

## **Analyses on the Patterns and Countermeasures of Strategic Emerging Industry Development of China----Based on a Case Study of a New Generation of Information Technology Industry**

**YAO Qingtao, BAO Lili**  
School of Management Studies  
Shanghai University of Engineering Science  
Shanghai 201620, China

### **Abstract**

*New generation of information technology is one of China's seven strategic emerging industries focus on fostering the development stage, is driving a wave of innovation and the industrial revolution, which is focused on strategic emerging industry development, leading the world in a new round of technological innovation that gave birth to the third Industrial Revolution. In this paper, I take the development of a new generation of information technology industry as an example to analyze the problems of the development of strategic emerging industries and give suggestions to improve the technical level.*

**Keywords:** Strategic Emerging Industries, Development mode, a new generation of IT industry

With the pace of economic globalization, the development of strategic emerging industries to become governments to address the financial crisis, a serious depletion of productive resources, ecological destruction and other issues, and seize a common choice for the next round of technological revolution in the commanding heights of the economy. China government in May 2009, the State Council, with financial support from the Deputy Prime Minister Li Keqiang first proposed "strategic emerging industries" concept on development of new energy and energy saving forum and other emerging industries.

### **I. New generation IT industry definition, classification, characteristics**

New generation of information technology is one of the seven strategic emerging industries focus on fostering China's current stage of development. Miao Wei pointed out that the new generation of information technology is driving a wave of innovation and the industrial revolution, which is the focus of the development of strategic emerging industries, leading the world in a new round of technological innovation, the birth of the third industrial revolution. We can say that the development of a new generation of information technology industry is good or bad, the pros and cons related to the development of strategic emerging industries globally. Central and State Council attached great importance to the development of next-generation information technology industry. July 9, 2012, the State Council issued the " " five "national strategic emerging industry development plan " clearly states that hold the information technology industry upgrading and integration of development opportunities, accelerate the construction of broadband, convergence, security, ubiquitous under generation information network, a breakthrough ultra high-speed fiber-optic and wireless communications, networking, cloud computing, digital virtual, advanced semiconductor and display the new generation of information technology, information technology, promoting innovation, interactive application development and network building new combination of innovative industrial organization model to improve the level of new equipment to protect, nurture emerging service format, and enhance international competitiveness, promote Chinese information industry from large to strong changes.

Next-generation information technology industry mainly includes six aspects: the next generation of information technology, networking, triple play, new flat panel display, high-performance integrated circuits, cloud computing and other high-end software. In addition to the new generation of IT industry have common strategic emerging industries also has a "broad level" and "high-coverage", "high integration" features.

**1.1 Wide level.** New generation of information technology industry , including not only core infrastructure industries such as electronics software and integrated circuit industries to the next generation of mobile communications industry and modern information network industry networking and triple play represented , as well as cloud computing , software, services represented modern information service industry .

**1.2 High coverage.** With the development of next-generation information technology industry, hardware and software infrastructure to promote the use of scale, such as in the fields of economy and society can be seen extensive coverage of the new generation of information technology industry, and this trend is gradually strengthened.

**1.3 High integration.** Arising from the process of generation of information technology point of view is the high degree of integration course. Gang pointed out the development of a new generation of information technology specifically : 1 ) the various sensors embedded in objects and equipment to the power grid , railways, bridges , tunnels, roads, buildings , water systems, dams, oil and gas pipelines , etc. , and is generally connected together ; 2 ) the "Internet of Things " and the Internet to integrate and realize the integration of human society and the physical system , by means of super- powerful central computer the ability to cluster and cloud computing technology, the network 's staff , machinery, equipment and infrastructure to implement real-time dynamic management and control ; 3 ) on this basis , humans can be more refined and dynamic management of production and life, to achieve "smart " state , improve resource utilization and productivity levels , improve the relationship between man and nature . Including items represented in RFID identification technology, sensing and transmission technology, network communication technology, data storage and processing technology to the next technology-driven as the representative of 3C integration technology, smart objects , things continue to extend , so full of information industry new vigor .

## II Status of development of the new generations IT industry

**2.1 Things.** English name: Internet Of Things (IOT), also known as Web of Things. Things, is "connected to the Internet", specifically refers to all items via radio frequency identification technology (RFID), infrared sensors, global positioning systems (GPS), laser scanners and other information sensing device, according to the agreed the agreement, to any object connected to the Internet, information exchange and communication in order to achieve the object of intelligent identify, locate, track, monitor and manage a network. After several years of short-term development, the Chinese Internet of things industry already has a technology, industry and other infrastructure , such as the establishment of a high-tech industrial base in Wuxi networking , sensor networks , Wuxi National High-tech Industrial Base .

**2.2 Triple play.** At this stage, the focus should be placed on the triple play in the transformation of the three networks, the network can provide a variety of services based on IP data applications on their platform, carrying a variety of business, so that a variety of network systems already have a basic ability to carry out appropriate business and penetration of the cross, the full potential of all types of network resources. From a technical point of view, although there are a variety of network characteristics of their own , but the technical features gradually moving towards the same, such as digital, fiber-optic technology , packet switching and so , in particular the gradual convergence towards IP protocol has become the next stage of development the common trend when a variety of network platforms to achieve essentially the same operational capacity can carry , they really become an alternative to each other , breaking the technical barriers three industries traditionally classified by type of business markets and industries.

**2.3 New flat panel display.** In recent years, the relevant enterprises, universities and research institutions in China's flat panel display industry is doing positive and effective efforts in support of the National Science and Technology Program has made some remarkable achievements. Zhang Fang respectively, from LCD technology, PDP technology, OLED technology, FED technology, electronic paper technology in five areas more comprehensive description of the current situation of China's new flat panel display.

In terms of new flat panel display industry, at the low end of the industry chain . Chinese mainland stage, most of the relevant companies are playing a "manufacturing plant " role, although 75% of the global machine assembly manufacturing in mainland China , but the share of domestic firms supplying core products accounted for about 10 % of the global share . International competitiveness is not strong, the core technology and key technology is not important breakthrough.

**2.4 High-performance integrated circuits.** China's IC industry began in the 1960s, after nearly 60 years of continuous development, especially in developing steadily after 1994, making the IC industry occupies a place in the national industry. Total sales from 2006 for the first time exceeded 100 billion to achieve 700 billion in sales, with a total of four years. "Five" first years, became the first integrated circuit to enjoy the country's strategic emerging industry policy support. IC industry is one of the most competitive international trade, globalization, resource flows, and configuration is very high. China, as one of the important national consumption of integrated circuits, integrated circuit products imports accounted for half of global exports.

### **III. Issue a new generation of IT industry development exist**

**3.1 From the perspective of regional development layout of the industry, there are homogeneous, reproducible developments of the phenomenon.** In the development of strategic emerging industries tide approaching, local governments hope with "forerunner" advantage, the first development, the central government explicitly seven strategic emerging industries. Seven provinces and cities will follow up with the industry, and common development, ignoring its own regional characteristics, leading to the phenomenon of regional homogeneity duplicate development. For some industries where there is an absolute advantage, rather than the place has the absolute advantage of actively investing in emerging industries, development issues continue to appear, the dilemma is obvious. Not only missed the opportunity to develop regional industries, but also missed the opportunity of regional economic restructuring and development.

**3.2 From the perspective of product development, independent innovation capability needs to be strengthened, the core, the key technology is not an absolute advantage.** Research and development of new industries can achieve the enterprise to promote the development of leading products first base. Zhang Shaochun pointed out that Chinese enterprises independent innovation capability is low, the lack of core technologies with independent intellectual property rights. Although China's national strategic emerging industry development momentum expensive, but really to the international market internationally competitive products occupy a very small, and occupies the core technology, key technology products less.

**3.3 From the perspective of enterprise development, financing difficulties, the initial investment is too large, the product promotion is not enough.** Uncertainty and high innovative features determines the strategic emerging industries in emerging companies need huge capital inflows. But the fledgling enterprise, more investment rather than income, this feature makes many afraid to venture capital firms involved in the choice of traditional industries, such as real estate and other industries gain fast. Investment in product development has been great for promotional products tend to make business in a "stretched" dilemma, which leads to the promotion of research and development on disjointed.

**3.4 From the market point of view, lack of effective market demand, product homogeneity, the lack of competitive products.** Companies invest heavily in research and development of new products, but not enough market acceptances, product homogeneity is restricting the development of strategic emerging industries related businesses. Strong market demand not only can effectively stimulate enterprises to industrial restructuring, but also encourage enterprises to increase innovation research and development efforts, and promote common development of new industries. In the international market, coupled with the advantages of the developed countries to support the policy, China's emerging products often do not have the core competitiveness of the international journey frustrations.

**3.5 From industry on the whole, the industry concentration degree is not enough, not enough to extend the industrial chain.** Strategic emerging industry is global and long-term economic and social development has a significant role in leading the drive industry. Strategic emerging industries have a high degree of industrial relevance, can promote the development of related industries, the National Bureau of National Accounts Division will regularly announce the induction of the Chinese industry and influence coefficient index. Domestic scholars, Zhang Dunfu by reference sensitivity coefficient and industrial industry influence coefficient gives a quantitative study. Industry response coefficient and industry influence coefficient strategic emerging industries are high. Industrial agglomeration, industrial chain extension is the only way to deepen the development of new industries, as long as the formation of a high degree of industry concentration, industry chain extension will not only enhance the development of emerging industries will enhance the upgrading and transformation of the development of other related industries.

**3.6 From the perspective of personnel training, lack of innovation and talent, talent cultivation is not enough.** Innovation is the essence of emerging industries industry, talent is the basis of technological innovation and core. Chinese strategic emerging industries, there are many problems in personnel training mechanism, such as the proportion of high-tech personnel occupy little lack of professionals, national training system as a whole is not perfect innovative talents, talent training mechanism within the enterprise complex there much room for improvement. Effective innovation incentive system is not established; resulting in serious loss of creative talent, a lack of innovation and motivation, as well as the introduction of corporate personnel policy is imperfect, so that talent is not enough to protect life. Talents restrict technological innovation, technological innovation restricting industrial development. Strive to introduce, reserves, placement, training, composite, etc. systematic use of technology talent.

#### **IV. Accelerate the development of China's emerging strategic industries Suggestions**

For China the process of development of strategic emerging industries problems now are given specific suggestions from the central government, local government, enterprise levels, in order to provide a little help for the development of strategic emerging industries China.

##### **4.1 Central Government**

**4.1.1 Policy development, grasp the overall situation, considering China's national conditions.** Relative to other developed countries, China's shortcomings inherent in the development of strategic emerging industries, the central government at the time of the development of relevant industrial policies, China should give full consideration to the strategic situation, phases and levels of development with Chinese characteristics emerging industries. The central government should be from the perspective of international, global, strategy, drawing on the experience of developed countries nurturing strategic emerging industries abroad, such as a combination of market research nurturing mode, type of government intervention in fostering positive mode, the government led to civil transformation nurturing mode.

**4.1.2 Carefully reviewed locations Industry planning, good coordination between regions blindly follow the trend set entry barriers and other issues.** Local government attaches great importance to the development of strategic emerging industries, but there are similar phenomena regional developments, some regions even at the expense of traditional industries directly holistic development of strategic new industries. Therefore, the central government, the local government strategic audit planning is very important emerging industries; the central government should blindly follow the trend of better coordination between the regions, set up barriers to entry and other issues. Achieve full audit, field trips.

**4.1.3 Foster strategic emerging markets, stimulating domestic demand, product promotion.** Strategic emerging industries is ultimately produced product, there is no market demand for the product is of no value products. How to nurture emerging industries of strategic markets, the pros and cons related to the development of the industry. Uncertain strategic emerging industries of this feature, the Central Government can stand on both international and domestic perspective cultivate markets. In the international market, the central government should make full use of the global innovation resources, timely advantage of the Chinese product marketing, strategic emerging industries around the world. For example, take advantage of a good opportunity to learn foreign exchange, the use of ten -nation summit, have a significant impact on organizations such as OPEC meeting, jointly developed by the two countries to jointly invest in other forms, the advantages of both products will expand their wide and up to the international stage provides an opportunity to learn the relevant enterprises. The next step for enterprise development, provide a reference. In the domestic market, it is necessary to vigorously raise public awareness of new products, especially the establishment of product credit evaluation system. Second, lead the consumer concept. Promote energy conservation, environmental protection, and consumer concept, in line with the characteristics of emerging industries of strategic development, to a certain extent, to broaden the development of space industry. Third, the government led product promotion. Government should actively help enterprises promotional products, promotional products, and increase public trust for new products. For example, you can promote the production and promotion through government procurement way through government subsidies to stimulate consumers' purchase intention.

**4.1.4 The importance of innovative talents training system, from the source to provide personnel support for the strategic emerging industry.** Development of strategic emerging industries is inseparable from the high-tech talents. The central government should proceed from the overall point of view, the cultivation of innovative talents as a national strategy, a steady stream of new industries to provide multi-level and high-level personnel support.

## **4.2 Local Government**

**4.2.1 In accordance with national strategic policy, a comprehensive assessment of the advantages of regional characteristics, the integration of regional resources, focused industry, especially fiscal support business start-up period.** Country according to the actual situation, proposed seven strategic emerging industries focus on the development of this stage. These strategic emerging industries with regional features, the decision of the local government in the development of strategic emerging industry development plan, I can not blindly follow the trend, and the region regardless of the actual situation of the industry. No comprehensive assessment of the characteristics and advantages of the region, in order to compete for investment and the total project funding to improve the region's economic approach are unscientific. Regional homogeneity planning area is the consequence of repeated construction has an absolute advantage soon occupy the lion's share of the industry, rather than an absolute advantage in the region will lead to make ends meet, the industry subsidy, only to lose the characteristics of the economic development of the region timing, in the long term, regional economic conditions may also deteriorate. Therefore, the local government should pay attention to assessment, accurate positioning of key industries, and ultimately the formation of regional specialties and industrial advantages. Strategic emerging industries have the characteristics of uncertainty, which restricts the development of enterprises in the start-up period of high risk. So for the fledgling related businesses, local governments should be given financial support from the financial as well as giving incentives on taxes.

**4.2.2 Focus on supporting the development of related businesses.** Develop appropriate policies in the region, to promote coordinated development of large and small businesses, to promote the healthy development. For the development of common technology, the development of key industrial enterprises, local governments should focus on supporting the development of the enterprise, will lead to positive externalities accelerate regional industrial upgrading, improving the pace of development of strategic new industries. Zhu Ruibo pointed out that SMEs at a disadvantage, facing discrimination policy, institutional constraints, market access, financing difficulties and other problems, and large enterprises due to the incumbent inertia, and thus avoid the development of new technologies, new products, deliberately raising industry barriers to entry, such as the status quo. Large and small enterprises are the main markets, indispensable in industrial development. Therefore, local governments should develop policies to coordinate the development of medium and small enterprises symbiosis, such as trial and error encourage small and medium enterprises, large enterprises to develop new technologies to increase power of new products, to promote the formation of large and small enterprise collaborative innovation mechanism, making strategic emerging industries health and sustainable development.

**4.2.3 A platform to promote one of the four official research modes.** Four features of emerging industries of strategic decision it needs government, industry, academia, research collaboration between. Because of strategic emerging industries are strategic, regional, so without government intervention, because it is highly innovative in nature, so inseparable from academia, research cooperation, because it is outside in nature, inseparable government, industry mutual coordination and cooperation learning and research. As part of one of the four in the role of government should be to build a platform to promote the formation of one of the four official research benign mode. For example, the talents, the Government has to formulate and implement the introduction of foreign high-tech talent, but also the development of high-tech talent placement incentive system to provide scientific support for them to show their talent for strategic emerging industries and services.

**4.2.4 Industry cluster development, extend the industrial chain, and ultimately to achieve industry-leading.** Not only in the industrial development of the local government to intervene middle period, the local government should be involved in the moment, and dynamic. After the local development of strategic emerging industries to a certain scale, the government should accelerate the pace of regional economic transformation, the transformation of traditional industries can transition directly into new industries, not transformation and no survival advantage for enterprises should adjust. For the development of better strategic emerging industries, the government should conduct industrial agglomeration; extend the industrial chain, bigger and stronger, the true realization of the goal of the country's leading industry.

### 4.3 Enterprise aspects

**4.3.1 Improve the capability of independent innovation, research and development efforts.** High innovative features emerging industries of strategic decisions related enterprises must increase innovation and investment. We can say that there is no innovation in the enterprise is not strategic and emerging industries; lack of corporate R & D investment will not get long-term development. Innovation is the driving force for enterprise development, increase research and development is the foundation for enterprise development. Development of strategic emerging industries affect the future of a country or region lifeblood, so innovation is particularly important, only to master an innovative initiative, the new ownership of the core technology, will maintain their position in the future economic development of competition in the .

**4.3.2 Multi-level, multi-stage introduction of talents, establish long-term mechanism of composite re-training personnel.** Talent is the basis of technological innovation and core, which can not be ignored. China compared with other developed countries, the high-tech talent is obviously there is a big disadvantage, which is China the relatively slow development of strategic emerging industries, one of the reasons why China should be in phases and levels of the introduction of foreign talents, added to the enterprise development to improve the comprehensive competitiveness of enterprises. On the enterprise, the different stages of development require different talents, apart from abroad, but also should pay attention to talent composite have been introduced and re-training. Talent composite culture should be a longer-term process; this will provide personnel support to a steady stream of business, break through the bottleneck of high-tech talent.

**4.3.3 Strengthen cooperation with research institutes and leading enterprises, complementary advantages.** Advanced scientific research institutes has a wealth of resources and personnel, enterprises should strengthen cooperation with research institutes, research institutes full advantage to make up for their lack of enhanced innovation capacity; same time, we should also strengthen cooperation between enterprises, play to their many advantages of resources, technology, form spillovers to jointly improve the economic efficiency of both companies to strengthen their technological advantage. Positive externalities of both companies, is conducive to the formation of the upstream and downstream business division, thus providing an opportunity to extend the industrial chain.

**4.3.4 Patents and actively introduce the advantages of large-scale production.** A patent is an asset; it is a new technology, new products, and birth control. Combined with their development needs, enterprises should introduce the advantages of the patent as an important aspect of business; it will also achieve innovation results. The large-scale production of the patented product not only makes the patented technology to get promotion, will enhance the subsequent power of enterprise development. For traditional non-strategic emerging industries, and actively introduce the advantages of the patent and large-scale production, after all is a good way to economic restructuring enterprises emerging strategic industries.

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