

An Empirical Patent Study of Internet Technology Innovation in China

Peking Law School/

IP Institute

Prof. Zhang Ping

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Empirical Patent Study of Internet Technology Innovation in China

- **1、 Why Study Internet**
- **2、 Methodology of the study**
- **3、 Patent statistics of Chinese Internet Companies**
- **4、 Challenges and Problems**
- **5、 Systematic Solution: Law and Policy**

1、 Why Study Internet

- In past 15 years, Chinese Internet companies achieve the most dramatic developments among all industries.
- In 2015, the Chinese government proposes to build an Internet-Plus economy, which puts Internet the center of all industries.
- Internet companies themselves are typically proud of being Hi-tech companies.

1、 Why Study Internet

According to ITU's report "2014 Information and Communication Technology", there are 3 billions internet users, 2/3 from developing countries.

According to Chinese Internet Association's "China Internet Development Report (2015)", there are 649 million Internet users by Dec, 2014, wherein mobile Internet users are 557 millions.

	2014 年	
应用	用户规模 (万)	网民使用率
即时通信	58776	90.6%
搜索引擎	52223	80.5%
网络新闻	51894	80.0%
网络音乐	47807	73.7%
网络视频	43298	66.7%
网络游戏	36585	56.4%
网络购物	36142	55.7%
网上支付	30431	46.9%
网络文学	29385	45.3%
网上银行	28214	43.5%
电子邮件	25178	38.8%
微博	24884	38.4%
旅行预订	22173	34.2%
团购	17267	26.6%
论坛/bbs	12908	19.9%
博客	10896	16.8%
互联网理财	7849	12.1%

2、 Methodology of the Study

- Since 2014, Peking Internet Law Center and China Science and Technology Law Center co-issue a study of China Internet innovations, in particular, focusing on **7** technical innovation areas.
- The study searches Chinese patent portfolios of internet companies and analyzes their market advantages.
- The study is made based on **35,707** patents (dated Nov 20, 2014)



2、 Methodology

- 7 most active Internet innovation areas :
 - Instant messaging
 - Internet payment
 - Online gaming
 - Social media
 - Search engine
 - Network security
 - Clouding computing

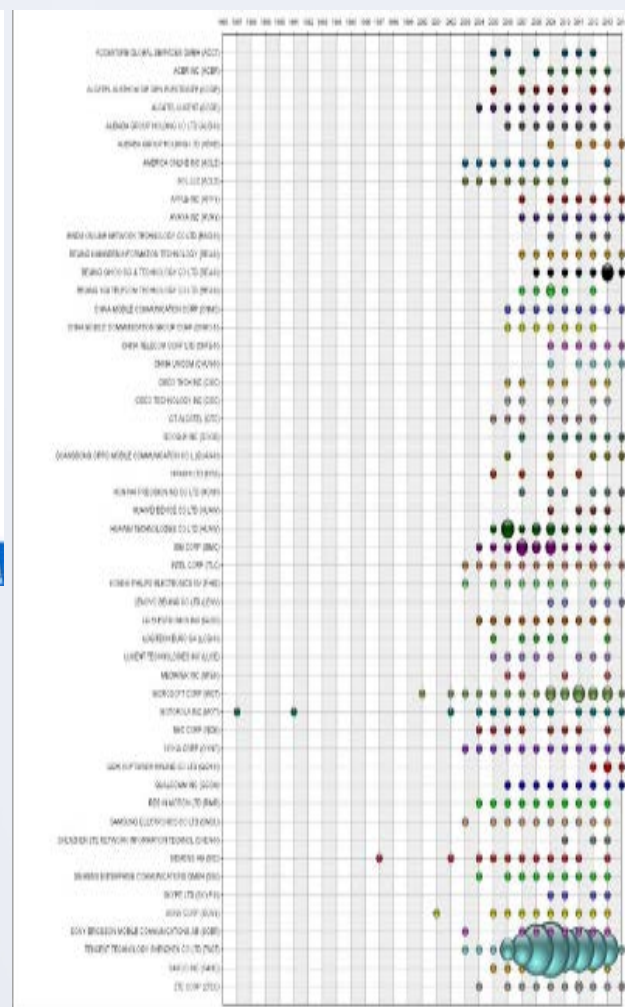
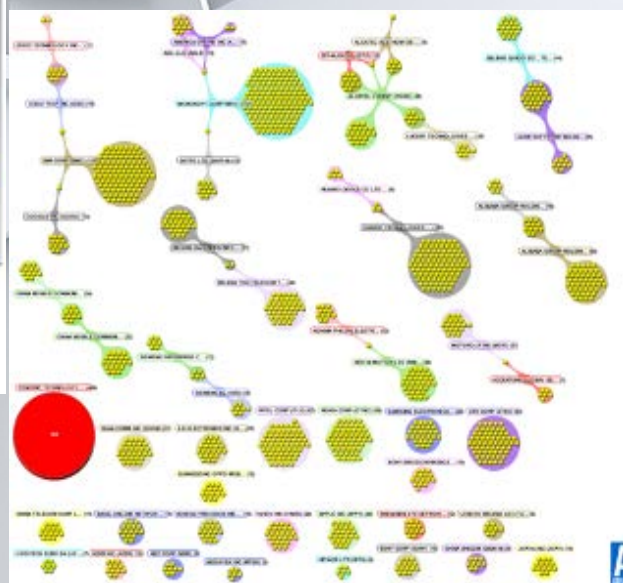
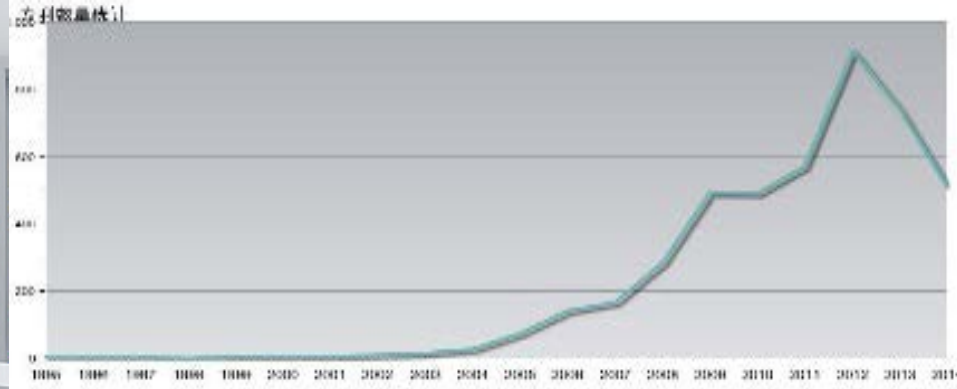
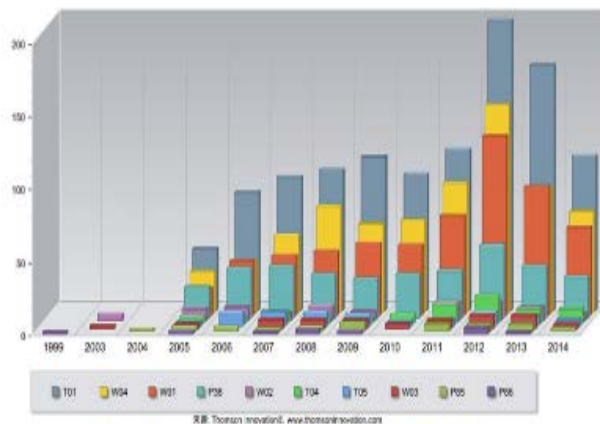
- Study the innovation and developments from the perspective of markets and products

2、 Methodology

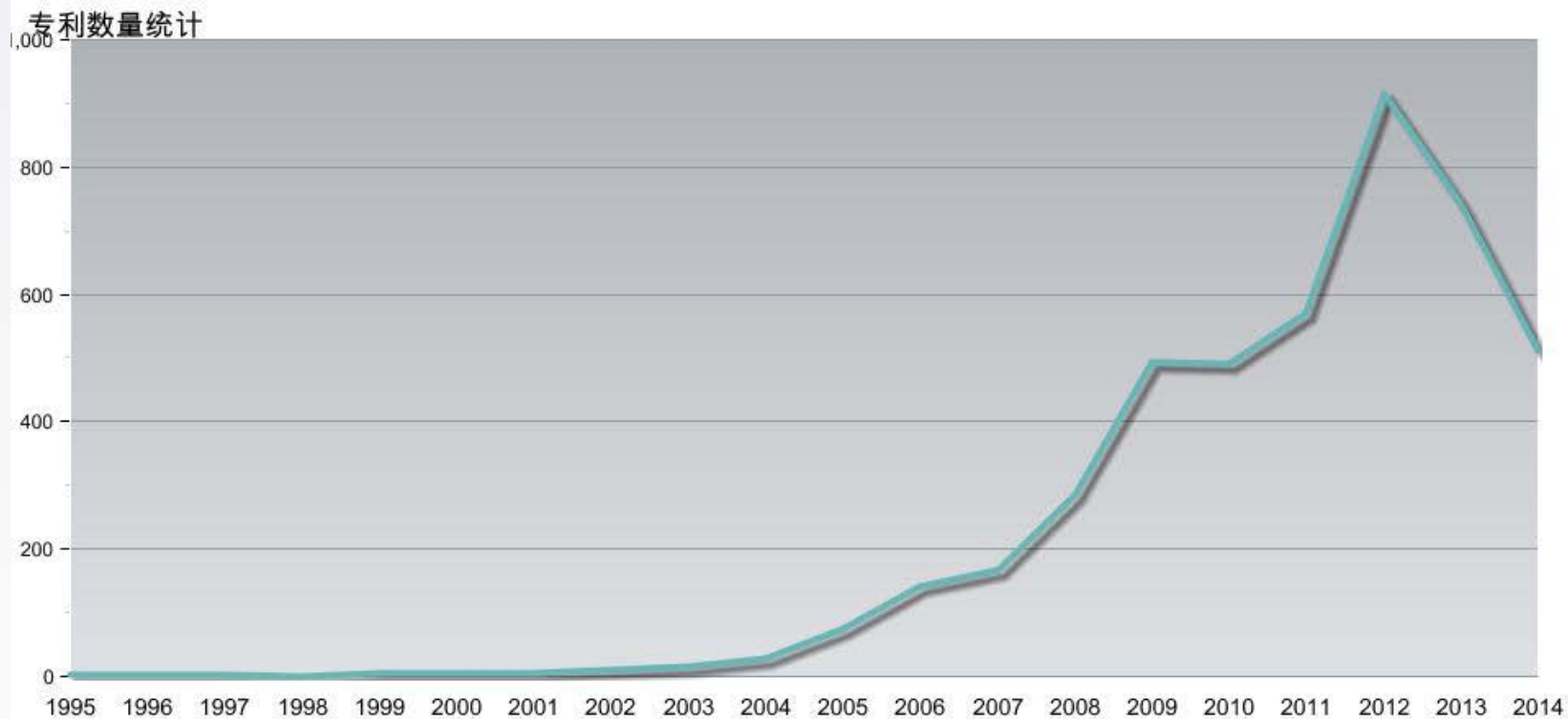
■ For each innovation area, six factors are considered:

- Number of patents
- Right owner of Patents
- Development trend of technologies
- Level of competition and market position
- Collaborative Innovation
- Case study

网络游戏主要技术领域分布图



3、Patent Statistics of Internet Companies——Instant Messaging



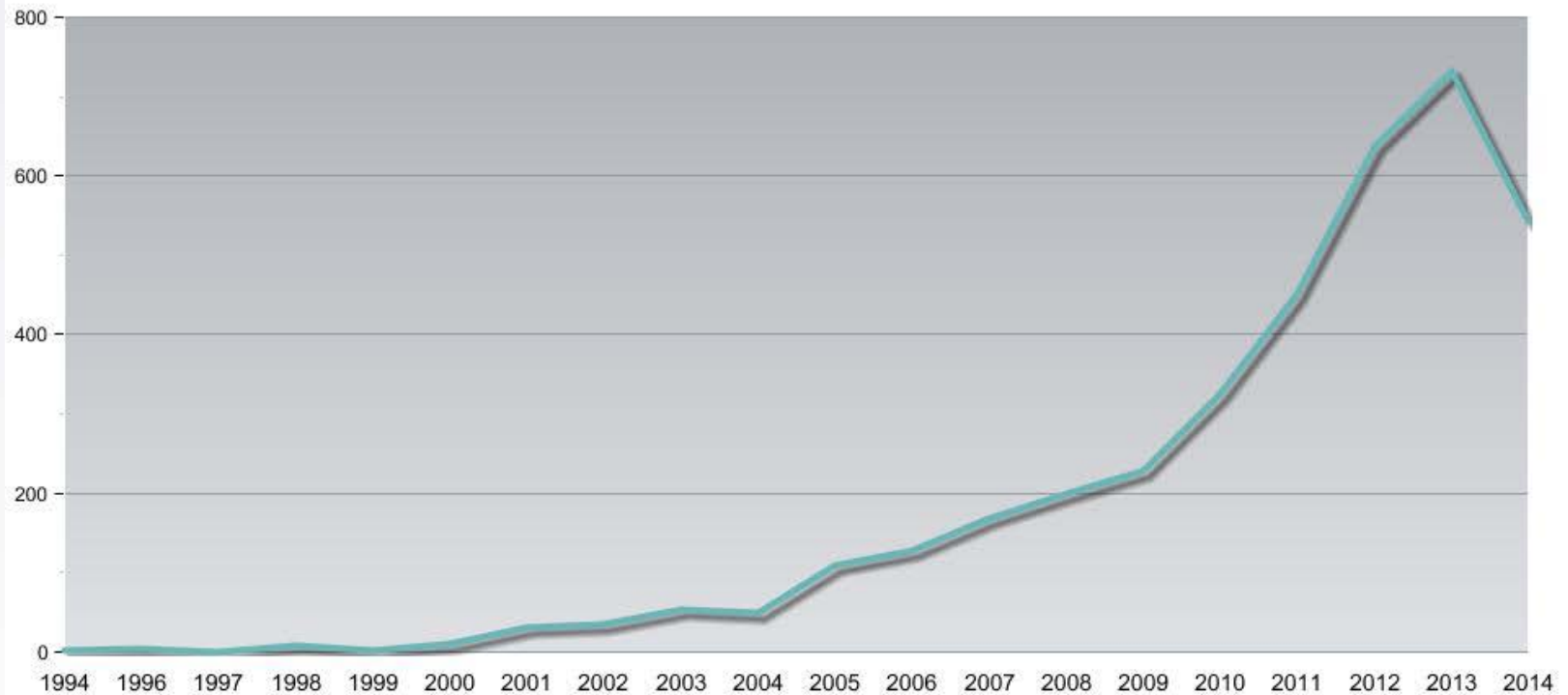
- 4469 Chinese patents (dated 2014.11.20)
- Mostly related to Internet data transmission/communication
- One significant patent holder is Tencent, which has the biggest patent portfolio.

3、 Patent Statistics of Internet Companies——Instant Messaging



- Tencent increased patent filings dramatically since 2008.
- Tencent's patents relate to various technical functions of their instant messaging product/service (QQ / Wechat), such as paging, contacts, emails, image capture, locating, network video, game client, interactive communications.

3、Patent Statistics of Internet Companies——Internet Payment



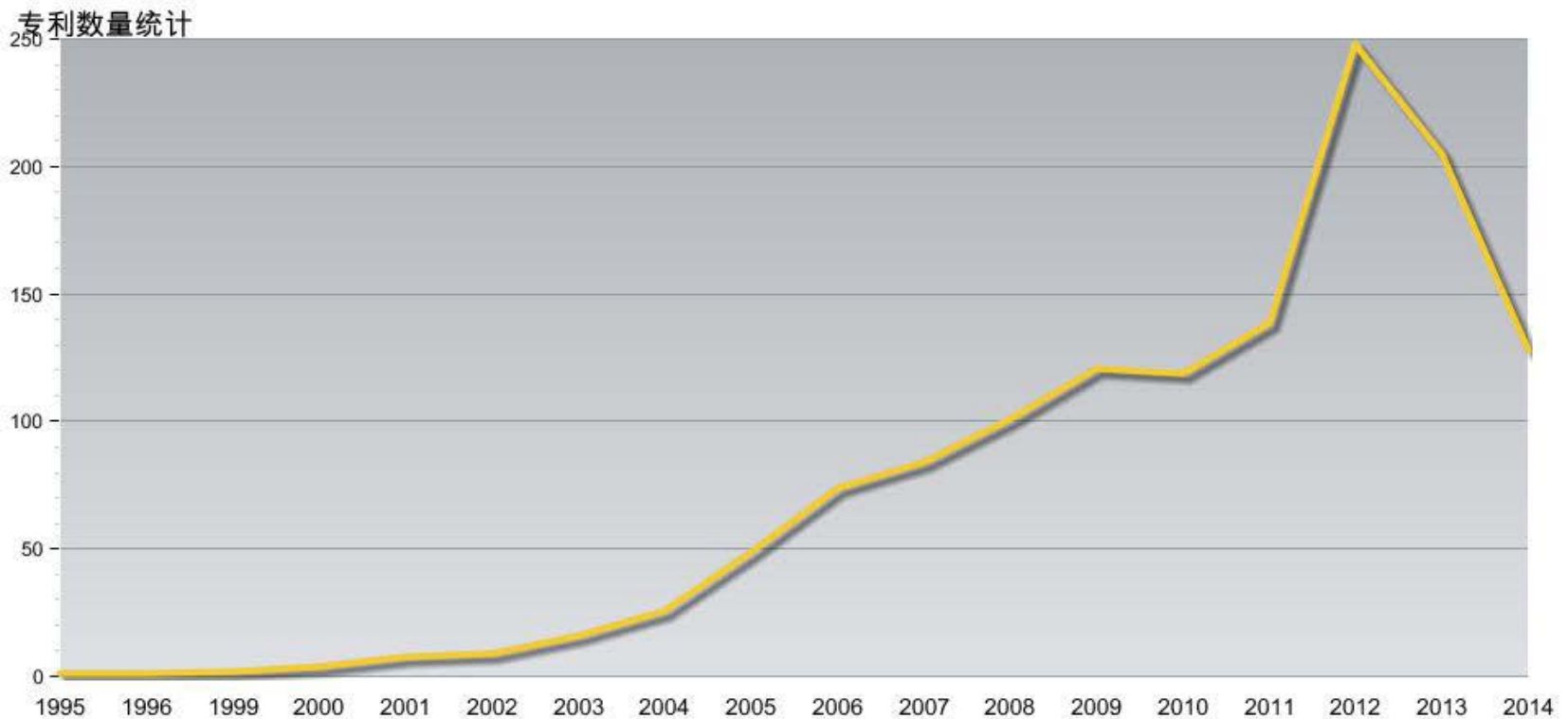
- 3721 Chinese patents (dated 2014.11.20)
- The important patent holders include Huawei, ZTE, ICBC, National Science and Technology, Samsung.
- Compared with other areas, this newly emerging area has less patents or patent holders.

3、 Patent Statistics of Internet Companies——Internet Payment



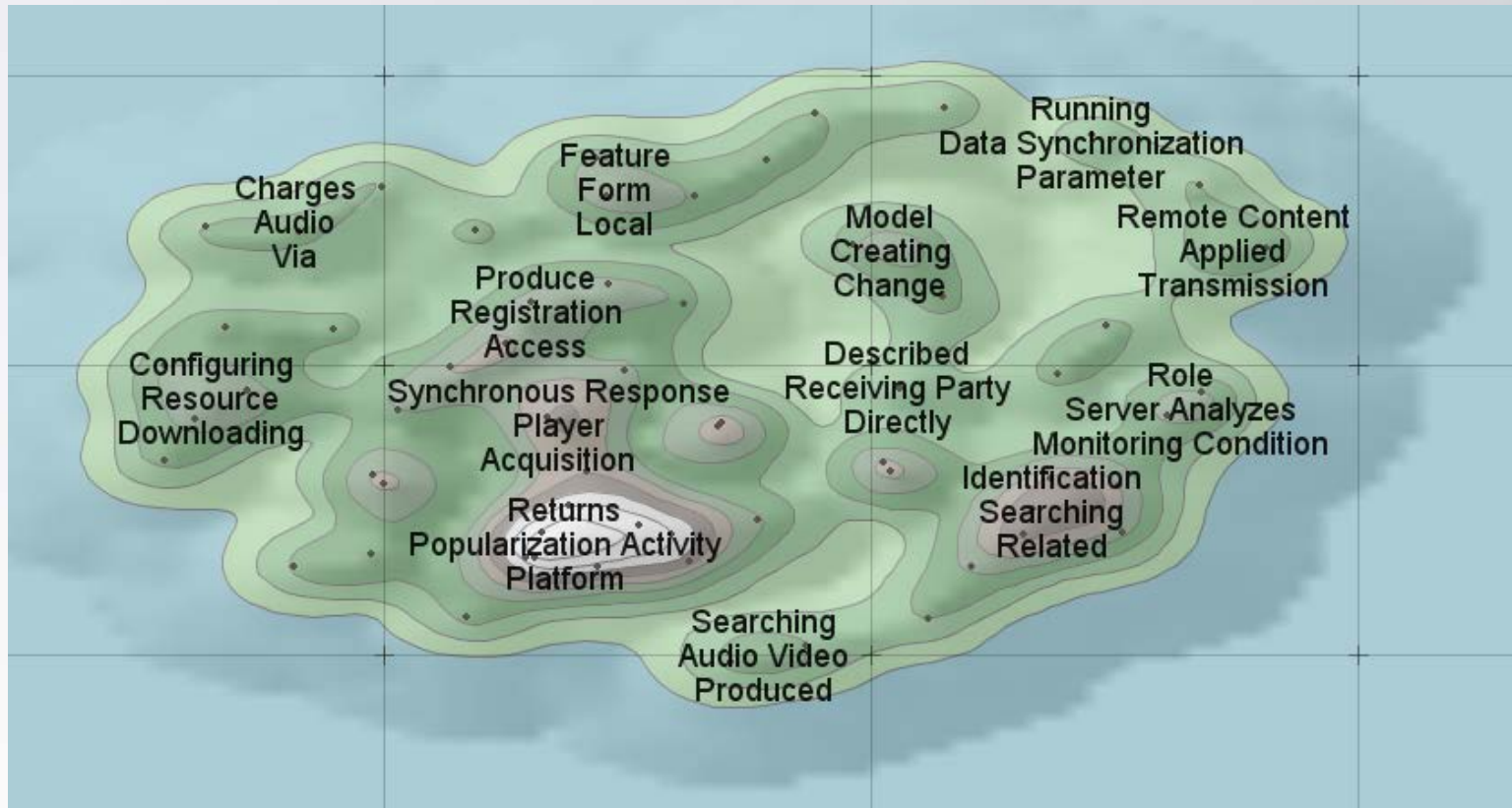
- Huawei's patent portfolio largely focuses on the physical level, such as interaction, caller identification, data transmission, payment security, resources management, as well as other areas such as advance payment, currency exchange, etc.
- Starting from 2012, Huawei was no longer merely a player in telecommunication industry, but provided infrastructure solution to other industries including finance, power, energy, government.

3、Patent Statistics of Internet Companies——Online Game



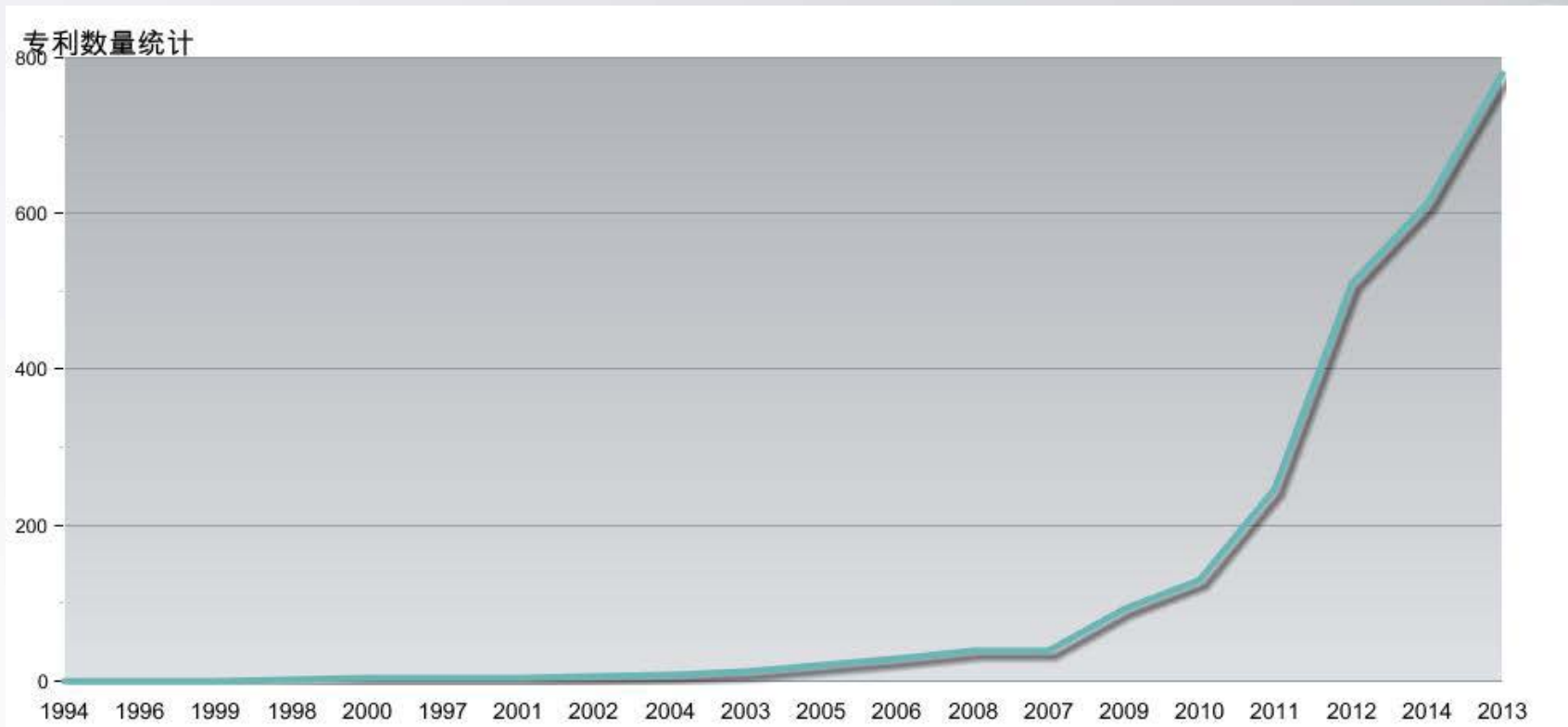
- 7266 Chinese patents (Dated 2014.11.20)
- Important patent holders are Tencent, Huawei, KONAMI, PinSe, ZTE, Microsoft
- Netease, ShengDa, Chang You, Wan Mei, Ju Ren have significant shares of the game market, but not much patents.
- Patents related to Online games are typically in IPC classification T01, W04, W01, P36.

3. Patent Statistics of Internet Companies——Online Game



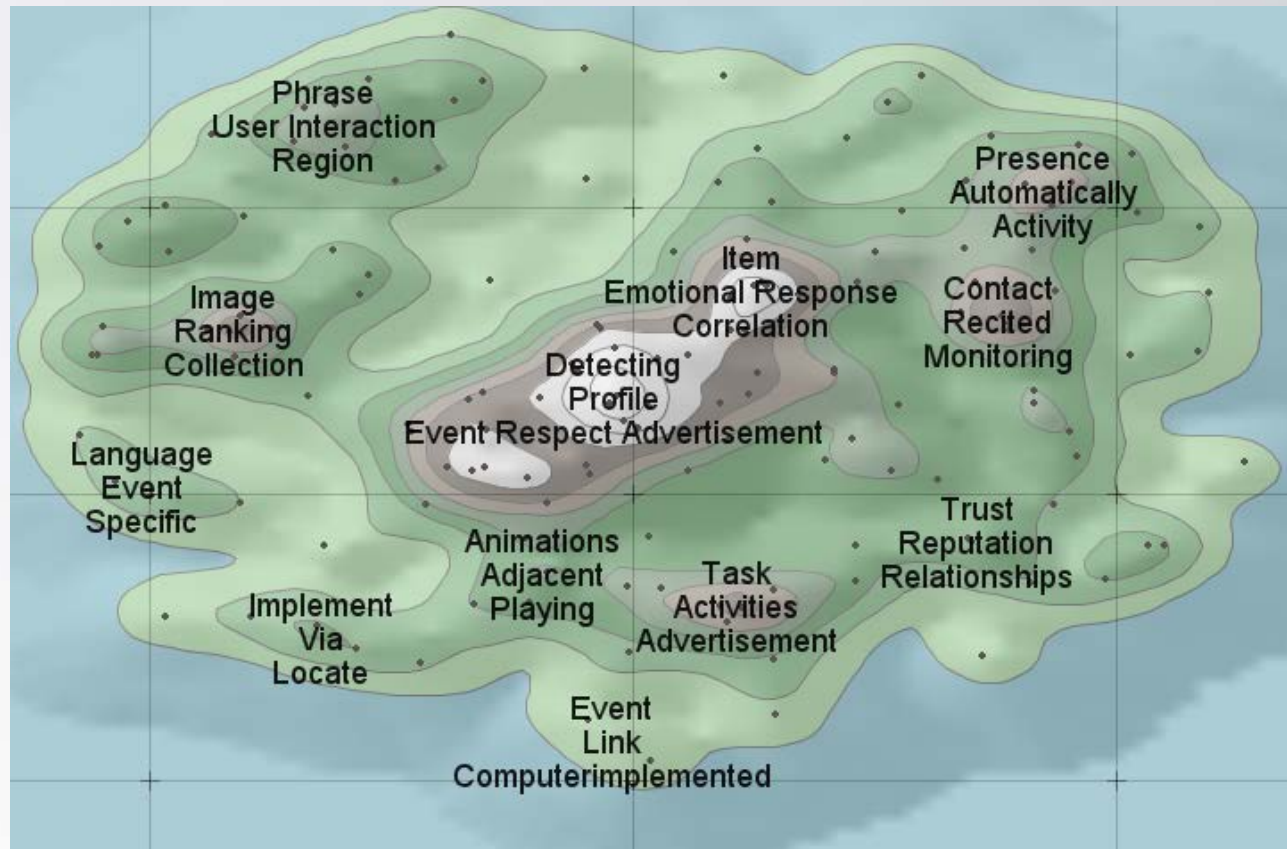
- Tencent has a bigger patent portfolio.
- Tencent's patents are related to interaction with game players, searching/locating of players.
- Network externality is also critical for Tencent's leading market advantage.

3、 Patent Statistics of Internet Companies——Social Media



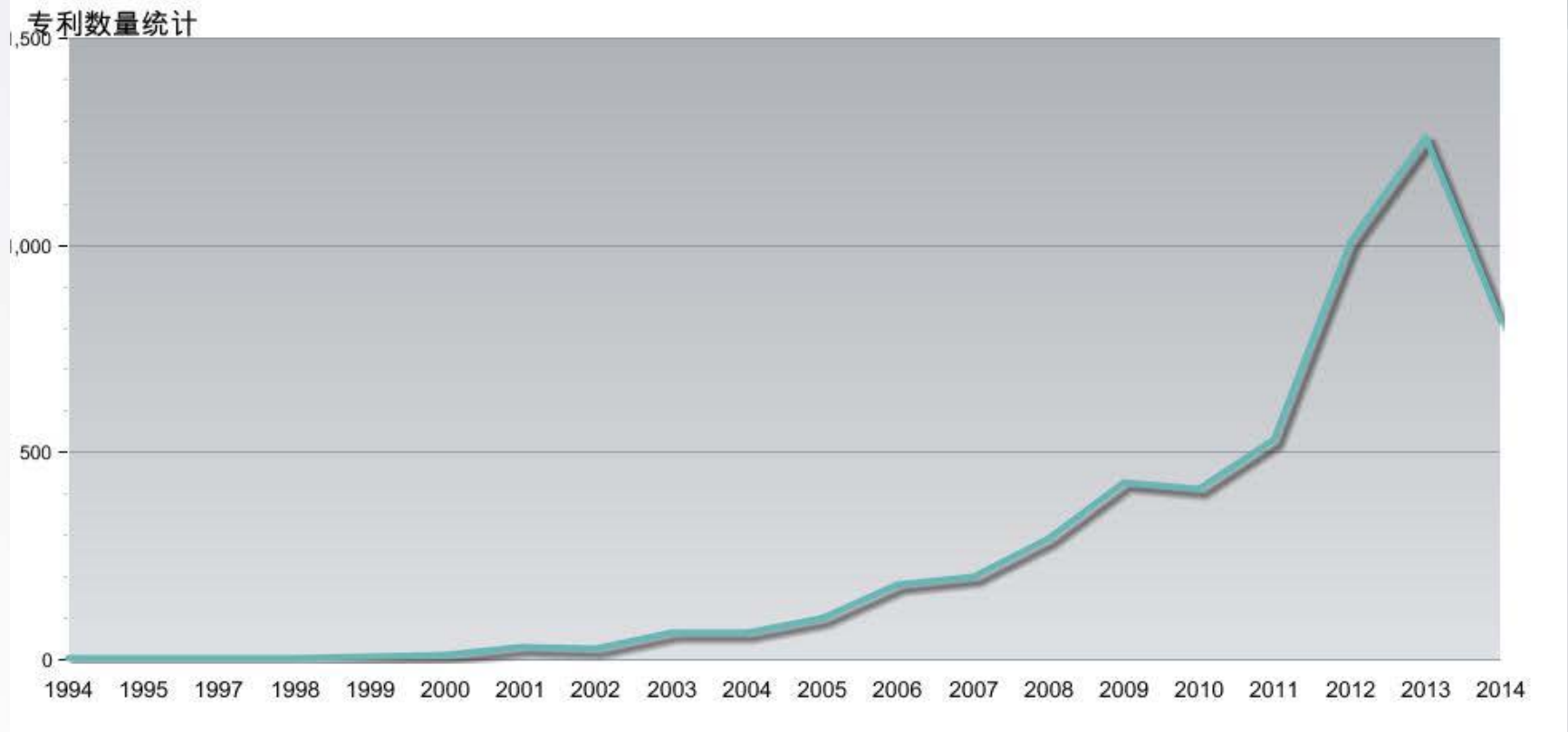
- 2534 Chinese patents (Dated 2014.11.20)
- Microsoft and Tencent are two biggest patent holders. Samsung, IBM, Google, ZTE, Sony, Facebook, Huawei, Yahoo also hold a significant size of patent portfolio.
- Facebook does not provide service in China yet, but already hold patents.
- IPC classification T01, W01

3、 Patent Statistics of Internet Companies——Social Media



- Microsoft's Chinese patent granting started in 2006, and increased dramatically in 2011~2012, but dropped a little bit after 2013. This might be related to the Microsoft's MSN Messenger stopped operating in China in 2014.
- Microsoft's patents relate to notification, contact monitoring, event schedule, image processing, etc.
- Microsoft still holds a sizeable patent portfolio covering the infrastructure of social media.

3、 Patent Statistics of Internet Companies——search enging



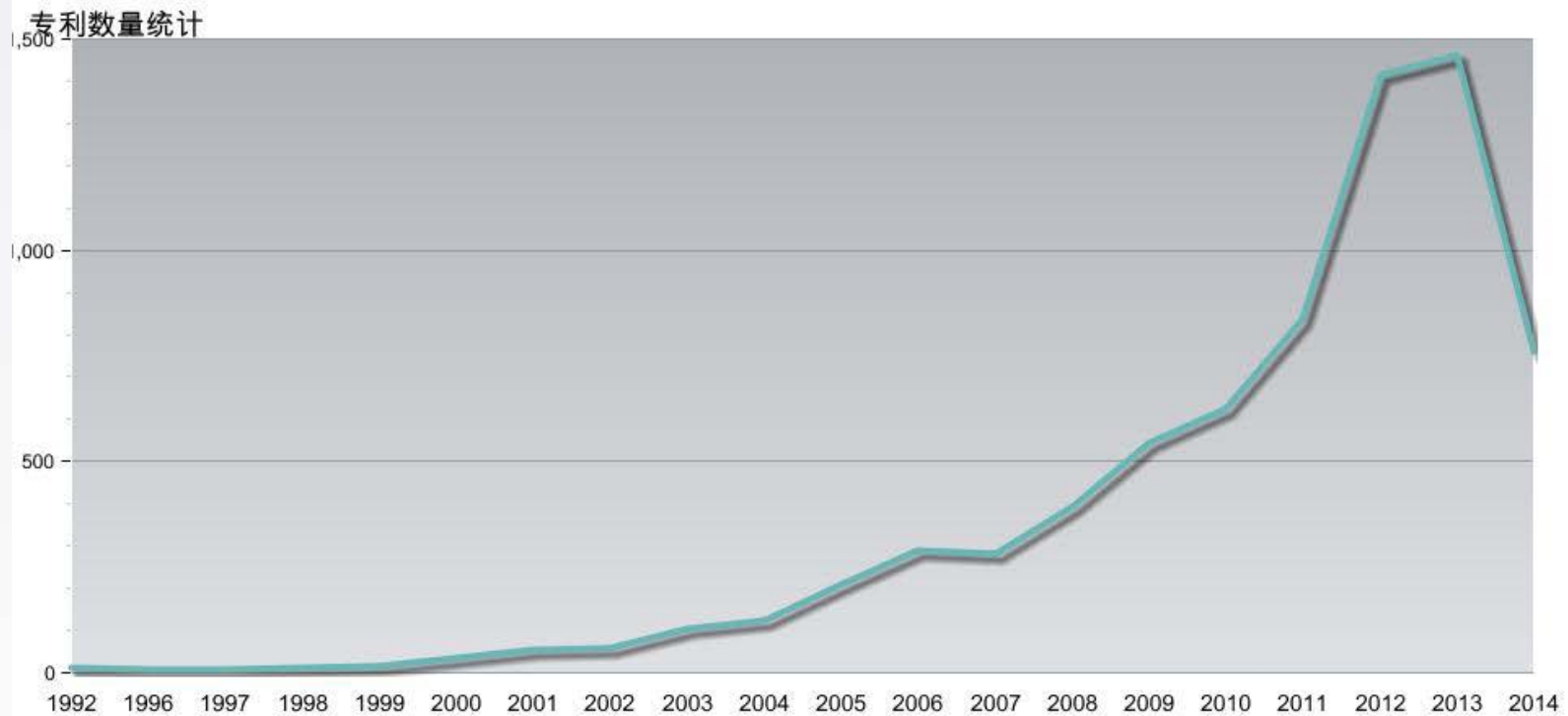
- 5453 Chinese patents (Dated 2014.11.20)
- Major patent holders include Microsoft, IBM, Google, Tencent, Qihoo, Alibaba
- IPC classification T01,W01
- Baidu's massive patent filing started in 2012, though it has a dominating market advantage in China years before.

3、 Patent Statistics of Internet Companies——Search Engine



- Qihoo/Qizhi established in Sep, 2005 as a network security company, initially providing free anti-virus softwares
- Qihoo/Qizhi came late to the searching engine area, but has been active in building its patent pool. But its patents do not seem to cover the core technology in search engine.

3. Patent Statistics of Internet Companies——network security



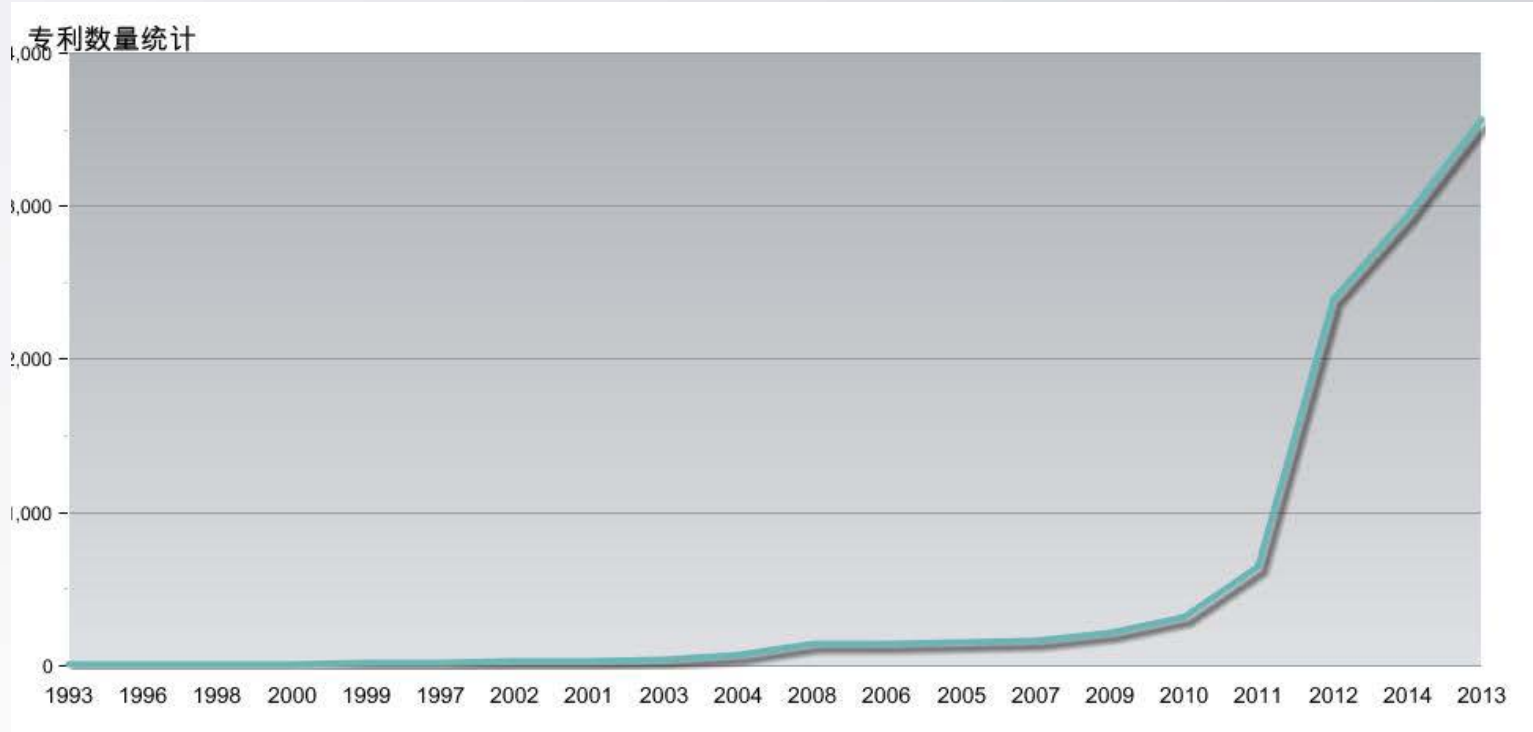
- 7266 patents (Dated 2014.11.20)
- Network security relates to anti-virus, monitoring, firewall. Huawei is a big patent holder.
- IPC classification T01, W01

3. Patent Statistics of Internet Companies——network security



- Network security is a strategic service area for Huawei. Huawei's patent filings relate to communication channel, device level, protocol level, etc.
- Huawei has a prominent market advantage in China.

3. Patent Statistics of Internet Companies——cloud computing



- 10929 Chinese patents (Dated 2014.11.20)
- Cloud computing is a relatively new technical field, but patents increases dramatically since 2012.
- Microsoft and IBM are ahead of Qihoo, Inspur, Huawei, Baidu, ZTE, State Grid.
- IPC classification T01, W01.

3. Patent Statistics of Internet Companies——cloud computing



- Microsoft's cloud computing focuses on resources loading, list updating, image locating, virtual installation, file saving, etc. Further, it relates to software algorithm.
- Baidu started massive filing in this area in 2013.

Example

Xiaomi



Being a fast growing start-up,
Xiaomi starts building patent
portfolios in recent years, and
apply 700~800 applications per
year.

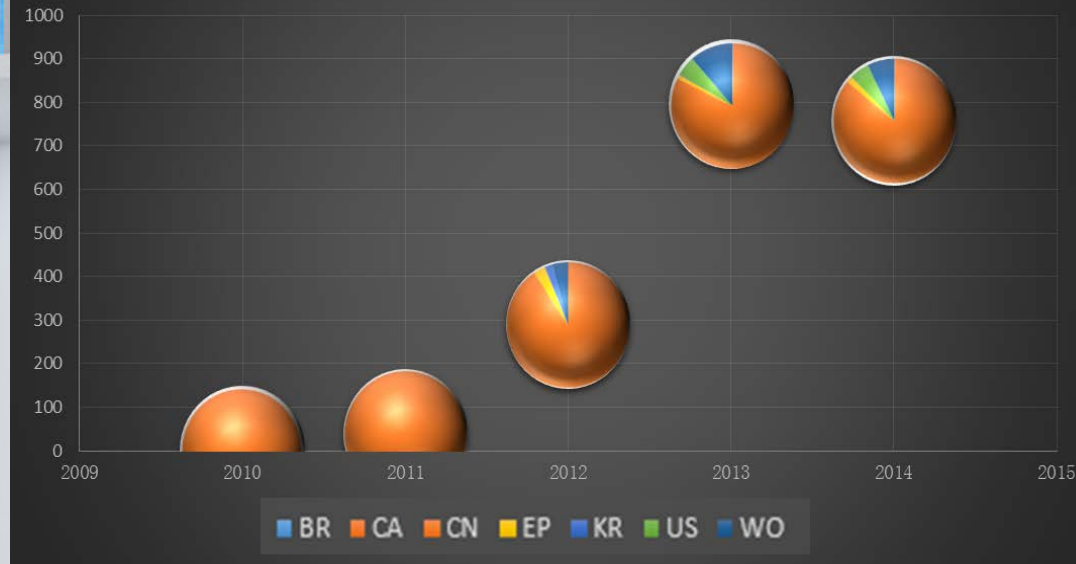
Ericsson sued Xiaomi in India for
patent infringement on Dec 5,
2014.

On Dec 8, 2014, India Court issued
preliminary injunction against
Xiaomi for infringement of
SEP.

Ericsson owns a patent portfolio or more than 35,000 patents, covering 2G, 3G and 4G communication standards.

Ericsson sued Xiaomi for patent licensing fees under FRAND terms.

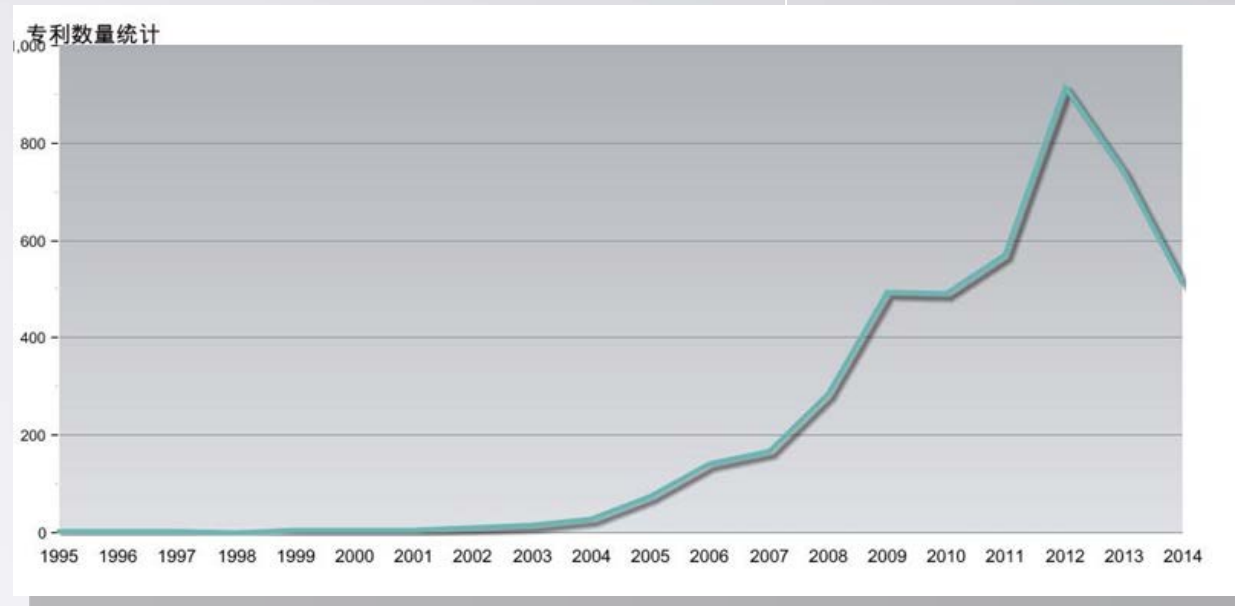
小米专利各国家地区占比逐年变化图



4、 challenges and problems

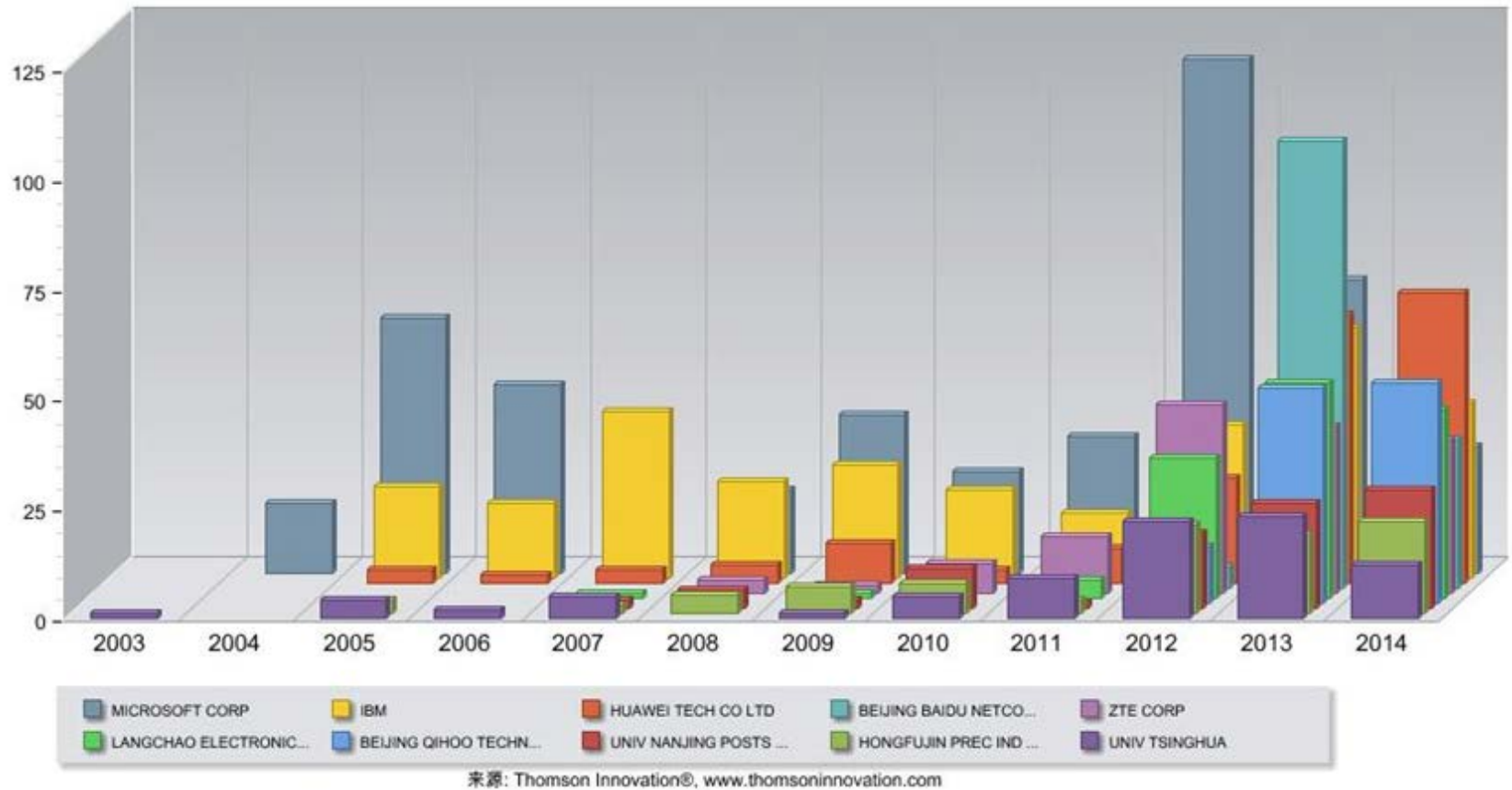
Faster growth in Internet innovations

- Patent statistics in past decade
- Patent dramatic growth every 3~4 years, indicating a cycle of technology upgrade
- Number of Patents grow faster after 2010
- Majority of growth come from domestic companies.



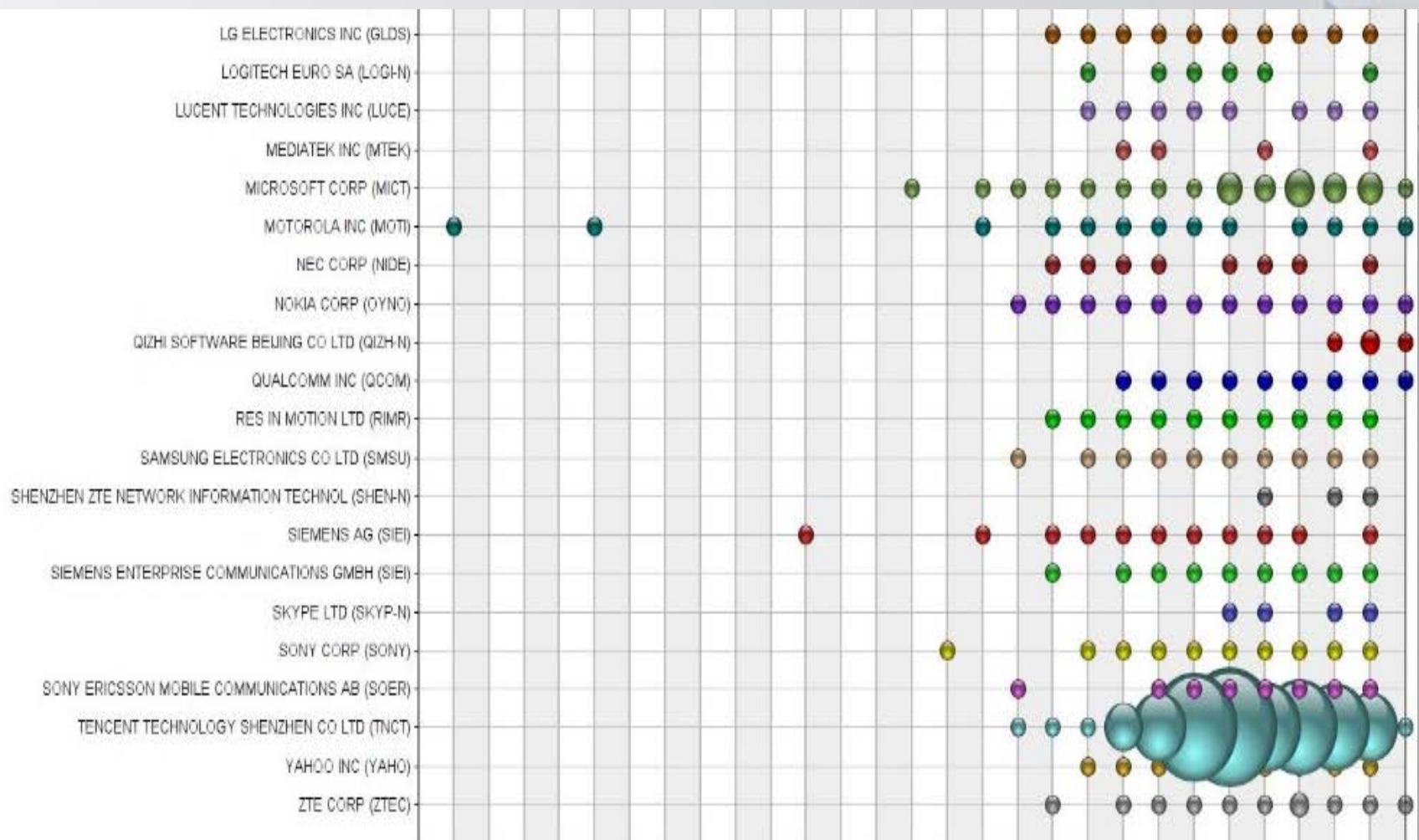
Patent apps growth in Instant Messaging

云计算竞业环境分析



Cloud computing

- Multi-national companies have accumulated certain patents in early times.
- Patents are more related to physical/transportation level of Internet, and some emerging areas, e.g., cloud computing
- But Chinese domestic companies got more patents in recent years.



Domestic patent growth Domestic companies got more patents since 2010, even outnumbered multinational companies in certain technology areas. But the patents are not evenly distributed among various technical areas. Most are related to software and product designs. Further, the speed of growth is not consistent, which implies the R&D are not always sustainable.

Network externality

Innovation is still not the driving force.

Successful internet companies benefit from network externality derived from a huge population of users.

Lack of collaborative innovation

We cannot see much cooperation between different entities in conducting R&D.

We are of the view that collaborative innovation might be necessary and are more cost-efficient.

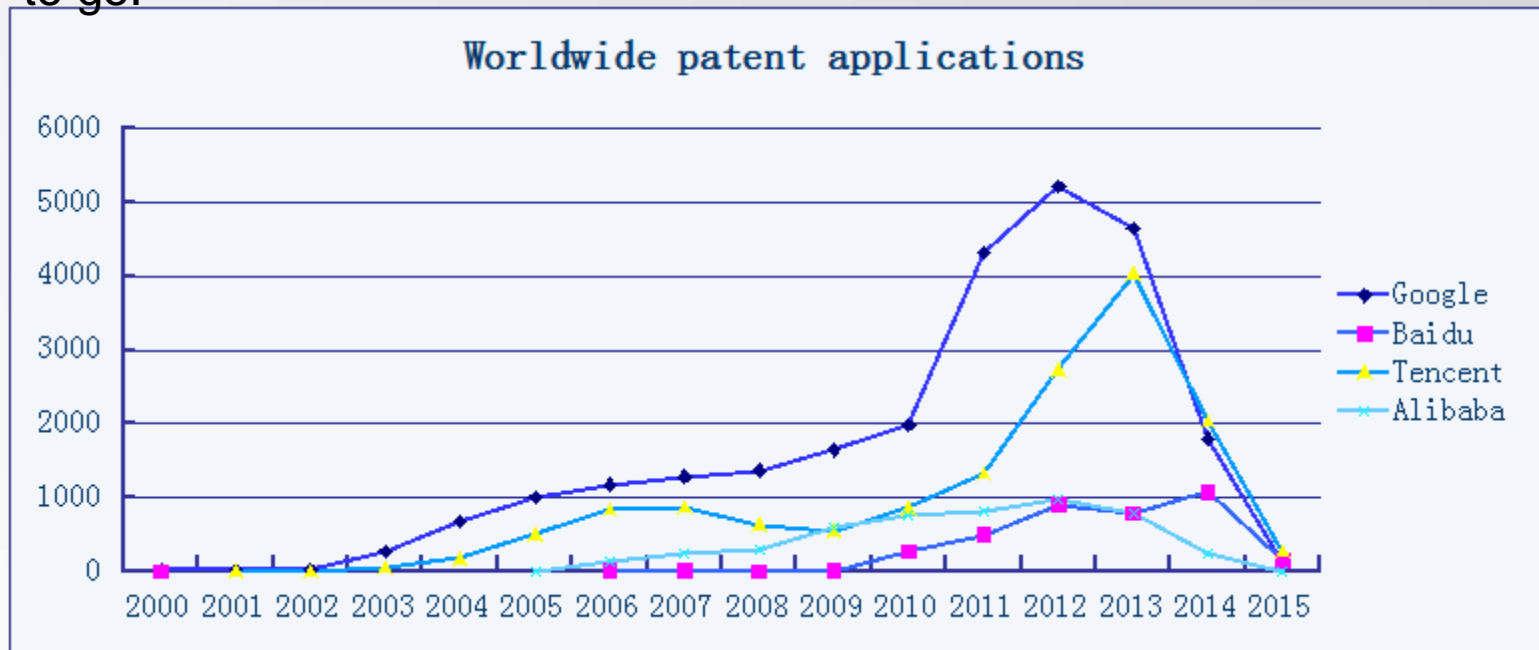
Uneven developments in various areas

Network security and search engine starts earlier. Instant messaging and online payment grows fast in the past five years.

Network game and social media have less patents and less driven by technology innovation;

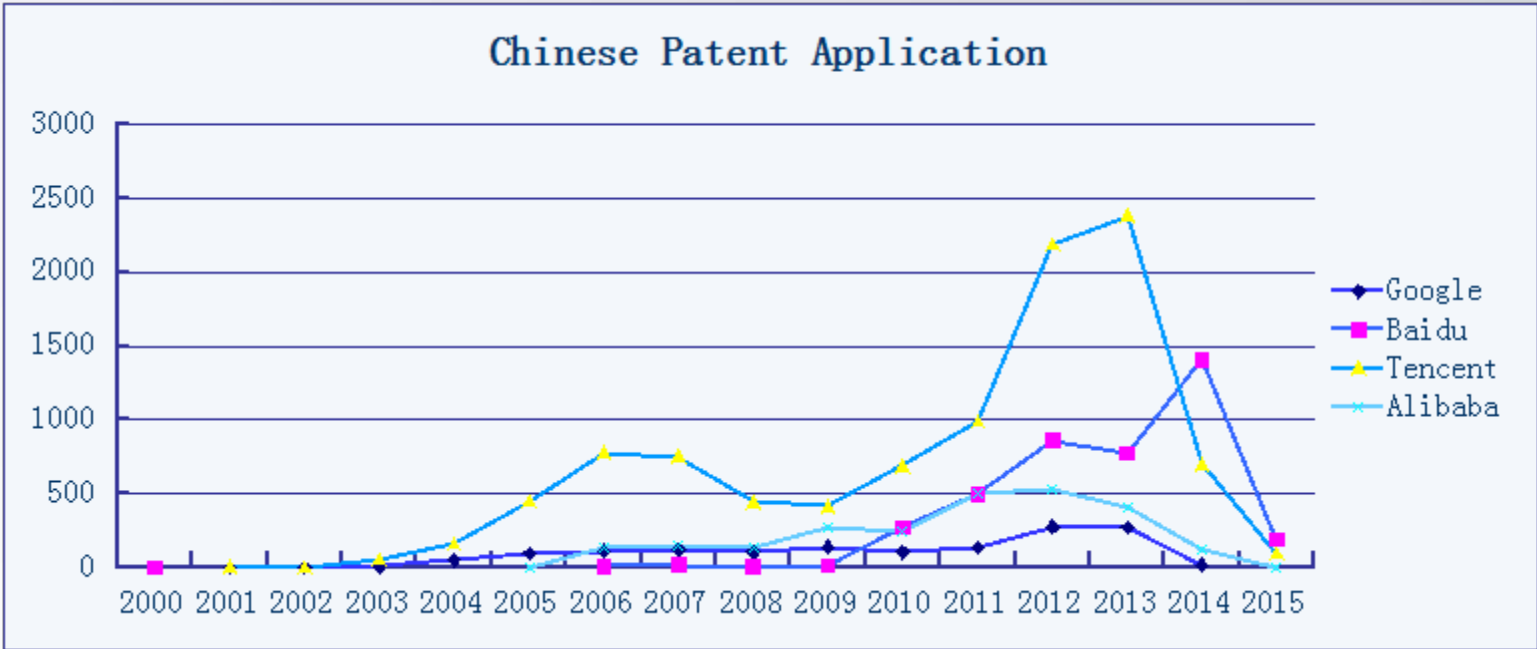
Cloud computing is an emerging area, but Microsoft and IBM started filing patents more than a decade ago. And recent patent filings increases dramatically.

- Globally, Chinese companies' patent portfolio grows fast, but still a long way to go.





- Domestically, Chinese internet companies have more patents than foreign competitors.



5、 Systematic solution : Law and Policy

- Chinese next 5-year Economical Plan: encouraging the public to establish innovative startups
- Improve IP system and national policy to encourage/protect innovation
- Chinese version of the Bayh-Dole Act (effective since Oct 1, 2015)
- Legislation revision of Patent Act, Copyright At
- Legislation of Inventor Compensation Act

5、 Systematic solution : Law and Policy

- Keep an open mind

- 1) Patent and Innovation

- 2) Patent strategy in an open innovation age

- 3) Enforcement regarding Internet SEP

- 4) Observations on OIN (Open Invention Network)

wellcom your comments

Professor Zhang Ping

hellopku@pku.edu.cn