

FUN READING ABOUT 悦读中国

# CHINA

Science and Technology in  
Contemporary China

Gu Ming



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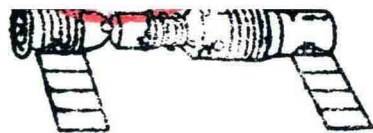
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 Foreword

Science and technology is no longer limited to scientists. Seen everywhere, it has made life easier and the world comfortable to live in.

Science and technology has advanced rapidly in contemporary China, particularly over the past decades when Chinese government puts people's livelihood on top of its working list by introducing advanced technology in health care, environmental protection, energy conservation, emission reduction, prevention and reduction of natural disasters and the protection of public security. The advance has caught the world's eye made in the increase of rice yields by hybrid technology, and in the introduction of new energy resources like solar, wind, nuclear and biological, etc. The energy crisis that once threatened China is released. Also, fast progress is seen in the prevention and control technology against malaria, SARS virus, bird flu, etc. Today, science and technology has benefited us in every part of daily life.

Come with us for a trip to see some of China's contemporary scientific achievements and cutting-edge technology, to feel the power of science in this part of the world.



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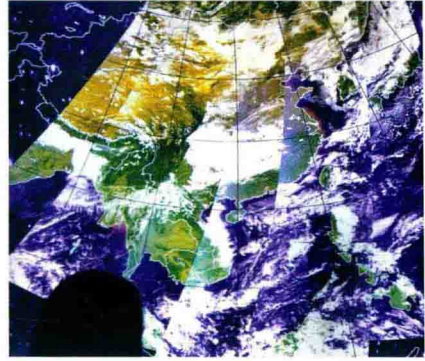
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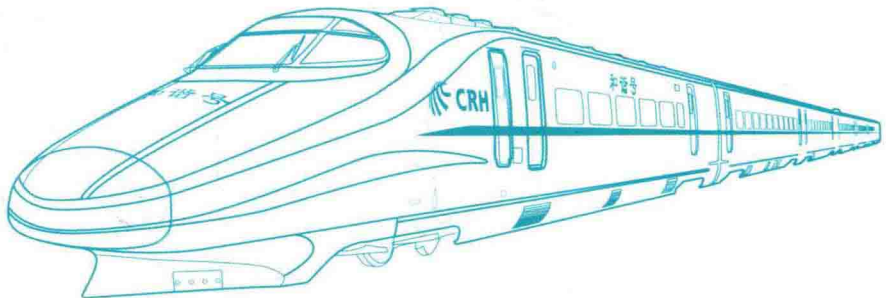
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# Information Technology

This world has become more informational than ever. The technology in computer science, network and communication has never been as influential as it is today. Presently, China's information industry has become a pillar industry, ranking the second in size worldwide. In some aspects, China is leading the world.



## Tianhe-series Super Computers

170 black equipment cabinets lined up like soldiers in a powerful square team in a huge room inside the National University of Defense Technology—they are the Tianhe 2 super computer, a hundred percent self-designed and self-developed model.

Back to November 2009, its predecessor, Tianhe 1, also a self-developed model, won the first place for the fastest calculation in Asia by over one petaflops on an international competition for super computers. This speed marked China as the second country after the US capable of doing petaflops. This record lasted only a year, for in November 2010, Tianhe 1 broke its own record with 4.7 petaflops. The world was amazed at this “black horse” of China in computer technology. Liu Guangming, a member of the development team, simply said the following on the award issuing



◆ Tianhe 1 Super Computer

ceremony, “When a nation has worked hard day after day, night after night for 30 years on run, with only a 3-day break for Chinese New Year each year, hitting the first place in the world is a sure thing.”

China didn’t stop at this, for in June 2013, Tianhe 2 won the first place in the world again by peak 54.9 petaflops and 33.9 sustainable petaflops.

It was indisputably the fastest computer worldwide.

Apart from Tianhe-series, China has other famous brands to boast of like *Shenwei*, *Shuguang* and *Shenteng*. After the US and Japan, China has become the third nation able to make and use one-gigaflop super commercial computers.



◆ Tianhe 2 Super Computer

## ● The Power of Tianhe Super Computers

In just one hour, Tianhe 2 is able to finish what 1.3 billion people can do for a thousand years, each having a calculator in hand. Tianhe’s total storage capacity equals 60 billion books, each having 100 thousand characters in it.

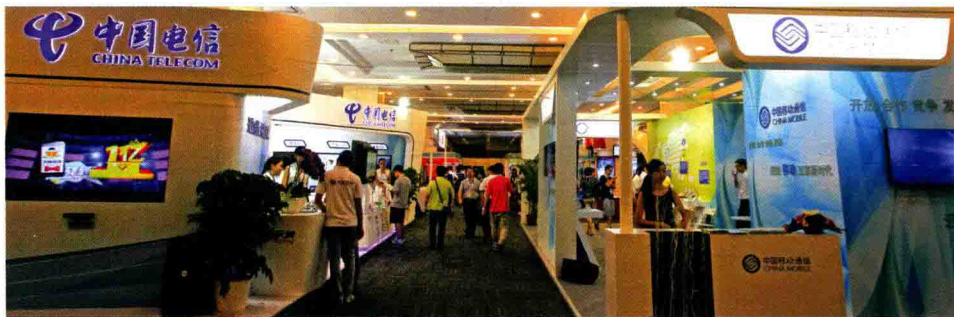
Tianhe-series has exhibited its huge power in different aspects like spaceflight, aviation, energy resource exploration, weather forecast, medicine development, architectural design, finance and insurance. The aerodynamic configuration for a new model of airplane, for instance, used to take something between 3—5 years to complete. Now, with Tianhe 2, a dozen or so days are more than enough.

## The Largest Internet in the World

Internet based on computers enables people to contact people anytime and anywhere in the world, to share joy, experience and help one another, disregard your ethnic group, nationality, age, gender, financial status and profession. With internet, you can pass knowledge or ideas. The earth has indeed become a “global village”.

In this, China’s internet is doubtlessly the largest in the world—not only in size, also in the number of netizens and areas. By June 30, 2013, China’s netizens were as many as 591 million and the internet penetration, 44.1%. The momentum of progress is huge. For with the spreading 3G (the Third Generation Telecommunication) and wireless network, by the end of June 2013, mobile phone netizens were up to 464 million. In near future, China will be the largest market in the world for internet commerce and computer technology.

So far, China has many web portals like Sina, Tencent and Netease, social networking sites like Microblog and Renren, community forums like Skyline, Douban, and search engines like Baidu, Sogou and 360, needlessly to say QQ and Wechat for instant chatting. They have made life much easier for netizens.



◆ The 12th China Internet Conference, August 2013, Beijing

## Part of the Internet Life for Chinese Netizens

Popular web portals:



新浪网网址: <http://www.sina.com>



网易网网址: <http://www.163.com>



凤凰网网址: <http://www.ifeng.com>

Popular social network sites:



人人网网址: <http://www.renren.com>



新浪微博: <http://weibo.com>

Popular community forums:



豆瓣网网址: <http://www.douban.com>



天涯网网址: <http://www.tianya.cn>

Popular search sites:



百度网网址: <http://www.baidu.com>

Popular chat tools:



腾讯QQ 腾讯网网址: <http://www.qq.com>

## International Standards for the Third Generation Mobile Communications

Mobile phones, a major instrument to get on the internet, are able to roam seamlessly from country to country, take photos, play music and videos, web surf and do e-commerce and teleconference. The Third Generation Telecommunication, commonly called 3G, has made all these possible.

As the largest mobile phone market on this globe, China has 1.1 billion mobile phone users. By the second season of 2013, 80.5 million of them went on internet via 3G mobile phones and the number was increasing.

International standards are necessary for 3G service and its data transmission speeds. So far, there are three: WCDMA, CDMA2000 and TD-SCDMA. Of the



◆ Passengers Surfing on Internet with Cell Phones on Subway Line Two, Shanghai

three, TD-SCDMA is a hundred percent Chinese design, and China has its proprietary intellectual property rights. In May 2000, the World Wireless Cable Association acknowledged TD-SCDMA, which marked China's leading position in mobile communication technology. Compared with others, TD-SCDMA has advantages: smaller radiation, more flexibility and low cost, which earned a reputation as "green 3G". Apart from the above mentioned, TD-SCDMA's TDD (Time Division Duplex) has been chosen by ITU (International Telecommunication Union) as the only technology to use. So far, this technology is still progressing.

**Data**

### **4G: A Wireless World Faster Than 3G**

While people are enjoying the convenience of 3G, its next generation, 4G, is around the corner. By newer technology, 4G is faster and more efficient, 50 times faster than current 3G technology. You can imagine the feel in that lightening speed. Right now, the US, Europe, Japan and the ROK are busy working on it, but China is leading them all!

On the International Telecommunication Union conference held on January 18, 2012, China's TD-LTE and 3GPP's FDD-LTE from the European Standardization Organization are both made the 4G international standards, a proof to China's leading position in the world. On December 4, 2013, Ministry of Industry and Information Technology of PRC issued business licenses to China Mobile, China Telecom and China Union for "LTE/fourth generation digital cellular mobile communication (TO-LTE)". This marked China's telecommunication industry into the 4G era.





◆ The 4G Library, Hubei Province

The Hubei new provincial library is fully covered by GSM, TD, WLAN and LTE, which enable people to get on the internet with CMCC-4G Wi-Fi signals via cell phones or laptops, into a transformed wireless network. Its download speed is up to 50M per second, ten times as fast as 3G. It is the same even in the remote corner of the library, more than good enough for on-line reading or video watching.