characters-- a long history

如何打|

han'zi   ⓘ 工具箱(分号)

1.汉子   2.汉字   3.憨子   4.汗渍   5.寒子   ◀ ▶
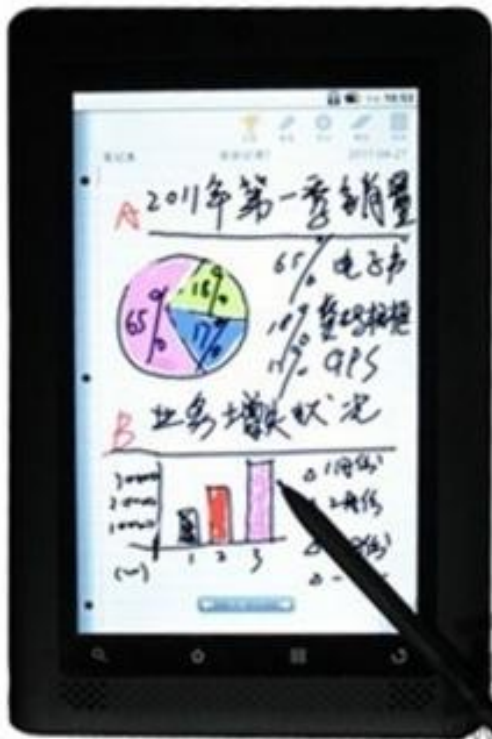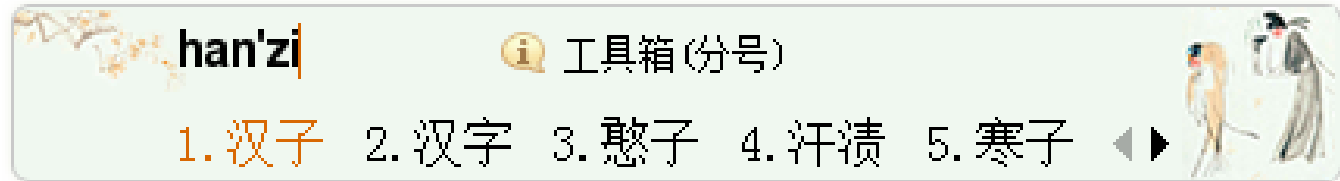
❑ How to type out a character in a keyboard?
- Pinyin (shown in the picture above)
- Strokes of characters (glyph)
- Handwriting (cellphone users, shown in the picture on the left)

Ancient Writing Media in China

an example of the content of *tipao*, recording activities of the emperor
http://www.zwbk.org/mylemmashow.aspx?lid=93640
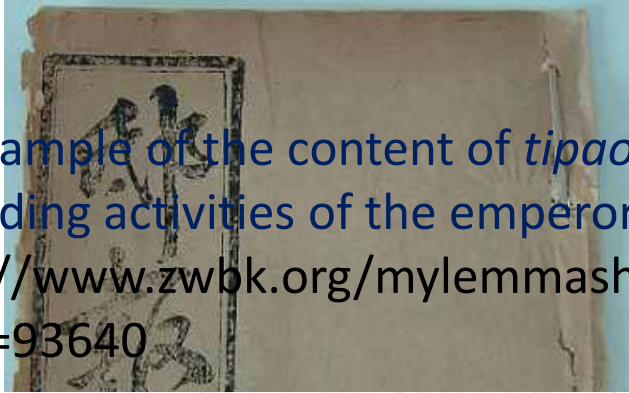
Earliest newspapers in ancient China (since second and third centuries AD)

Early government-produced news sheets, called *tipao* (邸报), were hand-copied and circulated among court officials, recording and reporting government news and emperor's activities.

Modern Writing Media in China

modern newspapers in late 1800s and early 1900s in China

contemporary newspapers in China

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Imperial Exam of Ancient China

- [Imperial Exam](): Standardized test system to gain intellectual degrees and select administrative scholar-officials into bureaucracy
- Writing skill is an important indicator
- an ancient portrait of the examination
- an example of the exam paper

科考

認保戶孔昌炳
派保彭世英

- the examinations were conducted in isolated examination rooms
- the museum of the imperial exam in Shanghai, Eastern China, showing the cubicles separating examinees apart

Control on Writing and Thoughts

- Qin Shi Huang

- Legalism was admired as the only acceptable ideology; banned the other schools of thoughts and philosophies popular at that time, after the unification of China

- Historical event: "burn books and bury scholars alive" ([cartoon](#))

Control on Writing and Thoughts

- [literary inquisition](#) (literary persecution): imprisonment or execution of an author for writing something considered offensive or dissident by the imperial court

- Such persecutions could be based on a single phrase or word which the ruler perceived politically incorrect.

- In a serious case, not only the writer but also his immediate and extended families would be killed.

Contemporary Opinions on Speech/writing Control History

- Negative evaluation: historical cases of speech/writing suppression lose legitimacy in contemporary context
- By review of the history of writing control, most scholars oppose it, and praise for an open channel for public opinion
- E.g. *"…These important ancient activities of public opinion deserve deep research, from which we can learn the merit and eliminate the dross. We can improve the art of guiding the public opinion in order to serve contemporary public opinion survey, control and guidance."* --- Zhenglin Luo, Nanjing Normal University, *Main categories and characteristics of public opinion activities in ancient China*

- Official attitude: Discourse: from "control" to "guiding" in the Internet era("control" is no more an acceptable phrase)

China's Internet Control

Blocking, Filtering, and Management

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of Int'l Affairs,Georgia Tech

Internet Management:
A Multi-level Regime

Legislative actions/ regulations	Technological Implementation
(Coercive) Collaboration with Business/ISP/ICP	Monitoring of Individual Users

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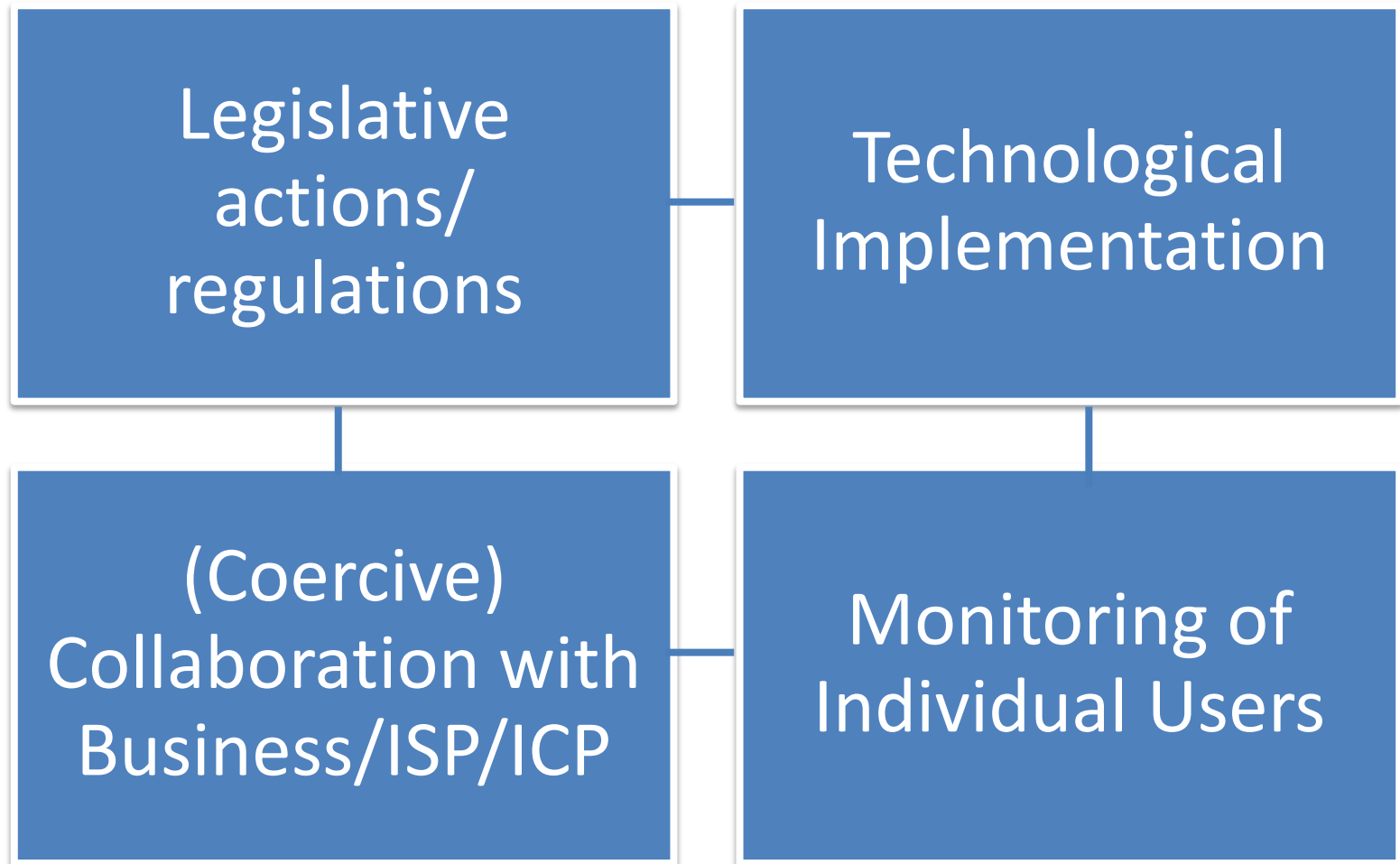
Telecommunication Regulatory Regime before the Economic Reform

MPT: Ministry of Post and Telecommunication
PTA: Post and Telecom Administration
PTB: Post and Telecom Bureau
PTE: Post and Telecom enterprise

State Council

(central)MPT

(provincial)PTAs

(municipal and prefecture) PTBs

(local service networks) PTEs

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Telecommunication Regulatory Regime before 1998

State Council

JCSEI (1994)
NIISC (1996)

MPT

DGT → China Telecom (1995)

DGP

MEI/MR/MEP → China Unicom (1993)

Other ministerial branches → Telecom systems

DGT: Directorate of General of Telecommunications
DGP: Directorate of General of Post
MEI: Ministry of Electronic Industry
MR: Ministry of Railway
MEP: Ministry of Electric Power
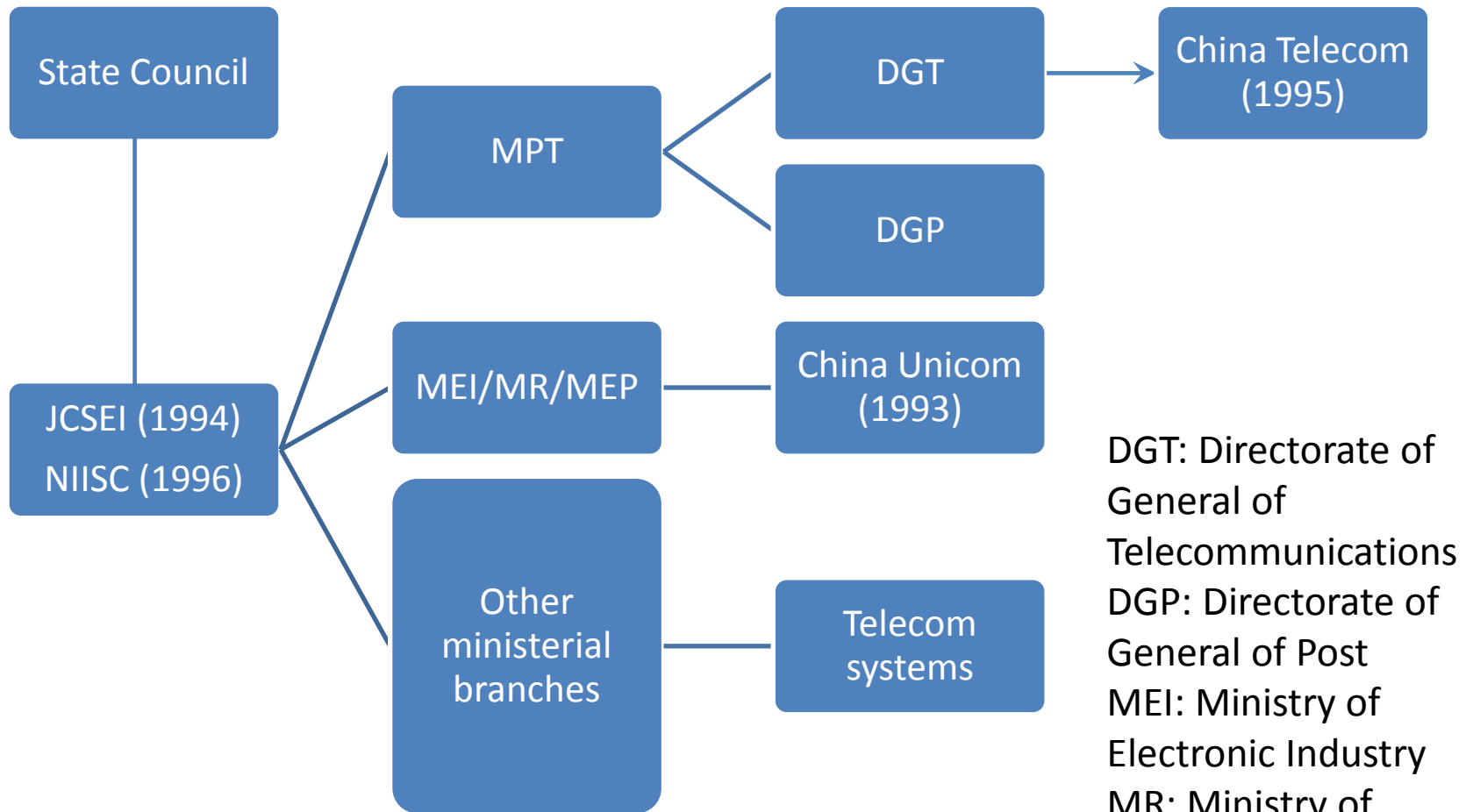
JCSEI: Joint Conference on State Economic Information
NIISC: National Information Infrastructure Steering Committee

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Telecommunication Regulatory Restructure in 1998: Formation of MII

FORM

JCSEI/NIISC

State Council's Commission on Radio Frequencies

Ministry of Radio, Film, and Television (MRFT)

China Corporation of Aerospace Industry

China Corporation of Aviation Industry

TAKE OVER

RESPON-SIBILITY

Ministry of Information Industry (MII)

MPT

MEI

Network Department of former MRFT

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Central Organizations Responsible for the Internet: Share of Power

Party Structure

Political Bureau

Department of Propaganda

Government Structure

State Council:
State Information Leading Group
State Council Information Office

MII
Ministry of Commerce
State Administration for Industry and Commerce
Ministry of Culture
Ministry of Public Security (Public Information Network Supervision Bureau)
State Administration of Radio, Film, and Television
State Secrecy Bureau

*Source: Yongnian Zheng (2008)

Three Steps of Internet-control

1994-1999: regulation for network security and physical entity

2000-2002: content regulations targeting ICP and individuals

From 2003: comprehensive strategy: control + propaganda agenda (eg. Pro-government Internet commentators)

*Source: Guobin Yang (2009)

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Regulations and Ordinances

- Feb. 1994: first official policy paper, **"Regulations for the Protection of Computer Information Systems Safety"**
- ✓ Issued by the State Council
- ✓ **Article 17**, Ministry of Public Security: "to supervise, examine and instruct the safety protection work for computer information systems"; to "investigate and handle crime and illegality cases of endangering the safety of computer information systems".

- Feb. 1996: **"Temporary Decree on the Management of Computer Information Network International Connectivity"**
- ✓ Issued by the State Council
- ✓ **Article 6, 13**
- ✓ Forbid access to channels for international networking unauthorized by MPT

Regulations and Ordinances

- Dec. 1997: **"[Computer Information Network and Internet Security, Protection and Management Regulations](#)"** (**Article 5**: 9 categories of forbidden information online; **Part II**: responsibility of internet providers)

- Jan. 2000: **"State Secrets Protection Regulations for Computer Information Systems on the Internet"** (issued by the National Security Bureau)

- Nov. 2000: **"Temporary Ordinance on the Management of Internet News Publishing"** (management on Internet companies and ICP)
- ✓ ICPs can only publish news from officially authorized news media
- ✓ Nov. 2002/ 2004: **"Regulations on Internet Domain Management"**

- Sep. 2005: **"Decree on the Management of Internet News/Information Services"**
- ✓ About 1000 websites were shut down for failure to register before deadline in the following two months

Technological Implementation

- [“Great Fire Wall”:](#)
- Block foreign-based websites with unwanted content out of China's boundaries
- ✓ All Internet traffic from and to China through a few major national backbones (ChinaNet, CERNet, GBNet, CSTNet)
- ✓ Close dissident or politically incorrect websites
- [Keyword-using filtering](#); track down footprints; regularly distribute lists of forbidden terms to website owners, managers and businesses
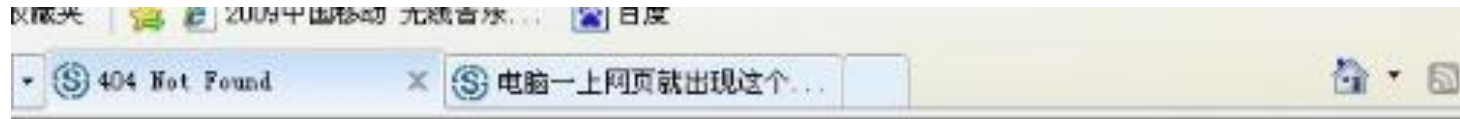
404 Not Found error: for blocked international websites, or deleted pages

Baidu百度 新闻 网页 贴吧 知道 MP3 图片 视频 地图 文库 更多»

六四天安门 [百度一下] 推荐：把百度添加到桌面

根据相关法律法规和政策，部分搜索结果未予显示。

美女飞行员压轴飞过天安门 看回放流泪(图)--新闻中心 中华网
2009年10月2日 - 返航时经过北京城区，周帅和姐妹们特意瞥了一眼欢腾的天安门广场，然后继续航行。何晓莉说，看到最后一架飞机安全着陆，她心里的石头才算是放下。 ...
news.china.com/zh_cn/ ... 58657_1.html 2009-10-2 - 百度快照

资料：《纳尼亚传奇3》导演迈克尔·艾普特 影音娱乐 新浪网
他同样在长篇纪录片努力不懈，拍摄美国印第安运动份子李奥纳德皮地尔的故事《印第安谋杀事件》、记录摇滚巨星史汀专辑《蓝龟之梦》创作过程的《喧扰夜晚》(他因此荣获...
ent.sina.com.cn/m/ ... 183029.shtml 2010-12-20 - 百度快照

1 2 3 4 5 6 7 8 9 10 下一页>   百度为您找到相关结果约98,800个

六四天安门 [百度一下] 结果中找 帮助 举报 高级搜索

©2012 Baidu 此内容系百度根据您的指令自动搜索的结果，不代表百度赞成被搜索网站的内...

"Some searching results are not shown according to related laws, regulations and policies."

Searching results of "June Fourth Tiananmen" on *Baidu* (biggest search engine in Chinese language, much fewer results on every page and irrelevant to the specific movement, experiment done on Sep. 2nd)

Control on BBS/chat rooms

- Oct. 2000: **"Administration of Electronic Bulletin Board Services"** (keep record of posts, user account, and domain name for sixty days; remove inadmissible content, report to authorities)

- Jan. 2005: Ministry of Education ordered student-run BBS and college forums to deny outside access; real name registration

✓ Protest from the students

Shuimu Tsinghua (SMTH, China's first Internet-based BBS): collective resignation of student forum moderators; expression of indignation online
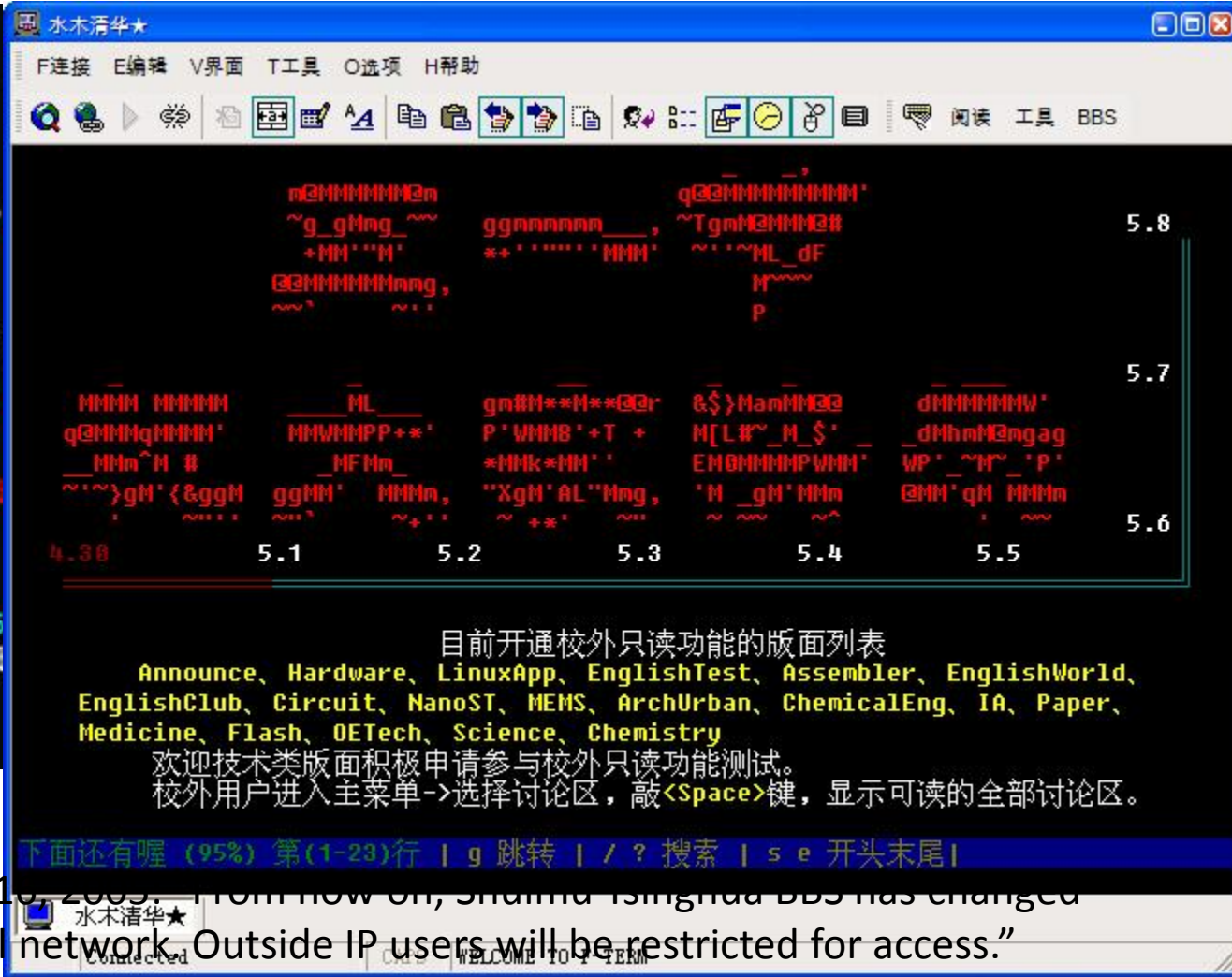
Entry Page after Mar. 16, 2005: "From now on, Shuimu Tsinghua BBS has changed from public to internal network. Outside IP users will be restricted for access."

Sub-forum of *Technology* after May. 2005: Outside IP users have access to read-only webpages.

Students in Tsinghua University mourned for the public Shuimu
Tsinghua BBS, at campus (Mar. 18, 2005)

ICP/ISP/businesses

- Self-regulatory measures:
- ✓ Set up 24-hour cyber-managers/monitors: patrol and delete inappropriate online content
- ✓ Internet Cafe: regular check websites browsed by customers
- The Internet Society of China (ISC, non-official self-governing organization)
- Mar. 2002: "Public Pledge on Self-discipline for China Internet Industry"

Public Pledge on Self-discipline for China Internet Industry

- Signatures from members of ISC, and branches of international companies such as Yahoo! Chinese language site

- Google's lesson:

Refused to filter sensitive content that was precluded by Chinese government

Aug. 31, 2002: blocked in China

2006: change: to cooperate with the Chinese authorities in censoring; www.google.cn specifically tailored to China

Mar. 2009: Youtube blocked in China.

Jun. 2009: faced with widespread access issues due to obscene content

Mar. 2010: stopped censored searching service, left China and went to Hong Kong: www.google.com.hk

http://www.youtube.com/watch?v=BWJkqDSdUjY

A Chinese Google user presented flowers to the Google China headquarters in Beijing, when Google threatened to leave China instead of filtering its searching results.
(Vincent Thian/AP)

Monitoring Individual Users

- May 1997: **"Interim Regulations on management of URL Registration":** all Internet users must register at the China Internet Network Information Center (CNNIC)

- Internet arrests of individuals

- Aug. 2000: "Internet police" (special police task forces): monitor and maintain order on computer networks

Comics features of Internet police

A Multi-dimensional Framework

- Sep. 2004, **"Decision of the Central Committee of the Communist Party of China Regarding Strengthening the Party's Ability to Govern":**

- "Step up the establishment of a management institution (of the Internet and other new media) that integrates legal system, administrative surveillance and management, occupational self-discipline, and technical guarantees; strengthen the construction of a Internet propaganda team, and forge the influence of positive opinion on the Internet."

- E.g. 2004 "Internet commentators" (50-cent Party): with anonymous IDs, attend in online debate/ discussions, and direct online public opinion in accordance with the regulations and ordinances.

China's Emergency Response Team (CNCERT)

Dr.William Abbott Foster,Sam Nunn School of Int'l Affairs,Georgia Tech

NATIONAL PUBLIC NETWORK SECURITY EMERGENCY RESPONSE SYSTEM

National Network & Information Security Coordination Team Office

Lead — Lead

Foreign Gov. (APEC) — Contact — Internet Emergency Response Coordination Office, MII — Contact — Other Admin. Agencies

Foreign CERTs — Contact — CNCERT/CC — Operate — 863-917 NetSec Monitoring Platform

Coordinate/Instruct — Support — Support — Coordinate/Instruct

NetSec Key Lab, MII

Network ER Key Lab, MII

ER Alliance (Network & Info Security Working Group), ISC

National Computer Virus ER Center (Tianjin PS Bureau)

National Computer Network Intrusion Protection Center

863 Program Anti-hacking & Anti-virus Research Center (3rd Institute, MPS)

Instruct — Lead — Coordinate

Public Network ER National Pilot Service Providers

CNCERT/CC's 31 Branches

Backbone ISPs' CERTs

Coordinate — Instruct

IDC's CERTs

Public Network ER Provincial Pilot Service Providers

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China's Efforts to Leverage Information Technology Standards

Dr.William Abbott Foster,Sam Nunn School of Int'l Affairs,Georgia Tech
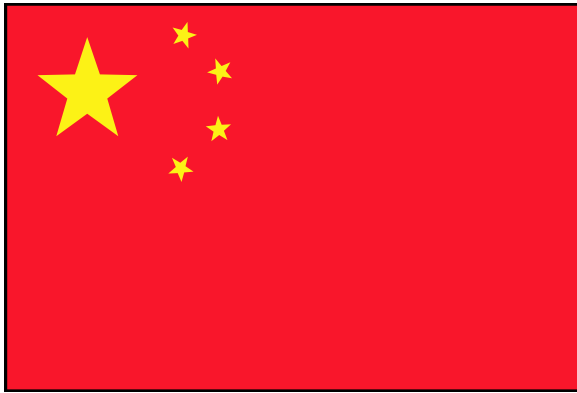
TD-SCDMA

- **Time Division Synchronous Code Division Multiple Access (TD-SCDMA)**
  - TD-SCDMA was developed in the People's Republic of China by the Chinese Academy of Telecommunications Technology (CATT),Datang Telecom, and Siemens AG in an attempt to avoid dependence on Western technology. This is likely primarily for practical reasons, since other 3G formats require the payment of patent fees to a large number of Western patent holders.[4]

(Wireless LAN Authentication and Privacy Infrastructure) (WAPI)

- **WLAN Authentication and Privacy Infrastructure** (**WAPI**) is a Chinese National Standard for Wireless LANs (GB 15629.11-2003). Although it was allegedly designed to operate on top of WiFi, compatibility with the security protocol used by the 802.11 wireless networking standard developed by the IEEE is in dispute. Due to the limited access of the standard (only eleven Chinese companies had access), it was the focus of a U.S.-China trade dispute. Following this it was submitted to, and rejected by the ISO. It was resubmitted to ISO in 2010, but was cancelled as a project in 2012 after being withdrawn by China. Part of the reason for withdrawal is thought to be the well documented observations by IEEE representatives that showed WAPI was equivalent to a small subset of IEEE 802.11i based system
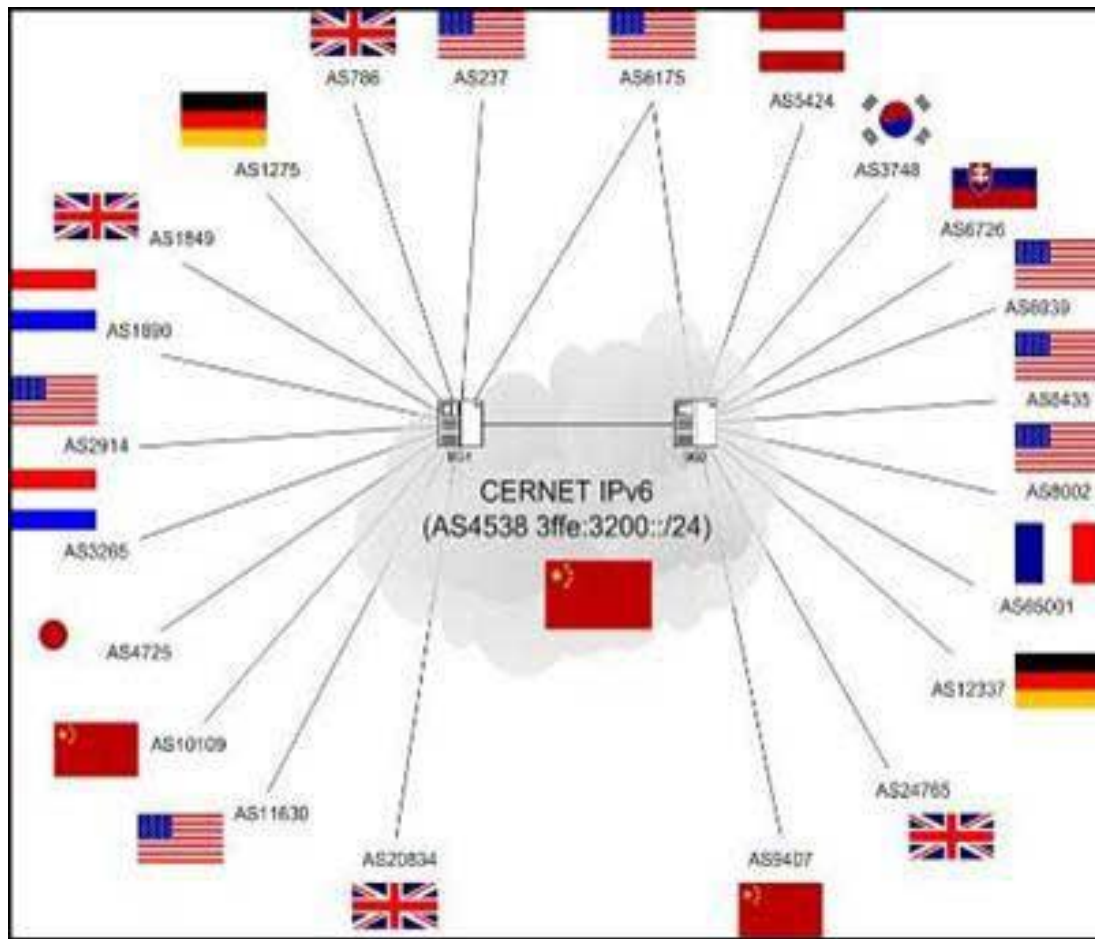
* Source: Wikipedia

CERNET2 (IPv6)

CERNET2 network: the opening of global IPv6 network services, involving most provincial capitals and connection to international network (2004)
*Source: CERNET

CERNET network interconnected with
international next-generation Internet
*Source: CERNET

IP Multimedia Subsystem (IMS)

- **IP Multimedia Subsystem or IMS** is a standardized Next Generation Networking (NGN) architecture for telecom operators that want to provide mobile and fixed multimedia services. It uses a Voice-over-IP (VoIP) implementation based on a **3GPP** standardized implementation of <u>Session Initiation Protocol</u> (SIP), and runs over the standard <u>Internet Protocol</u> (IP). Existing phone systems (both packet-switched and circuit-switched) are supported. The aim of IMS is not only to provide new services but all the services, current and future, that the Internet provides. In this way, IMS will give network operators and service providers the ability to control and charge for each service.

*Source: Wikipedia

IMS Architecture
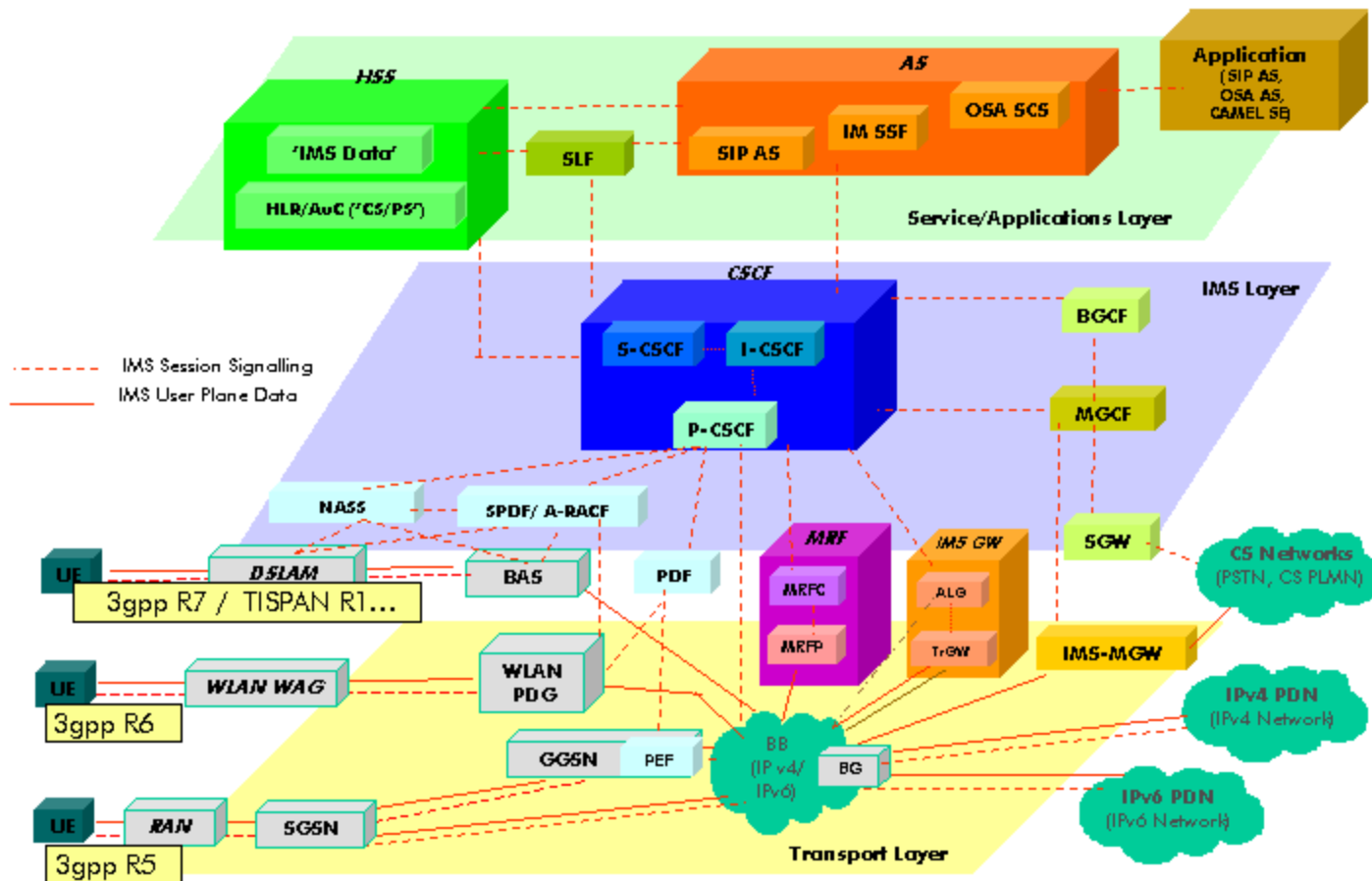
Huawei's
Multi-mode Base Stations

CDMA
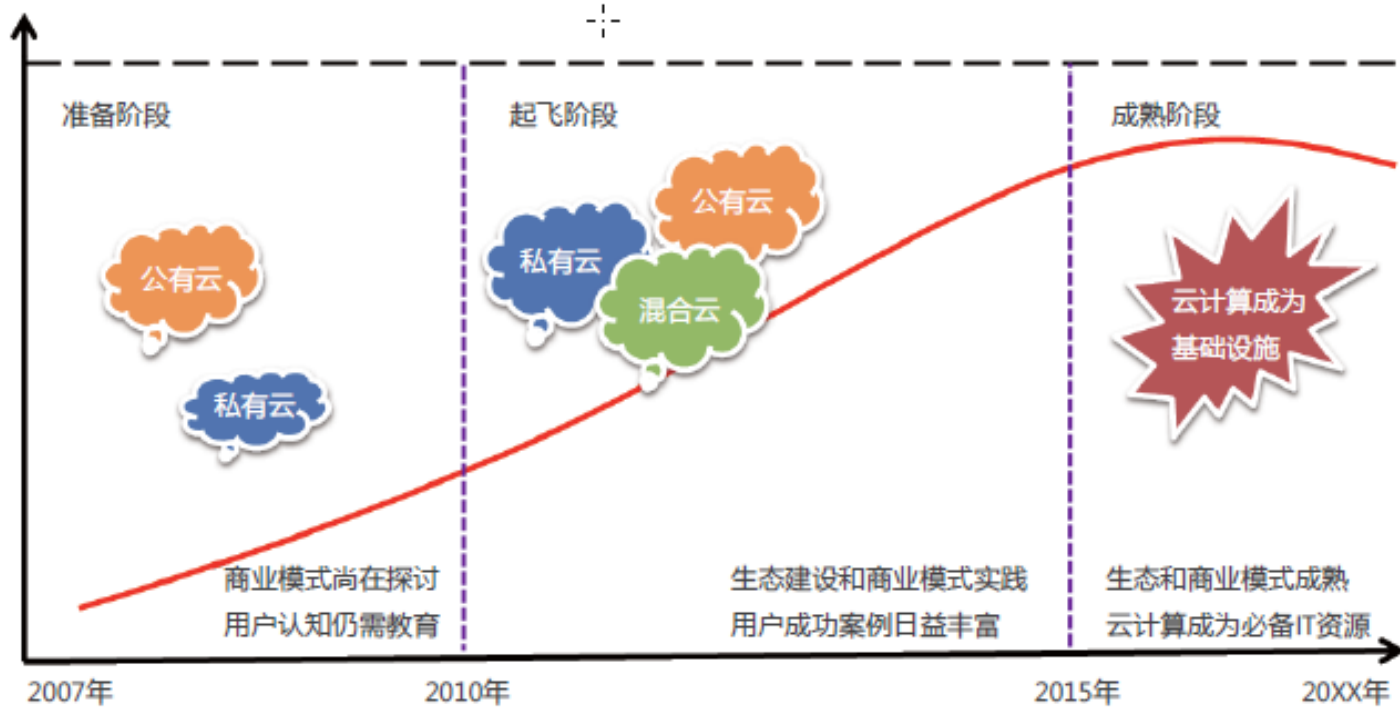WCDMA
TD-SCDMA
GSM
GPRS-Edge
WiMAX
LTE

Cloud Computing in China

Different Players, State Support and Challenges

Dr.William Abbott Foster,Sam Nunn School
of Int'l Affairs,Georgia Tech

Three Phases of China's Cloud Computing

Preparation period: knowledge, technology training

Flying period: ecosystem construction, business models

Mature period: mature ecosystem and industry chain, infrastructure

* The White Paper of China's Cloud Computing Industry Development, Pg. 5, CCID Consulting Co., Ltd

Boom of Cloud Computing

- Mar. 11, 2010, the 12th Five Year Plan for the five-year period, 2011-2015.
- Oct. 2010: Five coastal cities **Beijing, Shanghai, Shenzhen, Hangzhou and Wuxi,** under supervision of MIIT, pilot the development of and innovation in cloud computing.
- 8 provinces and cities such as Chongqing and Shandong, have also launched large data center and invested huge in cloud computing.
- Investments: a partnership between state-owned companies and local government.

* Fang Feng, China's Plan: What does it mean to cloud computing?

Boom of Cloud Computing

- Dec. 28, 2009: Chengdu Cloud Computing Center (China's first major commercially-operated Cloud Computing Center, launched by Chengdu Supercomputer Center Co. and powered by the Dawning 5000 supercomputer)

- In 2011, the first white paper of the cloud computing industry: "The White Paper of China's Cloud Computing Industry Development" (published by CCID Consulting Co., Ltd)

- A National Cloud Computing Industry Development Plan (Chinese version) was approved by the central government in May 2012.

Boom of Cloud Computing

- $286 million spent on cloud-computing infrastructure in 2011 (about 10% of global cloud-computing investment)

- Expected to be more than $1 billion in 2016

- China's cloud computing market is estimated to grow from about 16.7 billion CNY (US$2.62 bln) in 2010 to 117.4 billion CNY (US$18.6 bln) in 2013 (*Cloud Computing Strategy Research Report* released by CCID Consulting, Co., Ltd)

- by 2015, it is predicted to have reached 1 trillion CNY (according to the Internet Society of China)

- In 2012, China's cloud computing market is likely to be worth over 60 billion CNY (US$9.5 bln)

* Tuo Yannan, Chinese investment in cloud computing 'to reach $1b by 2016', *China Daily*
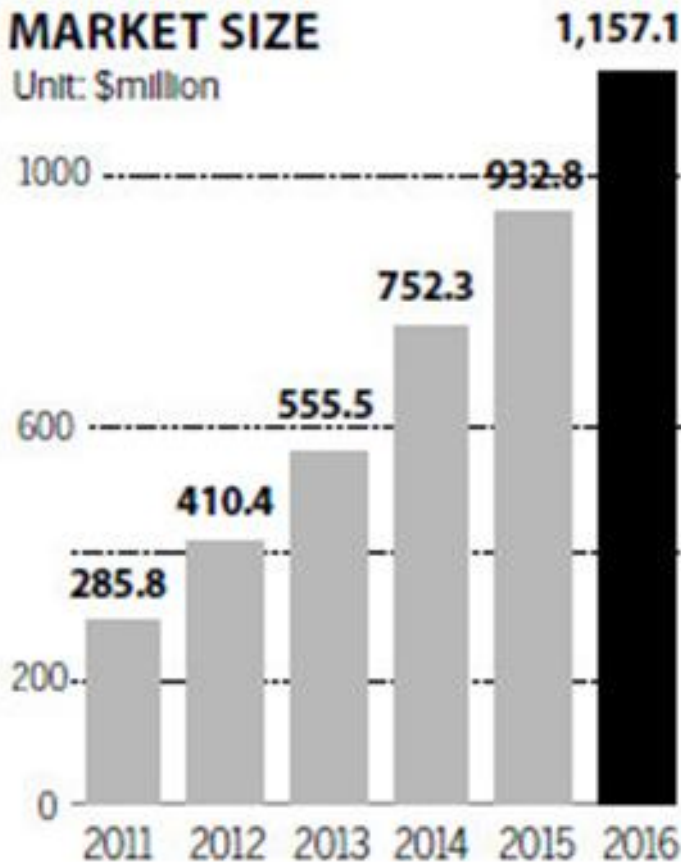* Penny Jones, China's growing cloud industry
* China Cloud Computing Market Size to Exceed US$9.5 BLN in 2012, *Asia Pulse*, Jan. 13, 2012
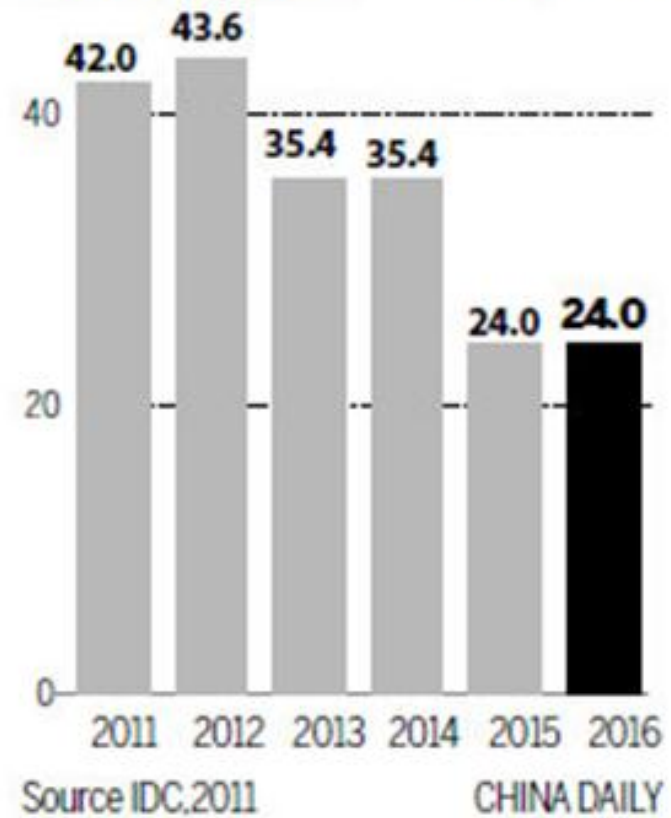
FORECAST OF CLOUD INFRASTRUCTURE MARKET IN CHINA

MARKET SIZE
Unit: $million

Year	Market Size
2011	285.8
2012	410.4
2013	555.5
2014	752.3
2015	932.8
2016	1,157.1

GROWTH RATE Unit: percent

Year	Growth Rate
2011	42.0
2012	43.6
2013	35.4
2014	35.4
2015	24.0
2016	24.0

Source IDC,2011   CHINA DAILY

* Tuo Yannan, Chinese investment in cloud computing 'to reach $1b by 2016', *China Daily*

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Support from the state

- National Financial Support Program for Cloud Computing Demonstration Projects:

✓ a maximum of 1.5 billion CNY distributed to 12 key projects from the five cloud computing cities.

✓ future plan: develop about ten cloud computing demonstration enterprises in the next three years, each with more than 10 million users with annual revenue of more than 5 billion CNY.

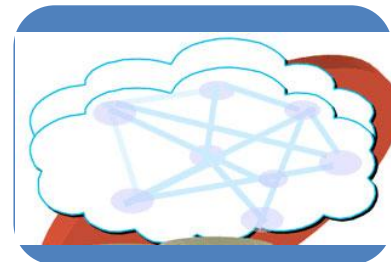* Penny Jones, China's growing cloud industry

Different Players
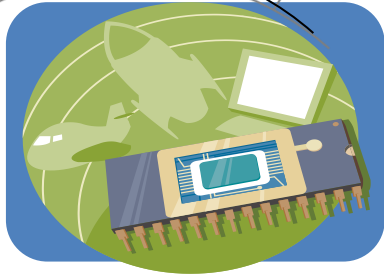
National Telcos

IT Companies

Local Cloud Startups

CLOUD COMPUTING

International Companies

China Telecom

- China Mobile, China Telecom and China Unicom have also stepped up their cloud computing research and development centers as well as joint projects with provincial and municipal governments.
- China Telecom spent the most on its facility, followed by China Unicom and China Mobile.

- China Telecom: the strongest operator in data centers and network infrastructure
- a cloud computing company
- 2009: Tianyi Cloud Computing Program, in six pilot cities including Shanghai, Guangzhou and Sichuan.
- May, 2012: China Telecom launched its cloud computing information park project in Inner Mongolia, which is likely to become the largest in China.
- will offer Internet Data Center (IDC) and Content Delivery Network (CDN) services as well as cloud hosting and storage services.

* Shervin Bakhtiari , Cloud Computing in China - the greatest hurdle?

China Unicom

- May 2012, announced to offer cloud-based services to business ventures.
- Jul. 2012, announced its investment of 12.3 billion CNY for cloud computing business in Hohhot, Inner Mongolia for a roughly 10-year project (plan to integrate a cloud computing center, an IDC data center, an EDC data center, a customer service call center, and a communications hub.
- Objective: "becoming a cloud resources purveyor, a private cloud operator and an established cloud application architect were its core objectives."
- Cloud service platform: cloud.10010.com

* Shen Jingting, Unicom offers cloud services to enterprise clients, *China Daily*
* Rajani Baburajan, China Unicom Displays Large-Scale Cloud Computing Project in Northwest

China Mobile

- started research and development of cloud computing technology in 2007.

- Nov. 2011: invested 12 billion CNY to build China's biggest data center in the Inner Mongolia autonomous region.

- Aug. 2012: invested $122 million on Global Network Center in Hong Kong that will serve as the company's submarine cable landing and transmission hub (the base for its international telecommunication services).

* Shervin Bakhtiari , Cloud Computing in China - the greatest hurdle?
* Penny Jones, China Mobile to build Hong Kong data center

IT Company Players-- Huawei

- cloud computing product portfolio and system integration services.

- Compete in international markets, with initial success in Asia-Pacific and Latin American markets

- a cloud computing research center in Silicon Valley.

- Aug. 2011, reported a plan to launch the first cloud-only smartphone to the Chinese market

* Shervin Bakhtiari , Cloud Computing in China - the greatest hurdle?
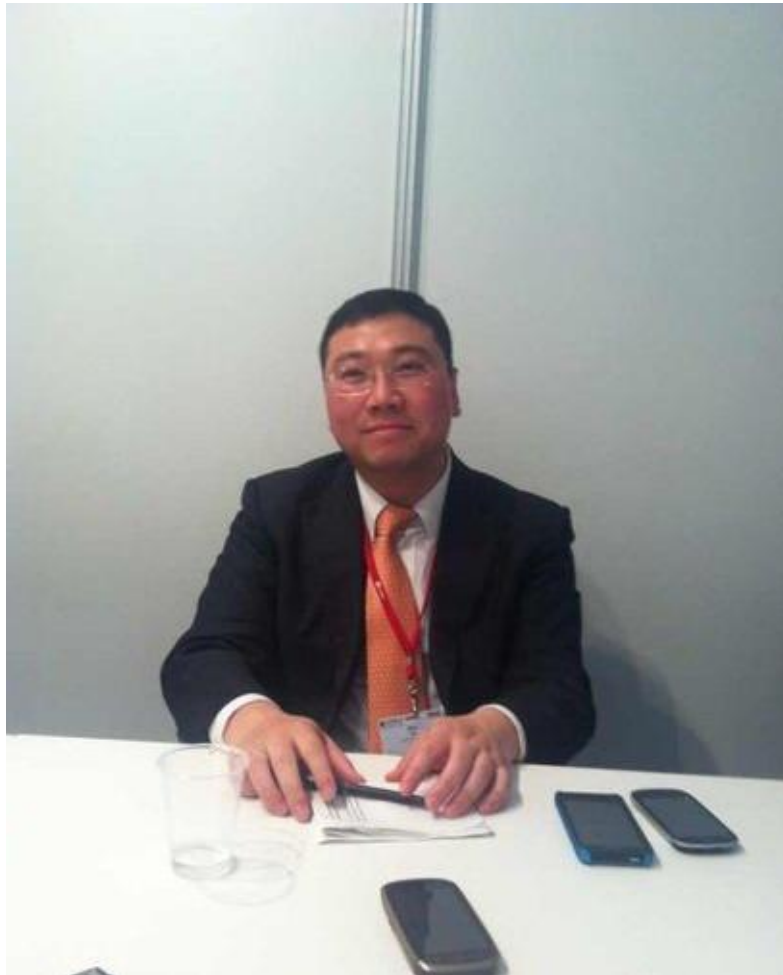
"*Huawei is the first mobile phone manufacturer worldwide to introduce a cloud-computing-based smartphone. We want people to live and work on the cloud.*"
----- Wan Biao, CEO of Huawei

* [Huawei to release first cloud smartphone?](#) *Business Cloud News*

IT Company Players-- Baidu

- Focus: cloud computing applications
- Large green data center clusters
- "massive data storage and processing, high-performance and real-time computing and high-availability service platforms."
- First company to open up cloud computing services free for users within the industry.
- Cooperation with the Ministry of Science and Technology on two special cloud R&D projects on the network operating system and internet language translation systems.
- Sep. 3, 2012 announcement: will invest more than 10 billion CHY ($1.6 billion) to set up its cloud computing center (Reuter, http://news.yahoo.com/chinas-baidu-invest-1-6-billion-set-cloud-061049095.html)

* Penny Jones, China's growing cloud industry

IT Company Players– Ali Group

- Ali Cloud Computing-- subsidiary of Alibaba Group
- Focus: infrastructure and technologies
- Apr. 2009, the first E-business cloud computing data center in Nanjing, which was planned to serve many cities across the Yangtze River Delta.
- Feb. 2012, it brought online its first service cloud email box from basic cloud platform
- cloud storage business
- the new generation cloud smart phone

* Penny Jones, China's growing cloud industry

Local cloud startups

- ChinaNetCloud, (one of the first cloud computing companies in China) providing server management and operation services to local and international customers ranging from video, social networking, mobile and media companies.

- 2Muse.fm: cloud entertainment and media services for the retail stores and commercial properties.

International ISP

- enter [via joint ventures with governments](#) or local partners.
- [Microsoft's partnership with China Mobile](#) on Cloud solutions
- SAP's [partnerships with China Telecom](#)
- Intel's investment of more than 10 million CNY to Beijing ZZNode Technology Co.
- Pacnet's cooperation with the Chongqing government for cloud computing and fiber connectivity at the new cloud computing zone.

* Shervin Bakhtiari, [Cloud Computing in China - the greatest hurdle?](#)

Challenges for the future

- design and development of core computing technologies such as CPU/chips, operating systems, storage, databases, and management software
- Infrastructure supply: such as power availability
- Competition between national telcos and IT companies: control on DC/ IDC
- Competition between domestic and international companies: open territory? China's standards? Information security?

US - China Cyber-Relations?

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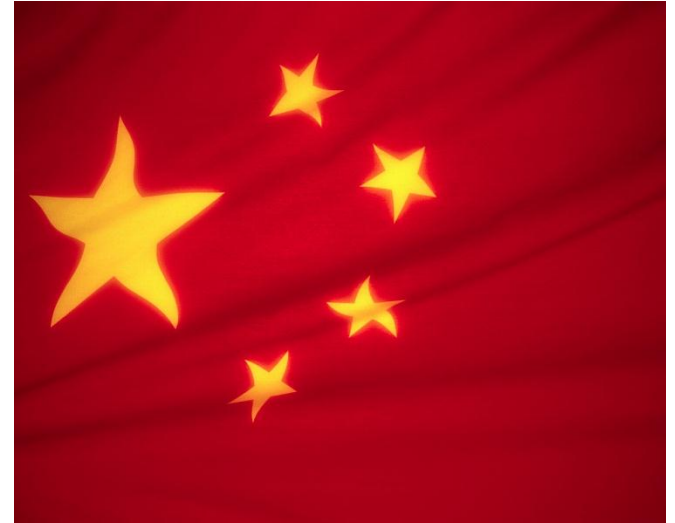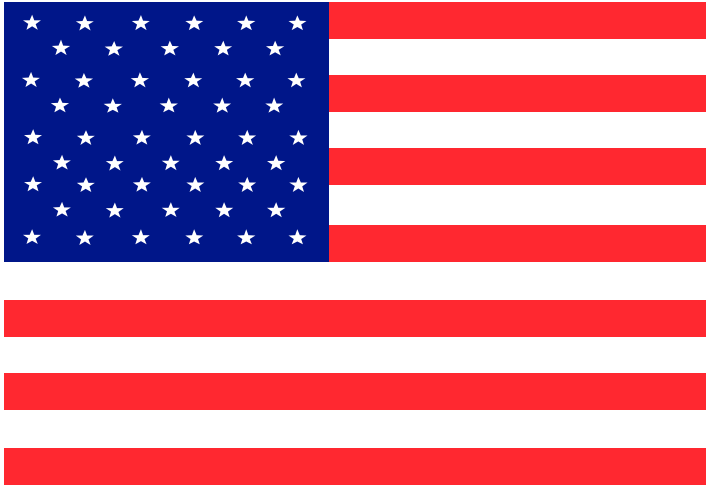
THANK YOU!

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