

China: Summary of the Tenth Five-Year Plan (2001-2005) – Information Industry

Short Introduction by the TRP

The following text has been locally translated for the TRP from the Ministry of Information Industries' (MII) contribution to China's Tenth Five-Year Plan. The TRP is grateful to APCO China (www.apcochina.com) for making available the original Chinese text.

The document begins in section 1 by asserting that the information industry 'will become the leading industry among all other industries in the economy', and section 2 elaborates this theme by reviewing the achievements of the Ninth Five-Year Plan. Section 3 is devoted to the targets of the Tenth Five-Year Plan, and section 4 is a summary. The information industry is discussed in terms of two broad sectors, the telecommunications industry and the IT or electronics industry.

An outline of the contents is given below, extracted from chapter headings. For readers, especially Western readers, unfamiliar with China's 'Plans' the experience may be rather frustrating. The text is tedious, repetitious and laden with sloganeering, much of which has been excluded from this translation to save the reader's time and patience. It is nevertheless an important document insofar as it establishes official national targets, priorities, policy concerns and directions. For example, there is a strong emphasis on promoting domestic production capabilities and using local products in preference to imported foreign technology, while at the same time recognizing that China has commitments under the WTO and the ITA (Information Technology Agreement) to open markets. Industrial policy runs through the document like a red thread, with special emphasis upon China's future role in establishing world standards in future technologies, such as mobile data and in the digital media.

There is a strong emphasis on raising productivity levels and promoting a more efficient allocation and use of resources to avoid wasteful duplication (of networks) and to spread the use of IT and modern management methods with the help of IT in state owned enterprises. Reading between the lines we may detect a frustration on the part of the MII as its controlling influence over the network operators loosens, leading to what the MII would term 'irrational' market structures, and especially of cut-throat prices that strip value out of the industry. Associated with this concern is how to overcome the digital divide between the prosperous Eastern provinces and the backward Western provinces, and how to fund universal access to basic telecommunications services.

From an analytical perspective the most frustrating absence from the document is any in-depth analysis of issues such as the contribution the telecoms and IT sectors are making to the economy. The document tells us; for example, that the industry's share of GDP will rise from 4% to 7% and input:output ratios will improve, but nothing beyond that. There are no models provided here. E-Government is given an important role with accords with the

central role of the state in all affairs Chinese. Finally, it is interesting to note the areas of weakness identified arising from the Ninth Five-Year Plan. They are more or less the same as the areas listed as successful achievements. Did two separate drafting sub-committees write them, or do they just tell us that China's information industry is facing a long march?

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Summary of the Tenth Five-Year Plan (2001-2005) – Information Industry Ministry of Information Industry¹

Foreword

The first five to ten years of 21st Century is an important period for our national economic and social development. It is also a crucial time for the rapid development of the information industry. Rapid advancement of and keen market competition in the global information industry and information technology brings a valuable opportunity for our information industry, but on the other hand, it brings about a great challenge. The Fifth Plenary Session of the 15th Central Committee of the Communist Party of China clearly pointed out that informatization is the key in promoting industrial advancement, industrialization and modernization. Therefore, national economic and social informatization should be the first priority. Putting effort into promoting national economic and social informatization is a strategic action in the fulfillment of the whole modernization construction plan. It aims at using informatization to promote industrialization and actualize the expeditious development in productivity. It is the very first time for the Central Committee of the Communist Party of China to put informatization in such a high strategic position. This is a great strategic decision made by our Central Committee, which stands at the forefront of this era. This decision has a great and deep historical, and reality-oriented meaning. Hence, fostering our IT manufacturing industry, telecommunications industry and software industry; and promoting the progress of the national economic and social informatization in our country, is the top-priority mission of the Ministry of Information industry in the “Tenth Five-Year” period.

Development during the “Tenth Five-Year” period is of paramount importance to the further progress of the information industry in this new century. In line with the requirements of the strategic planning in the Fifth Plenary Session of the 15th Central Committee of the Communist Party of China and the State Council and based on in-depth research and consultation, the Ministry of Information industry has drafted an outline of the Tenth Five-Year-Plan on the Information industry. This Outline is a macroscopic and strategic policy paper in guiding the information industry development in this tenth Five-Year period.

1. The importance and the role of the information industry in the national economy

The Information industry, serves as the basic, pioneering, supporting and strategic industry of the national economy, and has an increasingly important role in promoting the domestic economy, national safety, the welfare of citizens and social development.

1.1 Information industry as a pillar industry in the national economy

- The Information industry is a new area of growth in the national economy. During the tenth five-year period, the Information industry will continue to grow at a rate of three times the rate of growth of the national economy. In 2005, the value added will account for more than 7% of the GDP of which telecommunications will account for 4.7%, and electronic products will account for 2.5%. The direct contribution of the Information industry will increase continuously, whereas the indirect contribution will increase steadily.
- In 2005, the electronics and IT products will account for 30% of the total volume of exports. Its leading position in the national export sector will be further strengthened.
- In 2005, the Information industry will become the leading industry among all other industries in the economy, and emerge as the largest industry in China.

1.2 Information industry as a strategic industry fundamental to national security

- The Telecommunications network is the infrastructure of the national economy. Network and information security is an important area in national security. The strong electronic IT manufacturing industry and software Industry is fundamental to network and information

¹ We thank APCO China (www.apcochina.com) for the Chinese version of the document.

- security.
- Information technology and equipment are vital to modernized national defense construction. The Information industry has become the strategic industry in many countries in order to establish technological, economic and military authority in the world.

1.3 Information industry as a driving force for innovation and the growth in other industries

- The development of the Information industry has become the driver of economic growth and the basis of productivity enhancement in many countries.
- The Information industry, as a main division of high-tech industry, is the main force in fostering the advancement of other new and high-tech industries.
- The continuous expansion of the Information industry, and its constant penetration in other economic sectors, will create some new industry categories.
- The extensive use of information technology will shorten the cycle of technological innovation and hence boost up the knowledge and innovative ability of the country.

1.4 Information industry as a core industry underlying informatization and the changes in the directions of growth in the national economy

- The telecommunication network and information technology equipment are the main force and the basic resource for national informatization.
- The popularity of information technology and extensive use of information products will transform social production and lifestyle.
- The development in the Information industry will speed up the progress of informatization in other industries, and therefore enhance their efficiency, largely reduce the consumption of resources and transaction costs. This can stimulate and enhance economic growth towards economizing resources, protecting the environment and the continuous development of content-intensive industries, raising living standards and modifying the working methods.

2. Review of Information Industry in the Ninth Five-Year Period

With the development of reform and open-door policy, especially after the Ninth Five-Year period, the position and role of the Information industry has become more and more important, and it has emerged as the dominant industry in our national economy. The telecommunication Industry has built up a network that is close to the international standard. The scale of the fixed telephone and cellular networks is the second largest in the world. The postal service has a service network that basically covers all cities and provinces, and connects with the whole world. Both our network scale and coverage occupy a high ranking in the world. We have comprehensive telecommunication services that can basically satisfy our society's multiple needs. The telecommunication Industry has achieved its service provision target two years earlier than planned. Network construction has established a solid premise for the construction of the national telecommunication infrastructure. A fair and systematic market environment has been preliminarily established.

During the Ninth Five-Year period, software, electronic and IT manufacturing industries grew more than 30% per year. The productivity and sales volume of the main telecom products increased rapidly, structural adjustment began, and there was breakthrough in some core technology. The industry as a whole has achieved a leading position in the world. We have become the world's main manufacturing country of colour TV, LCD, colour tubes, program-controlled switchboards, cellular phones, display devices and monitors. At the end of 1999, the economic index reached the Ninth Five-Year target a year in advance. The electronic IT manufacturing industry and software industry have become the pillar industries in the country. The pace of national economic growth and informatization of social services has increased.

2.1 Development to date

2.1.1 Rising importance and status of the information industry in the national economy

- The Information industry percentage in the national GDP increased from 2% in the Eighth Five-Year period to 4% in the Ninth Five-Year period. As an essential and leading

industry, the rapid development in the information industry stimulated the development of other related industries.

- By the end of the Ninth Five-Year period, the turnover of telecommunications totalled 472.5 billion yuan with revenue of 349.8 billion yuan. The yearly growth rate reached 36.7% and 28.8% respectively. Electronic products manufacturing achieved a total turnover of 1000 billion yuan, and the revenue reached 600 billion-yuan. The value added, the industry as a whole was 133.4 billion-yuan. Its exports earned 55.1 billion US dollars. The average annual growth rates were 33.2%, 27.7%, 24.3% and 27.8% respectively.

2.1.2 Rapid increase in the telecommunications network capacity and improvement in service standards

- By the end of 2000, China's optic cable reached 1.25 million kilometers in total. The optic cable networks covered all the cities except a few remote areas. The auto long-distance switching capacity reached 5.49 million lines, made direct telephone communication with over 200 countries possible. The telephone density reached 20%. The local switching capacity came to 179 million lines. There were 144 million fixed telephone subscribers. The trunk line density amounted to 11.4%. 80% of the administrative villages were connected by phone lines. The switching capacity of mobile phones reached 130 million with 85.26 million subscribers, equivalent to a penetration rate of 6.7 handsets per 1000 people. As the supporting systems to the telecommunication network, the signaling networks, synchronous networks and management networks were basically built and improved.
- Great changes took place in the scale and structure of the international telecommunication networks. By the end of 2000, on the basis of developing satellite telecommunication networks, China took part in the funding and construction of 26 international marine cables to enable connections with 73 countries and regions. An integrated international telecommunication network mainly based on the optic cables has been constructed, which used to be based on satellites.
- With the bundling of the IP Network, multimedia data developed rapidly. By the end of 2000, the DDN capacity reached 353 thousand ports; there were also 37,000 broadband network ports and 3.577 million IP network ports. Subscribers to data telecommunications on the public telecommunication network reached 500,000. There were 22.5 million Internet users and 265,000 WWW websites. 8.9 million computers were online. Trial operations were carried out for E-Commerce, distance-learning and remote medication, etc.
- China's radio and television broadcasting network was the largest in the world.
- By the end of 2000, dozens of private networks were built and the optic cable for private networks totaled 50,000 kilometers.

2.1.3 Rapid growth in the production and sales of electronic products and structural changes began in the electronic industry

- The output and the sale volume of major electronic products increased rapidly. In 2000, the output volumes of the main products are as followed:
 - Colour TV: 37.42 million sets
 - Computers: 8.6 million sets
 - Local program-controlled switchboards: 46.57 million lines
 - Digital mobile switchboards: 36.3 million sets
 - Digital mobile phones: 51 million sets
 - Display devices and monitors: 45 million sets
 - LCD: 11 million sets
 - IC: 5 billion pieces
 - Electronic components: 250 billion
 - Colour tubes: 43 million

The software industry achieved sales as high as 5.6 billion yuan. Exports of electronic products achieve a trade surplus in 4 years accounting for 50% of products exported. Sales volumes of program-controlled switches, colour TV, telephones and some other products were the biggest of the world.

- The industrial structure became more rational. Products of investment accounted for a higher percentage.
- The structure of products was optimized. Electronic Products developed in the direction of high technology, high quality and high added value. Exports of high-tech machinery and components increased dramatically.
- Enterprises were also better structured. The leading and significant role of enterprises became more predominant. Foreign firms increased their investment. Steady progress was made in the reform of state-owned enterprises.

2.1.4 Technological advances in the telecommunications networks with the increasing use of locally produced network facilities

- Advanced technologies, such as optic telecommunication, digital microwave, satellite communication, program-controlled switching, mobile telecommunication, and data & multimedia communication were widely applied. Telephone switching became program-controlled, long-distance and inter-transmission were digitalized. DWDM technology was adopted. An ATM backbone network was built. An IP and multimedia telecommunications network was set up. The usage of various access technologies, including narrow and broadband, wireless and wireline technologies, started to spread.
- During the Ninth five-year period, locally manufactured switches comprised 95% of the newly installed program-controlled switches. Advanced equipment with independent intellectual property rights was used in the telecommunications network, including SDH, DWDM, ATM, mobile telecommunication, access equipment and software.

2.1.5 Breakthrough in the development of core technologies in the hardware and software industries

- In the Ninth five-year period, China's information technology entered into a new stage of development. The successful completion of the "909" project shortened the distance between China and the world in IC technology. China basically mastered the manufacturing technologies of TFT-LCD, displaying tubes for large projecting screen and chip components. There were breakthroughs in key technologies such as program-controlled switchboards, digital mobile telecommunication, DWDM, SDH and ATM etc, that which enabled China to become one of the countries owning advanced technologies in the world within a short period of time. Digital technologies were widely applied in the audio-visual areas. New products came out one after another. China successfully developed HDTV sample systems. Domestic produced microcomputers have reached international standard. New products were launched at the same time as in the international market. There were technological breakthroughs in producing high performance computers and high-speed routers. Important achievement was also made in software. The roll out of the COSIX Chinese operating system was acknowledged as first-rate software in the world. Reform in the method of scientific research and development made major progress and the industrialization of technological innovation was accelerated. The military electronic industry also developed a lot of key technologies that were needed in national defense construction. Especially, they have grasped well of basic research and development in high-tech electronic equipment, systems and key components, completing various tasks of scientific research.

2.1.6 Progress in the informatization of the country

- Informatization in various fields, areas and enterprises continued to develop. The development and utilization of information resources has gradually drawn more attention to e-commerce development in enterprises. Awareness of the importance of informatization constantly increases.
- The construction of social informatization develops steadily. Trial informatization in the cities and communities has been undertaken, and the informatization of the social security system made great progress in some areas, and was promoted to other areas.
- The exploration and the applications of information resources were further strengthened. By the end of 2000, there were 500,000 web pages on the Internet. Locally developed and publicly accessible databases were over 3000 and network points reached 5300.

- The implementation of various information projects resulted in great achievements. The projects such as Golden Bridge, Golden Card, Golden Customs and Golden Taxation, etc., were widely applied in government, banks, customs and taxation departments and enterprises. There were 112 national computer information systems based on the public network. A systematic framework was set up and carried out functions of information collecting, processing, storing and application. The projects of government on line, enterprise on line, and family on line were pushed ahead rapidly, effectively strengthening the informatization construction.
- The utilization of information technology in reforming and strengthening traditional industries had notable results. The Y2K problem is solved.

2.1.7 Breakthrough in the reform of management systems, operation mechanisms and the construction of better legal systems

- China carried out the restructuring of government departments and unified the planning and management of the whole information industry.
- In telecommunications, the government administration was separated from enterprise management. Telecommunication was separated from postal services. Reform and restructuring was undertaken in the telecommunications industry. Several big telecommunications firms were set up. They are: China Telecom, China Mobile, China Unicom, China Netcom, China Railcom, China Satellite and Jitong. There are about 1500 enterprises engaged in ICP/ISP services. The reform and restructuring brought vitality and energy into the whole telecommunication industry. Reform in the operating of telecommunication enterprises accelerated. State-owned enterprise succeeded in solving the difficulties in three years and industrial reform and prominent economic results were achieved.
- A series of regulations have been published, including "Telecommunication Regulations of the People's Republic of China", "Radiowave Administrative Regulations", "Management of Internet Information Service", "Decisions on Guaranteeing Internet Safety". Many other laws and regulations were being formulated to regulate the competition of the telecommunication market and protect consumers' rights, to create an open and fair regulatory environment.
- The State Council promulgated "Policies to Encourage the Development of the Software Industry and the Integrated Circuit Industry", in which favourable policies were provided for investment, fund pooling, taxation, technology, export, human resources, allocation and procurement in the software industry. "Procedures of Certifying Software Enterprises" and "Certification of IC Design and Products Management" were also published.

2.1.8 Wider applications of information technologies in various areas of the national economy

2.2 Experiences gained from the ninth five-year plan period

Reviewing development in Ninth five-year period, the Ministry of Information industry insisted on the basic theory, basic route and basic direction of the Communist Party, and actively explored and worked on industrial development, and achieved some successful experiences, they are:

2.2.1 Take the opportunities and accelerate the pace of development according to market demand and opportunities

- A series of decision and preparation to expand and promote informatization made by the Central Committee and the State Council, had a big impact on the development of information industry, and created a favourable external environment. The whole industry gradually taking a market-oriented and community-serving development approach and its role in national economy is greatly strengthened. The thinking of "Development is the hard rule", was fully proved by the development of the information industry.
- To balance the supply of product and services with market demand, we need to cater for market needs, serve the market economy, formulate regulations and related policies for the Information Industry. On one hand we satisfied the market needs, on the other hand

we ensured the efficient use of resources and promoted a healthy development of the information industry.

- The separation of enterprise and government, the separation of telecommunications and postal service operations, restructuring of telecommunication, anti-monopoly, introduction of competition mechanism, creation of a organized competitive environment, have enhanced the communications ability and service quality.
- Our electronic IT manufacturing industry and software industry insisted on following an open development approach, actively adapted to the international environment of the diversification of work, became more market-oriented, more refined structural adjustment and developed rapidly.

2.2.2 Technological advancement as the driving force for the growth of the information industry

- Technological advancement was the determining factor in fostering the development of the Information industry. The Ministry of Information Industries adopted the thinking of "Scientific Technology is the most important factor of production", actively followed the trend of the world's information technology development, and insisted on the integration of introducing, digesting, absorbing and creating technology, which made new technology, new products and new industry constantly emerge. MII also effectively stimulated and facilitated the market needs and helped the development of the information industry.
- The telecommunication Industry is the fastest growing and developing industry among all other industries in the world. Within the Ninth five year period, the telecommunication industry on the one hand continued to adopt the policy of "Openly introducing advanced technology and equipment", and on the other hand, a series of domestic telecommunication equipment inventions, which were close to the leading standard, were being applied to the telecommunication network, which rapidly promoted the technological level of the equipment to sophisticated world standards. By using scientific and advanced management strategy, efficiency was improved and the cost was lowered.
- Facing keen competition from the large overseas companies, Electronic IT Manufacturing industry focused on both importing and inventing new technology in order to breakthrough the limitation and integrate different types of technologies. The industry accelerated the invention and development of product categories, such as program-controlled switchboards, optic communication, digital mobile communication, digitalized consumer products, new display devices, chips components, network products, software and integrated system etc... The wide adoption of new technologies such as digital technology, network technology, micro-electronic technology and software technology etc..., emulation design technology such as CAD, CAM etc..., have largely promoted the technological level and the scale of the industry.

2.2.3 Network development, couple with the manufacturing of local telecommunications equipment and software development foster the growth of the information industry

- The telecommunication network actively utilized locally manufactured equipment and software, which in turn established a market for domestic industries. The creativity and production of the manufacturing industry has created favourable conditions for the rapid development and technological advancement for the telecommunication industry.
- In order to promote the technological standard of our manufacturing industry and software development, we provided a direction for locally manufactured equipment and software development, at the same time made use of the integration of technology and trade to foster technology exchange with foreign companies.
- We utilized locally manufactured equipment and software to promote upgrade and reform the telecommunication network and to ensure the promptness and flexibility of on-line service provision.
- The emphasis on the integration of production and utilization, informatization as the first priority, to insist on treating manufacturing, software and telecommunication service industries as the foremost industries in the country, has resulted in a healthy and orderly development of the information industry.

2.2.4 Support from the government and the provincial government departments ensure the rapid growth of the industry

- The government has offered financial and tax privileges for the manufacturing and software industries, providing them with the basic support for development. This strong support from all levels of local government has provided a good environment for the growth of the information industry. The launch of key projects such as the "909 Project", "National debt item", "Produce own mobile communication products", Electronic Industry Development Fund, and the creation of new technology have accelerated the development of the information industry.
- Privilege policy such as first installation fee and additional fee provided a financial assurance for the rapid development of information industry.
- The telecommunication Industry has adopted the approach of "Unifying the national, collective and individual effort" and "Formulation and planning, sharing of responsibilities and cooperation in construction". Relying on the local government, cooperation between different departments, joint efforts between military and citizens and making use of the market economy, the industry has achieved world-recognized results within a short period of time.
- The support from the government facilitated the management and operation mechanism of the telecommunication industry, created a competition mechanism in the telecommunication market.

2.2.5 Opening up of various channels for financing the industry

- During the Ninth five-year period, the telecommunications industry not only relied on indirect financing, but also explored direct financing channels. China Telecom (Hong Kong) Co. Ltd. (renamed as China Mobile (Hong Kong) Co. Ltd. in 2000) was successfully listed in the stock market, initiating a new financing means for the operators in the telecommunication industry. After that, China Unicom (Hong Kong) Company was listed in London and Hong Kong stock markets as well. This not only raised a large amount of capital for the construction and development of the company, but also provided valuable experience for reforming state-owned telecommunication corporations and changing indirect investment into direct investment.
- The Electronic IT Manufacturing Industry broadened the use of foreign investment. They fully made use of the investment from local areas, citizens and other industries; actively supported the listing of the corporation in the local and overseas stock markets; issued bonds and broadened the means of financing. A lot of high-tech electronic corporations have successfully listed in the stock market.

2.2.6 Actively open up the international market and expand the volume of exports

- Since the Ninth five-year period, the export of our electronic products increased drastically. The export at the end of the Ninth Five-Year period was triple of that at the end of the Eighth Five-Year period, which made the electronic information industry, the pillar industry for the export trade. The increase in export not only enhanced the survival of the industry, but also accelerated the speed of structural adjustment. It also effectively enhanced the quality of production, the level of technology and management of the industry.
- Insisted on the strategy of encouraging competent electronic corporations to invest and establish manufacturing plants in foreign countries, enhanced the ability of the corporation in developing international market.

2.3 Existing issues

Although we have profound development in the Information industry, when compare to other developed countries, there is still a large discrepancy: low economic efficiency, comparatively backward key technology, structural contradiction. The main problems are:

2.3.1 Use of information resources is still lagging behind the development in communication network infrastructure

Compared to the rapid development in telecommunication network, the exploration of information resources was obviously inadequate, the main reasons are as followed:

- Information resources exploration and the development of a market mechanism for fee-charging services have not yet happened, and there is a lack of property rights protection.
- The exploration of information resources was not in-depth enough; the knowledge was not adequate in general.
- The management system of information resources exploration is not fully established
- The basic work was inadequate, and the information service was weak

2.3.2 Delayed construction of a legal and regulating system, existing rules and regulations are inadequate in facilitating the development of the industry

- The related rules, regulatory system and institution of telecommunication management could not meet the developmental needs
- Industry's resources management was inefficient. Network resources were not fully utilized, and there was duplication in construction. Telecom resources such as spectrum, telecom numbering etc... were not efficiently used and deployed. A market mechanism of fee-charging services has not yet fully formed
- The tariff structure was not sensible, and the system was not flexible which to a certain extent restrained the development of the telecommunication market
- Control and monitoring in electronic product markets was not enough, leading to abnormal competition in some electronic products.

2.3.3 Structure and the organization of the industry need to be improved

- The construction of telecommunication supporting networks lagged behind the development in communication ability. The development of telecommunication manufacturing industry was slower than network construction. In general, the industry lacked planning and organized development.
- The structural contradiction in the electronic industry was very obvious. Organization adjustment was much in need. Most of the state owned enterprises were low in professional standards. Repetitive and low standards of network construction still existed. The proportion of general trade in total exports was small; the export volume of state owned enterprises was also small.

2.3.4 Gap exists in productivity and operation efficiency between local organizations and other global organizations

- Compared to the developed countries, a gap exists in the average revenue per user (ARPU), labour productivity and revenue index. The management standard and operation efficiency was comparatively low.
- The industry's concentration of production factors was not consistent and was of low standard. The key technologies still need to rely on other countries. The industry's profit ratio was far below the standard in developed countries.

2.3.5 Insufficient channels in financing the industry and there is a lack of research and development funds

- The means of financing was comparatively inadequate, thus making it difficult for investment to keep up with the rapid development of the whole telecommunication industry.
- The mechanism of investment in high technology has not been set up. Thus, the technological results could not be commercialized.

2.3.6 A lack of innovation, mechanisms for research and development in enterprises and a shortage of human resources

- Among the electronic information products, there was a small amount of products that have their own brand names or property rights. Commercialization of scientific research results was limited. A creative system that integrates the production, learning, research and usage was not seen in most of the enterprises.
- There was an obvious contradiction within the human resources structure. There was a surplus in general labour supply, but on the other hand there was deficit in management level executives, technological specialists and high level, integrating experts. State owned enterprises did not have a mechanism to retain all these experts.

2.3.7 Software, integrated circuit and components industries are the bottleneck that curbed the development of the IT manufacturing industries.

- The software industry has just begun to develop. A lot of key software was imported from other countries, thus, information security cannot be assured. The scale of the IC industry was small; the development of new components was more backward than the development of machinery. Key instruments and equipment basically relied on import.

3. The tenth five-year plan

The tenth five-year period will be a critical time for the development of the information industry, it is important to plan and realize the goals for leap-frogging the development of the information industry with a good start in the new century

3.1 Overview of the market environment

3.1.1 Globalization of the economy

The trend of globalization is manifested in the following ways:

- Internationalization of the industry: With the advantages of capital, technology and branding, developed countries have concentrated on system integration and the sales and development of high-tech products. The production of products with relatively low technology content has been moved to developing countries. Due to the speed at which technologies are developed and the scale of market competition, the risk involved in technological innovation becomes higher and requires greater input of R&D funding and human resources. Cooperation between countries and large corporations in R&D is now more common. Before, competition was based on resources and products, but now the focus of competition changes to technology, branding, capital and market share.
- Through merger and acquisition, multi-national companies are now typical of the industry's structure
- Scale production: A large proportion of electronic products enjoys economies of scale. With the advance in technologies, the scale of production will increase and the barrier to entry will become higher, and it will be difficult to become competitive without huge investment input
- Localization of the production and sales activities: Because of the need to develop local markets, multi-national companies start to establish production bases in developing countries through sole proprietorship, joint ventures and co-operation.

3.1.2 Opportunities and challenges to the Information industry with the entry into the WTO and ITA membership

- The entry into the WTO and the participation in the ITA (Information Technology Agreement) help to attract foreign capital and bring advanced technologies. Also, it can help to expand the export of electronic products and speed up the restructuring of the industry, which in turn increases the competitiveness of the industry
- Following the opening up of the market, the communications industry and local electronic products will face more competition, which may affect the export of locally produced electronic products

3.1.3 Global informatization has widened the digital divide

- Information technologies are viewed as one of the most important resources in a modern society. Informatization as a global trend has provided valuable opportunities for the growth of the information industry in China. But at the same time, network security has become a major issue

- The digital divide is further widened with the difference in the pace of informatization. It is necessary to narrow the gap with the developed countries by accelerating the process of informatization
- Locally, the digital divide between different regions, between cities and villages may be widened as well. Competition among different companies in the communications industry will be intensified, to some extent the basic service to villages and remote areas cannot be guaranteed which makes universal service a major issue to be dealt with during the tenth five-year period

3.1.4 Growing demand for IT products and services

- With the increase in national income, the demand for post and telecommunication services will change from merely satisfying basic needs to product and service variety
- There will be fundamental changes in demand and supply, and with the gradual formation of buyers' market development will be more prominently driven by market forces.

3.1.5 Technological advancement in the information technologies

- Distinctions between different technologies and products will be blurred. Digitalization and multi-media will lead to convergence of TV, computer and communications equipment
- Digitalization, broadband development, intelligent networks, personalization will be the major trends in the development of the information industry. The Digitalization has become the major direction of development for communications equipment and consumer electronics since the 90s. Broadband will develop rapidly with the increase in the scale of communication networks and the diversification of business. Also, the development in computer technologies will push the development of artificial intelligence. With continuous innovations in the research of manufacturing technologies, artificial intelligence, personalization will become the trend in the development of information industry in the 21st century
- Technological advancement has an increasing impact on the market. Products are constantly upgraded and generated. Fast development of new product categories and the shortening of product life cycle will drive the growth of the market
- IP based broadband multi-media networks will become the focus in network infrastructure and business development

3.1.6 Software, integrated circuits, electronic components are the core technologies for increasing the competitiveness of the electronic information industry

- Software, integrated circuits and new components are growing in importance. To a certain extent, the U.S. and Japan achieved their leading position in the IT manufacturing industry because they are able to grasp and monopolized the core technologies as well as the design of integrated circuit and key components. Strengthening the development of core software technologies, the design and production of IC and key components becomes vital in the development of the information industry during the tenth five-year period

3.2 Guiding principles of the tenth five-year plan

- 1) Striking a balance between speed and efficiency, market-economy and government regulation, universal services and effective competition, open market and security and achieving a coordinated development between manufacturing and services industries.
- 2) Deepen the reform, reduce monopolies, make comprehensive laws and regulations, better manage the industry and push the strategic reorganization of state-owned enterprises and establish modern enterprising policies. Incubate competitive enterprises to enable them to operate across different areas, industries and become multinational corporations.
- 3) Strengthen the development of basic infrastructure, integrate the use of different resources and use them efficiently. Coordinate planning to avoid replications in the building of infrastructure
- 4) Following through the plan to develop the Western region, develop resources that have comparative advantages, open up local and overseas markets, speed up the structural reorganization of the information industry in this region
- 5) Increase the competitiveness and strengthen the capabilities to innovate, grasp the core technologies in IC and software development, raise the proportion of products with intellectual

property rights. Support commercialization of research outputs that are profitable, put more effort into the development of new technological applications and new business services, conduct more research in standards development, actively participate in the development of international technology standards, place a high value upon information and network security

6) Adjust the structure of the industry, remove the bottlenecks that hinder the development of the industry

7) Using IT to reform and upgrade traditional industries, the information industry will be capable of providing system equipment and services to other sectors, pushing the growth of the national economy and informatization of the society

8) Strengthen international cooperation, increase international competitiveness, gradually open the local communications market and enter the international market. Using foreign investment effectively, stress the importance and increase the scale of IT exports

3.3 Targets of development

- During the tenth five-year period, information industry will continue to grow rapidly. By 2005, the scale of the information industry will be double that of year 2000 and will account for more than 7% of GDP. It will become a strategic industry that drives the growth of the economy and a pillar industry that speeds up the restructuring and strengthens the competitiveness of the economy.

- Provide a market environment with a legal system established, effective competition and efficient allocation of resources. Establish a technologically advanced, high capacity, safe and reliable communications network that can satisfy the needs of economic and social development. Create a group of companies that can compete effectively in the international market will emerge.

- China will become one of the leading countries in the manufacture and production of information technologies. The software industry will achieve economies of scale, become competitive and develop independently. The overall technological standard will be raised. IT will be widely applied in the society and the penetration of computer and networks will be raised. The quantity of IT equipment will be increased and system integration ability will be raised in order to satisfy the demand for IT products

3.3.1 Economic targets

- The rate of growth in the communications industry will continue to outstrip the overall economic growth rate. Revenue from the communications industry will amount to 1 trillion yuan (based on an average yearly growth rate of 23.38%), of which telecommunications will account for 920 billion yuan, three times that of year 2000.

- The value of IT products manufactured will reach 2500 billion yuan (20% yearly growth rate), industrial value-added will increase to 320 billion yuan, sales revenue will reach 1500 billion yuan and exports volume will increase to US\$100 billion, an average growth rate of 15% per annum

3.3.2 Communications capacity

- Optical cable: 2.5 million km in length (over 500,000 km for long distance cabling).

Basically cover the cities and villages in the whole country

- Fixed telephone capacity: 300 million

- Total wireless network capacity: 360 million subscribers

- Speed up the building of international submarine cable, provide high quality, safe and reliable communication channels, increase market share in the global communication market and become a major communications hub in Asia and one of the main information service centers.

- PC on-line: 40 million

- Internet subscribers: 200 million

- 5000 ISP/ICPs

3.3.3 Production volume

- Integrated circuits: 20 billion pieces

- Electronic components: 500 billion pieces (of which 80% are chips)

- Microcomputers: 18 million sets

- Cellular phones: 100 million sets

- Optical fiber: 20 million km
- Colour TVs: 40 million
- Laser disks: 20 million
- Color tubes: 45 million
- Sales volume of network equipment: 37 billion yuan
- Sales volume of software: 250 billion yuan

3.3.4 Service penetration

- Over 500 million telephone subscribers, achieving a penetration rate of over 40%. Strive to provide telephone connection in 95% of the administrative villages
- Fixed telephone subscribers will reach 240-280 million, account for 20% of the world total. Main line penetration will increase from 11% in 2000 to 18%, exceeding the world average of 17.65%
- Number of mobile subscribers will reach 260-290 million, accounting for one quarter of the world total. The penetration rate will increase from 6.7% to 21%, exceeding the world average of 15%
- Data, multi-media and Internet subscribers will reach 0.2 billion (a 15% penetration rate)
- Countrywide coverage by radio broadcasting and TV networks, cable TV subscribers will reach 150 million

3.3.5 Technological innovations

- Establish the mechanism for promoting technological innovation
- Further promote technological innovation so that 60% of the growth in the industry can be attributed to innovation. Concentrate on breakthroughs in core technologies in the area of microelectronics, digital, software and network technologies. Achieve industrialization in the design and manufacturing of sub-micron IC, high performance computer, photo-electronic materials and components
- Increase the number of intellectual property rights owned, target to commercialize 20% of innovation, and 60% of IT products should be home-grown

3.3.6 Investment and returns on investment

- Investment will reach 1700 billion yuan during the tenth five-year period of which the telecommunication sector and IT manufacturing sector will account for 1250 billion and 400 billion respectively.
- The investment output ratio for the telecommunications industry will increase from 1:1.5 in year 2000 to 1:3.3 in 2005
- Fixed capital to output value is expected to increase to 60-70 yuan.
- Labour productivity in the IT manufacturing industry will increase from 60000 yuan per man-year to 130000 per man-year. The fixed capital input output ratio for the IT manufacturing industry will reach 1:4

3.3.7 Regulating the industry

- Create a fair operating environment, a level playing field for the industry
- Enact the Telecom Law and related regulations
- Amend the Postal Law and radio telecommunications management regulations
- Establish control mechanisms for monitoring tariff and costs and set up a multi-level tariffing system which takes into the consideration of government-regulated price, government-directed price and market price
- Fair and non-discriminatory interconnection policy
- Licensing regime to ensure effective market competition. The number of licenses to be issued will be determined by the characteristics of the communication service
- Effective management of radio frequency, spectrum, and numbering plan
- Enact rules and regulations governing the management of different government networks and broadcasting networks

3.3.8 Industry structure

- Move towards high-tech, high value-added industries. Encourage technological innovation and increase the competitiveness of corporations. While continuing to accelerate the development of the Eastern region, support will be given to the development of the

Western region in order to minimize the gap between the development of the two regions

- Assist the local IT companies to establish themselves in the industry and aim to increase the competitiveness and the market share of locally produced products in the international market.

3.3.9 Use of IT in traditional industries

- To increase productivity, quality and competitiveness of the traditional industries and combine industrialization with informatization to reduce costs and wastage of resources. Using computers to assist in the management, production and design processes in order to increase productivity

3.3.10 Informatization of the society

- Information industry will provide the systems, equipment and services to meet the demand from finance, taxation, education, macro economic adjustment and national security. IT will be widely applied in different areas of the national economy, progress in the development of B2B and B2C e-commerce will be prominent and the scale of the information services industry will expand
- With the government online project, government departments can produce, send and receive documents on line. The public can access information from government departments through the Internet.
- Promote computer education in secondary and primary schools
- Promote B2B and B2C e-commerce and develop electronic payment systems

3.4 Focus of the development

3.4.1 Communications industry

3.4.1.1 Basic infrastructure

- Optical fibre is still the main focus of infrastructure development during the tenth five-year period. However, improvement will be made to the microwave and satellite transmission networks to supplement the optical cable
- Focus on expanding the scale and the capacity of the networks and raising the technological standard of the infrastructure
- Plan to build an additional of 200000 km long haul country-wide optical fiber network, and the total length will reach 500000 km. Put in more effort in the roll out of submarine cable and expand the ownership on the scale and capacity of the network
- Regarding the construction of long-haul optical cables, emphasis will be placed on optical fibre. In areas where service demand is high, Dense Wavelength Division Multiplexing (DWDM) technology and backbone node equipment like Optical Add-Drop Modules (OADM) and optical switches (OXC) will be used wherever it is appropriate. The aim is to construct a totally optical network to provide the necessary capacity, a highly reliable and flexible basic network infrastructure. The speed of transmission will reach 1.544 megabits per second (T-1) in order to meet the demand for broadband transmission.
- Frame relay transmission network is the integrated transmission platform for local telecommunication services. Optical networks will be improved during the tenth five-year period; effort will be made to increase the investment on the optical networks at the county and below-county level in the Middle and the Western regions. Network construction will be speeded up to provide a high capacity, high-speed, secure and reliable transmission platform for various services deployment.
- Develop network connections according to the demand and the availability of the technologies, fully utilize existing resources on optical fiber, copper wire, coaxial cable and wireless connection. Speed up the roll out of broadband networks in major cities and establish competition mechanisms to facilitate the opening up of the market for network build out and operation
- Coordinate and organize the use of network resources effectively, avoid duplication of facilities. Licensed operators should reasonably price their bandwidth, optical fiber, cable and other network components

3.4.1.2 Telecommunications networks

Fixed telecommunications network

- Continue the development of fixed telephone services, which is the principle way to

provide universal services. Focus on villages and the Western region. Using existing resources to provide data line and value-added services.

- Ensure interconnection between domestic telephone networks and long distance networks to provide consumers with more choice on local and long-distance telephone services
- With the development in broadband data network, major cities will employ integrated broadband exchange that can accommodate the transmission of voice, data and images simultaneously

Mobile communications network

- Actively develop the mobile communication sector. During the tenth five-year period, China will become the world's largest mobile market with great growth potential. The mobile communication sector will become the pillar in the communication industry and increasing the number of mobile communication subscribers is also one of the ways to increase telephone density in China
- Phase out the use of analogue systems, continue to develop the second-generation mobile systems and conduct research and development into third-generation network technologies. The third-generation mobile network will be built out around 2003, the second and the third generation mobile networks will co-exist at the end of the five-year period
- Mobile communications will evolve from voice-based services to offering different types of service with different transmission speeds. Apart from high quality voice transmission services, SMS, mobile data and multi-media services will be provided towards the end of the tenth five-year period

IP based backbone networks

- Develop IP networks and broadband IP networks based on technologies like IP over SDH/WDM (wavelength division multiplexing) and using high speed routers. Build LANs and broadband wide area networks in cities to form a broadband IP-based multi-media network platform to provide various types of services
- Launch new telecom services using an IP broadband network platform when VoIP and the IP-based third-generation network become mature
- Incubate ISPs, ICPs, ASPs and HSPs. Encourage service providers to provide information on line.
- Develop applications on e-commerce, e learning, telemedicine, teleworking and VPN.
- Encourage the setting up of e-government, e-hospital, e-school, e-shopping mall and the use of Internet applications in companies and households

3.4.1.3 Network security

- Ensure network security with the use of different types of communication technologies based on optical fiber, microwave and satellite
- Further research into the use of Global Positioning System technology
- Establish network management centers to oversee and regulate the use of network resources
- Establish, and improve the dedicated networks for the government and the party as well as the emergency communication network
- Network security will be the first priority for networks dedicated to national security, will be separated from public computer networks if necessary. However, it is important to fully utilize the public transmission resources to avoid duplication.
- Strengthen computer network security to prevent hacking and the spread of harmful information

3.4.1.4 Post – [not included in this translation]

3.4.2 IT manufacturing industry

Aim to develop core technologies and focus on the following sectors during the tenth five-year period to meet market demand and improve production capability.

3.4.2.1 Integrated circuit

- Focus on the design of ICs, encourage the set up of IC design centers to develop specific ICs products and chips that have a sizable market. Technology standards will reach 0.18-0.25 microns and gradually design and develop own IC products (including CPU)

- Raise the production capacity and technological level of existing IC manufacturing plants to achieve scale production, increase the types of product to substitute for imports
- Implement favourable policies to improve the investment environment, encourage companies with financial and technological capability to invest in the production of IC chips

3.4.2.2 Electronic components

- Strengthen the development of new and multi-functional components and display equipment through miniaturization to meet the demand for digital products, aim to increase the scale of production, quality and product types and aim to become a major production and exporting country for electronics.
- Support particularly the production and the development of chip components, electrical electronics, opto-electronics, high definition colour display, projector and flat screen panel display
- Support the development and production of materials used in the manufacturing of ICs and electronic components

3.4.2.3 Communications equipment

- Mobile communications products: Organize projects for homegrown GSM and CDMA products to make locally developed mobile communications products the mainstream in the market. Speed up the development of third generation mobile technologies and communication products, accelerate the formation of digital trunking communication standards and systems
- Optical communications products: Develop communication products using Dense Wavelength Division Multiplexing (DWDM), Synchronous Digital Hierarchy (SDH) technologies and other optical technology products
- Network connection equipment: actively develop wireless network connections and equipment for optical fibre connection
- IP network equipment

3.4.2.4 PC and network equipment

- Develop locally name-branded server, high-speed router, network exchanges, PDAs, network security products and network control or management systems to accommodate the demand from Internet development
- Achieve scale production of micro-computers, computer related products like CPUs, motherboards, printers and other key components
- Industrialization of high-powered computers, ultra-high speed networking system to raise the market share of locally produced products
- Produce and develop digital products that converge computers, communications and consumer electronics according to market demand

3.4.2.5 Digital entertainment products

- Apply digital technologies in existing analogue audio and visual equipment to accelerate the transition from analogue to digital. By the end of the tenth five-year period, digital audiovisual equipment will be one of the leading local industries
- Under the direction of market demand, actively enhance the research and development of digital TV technologies and related standards. Try to achieve breakthrough in the core technologies of software platforms, digital compression, high-definition colour monitors, colour projectors. Actively boost the development of digital TV, digital set-top box, digital receiver, digitalized family information network systems and technological products, digital cable TV, digital satellites TV products
- Achieve scale production of core components to enhance the development of the CD-ROM industry
- Speed up the development of digital audio equipment used in home entertainment. In line with the promotion of digital audio broadcasting in China, actively push the development of transmitters and receivers of digital audio broadcasting

3.4.2.6 Electronic equipment and instruments

- Develop micro-electronic equipment, equipment for the manufacturing of electronic components, vacuum electronic devices

- Develop integrated circuits, communications products, digital audio and visual equipment, new component testing equipment and general digital testing equipment, integrated online testing equipment

3.4.2.7 Applied electronics

- Apply IT in traditional industries to enhance their efficiency, save resources and energy as a strategy to drive the growth of the national economy
- Stress the development of information technologies, software and systems that are needed in the areas of energy, automobile, transport, freight management, finance and medical. Pushing the use of IC cards and systems, further raising the contribution of IT manufacturing to the national economy

3.4.2.8 Electronics applied in the military

3.4.3 Software industry

- Develop Chinese operating systems, platforms, database management systems and Chinese network management systems
- Change the traditional ways in which software is developed and managed, support the development of software parks and the backbone software industry Assess and manage the software process using the Capability Maturity Model for software
- Encourage corporations in developing application software, support will be provided to the development of software applied in information system management, industrial control, CAD/CAM as well as those applied in finance, taxation, insurance, information services, education and multi-media entertainment
- Encourage the export of software and increase the market share of locally developed software

3.4.4 Growth in the national economy and informatization

- Encourage the use of information technologies
- Encourage information sharing and the development of information databases in education, medicine, entertainment
- Coordinate different departments in the development of applied information systems in the areas of science, education, finance, trade, agriculture, tourism and culture
- Promote informatization in government, public services and community services
- Encourage the usage of IT in other industries. Reform the way products and services are marketed and delivered through the use of e-commerce
- Improve production technologies with the use of IT and change the focus from quantity to quality and efficiency
- Establish the legal framework, standards for information systems to provide a conducive environment for informatization
- Emphasize the strategic importance of information technologies and promote the use of it. Increase the penetration of computers and Internet in schools

3.5 Industry reform

3.5.1 Communications industry

3.5.1.1 Reform the ways governing and managing the industry

- Through laws and economic policies to indirectly adjust the communication industry to create a fair and regulated market environment
- Through the allocation of resources like radio frequency, geo-stationary satellite orbit, telephone numbers to adjust the structure of the market. Introduce regulations to govern the allocation of resources and ensure that the limited telecommunication resources are fully utilized. Set up and strengthen management control systems as well as databases for resource management
- Actively reform supporting organizations such as research institutions and increase government support towards research and development. The role intermediaries such as industry associations, academic societies and consumer groups will be stressed
- Increase public consultation and transparency in government policy making, encourage self discipline among practitioners in the industry

3.5.1.2 Organizational restructuring

- Actively push the reform and the development of state-owned enterprises. Through capital restructuring, state-owned enterprises will establish business entity management structures matching the requirements of a market economy. Both rewards and constraints will coexist and there are rights as well as responsibilities
- Change the financing mechanism, expand the financing channels, lower the risk of incurring debt. Effectively utilize the financial instruments in local and overseas financial markets; decrease reliance on bank loans and favourable government policies. Shift the emphasis to directly obtaining finance from local and overseas financial markets
- Asset restructuring in the state-owned enterprises according to the market situation. Encourage merge and acquisition to make large-scale production and modernization possible

3.5.1.3 Create fair market environment and a level playing field

- Adjust the number of major operators and the structure of the industry through the licensing regime according to the Telecom Ordinance of the PRC. Gradually open up different telecommunications markets; allow different types of company to operate telecommunications services if they meet the requirements. Assist the development of the non-dominant companies while supporting the development of the dominant operator
- Timely release of information related to management policy and market information
- Strengthen the management of interconnection, mediate disputes arising from interconnection arrangements. Further regulate the interconnection rate, encourage the share of network resources among operators, ensure customers' right of choice
- Establish mechanisms to monitor the tariffs and the cost of the communications industry
- Establish quality control systems
- Establish a scientific and equitable regulatory environment, devise scientific management policies according to the operator's location, market share and stage of development to provide incentives and encourage development
- Devise policies to constrain market behaviour, prevent irrational price competition and suppress illegal smuggling and dumping in order to establish a fair competitive environment
- Encourage the use of locally produced products that employ mature technologies to meet market requirements. In areas related to national security and national economy, locally developed and manufactured IT products will be used

3.5.2 State-owned enterprises in the electronic industry

3.5.2.1 Establish modern enterprise system

- Establish property rights, legal entity management structures and restructure company law. Except for business related to national security, vital public services and important backbone industries, other industries will become share holding companies to diversify investment sources. Establish operational mechanisms and a rational system that are in line with modern business management systems.

3.5.2.2 Strategically restructure the organization of state-owned enterprises

- Encourage mergers and acquisition, support the development of internationally competitive enterprises, further assist the small and medium-sized enterprises to develop towards specialization, excellence and innovation. Accelerate the development of new products and renovations, achieve economies of scale, encourage or reform applied research and development institutions into business operations.
- Enable large enterprises to have the capabilities to innovate, perform scale production, systems integration, consolidate services and develop new markets with supporting policies and capital. Also aim to increase technological innovations and exports in order to earn foreign exchange. Support the development of name-branded products
- Adjust the strategies for the development of the state-owned IT manufacturing sector, encourage other economic sectors to participate in the asset restructuring of state-owned enterprises and acquire small and medium-sized enterprises.

3.5.2.3 Support major research and development projects launched by state-owned enterprises

- Taxation benefits to products that have obtained property rights, taxation reduction for research and development funds
- Convert the debt to shares for those companies that have heavy debt burden but

prospective products

- Totally fund or subsidize major research projects from state-owned enterprises. Provide financial support in the form of subsidies and assignments to assist in basic research and technological innovation.
- Expand the number of financing channels, change from relying on bank loans to obtaining capital investment directly from overseas or local financial markets
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3.5.2.4 Create a favourable regulatory environment to facilitate the transition from state-owned enterprise to independent corporation

- Change the functions of the government and create a conducive environment to help the state-owned enterprises to change into self-managed, self-sustainable business entities. Create a favourable external environment for the business enterprises through a comprehensive social security system
- Create a fair, competitive environment, avoid unlawful competition, fight against smuggling and dumping

3.5.2.5 Nurture entrepreneurship

- Establish a comprehensive mechanism to develop, employ and assist entrepreneurs. Create a favorable environment for entrepreneurs to contribute to the business, establish incentive schemes and constraints for the entrepreneurs and senior managers

3.6 Policies

To achieve the goals set in the tenth five-year plan and the 2010 long term development targets, policies must be devised to create a favourable environment for the development of the information industry and solve the existing problems faced by the industry

3.6.1 Further delineate the functions and responsibilities of the government; ensure effective administration, management and operation of the industry

- Strengthen the macro guidance and monitoring of the industry and create a favourable regulatory and competitive market environment
- The enactment of laws and regulations during the tenth five-year period including the Telecommunications Law, Radiowave Law and Informatization Promotion Law.
- Amend the Postal Law, Radiowave Administrative Regulations and Software Protection Regulation and drafting the laws on foreign investment and operation in the telecoms industry, Internet security, secure electronic transactions, digital signatures and certificates, semiconductor and integrated circuit topography protection
- Devise administrative procedures for the aforementioned laws and regulations to facilitate the formation of a comprehensive regulatory framework for the information industry
- Establish a vigorous law enforcement and monitoring mechanism, define the scope of the administration and enhance the training of regulatory staff. To monitor the power of the administrators, appeal and complaint handling procedures will be in place.
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3.6.2 Strengthen the capabilities to innovate and speed up commercialization of the innovation

- Formulate policies on information technologies to provide enterprises with guidance and direction on the areas of renovation and technological development and support the development of IT products
- Encourage companies in the communications industry to use locally produced communications equipment and software
- Set up venture capital to encourage companies increase investment in R&D. Encourage cooperation among universities, research institutions and enterprises to enhance the capability to innovate and develop new products
- Encourage enterprises to establish their own R&D facilities and cooperate with existing research institutions
- Effort will be put into the integration of various important technologies from the integrated circuit and software industries to increase their productivity
- Focus on high-speed broadband networks, powerful PCs, ultra-large scale integrated circuits, applications software. Building high speed broadband networks and encourage

the development of digitalized products, micron integrated circuits, new digital display units, photo-electronics and satellite communications equipment

3.6.3 Tariff and pricing policies

- Tariff adjustment will be market-led and based on cost
- Tariff for basic services will be determined by government or government proposals to ensure universal service and a fair rental of network resources among enterprises to prevent duplication in network build out. For value-added services, the service providers have the right to freely adjust the levels and structures of tariffs.
- The pricing of paid services should benefit both the service providers and the users
- Strengthen the administration on tariff management, establish mechanisms to monitor the level of tariffs to prevent unconstructive price competition

3.6.4 Human resources development

- Overall planning of human resources development according to the development of the industry
- Promote cooperation between business enterprises and universities in developing professionals, provide for on-the-job training to improve the quality of human resources
- Train up or bring into the country technical and managerial professionals, attract professionals who have both technical expertise as well as managerial and marketing capabilities
- Encourage the inclusion of capital and technologies in the rationing of revenue, introduce bonus and share options to the remuneration of company directors, provide an attractive environment to attract human resources

3.6.5 Opening up additional financing channels to attract investment

- Change the mechanism of financing the business from relying on bank loans to directly obtaining capital investment from overseas or local financial markets
- Gradually open up the capital market for the communications industry, encourage capital investment from local people, business entities and foreign companies
- Attract capital investment from the public through IPO, venture capital and through the formation of limited companies.
- Formulate favourable policies to attract capital to support capital-intensive projects as well as the development of the information industry in the central and western regions.
- Favourable taxation and investment policies for investment in the postal sector

3.6.6 Network security

- Enact comprehensive legislation and devise standards for network security
- Strengthen the regulations and directions regarding the practice of network security in business enterprises as well as preventive measures on the security of the international gateway
- Coordinate the relevant departments in establishing a mechanism to better control and regulate information security to discourage the spread of scam

3.6.7 Establish universal service contribution and government subsidizing mechanism

- Establish a universal service contribution to ensure universal telecommunications service is available in areas where the costs of providing it is high or the income level of the people is low. During the tenth five-year period, the types of universal services include fixed telephone and post
- Flexible taxation and investment policies to encourage the development of telecommunications services in poor areas and villages
- Provide government subsidies for the provision of dedicated government and Party networks, emergency communications services and the publishing of the Party's doctrine and books for blind people.

3.6.8 Develop the Western region

- Systematically plan and coordinate the development of the Western region. Aim to accelerate the development of communications, strengthening economic development.

Launch a large scale communications infrastructure to improve the basic infrastructure, further open up the IT manufacturing industries and the software industry in the Western region, reform the business structure and accelerate the pace of improvement

- Develop technologically advanced industries that enjoy comparative advantage. To utilize national debt and low-interest loan from the country or from overseas to develop the basic telecommunications infrastructure and the IT manufacturing industry
- Encourage investors from overseas or local enterprises in other provinces or cities to invest in the communications industry in the Western region

3.6.9 Expand exports for homegrown electronics products

- Improve the structure of products, organization and the market to open up the international market, increase exports in general and gradually increase the proportion of home-grown brands and products with locally developed technology in exports
- Develop international sales networks for electronic products, increase the exports for high-valued and high-tech products such as computers, communications devices, digital home appliances, integrated circuit, micro-electronics, new components. Create highly competitive and internationally well-known brands
- Encourage well-established local enterprises in the electronic industry to expand overseas, assist competitive multi-national enterprises
- Encourage local enterprises in the communications industry to enter and compete in the international communications market

3.6.10 Formulate technical standards for different technologies, strive to participate in the development of international technology standards

- Gradually change the passive role from following international developed technology standards to devising standards according to the trends and development of the information technologies. Some of these locally developed standards may gain acceptance internationally

3.6.11 Increase the applications of local equipment in the communication networks and in other industries

- Increase the number of innovations in locally produced equipment and the number of property rights. The proportion of locally produced equipment used in the communications network should also be raised
- Devise a national purchasing policy, IT products sold to the government should be primarily produced locally

3.6.12 Devise and implement industry policies

- Implementation of the "Notice of Policies on Encouraging the Development of Software Industry and Integrated Circuit Industry"
- Implement asymmetric investment policy to increase capital inflow to the industry, provide a favourable interest rate, special depreciation policy and reduce the profit tax of technological products with property rights

4. Long term goals for 2010

4.1 Strategic targets

By 2010, China will become an information society, raising the breadth and the depth of using information resources and the development in information services will accelerate and meet the demand from the public. The information industry will be the most important industry in the national economy, achieving a large scale and technologically advanced national information infrastructure.

4.2 Prospects

4.2.1 Communications industry

Building a high speed and high capacity backbone network, fixed and wireless connections with the co-existence of narrowband and broadband information rich networks. Establish an efficient, flexible postal network with advanced technologies and excellent services. Supply and usage of mature and developed technologies in the communications equipment

industry. Locally produced and developed equipment and software will dominate the Market.
Service standards – Capable of providing communications and Internet services anytime in most places in China to anybody who has a terminal.
Market environment – Create a competitive and regulatory environment compatible with market development. Produce businesses that are competitive in the international market.

4.2.2 Software, IT manufacturing industry

From 2006 to 2010, the average annual growth rate is expected to reach 10-15% for the IT manufacturing industry and software industry. By 2010, the scale of production and the level of production technologies will be comparable to those in the United States and Japan and at the forefront of the world economy.

4.2.3 National economy and informatization

IT knowledge and skills will be greatly improved, information technologies will be widely applied and informatization will have remarkable achievements.