

But China mobile market has its own characteristics. One notable difference with others is the relationship between the operators and the government. Although the trend of separation of enterprise and government is well underway, the organizational boundaries between the operators and the government are much less clear than in most other markets of the world for enterprises' state-owned nature. As a result, the government regulator plays a key role in the choice of 3G standards. The other difference is the lack of service integration. Except for China Unicom operators were supposed to provide only one type of service. The government has indicated its wish to drive the industry's structure toward integrated operators, i.e. allowing fixed-line operators to enter mobile and vice-versa. But by-and-large, the wireless market structure is not expected to change until the attribution of new mobile licenses at some point in time in 2005.

Therefore, it's no surprising that there are different opinions on how to develop 3G. The government and regulator is not quit clear, so the date of 3G licenses was postponed over and over again. The exiting telecom operators (China mobile and China Unicom) seem to be neutral to 3G, while potential new 3G operators (China Telecom and China Netcom) are eagerly waiting 3G, so are the domestic and foreign equipment manufactures.

3 THE THREE MAINSTREAM 3G STANDARDS OF ITU

In May 2000, the International Telecommunications Union (ITU) approved three mainstream standards based on CDMA. They are WCDMA (proposed by Europe and Japan), CDMA2000 (proposed by the United States), and TD-SCDMA (proposed by Datang Telecoms Group on behalf of China). Both of them have their own advantage and currently, there is no sign that any of them will become the only standard in 3G market. On the other hands, it is not easy to predict which standards will own the largest market; all depends how the standards fit the need of the market. Recently years, some of the countries, such as China, are going to rollout the 3G implementation. Before making the selection, services provider has to consider the suitable each standard and decide which one should fit their need before operating it. Because in the evolution from 2G to 3G systems, different migration paths should be identified for GSM and CDMA-centric systems (see Figure1).

3.1. WCDMA

GSM-centric operators have the option to implement General Packet Radio Service (GPRS) and/or Enhanced Data Rates for Global Evolution (EDGE) prior to 3G rollout. GPRS provides a relatively easy upgrade of existing 2G networks to support higher bit rates.

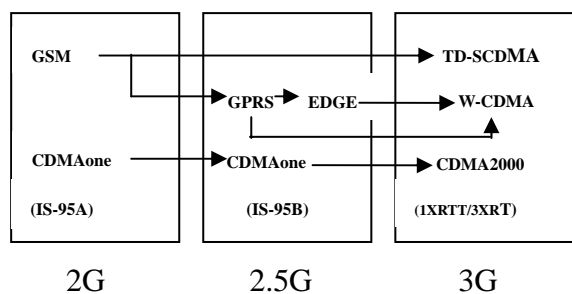


Figure 1 The different migration paths to 3G

4.1. How to Issue 3G License

Europe is most active in developing 3G, the first 3G license issued in Finland in 1999, the flood of issuing 3G licenses surged around Europe continent. It brings plenty of revenue to governments through fierce auction, meanwhile it puts so heavy burden on operators that their 3G development is halted. How to issue 3G license affects the construction of entire telecommunication infrastructure. Since China is still under the initial phase of market economy. Market competition mechanism is not mature, self-adjustment can not work well. So the macroeconomic control and regulation for government is required. Also since the telecom operators in China are all state-owned enterprises and two types of 2G standards: GSM and CDMA, are employed in China. And 3G standard TD-SCDMA initiated by China needs to be supported. So the auction like Europe is not the best way to issue 3G licenses. Instead inviting public bidding may be introduced. The public bidding is manipulability. With it, winner is chosen not only based on price offer, but also its capability and technical offer are taken into account.

4.2. Multiple Systems or Single 3G Standards

According to Current mobile market situations in China, and the update road from 2G to 3G, multiple 3G standards would co-exist in China.

Firstly, China Mobile, as the biggest 2G operators in the world, runs a pure GSM network. Recently year, it just upgraded its GSM network from 2G to 2.5G. If 3G licenses are issued, China Mobile has to catch up with other operators, to upgrade its 2.5G network to 3G. So in order to save investment, WCDMA is its best choice. To support national industry and enhance the efficiency of network, TD-SCDMA may be chosen as supplementary too.

Second, China Unicom, the country's second-largest mobile operator, which has built a current-generation CDMA network together with its GSM system, is the only CDMA operator in the country. Therefore CDMA2000 is its certain choice.

Third, TD-SCDMA, as the only one to have developed out of China, has received the strongest recognition from the Chinese government, will certainly become one of 3G standards in future China mobile market. Then, China Telecom & China Netcom, even China Railcom may be the best operators for TD-SCDMA.

4.3. The 3G Licenses Schedule

The government has not published any schedule to issue 3G licenses mainly for following reasons:

Firstly, technology and economy factors are taken into account. If the 3G standard of technology is changed frequently, it is hard to be accepted by public, because it brings so many risks to vendors and operators, even damages the reputation of technology. 3G standard have been changing for many times. It impresses people that 3G standard is not finalized yet. Additionally the existing problems in 3G equipments are obstacles to prevent 3G from commercial using. Up to now, in the 3G test being held in China, many problems are detected, such as frequent handover drops between 2G network and 3G network, lack of 3G terminal, various standards for some value added services. Currently public have high expectation on 3G. But if performance of 3G were worse than one of 2G, public would be disappointed, even give up any hope on it. Moreover, killer applications based on 3G are not found out. This is

6. J. J. Laffont and J. Tirole. A Theory of Incentives in Procurement and Regulation. Cambridge MIT Press, 1993.
7. Jean Jaques Laffont. Incentives and Political Economy. Oxford University Press, New York, 1st. edition, 2000.
8. Justus Haucap, The Economics of Mobile Telephone Regulation, Working Paper, University of the Federal Armed Forces Hamburg, 2003
9. Justus Haucap, Discussion Paper, University of the Federal Armed Forces Hamburg. June 2003
10. Otto Toivanen, Choosing Standards, Discussion Papers, University of Helsinki. October 2004
11. Paul Joskow, Deregulation and regulatory reform in the U.S. electric power sector. Paul Joskow's web page, February 2000.

