Open Source and Software Industry in China

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Abstract. In this article, at first, early history of Internet and open source in China is introduced. It implicates that there is a tradition of cooperation in ICT in China. Then market status and development environment of open source is discussed. It turns to a conclusion that over commercialization is the key problem to obstacle open source development in China, which is supposed to seriously face in the near future.

1 Early History of Internet and Open Source of China

In September of 1987, China sent the first email to Karlsruhe University in Germany. It implicated that China succeeded to make connection to CSNET which was founded by USA National Science Foundation. It was just the time that Internet all over the world was forming. Why this email is so important? It opened the door of Internet to China.

The reason that I mention this event was that only by international collaboration we can come across the obstacle from not only technology aspects but also from political factor. The latter one was the most difficult factor to overpass.

In 1984, Professor Werner Zorn of Karlsruhe University emailed Lawrence Landweber and asked for permission to make a CSNET gateway to German. Lawrence Landweber got the permission from Bob Kahn-the father of Internet. As a result, Karlsruhe University-CSNET connection was made in 1984. From 1986 or so, Lawrence Landweber received messages from GFN (German National Network), asking him to cut off the connection to Karlsruhe University and connect directly to GFN. Fortunately he refused. In some sense, it means that Karlsruhe University was the central hub of Internet in German at that time. From this point we can know the exact and fundamental meaning of the first email: “ Across the Great Wall we can reach every corner in the world”. It was taken regards as the first step towards China and the world interconnection.

So in 1987, Steven Wolff gave Professor Werner Zorn and other scientist permission to make the gateway to China. But on the next day he was noticed by White House that permission was revoked. At the critical time, Wolff’s philosophy, “Do not ask permission before but ask for forgiveness after”, and other scientists’

faith, “It is White House and we are academic”, together pushed the fundamental step towards the interconnection of China and the world[1].

After that, China fulfilled the full connection to CSNET through the root server in Japan and Internet in China started to develop very fast. In 2008, number of netizens in China exceeded USA and became No.1. Up to 2010, China has over 360 million Internet users. Without boom of Internet development in China, it’s hard to imagine the rapid development of open source movement. But we should know, the collaboration and collective efforts definitely helped China. It showed us a vivid story how Internet was forming and why it should be a commons.

Now let’s turn to open source movement in China. Open Source movement in China started from Linux. In 1991, Dr. Gongmin was a Ph.D Candidate of Finland Helsinki Metropolia of Applied Sciences. Then he found out Linux system the first time and became the first Linux user of Chinese. One year later, Linux system was issued. He liked to use this system because some ideas could become truth with source codes. Later at some conference, when discussing about the reason why Linux came birth in Finland, they attributed most to the largest free/open source software bank of the world in Finland. Then he contacted with director of the Ministry of Materials Supply Information Center, Hu Yizhi, and director of State Information Center, Gao Xinmin, discussing the feasibility to set up a open source bank in China. In 1994, he launched Linux system for State Information Center. With their helps, he carried 80G open source software back to China in 1996 and set up the first open source software bank based on the server of State Information Center.

As a result, in the middle of 1990s, many software companies emerged to develop Chinese Linux system as well as other open source software in China.

2 Market Status of Open Source in Software Industry of China

From the end of 1990s, market share of open source software grows rapidly. Take Linux for example, the average growth rate of 2006 and 2007 is 27%. The market share of Linux server grew from 9.5% in 2006 to 11.3% in 2007.

[1] The Amateur Computerist, Summer 2008, Volume 16 No.2. In 2007, a ceremony was held in German to celebrate the 20-year anniversary for the first email of China. Most key figures attended the conference. The journal collects most presentations and materials in that conference. I am really appreciate Professor Cui Zhiyuan, my supervisor, for providing me the critical materials.

In 2008, the turnover of Linux server is more than 323 million RMB with the growth rate of 17%. Desktop Linux was sold 7.48 million with the sale of 26.94 million RMB, and Linux server was sold 77 thousand with the sale of 296.3 million RMB. Download of Open Office is more than 400 million，accounting for 4-5% or so of the whole download of the world. The market share of Linux server operation system is 12% in China.[2]

	Windows	Linux	Unix
The World	64%	25%	11%
China	48%	12%	40%

Table 1 Market Share of Server OS in 2008

There are some differences for the market situation of Linux and Unix in China and the world. One of the reason is that Unix server maybe more popular in Universities and high education institutes of China.

There are five main Linux Companies in China. The first is Red Flag Software Co., Ltd, which was founded by China Academy of Science. In 2007, the market share in China is 27.2%. In 2005 it was acknowledged by IBM as the third main identification company (the other two are Red Hat and Novell). 。

In China, other main Linux supplier companies are China Standard Software Co., Ltd., Red Hat, Novell and Turbo Linux.

In China, there are over 200 open source societies in 2008. Some of them are becoming mature and participants can make contributions to improve open source software. Most of them are based on regions, such as in large city or province. Meanwhile, there are also some associations at the national level. I will discussion more about it later.

3 Development Environments and Promotion Policy for F/L OSS

As far as developing environments and policy were concerned, I would discuss it from three dimensions. The first is institution layer. It means that the law framework for software industry including open source. The second one is public policy layer. In this layer, varies of public policies aiming to promote OS development will be considered, such as industry policy and government procurement. The third layer is

[2] The data is from blog of Lu Shouqun. He is the Chairman of China OSS Promotion Union. http://blog.sina.com.cn/copu

industry layer, which is referring to open source companies, participants of open source societies and so on.

3.1 Institution Layer

For software industry, intellectual property right protect is vital. In 2000 or so, piracy is very popular, which made the industry huge loss every year. Domestic companies also suffered a lot from pirates because of no profit to support innovation and invention.

China joined in WTO in 2001, with promise to punish piracy activities and give strictest protection to intellectual property right. To line with these promise, China government started to promote the usage of legal copy. In April of 2006, four departments of central government collaborated to issue a notice, demanding all pre-sale PC in future must install official operating system software.

Meanwhile, China government issued some new laws and take severe action to against piracy. Once piracy helped Microsoft to occupy local software market and then Microsoft began to prosecute. The famous one is Tomato Garden XP case in 2008. At that time, more than twenty percentage of pirate XP operating system was Tomato Garden XP version. Then it was charged huge amount fine and some chief persons were put into prison. In September of 2008, CCTV-1 continued to broadcast the case four times. It showed the determination of government to punish piracy without hesitation. But high price of official private software was still a key factor. So in the end of the program, it spent more than 10 minutes to introduce Linux and open source software. Accounting for the status of CCTV in the public media, in some sense, it showed the official attitude towards the case.

Internet Cafeteria was another main channel which was easy to supervise. Because of heavy pressures from Microsoft, thousands of net bars began to turn to Linux system and other open source software from the consideration of operation cost.

Intellectual property right protection is a double-edged sword for the development of open source. In 2006, at first, many large companies preferred Linux as pre-installation operation system. But because of high rate of piracy of Windows in the past, in some sense, customers are addictive to Microsoft product (Seen in Table 2).

Table 2 Piracy Rates in 2005-2007 (%)

Calculation Line		2005	2006	2007
On Value	All	26	24	20
	Software	40	36	31
	Computer Software	57	53	41
On Copy	All	26	20	13
	Charged Software	66	63	56
	Company Customer	48	39	35
	Private Customer	80	78	69

Source: China Software Piracy Report 2008

Due to customs' habits, PC companies such as Legend etc, visited USA and negotiated with Microsoft very soon. Finally the price of official system was cut to relatively low, but the total bill was still very high. There is still severe competition between open source software and private property software.

Piracy makes Microsoft popular and gain great success. On the other hand, in some sense, open source belongs to public or collective property. As a result, the intellectual property of open source software is much easier to be infringed. In the future, patent risk is still a serious problem for open source. It demands some proper and innovative law framework different from USA-style to give effective protection to open source. In other words, it is a big challenge for human being to protect copyleft under the framework of copyright.

3.2 Public Policy Layer

Except from law framework, a series of public policies are introduced to improve the development level of open source. From the end of 20 century, China started to promote the development of open source. Ministry of Information Industry (now it is Ministry of Industry Information Technology) as well as other government sectors takes Linux as a significant part of software industry.

In 2000, the State Council promulgated Policies on Encouraging the development of Software Industry and Integrated Circuit Industry(Document 18th), promoting the development of software industry through diversity of public policies. To line with this objective, the State Council issued The Action Program for Vitalizing Software Industry, making the middle and long term objective for software industry.

In Essentials of National Medium and Long--Term Science and Technology Plan(2006 — 2020), supporting software system, including operation system, database system and office system, is paid attention. For the reason that source code can be used in open source process, it is practical and effective to take open source as industry policy promoter. Some important projects in 863 Plan were approved to give technological support as well as intellectual support to promote open source.

These relative polices are all relative with open source. Investments from public budget are put into developing public invention platform, infrastructure and other supporting system.

Some local governments take open source as a industry tool to stimulate economy development. In 2004, Guangdong province issued Linux promotion plan to encourage its development. Later software parks are invested to develop software as well as open source.

Another promotion policy is government procurement. The scale of government purchasing is rising in recent years. Government purchasing is suppose to be part of industry policy for public interest. In August of 2003, the State Council issued an order to require government sectors should give priority to domestic software.

There are hot debates on the role of government towards software industry. In 2005, China Software Industry Association published a report on the intellectual issue of open source software and business software. In this report, open source software is taken regards as independent model and could be encouraged. In the meanwhile, the report argued that government should not directly support or influence any type business model of software. “Market rules” is basic faith for many people. At the same time, “Market rules” is criticized hard because it does not consider the weak power of software industry in China.

3.3 Industry and Association Layer

In USA cost is much more concerned. But in China and other developing countries, national information security is key issue for e-government. Relying on Microsoft and other foreign companies would obviously threaten national information security.

Open source and national independent software industry would contribute to break monopoly and reduce high risk from this.

So there are much subsidy and preferential taxation to software industry as well as direct investment. Billions of money is used to promote open source. As a result, it forms incentives to act as free rider but not contributor. Behaviors of some open source company are contradicted to open source spirit. They make use of source code from open source society but not providing their codes to public. In some cases, one operation system was charged ten thousand RMB. Over commercialization of open source directly hurts public recognition to open source movement in China. Only one percentage of computer users in China is frequent Linux users. It is still a very long way to go.

As mentioned above, there are already more than 200 Linux societies in China. Meanwhile, there are some national level Linux and open source organizations including Open Source Society (OSS), China Linux Industry Strategic Alliance(CLIA)， Co-Create Software League（CoSoft），China Linux University Promotion Alliance(LUPA) and China Open Source Software Promotion Union （COPU）etc. They focus on open source development in the fields of public society, software industry sector, universities etc.

Linux companies and associations in China also try to make international networks and collaborations. COPU was set up in July of 2004. Now they have formed regular communication mechanism of open source societies in Northeast Asia and promote development of open source in China, Japan and Korea (CJK). In 2006, Asianux was set up by main Linux companies in CJK. Now it is the third largest Linux company in the world.

But in China, it lacks some huge and powerful open source foundations to promote and lead development of open source. In the meantime, software companies do not intend to throw money to found these kinds of foundation.

4 Conclusions

In the last decade, open source movement emerges and develops rapidly in China. Now open source software is one key part of software industry policy of China. Large public budget every year is used to promote its development. This is the advantage for open source development in China.

But, there are still some bottlenecks needed to break in future. One problem is over commercialization. It will encourage speculation behavior and damage capacity of sustainable development of open source software industry. The other one is piracy problem, which has been discussed a lot in this article. Because of disregard of copyright, it may lead to misunderstand open source spirit. Open source also has its own framework of copyright. The spirit of open source is to encourage coloration

and share, but definitely not steal. So part of public budge should be used to introduce open source to public and promote the spread of open source spirit.