

## **North Korea's Policy Shift Toward the IT Industry and Inter-Korean Cooperation**

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### **PREFACE**

Since the historic inter-Korean summit talks in Pyongyang, inter-Korean economic cooperation has been growing at a breathtaking pace in the private sector, particularly in the IT industry. And although the new Bush administration put overall inter-Korean relations on hold, the move did not affect the IT industries of the North and the South. The speed and extent of the exchanges and cooperation that is occurring in this sector are so significant that it has even raised concerns among some people, considering the fact it is a non-political sector that can have a far-reaching impact on inter-Korean exchanges as a whole.

Of late, North Korea has become keenly interested in the IT industry, as evidenced by North Korean leader Kim Jong-il's visit to Beijing's Chungguanchun Technological Park on his way to China shortly before the inter-Korean Summit (May 2000), and to Pudong this year (January 2001). In addition, the North unveiled a national development strategy stressing utilization of the IT industry, and the strengthening of cooperation with the South. Also, North Korea is

making various attempts to capitalize on the latest high technology.

North Korea's heightened interest in the IT industry is directly related to its goal to construct Kangsong Taeguk--a powerful nation. Recognizing the importance of the development of the IT industry to achieve this goal, North Korea has adopted a positive stance with respect to inter-Korean technology cooperation. Taking into consideration the scarcity of capital and natural resources, North Korea made a strategic choice to lay the groundwork for self-renewal by nurturing the high-value added IT industry. It was recognized by the North as the best way to resuscitate its moribund economy, while still preserving the regime, as its traditional industries lack competitiveness and the leadership is disinclined to accept rapid reform. The IT industry is also suitable for Pyongyang in that it can be developed by a few specialists and scientists. This minimal opening would thus continue to shelter the nation from the world community. North Korea seems to have perceived the significance of the IT industry in the era of information as an integral element for sustained economic development. It increased interest in the industry therefore cannot be dismissed as just a passing phase.

There is no doubt that the North has placed priority on the facilitation of inter-Korean exchanges in the IT sector as a means to revive its economy. Understandably, it was not an easy decision to place special emphasis on developing the IT industry, given the inherent dangers it poses to the stability of the regime.

### CHANGED ECONOMIC DEVELOPMENT STRATEGY

#### *North Korea's Science and Technology Policy and the "New Thinking"*

The North's emphasis on the development of science and technology as part of economic management is attracting close attention at home and abroad. This is not new. However, since Kim Jong-il came to power, more stress has been focused on the

development of this sector than ever before. Since 1998, in particular, the Kim Jong-il regime has adopted the “policy attaching great importance to science” as a development strategy.<sup>1)</sup> North Korea has made efforts to develop science and technology in the past. Since 1998, Pyongyang has called for national scientific and technological renovation by promoting “the policy attaching great importance to science.”<sup>2)</sup> This was the result of the North’s judgment that without the development of science and technology, it would be difficult to make North Korea an economic powerhouse.<sup>3)</sup>

In line with this, North Korea designated the year of 1999 as “the year of science.” In the 2000 joint New Year editorials of the newspaper of the Workers’ Party of Korea Central Committee, *Rodong Sinmun* and the newspapers *Chosun Inmingun* and *Chongnyon Jonwi*, science was designated as one of the three major pillars for the construction of Kangsung Taeguk, along with ideology and arms. This year’s joint editorial reaffirmed the importance of science by asserting that “it is necessary to create in the entire society, an atmosphere in which science is emphasized, and to make the flame of technological renovation burn fiercely.”<sup>4)</sup>

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- 1) 1998 is the year when the Kim Jong-il regime was stabilized and the power succession was completed.
  - 2) Since the test-launch of the satellite “Kwangmyungsung 1,” Kim Jong-il has frequently stressed the policy to promote science. It seemed that this has helped the North Korean leadership to regain self-confidence and to make a shift in perspective.
  - 3) There are two underlying reasons for the North’s policy of attaching great importance to science and technology. The first is that the North regards science as an important vehicle to awaken its potential as an economic powerhouse. The second is that it is a key to successfully meeting imperialist challenges such as the economic sanctions enforced by the United States. Sim Kyu-suk, “North Korea’s Policy for Science and Technology: Let’s Run Fast,” *Unified Economy*, Hyundai Research Institute, Vol. 64 (April 200), p. 76.
  - 4) “Opening Inroads into the New Century in the Spirit of the Victorious ‘Arduous March,’” 2001 Joint New Year editorial by *Rodong Sinmun*, *Chosuninmingun* and *Chongnyonjonwi*.

North Korea's policy to attach great importance to science and technology is significant in that it utilizes science as a political tool. Scientific politics is emerging as a new ruling theory, as evidenced by the assertion that "The scientific politics led by General Kim Jong-il promises a bright future for the IT industry."<sup>5)</sup> This shows that science-related ideology will gradually spread. It is perceived that scientific politics will stimulate an intense interest in science and technology throughout society, while encouraging scientists, engineers, workers and leading figures to exert their utmost efforts in what they are doing.<sup>6)</sup> On the other hand, the employment of the term "scientific politics of *Juche*, or self-reliance" displays North Korea's intention to allay concerns over the ideological laxity and domestic instability which might be caused as a result of the inevitable introduction of the advanced technology and facilities for informatization.

The focus of North Korea's science and technology policy lies first on the application and proliferation of science and technology used in factories and enterprises to the production site of the traditional industries, secondly, on the informatization, and thirdly, on the nurturing and development of the high-tech industries such as IT and bio-technology industry.<sup>7)</sup>

North Korea's science and technology-focused policy is not only aimed at revolutionizing technology but also at intensively fostering the IT industry as a mid- and long-term national strategy. Even though this policy is not pursuing reforms and opening in earnest as it focuses on the development of technology, it will eventually accelerate the process of the opening-up of North Korean society.

Meanwhile, the 2001 joint New Year editorial continued to stress

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5) North Korean Central TV Broadcasting Station, May 19, 2001

6) *Yonhap News*, May 19, 2001. [www.yonhapnews.co.kr]

7) Yang Mun-su, "Direction and Implications of the Recent Changes in the North Korean Economic Policy," *Research Report*, LG Economic Research Institute, Vol. 15 (May 2001), pp. 11-17.

the “new thinking,” by saying that “It is necessary to clear up antiquated and backward ideas, and to think and act in a fresh fashion,” “The new century calls for a revolutionary perspective, innovative thinking, and a progressive business spirit,” “We need to boldly get rid of the past by discarding old perceptions, and by restoring our technological capacity.”<sup>8)</sup>

North Korea recognizes the need to modify its existing perspectives and paradigms and introduce new approaches in order to develop science and technology and to meet the challenges of the IT era. The new thinking encompasses the North's intention to preserve the socialist system and to develop the nation in a single leap by nurturing science and technology and developing of the IT industry.<sup>9)</sup> It foretells a shift in Pyongyang's economic policy that will focus on the IT industry.

#### *A Shift Toward IT Technology*

North Korea's interest in the IT industry emerged in two major phases. The first was in 1984 during Kim Il-sung's trip to Europe. At that time, the North Korean regime recognized the importance of information and technology and established a long-term plan at a governmental level in this area. During his visits to European nations, the North Korean leader was exposed to the

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8) The seed theory is always associated with this logic. In other words, the new paradigm calls for changes and changes will only be implemented when Kim Jong-il's revolutionary spirit is emulated. Those who are armed with “the seed theory” are the bona fide revolutionists who have the same spirit as Kim Jon-il,” said the Korean Central TV Broadcasting Station, May 19, 2001. What needs to be pointed out is that a new perspective, strong efforts for development, and emphasis on the spirit based on the seed theory is becoming a public movement and are being used as propaganda slogans.

9) Seo Jae-jin, *North Korea: From Economic Crisis to the IT Industry* (Center for Future Human Resources Studies, Jishik Madang, 2001), p. 178.

microelectronics industry and came to recognize the significance of state-of-the-art technology focused on the electronics industry. He signed technology cooperation contracts with European countries, allowing North Korean trainees to go to Europe and learn skills. Investment in the IT industry was already in full swing in 1988 when North Korea formulated a three-year plan for the development of science and technology, which was implemented in the same year.

In 1985, the Chosun Calculator College was established to provide computer-related four-year courses. In 1986, the Pyongyang Information Center, specializing in program development, was opened. Later, the Chosun Computer Center was also established in 1990. Then in 1995, Eunjung District in Pyongyang was designated as the Scientist Center since it is the site of most of the major universities including colleges of science, which nurture scholars in the basic scientific fields. Most recently, the Daedong River Valley was created as part of the efforts to establish an industrial district related to the IT industry.<sup>10)</sup>

The second phase began in the mid-1990s concurrent with the global IT revolution and the Internet boom. At that juncture Kim Jong-il directed a second policy shift. As mentioned above, since 1998 North Korea had been keenly interested in computer technology. At the same time, the Kim Jong-il regime was regaining political stability to some extent, and even made progress in overcoming the food crisis in the 1990s. There were attempts to compensate for the failure to develop an industrial economy by successfully entering into the digital economy. As part of this effort, since the 1990s, North Korea has held annual nationwide competitions to encourage program development. In November 1999 it also set up an electronic industrial ministry exclusively responsible for information technology.<sup>11)</sup>

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10) Park Chan-mo, "North Korea's Information Technology and Inter-Korean Cooperation," *Tongilsiron*, Chongmyung Cultural Foundation (Spring 1999), p. 124.

11) Kim Yu-hyang, "Development in North Korea's IT Sector and Informatization,"

North Korea's radio, TV and newspapers report almost daily on the significance of computer science and technology.<sup>12)</sup> Moreover, on July 10, 2000, Pyongyang opened its official English website on the Internet.<sup>13)</sup>

The government is encouraging North Korean residents to participate in the process of informatization through computer studies, emphasizing the need for public education in this sector to develop the information industry. In its efforts to nurture an IT workforce, North Korea opened computer science colleges within the Kimilsung University and at the Kimchaek Industrial University in 1999. Special curricula designed for young people who demonstrate special aptitude was established on April 1, 2001, in Mankyongdae Student Palace, Pyongyang Student Boys' Palace, and in Kumsung First and Second Junior High Schools. Beginning last year, it stepped up its efforts to nurture talented people by holding a national computer program development contest for university students.<sup>14)</sup> In

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*North Korean situation II*, Ministry of Unification (2000), p.113.

- 12) Some of the examples are as follows: "This is the era of science, technology and computers. We need to make vigorous efforts to restore the people's economy through modernization of equipment, facilities, and production with the introduction of scientific elements and information technology," Korean Central TV Broadcasting Station, April 20, 2001; "Computers and information technology will be key factors, determining the development of the society and economy," *Rodong Sinmun*, April 27, 2001; "Without the knowledge of modern science and technology, not even a single step can be taken, and no contribution to the construction of a powerful nation can be made in a real sense," *Chongnyonjonwi*, May 16 2001; "The role of the information technology for social development," *Rodong Sinmun*, May 23, 2001.
- 13) North Korea, on July 10, 2000, opened an English website, providing information and news on North Korea. [<http://www.English.dprkorea.com>]
- 14) North Korea is focusing on fostering human resources based on the judgment that current economic conditions make it difficult to develop the IT industry fully. Thus, it appears that the North is committed to producing high-quality manpower and to create an atmosphere conducive to the development of the IT industry.

addition, the North Korean official newspaper stated, “All North Korean workers should have a correct understanding of the informatization of the economy, and tireless efforts must be made to modernize the production process based on information technology.”<sup>15)</sup> It also emphasized the need for rapid development of the information industry and reforms of the entire economic sector to bring it in line with the information age.

Meanwhile, on April 5 of this year, the fourth session of the 10th Supreme People’s Assembly adopted the copyright act. This can be interpreted as a display of the North’s determination to lay the legislative foundation for the development and introduction of advanced technology from the West in the IT sector. North Korea might have considerable potential in the IT industry with its computer software sector recognized for its prominence. Also on the table of inter-Korean economic cooperation, North Korea has shown interest in discussing IT-related business projects.

North Korea’s policy shift toward the IT industry is significant in two respects. First, a socialist country tends to maintain complete control over the communications sector—as was seen in the Soviet Union, and North Korea is no exception. Secondly, North Korea is attempting a dramatic transformation while at the same time, keeping the socialist system intact.<sup>16)</sup> This is very similar to Ireland’s development of its own IT industry. Ireland was successful in informatization even though it limited industrialization to a minimum, recognizing that too much attention to industrialization

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15) *Rodong Sinmun*, August 12, 2001

16) The lack of a manufacturing industry in North Korea practically negates the synergy effect among industries. There is also not much investment in North Korea. In this situation, North Korea came up with the idea of the so-called “take-off,” or “economic take-off theory.” North Korea is focusing on the development of the labor-intensive software industry that requires relatively small facilities and investment rather than on the hardware sector, which is already in deep recession partly due to economic sanctions imposed by the United States.

might delay the informatization process because of the rapid pace of industrial development in the 21st century.

Without a doubt, North Korea's interest in the IT industry and its technological advance in this sector is qualitatively different from the past. Thus, the North will be pursuing the incompatible policies of opening up its IT industry while retaining tight control over its citizens in order to keep the socialist nation intact in its unique isolationist style. In the process, Pyongyang will find it inevitable to make policy changes such as the limited easing of its restrictions on the IT industry.

#### **INTER-KOREAN COOPERATION IN THE IT INDUSTRY**

##### *The IT Industry and Inter-Korean Relations: Opportunities and Challenges*

Inter-Korean relations entered a new phase following the June 15 Joint Declaration, the result of the landmark Pyongyang summit between the leaders of the two Koreas. The inauguration of the Bush administration in the United States, however, brought about a cooling-off period in inter-Korean relations. The North's unilateral postponement of the reunion of separated families and sports exchanges again raised concerns over the possibility of implementing the historic declaration. Nevertheless, cooperation in the IT industry is progressing so rapidly that some worry about overheated competition in this arena.

The Kim Jong-il regime's active efforts to foster the IT industry have prompted the keen interest of South Korean businesses in the inter-Korean exchanges in the IT sector. There have been media reports about Kim Jong-il's deep interest in the IT industry and his active support for the new initiatives. Kim visited China, last May and also in January, this year, and made trips to the IT industrial complex to see for himself China's remarkable achievements. This kind of interest is reflected in North Korea's national industrial

policy that serves as a driving force for the development of the IT industry.

One of the reasons for the robust exchanges and cooperation is that Seoul and Pyongyang discovered that they could complement one another in their IT sectors. The South finds it attractive to utilize North Korea's cheap labor in the IT industry and to use the country's relatively advanced software technology. Conversely, the North expects to learn from the South about IT technology and to earn much-needed foreign currency. Pyongyang realizes that developing its IT industry is the only way to revive its economy and that cooperation with the South is essential. It has thus devised an economic development strategy to revive its economy, which can be seen as a significant turn in its development. In other words, it will move directly toward the high-tech industry, while bypassing the traditional industrial development stage that focuses on light industry.

Exchanges and cooperation in the IT industry are both an opportunity and a challenge for the two Koreas. As mentioned above, South Korean companies can take advantage of the highly-trained North Korean workforce at a low cost and a low turnover rate, which promises a stable business. What is also attractive about the IT industry is the high profitability with minimal investment in equipment and facilities, as well as the low logistical costs. South Korean companies will also have an opportunity to make inroads into the North Korean IT sector and its potentially vast business opportunities. By making investments in North Korea's IT industry earlier than others, South Korean companies will be able to secure an advantage over future competitors in this field.<sup>17)</sup>

Already many South Korean companies are cooperating with

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17) The two Koreas should accelerate IT exchanges, not only to lower costs in case the South fails to establish a business presence in North Korea ahead of other countries, but also because of the possibility of enormous cost savings after unification.

North Korea in various areas including the joint development and introduction of software, process-on-commission of hardware and software, and the establishment of an information and technology complex. The inter-Korean cooperation involves mostly small and medium-sized investment and venture capital companies rather than conglomerates in the field of the knowledge industry and other high-tech areas. And it has been an ongoing process.

The first inter-Korean IT joint venture company “Hana Program Center” was launched on May 10, 2001 in Dandong, China. There, talented North and South Korean workers in the IT industry met for the first time to market software.<sup>18)</sup> What is also notable is that Pyongyang’s hidden information technology might be disclosed through the Hana Program Center. After all, North Korea has boasted highly advanced science and technology that was demonstrated by the launch of the artificial satellite, Kwangmyungsung I, and the development of Taepodong missiles, and the world has kept a watchful eye on the development of this technology. Inter-Korean cooperation has thus far neglected this field, which makes the recent cooperation in the IT sector more significant. North Korea can also benefit from this project in the field of security solutions. On the other hand, North Korea’s technology can also contribute to their national interests in a military sense after the two Koreas are united.

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18) South Korea’s Hanabiz and North Korea’s Pyongyang Information Center chose Dandong for the launch of their business because it is close to Sinuiju, an industrial city, and it is an ideal location for an information technology center, which could be linked with Sinuiju in the future. In Dandong, contacts with North Korean companies for business consultations can be made only with approval, bypassing the complicated procedures needed to visit North Korea. Dandong is also a perfect place to run a stable, seamless business since there is limited exposure to the effect of the Wassenaar regime and to the changes in inter-Korean relations. Seo Hyun-jin, “Hana Program Center: From Agreement to Opening,” *Minjok 21 South and North Korea Together*, Minjok21 (May 2001), pp. 58-61.

Other cooperative efforts have been launched in the IT industry: Pyongyang Information Center submitted an official request for about 200 IT-related books<sup>19)</sup>; The two Koreas established the Pyongyang Information Science Technology University; And they also agreed on the layout of the consonants and vowels on the computer keyboards and on the IT terminology they would use.

However, only a few South Korean companies have found a profit model. In this sense, the exchanges and cooperation in the IT sector are still a challenge. Rash moves aimed at gaining short-term profits and quick results would not be beneficial to inter-Korean exchanges, especially since the return on investment in the IT sector tends to be in the medium- to long-term. While South Korean companies can play a contributing role in closing the digital gap by assisting North Korea, at least in establishing the basic IT infrastructure, it is unclear whether this will be very profitable to South Korean businesses. They should keep in mind, however, that the stimulation of the inter-Korean exchanges in the IT industry presents the possibility that South and North Korea have the potential to be information and technology leaders in the future.

### *Stumbling Blocks in IT Cooperation*

Even though some exchanges and cooperation between Seoul and Pyongyang have taken place in the IT sector, there has been less progress than expected. Stemming from the lack of information on North Korea as well as a lack of understanding of the country,<sup>20)</sup> the sector lacks guidelines and goals for inter-Korean cooperation. For one reason, the approaches by the South and the North are vastly different. There are plenty of South Korean companies wishing to do

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19) Exchanges in books provide North Korea an opportunity to assess the current

20) A problem is that some businessmen who have visited North Korea once or twice act as if they know everything about the North. What is more serious is that some people expect huge profits immediately after exchanges begin.

business with North Korean companies, but only a limited number of them are given the chance to become involved. In the South, a confusing process exists that prevents South Korean companies from efficiently doing business with North Korean companies. In contrast, North Korea has a single integrated official channel. Such a system is sorely needed in the South Korean government as well.

The procedures for getting into North Korea are so complicated that small- and medium-sized companies are unaware of the pitfalls. The Law on Inter-Korean Exchanges and Cooperation stipulates that those who wish to contact or communicate with North Korea must apply for the approval of the Unification Ministry, completing the appropriate written forms 15 days in advance. In the case of telecommunications carriers wishing to engage in inter-Korean cooperative projects, they must get additional approval. If these complicated procedures could be simplified, it would facilitate inter-Korean exchanges and cooperation considerably.

The lack of a communications infrastructure in North Korea is another hindrance to inter-Korean exchanges and cooperation. The North might have an advanced IT infrastructure in the military field, but it is a different story in the private sector. What is worse, North Korea absolutely lacks communications equipment. In fact, the computer industry is assessed to be the most backward sector in North Korea. There is also the issue of information control among its residents. The North Korean regime views the Internet as an open door to capitalist invasion. Thus, it strictly controls access by ordinary North Koreans to the Internet. The vulnerability of the traditional industries is also a problem. Considering these facts, some obvious limitations stand in the way of development of the IT industry in North Korea.

The biggest stumbling block is the restriction on the shipment of

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21) Refer to the official website of the Wassenaar Arrangement. [<http://www.wassenaar.org>]

strategic materials to North Korea. The Wassenaar Agreement<sup>21)</sup> that replaced the COCOM (Coordinating Committee for Export Control to Communist Areas) bars IT-related export to North Korea. The Wassenaar regime classifies North Korea as a terrorism-sponsoring nation, prohibiting the export of dual-use goods and technologies. Under the Arrangement, the shipment of 486 computers to North Korea is prohibited.<sup>22)</sup> But this is preposterous, given that Chinese-made Pentium computers are already in North Korea. In this sense, some modifications should be made to the Wassenaar Arrangement. The United States did ease economic sanctions on North Korea on June 19, 2000, which aroused much expectation, but technology-intensive goods, such as semiconductors, computers, and communications equipment as well as goods that could be used for military purposes still cannot be exported to North Korea. The question of whether to grant Pyongyang the Generalized System of Preferences remains undecided. In sum, North Korea's introduction of technology from the world and continued cooperation between the two Koreas hinges on modifications to the domestic and international regulations concerning shipment of strategic materials.

### *The Future of IT Industry Cooperation*

A great deal of research has gone into plans to increase exchanges and cooperation between Seoul and Pyongyang in the IT, sector and much more is in progress.<sup>23)</sup> From these studies, four

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22) These goods can be used for strategic or military purposes to maintain the regime. In the past, the shipment of 386 computers was banned. And now, 486 computers cannot be exported to North Korea.

23) Prominent studies include the followings: Kim Gyu-ryun, "Inter-Korean Exchanges and Cooperation in the Communications Sector," *Study Reports, 98-16* (Korea Institute for National Unification, 1998); Choi Sin-rim, "North Korea's Industrial Technology: IT industry," *KIET Policy Materials No.83* (Korea Research for Industrial Economics and Trade, 1999); Park Chan-mo, "The Level of North Korea's Communications Technology and Ways to Increase Inter-Korean

major points have been identified.

The first is that it is desirable to take necessary measures to stimulate inter-Korean IT cooperation, for example, by addressing the technological gap. That goal can be met by establishing a cooperative, standardized system<sup>24)</sup> for mutual benefits; promoting technology transfers to North Korea, offering IT equipment and facilities; providing policy support at the governmental level to foster IT personnel in North Korea and utilize them; establishing a communications channel between the South and the North in each industrial sector; and finally, opening an official channel responsible for dealing with all related matters.

Secondly, the Wassenaar Arrangement prohibiting shipment of strategic materials is an important issue that must be addressed. The Arrangement is indeed a stumbling block to inter-Korean cooperation. In fact, the two are incompatible.<sup>25)</sup> The biggest problem

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Cooperation," *Unified Economy*, Hyundai Research Institute, (September 1999); Kim Sang-taek, and Gong Young-il "North Korea's Informatization and Inter-Korean Communications Integration," *The Internet and North Korea* (The Institute for Far Eastern Studies at Kyungnam University/Hanaro Telecom, 2000); Lee Tae-sup, "Current status of the North Korea's Information Technology Industry and the Tasks for the Inter-Korean Cooperation," *Unified Economy*, Hyundai Research Institute (August 2000); Jae Sung-ho, "Directions for the Legislative Improvement for the Promotion of the Inter-Korean Communications Exchanges," *IT Policy*, Korea Information Society Development Institute, Vol. 13, No. 7 (2001)

24) In pursuing IT cooperation with North Korea, efforts to standardize keyboards, code systems and terminology should be made at a governmental level in the initial stage. The private sector should also establish cooperation on standardization. Certification procedures need to be made prior to or concurrently with the standardization efforts. With a certification system in place, the two Koreas then can work together for standardization. Choi Gi-chul, "Possible Effects from the Inter-Korean IT Industry and Development Plans," *Unified Economy*, Hyundai Research Institute, Vol. 786 (July/August 2001), pp. 36-37.

25) The Wassenaar Agreement led to the failure of the inter-Korean economic cooperation project. In 1999, Hyundai Electronics signed a \$1.5 million contract for the transfer of computer assembly facilities, and applied to the Unification

is the ban on the export of dual-use goods (the basis for the export ban of 486 computers to North Korea), due to a lack of transparency. What is important, however, is to stop civil technology from being diverted for military purposes, not to ban the peaceful industrial use of computers, themselves. After all, this is an issue of determining the nature of the use, which has always been open to debate. U.S. economic sanctions on North Korea are also a problem. Generally speaking, the Wassenaar Arrangement is not directly related to the U.S. sanctions. Given the high status of the United States in international multilateral bodies, however, Washington has an influence on the Arrangement. Moreover, for the past 14 years, as of May 1, North Korea has been on the U.S. list of terrorism-sponsoring nations, and that stigma continues to prevent Pyongyang from receiving possible aid from Western countries.

Even after North Korea is taken off the list of terrorism-sponsoring nations and most U.S. sanctions on the North are lifted, the ban on transactions of goods and technology related to nuclear and missile development will continue under the Wassenaar Arrangement. But if there is reliable guarantee that these goods and technologies will be used only for civil purposes, not for the military purposes, there is no reason to bar them. Thus, North Korea should establish guidelines that will guarantee transparency in order to speed the resolution of this issue.<sup>26)</sup>

Thirdly, laws and institutions should be improved for the promotion of the inter-Korean exchanges.<sup>27)</sup> To this end, there needs

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Ministry for their shipment. However, the ministry did not allow the shipment heading to the North, citing the Wassenaar Arrangement. The Arrangement has indeed, stood in the way of inter-Korean cooperation.

26) Refer to "Improvement of the Wassenaar Arrangement concerning the shipment of strategic materials," Kim Yeon-chul, Shin Ji-ho, and Dong Yong-seung, *Inter-Korean Economic Guideline* (Samsung Economic Research Institute, 2001), pp.169-170.

27) Refer to "Directions for the legislative improvement for the promotion of inter-Korean

to be comprehensive improvement of the Law on Exchanges and Cooperation between South and North Korea in order to modify the approval system for contacts and businesses with North Korean people and companies. There should also be some modification to the Law on Inter-Korean Communications Exchanges and Cooperation to facilitate inter-Korean communications exchanges, for example, the scrapping of the approval system for contacts. If it is not feasible to end the system completely, a notification system should be first introduced in the communications areas of telephone, fax, and the Internet. In addition, it is unrealistic to require those who make contacts with North Koreans by mail or telecommunications to report the results of their contacts on every occasion. It is more realistic to have them report the results every quarter or twice a year. There should also be institutional reforms in the exchange of goods. Recently, an increasing number of South Koreans have registered with Chosun Infobank, a North Korean internet site, in order to get North Korea-related information, and are seeking to sell North Korean goods on this site. In this situation, the current approval system regulating inter-Korean exchanges via the Internet is not appropriate.

The fourth issue is the direction of inter-Korean informatization. It is necessary to assess the situation of North Korea in terms of informatization. After that, the two Koreas need to exchange information and promote joint research in order to create an environment favorable to inter-Korean cooperation for informatization. Essential IT infrastructure should be established in North Korea.<sup>28)</sup> Moreover, information service connecting the two Koreas should be developed. In this process, projects such as SOC construction that require much investment in the initial stage should

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communications exchanges," Jae Sung-ho, *IT Policy*, Korea Information Society Development Institute, Vol.13, No. 7 (2001).

28) Expansion of the high-speed IT network, fostering IT manpower, organizations responsible for information services, etc.

first be implemented. To encourage North Koreans to use more of the information services, intensive efforts should be directed to the development of information contents that can contribute to the restoration of national homogeneity. In addition, the two Koreas should work together to link inter-Korean communications lines, conclude a communications agreement, establish the necessary system for teleconferencing for divided families, build portals, combine domains, and start e-commerce.

To secure balanced development between the South and the North, systematic support for the construction of the IT infrastructure in North Korea is required. Exchanging old telephone converters for new ones and fiber-optic cable installation must be given full support. When the IT infrastructure is in place, the information communications networks including the Internet will bring the two Koreas closer. When the South sets up communications networks in North Korea, it is more important to gain an advantageous position in the IT sector than in any other sector, and therefore, foreign capital should be kept at bay. The South Korean government and the private sector should play respective roles in supporting North Korea's modernization of its communications sector, with the government dealing with public projects, and the private sector handling commercial ones.

Much time will be needed for the whole process to be completed. How cooperative North Korea will be in this process and whether and how it will pursue informatization will be a critical factor in bringing about a successful outcome to the inter-Korean exchanges and cooperation in the IT sector. Informatization in North Korea could cause instability and confusion within the society, possibly leading to the collapse of the regime. The North Korean authorities are facing a dilemma: it should curb informatization in order to maintain its regime, yet it should also pursue informatization to develop the economy. Nevertheless, North Korea has embarked on the journey and cannot turn back.

Although developments in inter-Korean relations are on hold at

the moment, the exchanges in the IT sector should be pursued from a long-term, forward-looking perspective. Not only technology, but also information contents should be included in the inter-Korean IT exchanges. The South's rapid information-collection capabilities coupled with North Korea's creative information processing ability will create a synergy effect, enabling the two Koreas to be competitive in the global IT arena.

### CONCLUSION

North Korea's IT sector is very underdeveloped. Computers are obsolete and only a few are in use, which impedes the process of informatization in North Korea. To address this problem, the North Korean authorities are making vigorous efforts to develop software and foster talented people in the IT sector. Well-known North Korean software can be easily found in South Korea, for example, the "Srasra Series," which has received favorable response. This software was developed by South Korea's IMRI using North Korean multi-lingual processing technology, and was marketed in commemoration of the first anniversary of the inter-Korean summit in Pyongyang. Even though the new Bush administration has put the brakes on inter-Korean relations temporarily, inter-Korean cooperation in the IT sector has been rather brisk.

North Korea is mobilizing its national capabilities toward the IT industry. Considering the North's education system that provides specialized education for brilliant students and in view of its competitive software industry, North Korea does have something to offer to South Korea. And North Koreans see only progress ahead. As long as Pyongyang has focused on the IT sector and has chosen it as its core industry, the country has no choice but to be part of the global tide of informatization.

Yet, if it is committed to the IT industry North Korea must overcome many hurdles in order to revive its economy. Among other

things, the country lacks IT infrastructure as well as a domestic market that can consume quality goods if they are ever developed. Public access to the Internet will not be allowed in the near future due to political considerations. Pursuing informatization while skipping industrialization will provide opportunities and wealth only for a few top-echelon personnel. Thus, the restraints on informatization and development could turn out to be ultimately undesirable for economic development.

Nonetheless, the IT sector is fairly free from the effects of politics and ideology. Exchanges in the IT sector are taking place on the private level, contributing to a feeling of homogeneity between the two Koreas and the establishment of mutual trust. This will also benefit the economies of the South and the North. At the same time, South Korea should come up with an appropriate policy for exchanges and cooperation as North Korea is focused on building a powerful nation through the development of the IT industry.

Pyongyang is heading toward the information age while bypassing the industrialization stage. Its move is also beneficial for Seoul in terms of peaceful coexistence and reducing unification cost. To this end, it is urgent that the two Koreas work together for informatization in the era of information. The convenience and efficiency of the Internet could ease the restraints placed on inter-Korean exchanges. The South's accumulated experience on the Internet will be helpful in advancing the use of the Internet in North Korea. In addition, if Seoul and Pyongyang meet with changes and challenges cooperatively, it will create a new opportunity for great national unity in a virtual world, which can overcome the political constraints of the real world.