Vision for Building a Creative, Knowledge-Based Society

December 2002

Ministry of Information and Communication
Republic of Korea
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The digital revolution has opened a new door leading to the "Knowledge-based economy" where intangible assets such as knowledge, information and cultural creativity determine competitiveness. In this information age, underprivileged people in the poor nations can also create wealth only if they effectively utilize information technology.

In response to this great wave of changes, Korea discarded its old way of thinking and practices of the industrial society, and embraced new mindsets and economic structures, fitting for the digital era.

Over the last few years, Korea has made vigorous efforts to build the wired and wireless telecom infrastructures across the nation. As a result, Korea now has 31 million mobile subscribers, equivalent to 67% of the total population. Furthermore, as of last October, the number of people with a broadband Internet connection stood at 10 million subscribers, or 70% of total households in Korea, which is the highest penetration rate throughout the world.

Based on such well-deployed infrastructures, the Korean government, enterprises and individuals are leading the social paradigm shift.

First of all, the government opened an era of e-Government to allow the people to enjoy a broad range of public services in the comfort of their own homes. At the same time, the government tries to realize a transparent and fair society.

As for the companies, through e-commerce and online networking among small businesses, they enhance transparency as well as efficiency of the corporate management, ultimately strengthening the competitive edge of the overall industry.

For many Koreans, the Internet has truly become part of daily life. They search information, conduct financial transaction, receive online education and engage in many other activities, hooking up to the Internet. This earned Koreans most active and sophisticated Internet users in the world.
As such, the Korean government, companies and individuals successfully adopted digital technology and improved productivity and the quality of lives. Consequently, the IT industry came to account for 15% of GDP in 2002 and Korea consolidated its position as a global IT leader.

Now, with the advanced IT infrastructure in place, the Korean government spares no efforts to come up with better policies that can bring the benefits of the digital revolution to Koreans.

The government will create new jobs in the IT sector and continuously drive the economic growth to build a prosperous society.

The government will also encourage fair competition among the telecom operators and provide a universal broadband Internet service to create an environment where people can access information and knowledge anytime anywhere at low cost.

In addition, Korea aspires to share the digital benefits not only among ourselves but with all the other developing nations and marginalized people of this world.

Whatever walls and barriers that have been erected among regions and countries in the industrial era will be brought down through IT. And Korea will be at the forefront of this endeavor.

IT Korea 2002 illustrates Korea's achievements in the IT field in 2002 along with our vision and policy directions for the future. I hope this paper to help those interested in the Korean IT sector gain a better understanding. And I hope Korea's policy know-how will be helpful to those of you who wish to emulate our success without going through trials and errors.

December 2002

Sang-Chul Lee Ph.D.
Minister of Information and Communication
1. IT Industry and Knowledge-Based Economy

The IT industry is characterized by technological innovations, short product cycles, high profits, and extensive investments in research and development, which have become pivotal factors in attaining a competitive edge in modern times. Since the last decade, the role of the IT industry has become increasingly more significant with the creation, spread and usage of knowledge to create economic value in the knowledge-based economy. IT connects individuals and enterprises via networks, facilitating the production, distribution and consumption of information through overall economy as well as enhancing the development of the intangible economy. In particular, any further advancements in the use of the Internet by the business world depend largely on the development of the IT industry. Moreover, the continuous development of the IT industry fuels the explosive growth of electronic commerce and business re-engineering.

The paradigm shift toward a knowledge-based economy has focused the spotlight on the significance of information technology more than ever and in response, governments across the world are scrambling to formulate a policy framework for this strategically important industry.

Korea blossomed into an industrialized nation as a result of the ambitious industrialization efforts launched in the 1960s. Phenomenal economic success was achieved on the backs of such physical factors as capital and labor. However, with the current paradigm shift toward a knowledge-based economy, the greatest concern for Korea is to enhance its competitiveness through greater productivity via the promotion of the IT industry and informatization of the society as a whole. In the 1990s, along with private investments in the IT sector, a wide variety of policies tailored to promote the IT industry and informatization has been actively implemented. Currently, the IT industry stands as the most crucial sector in the Korean economy with its sustained development tabbed as an indispensable element of economic growth.
2. IT Industry in Korea

2.1. Production, Domestic Sales and Export/Imports

Korea's IT industry has recorded a solid growth since the 90’s. In terms of production, Korea's IT industry has grown tenfold, from 15.2 trillion won in 1990 to 150.5 trillion won in 2001. The IT industry, despite the lackluster economy in 1997 showed 27.1% in growth, and maintained 16.7%, 30.4% and 26.3% growth in 1998, 1999 and 2000, respectively. Although the growth rate recorded only 3.7% in 2001 due to the worldwide decline in IT demand, it is anticipated that Korea's IT industry will rebounded in 2002.

<Table 1-1> Korea's IT Industry Production Status

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Information communication service</td>
<td>17.0</td>
<td>17.9</td>
<td>21.6</td>
<td>28.6</td>
<td>32.9</td>
<td>37.9</td>
</tr>
<tr>
<td>Information communication equipment</td>
<td>55.0</td>
<td>65.6</td>
<td>86.8</td>
<td>105.9</td>
<td>102.2</td>
<td>133.4</td>
</tr>
<tr>
<td>Communication equipment</td>
<td>13.8</td>
<td>14.2</td>
<td>20.0</td>
<td>22.5</td>
<td>24.5</td>
<td>28.1</td>
</tr>
<tr>
<td>Information equipment</td>
<td>9.8</td>
<td>10.7</td>
<td>15.7</td>
<td>20.9</td>
<td>18.3</td>
<td>24.0</td>
</tr>
<tr>
<td>Broadcasting equipment</td>
<td>0.6</td>
<td>0.7</td>
<td>0.9</td>
<td>1.6</td>
<td>1.6</td>
<td>3.4</td>
</tr>
<tr>
<td>Electronic components</td>
<td>30.9</td>
<td>39.9</td>
<td>50.3</td>
<td>60.9</td>
<td>57.8</td>
<td>77.9</td>
</tr>
<tr>
<td>Software</td>
<td>3.5</td>
<td>4.7</td>
<td>6.5</td>
<td>10.7</td>
<td>15.4</td>
<td>17.8</td>
</tr>
<tr>
<td>Total</td>
<td>75.5</td>
<td>88.1</td>
<td>114.9</td>
<td>145.2</td>
<td>150.5</td>
<td>189.1</td>
</tr>
<tr>
<td>Rate of increase</td>
<td>27.1%</td>
<td>16.7%</td>
<td>30.4%</td>
<td>26.3%</td>
<td>3.7%</td>
<td>25.7%</td>
</tr>
</tbody>
</table>

Source: KISDI

Domestic sales for Korea's IT industry has also shown remarkable growth, from 13.9 trillion won in 1990 to 139.3 trillion won in 2001. The growth rate for domestic sales by the IT industry languished at a mere 6.3% in 1998 due to a stagnant economy, but has resumed its robust growth since 1999. Domestic IT sales always fall below its production, due to Korea's healthy IT trade surplus.
Exports by Korea's IT industry increased from 9.2 billion USD in 1990 to 38.4 billion USD in 2001. At the same time, imports increased from 7.5 billion USD in 1990 to 27.9 billion USD in 2001, recording a continuing surplus in the sector's trade balance. The IT industry's surplus in trade balance has grown rapidly, especially after the economic lethargy of 1997, to 10.6 billion USD in 2001 from 9.4 billion USD in 1997. IT exports declined in 2001 but is expected to reach 45.6 billion USD in 2002 as the world IT demand recovers.

Major export items of the Korean IT industry include memory semiconductors, mobile telephone, monitors, LCDs, PCs and satellite broadcast receivers, while major import items include non-memory semiconductors, transmission equipment and large-size computers.

### Table 1-2: Outlook for Domestic Sales by Korea's IT Industry

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Information communication service</td>
<td>17.0</td>
<td>17.9</td>
<td>21.6</td>
<td>28.6</td>
<td>32.9</td>
<td>37.9</td>
</tr>
<tr>
<td>Information communication equipment</td>
<td>45.7</td>
<td>48.0</td>
<td>70.5</td>
<td>87.7</td>
<td>90.5</td>
<td>112.9</td>
</tr>
<tr>
<td>Communication equipment</td>
<td>13.3</td>
<td>11.3</td>
<td>15.9</td>
<td>18.3</td>
<td>15.3</td>
<td>17.2</td>
</tr>
<tr>
<td>Information equipment</td>
<td>6.9</td>
<td>6.2</td>
<td>10.7</td>
<td>15.9</td>
<td>13.5</td>
<td>17.6</td>
</tr>
<tr>
<td>Broadcasting equipment</td>
<td>0.5</td>
<td>0.7</td>
<td>0.5</td>
<td>0.9</td>
<td>0.7</td>
<td>2.5</td>
</tr>
<tr>
<td>Electronic components</td>
<td>25.0</td>
<td>29.8</td>
<td>43.3</td>
<td>52.6</td>
<td>61.0</td>
<td>75.6</td>
</tr>
<tr>
<td>Software</td>
<td>3.8</td>
<td>4.9</td>
<td>6.8</td>
<td>11.2</td>
<td>15.8</td>
<td>18.2</td>
</tr>
<tr>
<td>Total</td>
<td>66.6</td>
<td>70.8</td>
<td>99.0</td>
<td>127.4</td>
<td>139.3</td>
<td>168.9</td>
</tr>
<tr>
<td>Rate of increase</td>
<td>29.6%</td>
<td>6.3%</td>
<td>39.8%</td>
<td>28.7%</td>
<td>9.3%</td>
<td>21.3%</td>
</tr>
</tbody>
</table>

Note: figures in 2002 are estimates
Source: KISDI
2.2. Changes in the Trend of IT Industry's Employment and IT-Related Jobs

The total number of workers in the IT industry stood at approximately 494,825 at the end of 2001, or 2.3% of the total national workforce. Demand for IT human resources in other industries have steadily increased and the number of workers engaged in the IT profession throughout the whole economy reached 1,215,000 in 2002, or 5.6% of the total national workforce. The number of workers in the IT profession is expected to show continuous growth at an annual average of 4.4%, exceeding the 1.4% rate for overall industries, to reach 1,505,000, or 6.5% of the total national workforce by 2007.

<Table 1-3> Korean IT Industry's Imports/Exports (unit : hundred million USD)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
<td>313</td>
<td>305</td>
<td>400</td>
<td>512</td>
<td>384</td>
<td>464</td>
</tr>
<tr>
<td>Imports</td>
<td>219</td>
<td>183</td>
<td>265</td>
<td>355</td>
<td>279</td>
<td>296</td>
</tr>
<tr>
<td>Balance</td>
<td>94</td>
<td>122</td>
<td>134</td>
<td>157</td>
<td>106</td>
<td>168</td>
</tr>
</tbody>
</table>

Note : figures in 2002 are estimates
Source : KISDI

<Table 1-4> Changes in IT Employment Pattern and Outlook (unit : thousand persons)

<table>
<thead>
<tr>
<th>Classification</th>
<th>1995</th>
<th>2002</th>
<th>2007</th>
<th>2002-07 Average growth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons engaged in information communications jobs</td>
<td>862</td>
<td>1,215</td>
<td>1,505</td>
<td>4.4%</td>
</tr>
<tr>
<td>Computer professionals</td>
<td>115</td>
<td>236</td>
<td>338</td>
<td>7.5%</td>
</tr>
<tr>
<td>Low to mid level computer-related jobs</td>
<td>177</td>
<td>210</td>
<td>229</td>
<td>1.8%</td>
</tr>
<tr>
<td>Electronic and telecommunication technicians</td>
<td>126</td>
<td>188</td>
<td>265</td>
<td>7.1%</td>
</tr>
<tr>
<td>Manufacturing, operating and maintenance</td>
<td>384</td>
<td>473</td>
<td>528</td>
<td>2.2%</td>
</tr>
<tr>
<td>Other information communications related and administrative jobs</td>
<td>59</td>
<td>108</td>
<td>144</td>
<td>6.0%</td>
</tr>
<tr>
<td>No. of workers in overall industries</td>
<td>20,432</td>
<td>21,553</td>
<td>23,131</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

3. Korea’s Major IT Products

3.1. Semiconductors

Korea’s semiconductor industry has shown remarkable growth in the past 20-year period, and Korea ranks 3rd in the world in terms of total production. Korea’s semiconductor industry accounted for a 6.1% of global market in 2001. In particular, Korea has secured a superior position in the development of next-generation products and technology, through extensive facility investments to boost productivity in the memory sector including DRAM, which has captured approximately 40% of the global market. Korea has been the largest DRAM manufacturing country in the world since 1998, and has emerged as the second largest manufacturing country in total memory semiconductor production, of which DRAM constitutes a major portion.

<Table 1-5> Production Status of Korea’s Semiconductor Industry  
(unit: billion USD)

<table>
<thead>
<tr>
<th>Classification</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own brand</td>
<td>10.4</td>
<td>8.1</td>
<td>12.3</td>
<td>17.2</td>
<td>9.1</td>
</tr>
<tr>
<td>OEM and foundry</td>
<td>0.4</td>
<td>0.2</td>
<td>0.1</td>
<td>0.8</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td>10.9</td>
<td>8.4</td>
<td>12.4</td>
<td>18.0</td>
<td>9.5</td>
</tr>
<tr>
<td>DRAM production</td>
<td>8.1</td>
<td>5.3</td>
<td>9.2</td>
<td>12.1</td>
<td>4.9</td>
</tr>
<tr>
<td>Ratio of DRAM to total production</td>
<td>74.3%</td>
<td>63.1%</td>
<td>74.2%</td>
<td>67.2%</td>
<td>51.6%</td>
</tr>
<tr>
<td>Global market share</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic semiconductor production</td>
<td>7.4%</td>
<td>6.2%</td>
<td>7.3%</td>
<td>7.9%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Domestic DRAM production</td>
<td>38.9%</td>
<td>37.7%</td>
<td>39.8%</td>
<td>38.4%</td>
<td>41.5%</td>
</tr>
</tbody>
</table>

Source: Dataquest Seminar
Korea's competitive edge in the production of DRAM has enabled the nation to take a world leading position in the development of next-generation value-added products and processing technology, and Korea is also ahead of the competition in manufacturing and assembly technology. Korean manufacturers surpass foreign manufacturers in the number of chips manufactured per wafer, a factor which directly affects productivity, and possesses technology that is more than 6 months ahead of the competition in the development of high-speed DRAM (above 64M DRAM), justifying the expectation that Korea will continue to dominate the DRAM sector well into the future.

**Graph 1-1**  
**Share of Major Countries in the Global Semiconductor Market**

Source: Dataquest (May 2001)

**Graph 1-2**  
**Trends of Global DRAM Sector Market Share by Nations**

Source: Dataquest (May 2001)
3.2. Mobile Phones

As one of the major IT items produced in Korea, mobile phones are expected to record 17.47 trillion won in total production and 8.7 billion USD in exports for 2002. Growth of the mobile phone industry has been fueled by a combination of factors at home and abroad, such as steadily increasing exports and brisk domestic sales owing to an explosive growth in Korea’s mobile telephone service.

In particular, exports have played a significant role in the growth of the mobile telephone industry. Exports of mobile telephone increased from 852 million USD in 1997 to 7.0 billion USD in 2001. Korea, by commercializing the CDMA technology for the first time in the world, secured an unrivaled position in the CDMA mobile phone market. Moreover, by entering the GSM mobile phone market abroad, Korean producers are diversifying their overseas markets. As domestic market becomes mature, the impact of exports in the growth of the mobile telephone industry is expected to increase even more in the future.

Currently, the proliferation of wireless Internet services and introduction of third-generation mobile communication services are contributing to the growth in domestic sales of mobile phones. Accordingly, manufacturers are integrating the newest technological developments to offer such improved functions for mobile phones as color display, wireless access to the web, location-based service, digital payment, and various wireless Internet platforms. Furthermore, a steady increase in exports is being pursued by developing new overseas markets and various new models. Considering the range of growth factors at home and abroad, the mobile telephone industry is expected to show growth at an annual rate of 9.2% in production, 2.7% in domestic sales, 13.8% in exports and 8.8% in imports by 2007, with the ratio of exports to total production expected to rise continuously.
3.3. LCD

The display component, a major component in various information communication equipment such as TVs, computers and mobile telephone units, can be largely divided into CRT (cathode ray tube) and FPD (flat panel display). Korea is one of the major CRT manufacturing countries in the world, and has recently emerged as a global supplier of FPD with LCD (liquid crystal display) as its core product.

Korea's LCD production underwent rapid growth through quick expansion in production capacity since 1995. LCD sales by Korean manufacturers grew from 4,822.4 billion won in 1999 to 6,352.4 billion won in 2001.

Korea's export of LCD has grown at an average annual rate of over 80% since 1995. In particular, a phenomenal growth in exports of over 100% was recorded in 1999, positioning LCD as one of the three major IT export items along with semiconductors and mobile telephone.

---

<table>
<thead>
<tr>
<th>Category</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Average growth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>105,573</td>
<td>119,572</td>
<td>158,803</td>
<td>174,696</td>
<td>190,244</td>
<td>207,366</td>
<td>226,237</td>
<td>247,277</td>
<td>270,768</td>
<td>9.2%</td>
</tr>
<tr>
<td>Domestic sales</td>
<td>64,392</td>
<td>58,006</td>
<td>69,368</td>
<td>93,720</td>
<td>95,975</td>
<td>99,117</td>
<td>101,960</td>
<td>104,861</td>
<td>107,234</td>
<td>2.7%</td>
</tr>
<tr>
<td>Exports</td>
<td>3,656</td>
<td>5,499</td>
<td>6,967</td>
<td>8,740</td>
<td>10,025</td>
<td>11,386</td>
<td>12,936</td>
<td>14,687</td>
<td>16,713</td>
<td>13.8%</td>
</tr>
<tr>
<td>Imports</td>
<td>193</td>
<td>52</td>
<td>38</td>
<td>93</td>
<td>101</td>
<td>111</td>
<td>121</td>
<td>131</td>
<td>142</td>
<td>8.8%</td>
</tr>
<tr>
<td>Balance</td>
<td>3,463</td>
<td>5,447</td>
<td>6,929</td>
<td>8,647</td>
<td>9,924</td>
<td>11,275</td>
<td>12,815</td>
<td>14,556</td>
<td>16,571</td>
<td>13.9%</td>
</tr>
</tbody>
</table>

Note: mobile phones represent both cellular and PCS
Source: KISDI
Korean LCD companies are continually increasing their share of the global LCD market, which stood at 37.8% in the fourth-quarter of 2000 and jumped to 41.5% in the second-quarter of 2001. However, in the second-quarter of 2002, the share held by Korean firms in the global LCD market fell slightly due to the production increase by Taiwanese LCD companies.

Competitiveness of Korean LCDs lies in well-developed related industries, such as computers and home appliances, as well as sophisticated mass production capacity built with huge facility investments.
4. The Informatization of Korea

The huge investment on IT has led the informatization in Korea. According to ITU (World Telecommunications Indicator, 2002), the share of IT investment in Korean GDP was 1.7%, ranked as the third among OECD member countries. Such high level of investment promoted informatization of both public and private sector in Korea. Currently, Internet access is possible to all elementary, middle and high schools. Ordinary citizens can access information from government offices, local bodies, research institutions and libraries. Most firms can also utilize information infrastructure for their business.

The level of informatization in Korea is clearly manifested in the Internet related indicators. As of March, 2002, the number of Internet user per 10 thousand people is 2780, ranks as the 6th in the world. The average time spent on Internet is 17 hours per week, the 1st in the world. In particular, Korea ranks 1st in the world in terms of the Broadband Internet users (17.16 per 100 persons).
5. IT Industry and the Korean Economy

The rapid upsurge of the IT industry has augmented the health of the Korean economy. The amount of added value realized by the IT industry grew from 33.7 trillion won in 1996 to 70.2 trillion won in 2001. Such high growth led to a considerable increase in the share of the IT industry in GDP, which jumped from a mere 8.1% in 1996 to 12.9% in 2001, the highest proportion among OECD member countries.

<Table 1-9> The Number of Broadband Internet Users (2001)

<table>
<thead>
<tr>
<th>Country</th>
<th>Korea</th>
<th>Canada</th>
<th>Sweden</th>
<th>USA</th>
<th>Japan</th>
<th>OECD average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>17.16</td>
<td>8.4</td>
<td>4.96</td>
<td>4.47</td>
<td>2.23</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Source: OECD (2001. 12)
Korea's IT industry accounts for a higher portion of the GDP than other advanced countries because it has established both domestic sales and overseas markets as the foundation for its growth. The continuing growth of the IT industry is driven by the expansion of domestic consumption and increase in exports. As such, even in such times as when the domestic market suffers a slowdown, growth is still possible through strong exports. In recent years, the share of IT exports of the total IT production has been around 40%, which implies that the Korean IT industry has actively taken advantage of the rapid growth of the world IT market.

Meanwhile, the IT industry's contribution rate to Korea's real economic growth increased dramatically in the last decade, from a mere 4.5% in 1990 to 31.7% in 2001. The high contribution rate can be attributed to the rapid growth achieved in value added sectors, such as information communications services and software, as well as increased exports in the IT equipment sector. Information communications services and software sectors, high in added value, grew by an average annual growth rate of 19.1% and 30.6%, respectively, since 1996, while the IT equipment sector, relatively low in added value, grew at an average annual rate of 25.8% since 1996 by overcoming the limits of the domestic market.

### Table 1-10: IT Industry Share in GDP

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Production amount for IT industry</td>
<td>75.5</td>
<td>88.1</td>
<td>114.9</td>
<td>145.2</td>
<td>150.5</td>
<td>189.1</td>
</tr>
<tr>
<td>Rate of increase</td>
<td>33.2%</td>
<td>16.7%</td>
<td>30.4%</td>
<td>26.3%</td>
<td>3.7%</td>
<td>25.7%</td>
</tr>
<tr>
<td>Value added amount IT industry (A)</td>
<td>39.1</td>
<td>41.4</td>
<td>54.0</td>
<td>68.1</td>
<td>70.2</td>
<td>88.4</td>
</tr>
<tr>
<td>Rate of increase</td>
<td>22.2%</td>
<td>5.9%</td>
<td>30.4%</td>
<td>26.1%</td>
<td>3.1%</td>
<td>25.9%</td>
</tr>
<tr>
<td>Ordinary GDP (B)</td>
<td>453.3</td>
<td>444.4</td>
<td>482.7</td>
<td>522.0</td>
<td>545.0</td>
<td>594.1</td>
</tr>
<tr>
<td>Rate of increase</td>
<td>8.3%</td>
<td>-2.0%</td>
<td>8.6%</td>
<td>8.1%</td>
<td>4.4%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Portion occupied (A/B)</td>
<td>8.6%</td>
<td>9.3%</td>
<td>11.2%</td>
<td>13.0%</td>
<td>12.9%</td>
<td>14.9%</td>
</tr>
</tbody>
</table>

Note: figures in 2002 are estimates  
Source: KISDI
Government policy has been pointed out as a major factor in the impressive growth of the Korean IT industry.

First, from the very beginning of the privatization of the telecommunications service market in the 90’s, the government has consistently promoted market competition and private investments in the IT industry. The introduction of competition in the telecommunications market in 1990, 1994 and 1995 resulted in structural change in the IT industry. Local telephone services with 33 facility-based carriers, 4,890 value added telecommunications service carriers, and over 78 special telecommunications service carriers were providing services in 2001, and foreign investments were liberalized to a great extent.

Second, establishment of the broadband information communications network and informatization policies, such as the efforts toward widespread informatization of the public sector, also contributed to the growth of the IT industry by creating demand for IT.

Third, the government has implemented various programs to facilitate R&D and training of IT human resources. Finally, the government is actively nurturing IT venture companies through the organization of an investment fund, establishment of support centers for new business establishment at universities, as well as software support centers.

Furthermore, the restructuring of the venture capital market and KOSDAQ-related systems after the financial crisis of 1997 provided an environment conducive to the growth of the IT industry by facilitating financing of business enterprises. In sum, it can be said that the remarkable growth of Korea’s IT industry was brought on by a fortuitous combination of entrepreneurship in the civilian sector and government initiatives.
1. Informatization Policy

In the 1990s, the government devoted much of its energy to informatization. Both the government and the private sector have concentrated their investments on building up a more efficient and faster information infrastructure, which was expected to be in great demand in the future.

As a result, a high-speed broadband network for government was constructed across Korea in all of the 144 call areas. In addition, a 2-Mbps Internet access is possible to 10,482 elementary, middle and high schools and 36,689 lines were supplied to the public sector including government offices, local bodies, research institutions, libraries and museums. According to the plan for the Information Superhighway (KII), which will strengthen the backbone of the subscriber networks, the government has committed itself to the goal of providing 20 Mbps broadband communication service to 84% of Korean households by 2005. In addition, the private sector has invested in the construction of the national information infrastructure centered on large cities and businesses in order to offer universal service to the public and to handle the growing traffic volume.

<table>
<thead>
<tr>
<th>Call areas connected to broadband network</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>October 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80</td>
<td>94</td>
<td>107</td>
<td>144</td>
<td>144</td>
<td>144</td>
</tr>
</tbody>
</table>

Number of broadband Internet subscribers (unit: 10 thousand households)

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td></td>
<td>-</td>
<td>1.4</td>
<td>37.4</td>
<td>401</td>
<td>781</td>
<td>1,012</td>
</tr>
</tbody>
</table>

Source: MIC

The government's efforts toward informatization were further strengthened with the launching of the 'Cyber Korea 21' in March 1999. One of the goals of 'Cyber Korea 21' is to improve the quality of life for the general public. Providing PC units to elementary and middle schools, and enhancing IT literacy through a number of IT education programs are the primary measures being taken to achieve this goal. In particular, IT education will be
provided to 5.7 million people such as the handicapped and the elderly and to another 5.4 million people including those in military service. These measures are expected to bridge the digital gap by providing an environment that spreads the benefits of IT usage to the general public.

The 'Cyber Korea 21' initiative also aims to ensure the competitiveness of Korea's industry as a whole, such as support for the construction of an e-commerce system in traditional industries. Currently, the government is providing support to promote B2B in 20 industries such as electronics, automobiles, textiles, electric power, shipbuilding, steel, agricultural products, petroleum products, lumber, etc.

In addition, Korea has established a comprehensive and systematic platform to enable the realization of e-Government by devising an Comprehensive e-Government Implementation Plan, which aims to reform the management of governmental administration. Furthermore, the committee of e-Government Korea is operating under the direct control of the President. The role of this committee is to formulate strategies for effectively promoting e-Government.

The government embodied these wide range of informatization policies in the 3rd Basic Plan for Informatization Promotion(2002-2006) issued in April, 2002. Through this plan, the government will give every Korean with an lifelong learning opportunity by fostering an online learning environment and training Internet usage skill. In addition, it will promote online government, enhancing mobile civil service and public participation in the policy making process. Moreover, it has placed an emphasis on expanding IT infrastructure, promoting IT usage in traditional industries and developing international cooperation. With the implementation of the plan, Korea is expected to emerge as a global leader in IT.
2. Policies for the Promotion of the IT Industry

2.1. Policies for the Development of the Telecommunications Service Sector

The government has taken concrete measures to revise its regulatory framework that governs the telecommunications service sector and liberalized the telecommunication services market faster than Korea's obligations under the WTO Negotiation Group for the Basic Telecommunications Agreement. The key laws governing the telecommunications industry entered into effect on January 1, 1998, and were amended in 1999 and in 2000. The laws and subsequent revisions outline the plans to privatize Korea Telecom and other state-owned firms, an increase in the limits on foreign ownership in the telecommunications service sector, and the introduction of such new services as international simple resale and Internet telephony. All of these factors and developments have led to a tremendous growth in the telecommunications service sector in a much more competitive market environment and further growth is projected, making Korea the world's leader in wireless telecommunication services as well as broadband Internet services and applications.

1) Leader in CDMA Technology

Korea first launched mobile communication services based on the AMPS (Advanced Mobile Phone System) analogue system in 1984. Research development of mobile communication based on digital technology was carried out at the national level from 1989 and service providers adopted the CDMA technology for the digital cellular system in 1991. ETRI (Electronics and Telecommunications Research Institute) carried out research and development on CDMA technology in concert with U.S. Qualcomm and succeeded in developing the first prototype in 1994 and finally launched world’s first CDMA commercial services in 1996. All of these achievements led Korea to launch cdma2000-1x for the first IMT-2000 service in the world in October 2000, emerging as the world leader in CDMA technology. As a result, the number of subscribers exceeded 32 million as of this October, and the penetration rate stands at 67.7%, and more then 7 million subscribers are using IMT-2000, 3G services. Korea is also one of the leading exporting countries of mobile communication terminals and systems.
The pioneering and challenging spirit of the government, private sector and research institutes have led Korea to realize the goal of launching the first commercialized CDMA service. The government policy of introducing competition to the market served as an opportunity for late entrants to successfully enter the market, resulting in improvement of service quality, lower costs to customers and development of related industries. Overall, the mobile communications industry including manufacturers of systems, terminals, repeaters and equipment as well as a number of wireless Internet companies were able to develop in a well balanced way, laying the foundation for a host of start-ups in this field to spring up.

2) Leader in Broadband Services

The IT industry, which has made significant contributions to the economic growth of the nation during the last decade, is facing formidable challenges posed by fierce competition, over-investment and unfriendly business environment throughout the world.

Moreover, with the introduction of new services such as mobile phone services and VoIP, traditional telecommunication services face a decline in its business operation. Korea is not an exception and was also influenced by the global IT downturn. Total exports decreased by 9.3% compared to the year 2000, and in particular, exports of semiconductors decreased by 39% last year. Such a sharp recession in the IT sector is a severe blow to Korea's economy which is heavily dependent on IT export.

However, during this economic downturn, Korea emerged as the most advanced country in providing broadband Internet services with an unprecedented rollout of the service in a short period of time. The number of total subscription stands at over 10 million households as of October this year. Contrary to negative views on the economic viability of this
service at the outset, carriers were able to record positive profit during the first half of last year with the tariff set as low as $30 US dollars per month. In addition, with the economies of scale, the price of ADSL terminal equipment fell from $700 US dollars to less than $100 US dollars, making the service even more available to consumers.

Broadband Internet, which is 32 times faster than that of the dial-up modem on average, can not only utilize the idle facility of the backbone network, but also promote the related equipment and component industries, nurturing a positive economic cycle in the future. In addition, the high-speed broadband Internet service will pave the way for multimedia contents, application services and e-commerce to prosper. With the advent of broadband Internet services, Korea has shown that the traditional telecommunications industry can forge a brighter future by actively participating in the rapidly growing Internet industry.

The notion of providing broadband Internet service to newly constructed apartment buildings, known as Cyber apartments, was conceived by innovative construction companies and a competitive local exchange carrier, Hanaro, which has entered the broadband Internet service market. The success of Cyber apartments and Hanaro’s rapid growth in this market induced Korea Telecom to launch the service as well, which then triggered a cutthroat price competition among the service providers.

This is only one of the many reasons for the successful introduction of broadband Internet services in Korea. The residential structure, approximately one third of which is composed of households living in clustered apartment complexes, also made the deployment of broadband Internet service less expensive. The VoIP service combined with the feature of free call service has served as an extremely attractive application as well. But most of all, the vision and consistency in government policies to expedite the informatization of the nation played a crucial role. The government's hands-off policy with respect to new services and policies based on the market principle made the broadband Internet market more competitive and profitable at the same time. In the rapidly changing telecommunications industry, the government has carefully fulfilled its role of providing an environment conducive to innovation and competition.
3) Providing a Level Playing Field

- **Number Portability**

  Recognizing the difficulty of introducing competition in local loop competition without number portability which allows customers to reduce the transaction cost of changing service provider, the government announced detailed plan to implement number portability in fixed telecommunication services in January 2001 and for the mobile market in January 2002.

- **Local Loop Unbundling**

  The Telecom Business Act of Korea mandated a new obligation in December 2000 to major telecom service providers to provide their unbundled elements to competitors. Furthermore, the government finalized the details of the obligation and relevant pricing scheme in December 2001, so that unbundling obligation is now effective de jure as well as de facto in the Korean marketplace.

  It is noteworthy that Korea enacted its statutory and regulatory requirements for incumbent facilities-based service suppliers (KT, Hanaro and Thrunet) to provide unbundled network elements to their competitors when the country was already well on its way to leading the world in broadband access penetration rates. The Telecom Business Act was enacted in December 2000, and the government finalized the regulation setting out detailed requirements for unbundling, including pricing, in December 2001.

- **Carrier Pre-Selection**

  Preselecting a long distance carrier allows end-users to use the long distance carrier of his/her choice without dialing additional codes. In order to create a level playing field for competitors and enhance user convenience, Korea introduced carrier pre-selection in November 1997 and provided the guidelines for implementing the carrier pre-selection process in March 2002.
2.2. Policies for Human Resource Development

With the emergence of the new IT businesses and the steering of traditional industries into the IT sector, the demand for skilled labor is increasing rapidly. There is currently a shortage of approximately 40,000 skilled workers in the IT industry. In the future, this labor shortage will reach as high as 140,000 workers by 2005.

To overcome the current and future shortage, the government has invested 33.5 billion won in support of education in the information and communication area, establishment of a technical high school specializing in software development, and basic research in related subjects. Furthermore, the government has provided support for the development of a University Information and Communication Research Center, an Information and Communication University Overseas Scholarship Program for ASIC design, and JAVA training. The government has also sponsored information and communication re-training courses for the unemployed with high academic backgrounds from traditional industries. This will assist such qualified unemployed to find jobs in the IT sector or to start new IT businesses. In addition, government support has been provided to IT professional education organizations, cyber universities involved in the field of information and communications, the invitation and training of foreign IT specialists and experts. To

\[\begin{array}{|c|c|c|c|c|c|c|}
\hline
\text{Academic Background} & \text{Year} & 2001 & 2002 & 2003 & 2004 & 2005 & \text{Total} \\
\hline
\text{Technical high schools} & & -4,018 & -3,578 & -1,179 & -651 & - & -9,425 \\
\hline
\text{Colleges} & & - & - & - & - & - & - \\
\hline
\text{Bachelors Degree} & & -27,597 & -26,656 & -23,500 & -21,862 & -21,991 & -121,606 \\
\hline
\text{Masters Degree} & & -1,612 & -1,688 & -1,820 & -1,948 & -1,896 & -8,964 \\
\hline
\text{Ph.D.} & & -212 & -289 & -303 & -430 & -542 & -1,777 \\
\hline
\text{Total} & & -33,439 & -32,211 & -26,802 & -24,891 & -24,429 & -141,772 \\
\hline
\end{array}\]

Source: KISDI

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further develop human resources in the IT field, the government has provided computer literacy training and education aimed at elementary and middle schools, housewives, the military, and the disabled.

The government will invest approximately 430 billion won in expanding the involvement of regular educational organizations in information and communication education, as well as cooperation with overseas schools and universities. The government also plans to sponsor the retraining of industrial workers, bridge the digital gap among the populace, and develop a highly skilled workforce for the IT field. The government will expand its investments in discovering gifted IT talents in their early stages and nurturing them to contribute to the world economy.

A. Training New IT Workforce

The government plans to help newly-founded educational institutes in the field of IT to purchase facilities and equipment. To do this, it will designate 25 graduate schools, 44 colleges, and 25 technical high schools for the assistance. By making available state-of-the-art equipment and improving the conditions of training, the government aims to facilitate the supply of skilled IT workforce. In 2001, The government gave support to IT research centers at 22 universities. Besides, it designated 7 new centers as recipients of various types of subsidies.

The government plans following programs to train new IT workforce:

i. The government is planning to spend about 4.4 billion won in supporting scholarship programs for IT students studying in foreign countries. This program is expected to support more than 200 advanced IT experts.

ii. The government is planning to attract renowned foreign institutions to open branches in Korea to train the advanced IT workforce. It earmarked 5 billion won in 2001 toward this effort, which will provide training to about 1000 undergraduate students and the general public.
iii. In order to raise the aptitude of those who specialize in the IT venture business, the government has entered into a cooperative relationship with Stanford University to foster training and to provide information related to the establishment and operation of venture IT startups.

iv. The government is cooperating with Carnegie-Mellon University to enhance the expertise of the advanced IT workforce in the software field. Through this cooperation, the government is planning to provide reinforced special education to professors, researchers, software project leaders, IT engineers, and software consultants.

B. Retraining Programs for the Workforce

i. After selecting such excellent private institutions as the MIC IT ACADEMY, the government will subsidize them to update their equipment in order to promote more modern educational facilities. And it will also subsidize the cost of specialized IT training in these institutions. These subsidies will assist private institutions to produce more qualified IT specialists. The government will also offer IT courses online through cyber universities. To do this, it has been developing about 20 software-programs for online education.

ii. The government will foster many specialists in various related IT fields such as ASIC, JAVA, RF (Radio Frequency) Design and so on.

iii. In order to foster specialists in digital contents and games, the government will offer educational programs to specialists in e-book, Internet intellectual properties, and wireless contents. Moreover, it will offer such programs to graphic designers and game programmers.

iv. The government is planning to support the many promising IT companies to enter into new businesses by giving financial aid to cover incubation expenses and development costs. Such companies will also be counseled on patent matters and allowed to occupy space at venture support centers at a reduced lease cost. And it will reinforce venture management education by building a venture academy.
2.3. Developing Core Technologies and Reinforcing Standardization Activities

A. Developing Advanced Technology in Information and Communications

The government has designated 174 core strategic technologies for technology development projects in 2000 in order to gain a technological competitive edge in the world market including the next-generation Internet, optical communications, digital broadcasting, wireless communications, and computer software, among others. Accordingly, Korea has made more than 1,000 patent applications related to the advancement of core technology in and outside the country. In addition, the government has improved the appraisal system for the selection of research subjects, and has helped to establish effective research management methods for the efficient utilization of R&D funding and maximizing the benefits of R&D. At the same time, the government is concentrating on the development of innovative technology that forms the basis of securing sustained national competitiveness in the future. Private investments are not readily made in this area since short-term commercialization is generally not feasible.

B. Promoting Basic Research in Information and Communication

The government support R&D activities of small and medium-sized venture businesses, to develop information and communications policies, to establish e-libraries, and to construct the next generation Internet platform. The government continuously searches for leading technologies by appraising their technological and commercial merit, and providing marketing and commercial support in order to create demand. In addition, the government has established a Test Support Center for Optical Parts and Systems at the Gwangju Optical Industrial Complex to develop a quality control system for optical communication systems.

C. Development of IMT-2000 and Wireless Internet Technology

The government has implemented a technology development plan focussing on
WCDMA from 2000 to 2001. With standardization of post IMT-2000 technology, many countries will be undertaking further technology development in this field, and thus, Korea needs to prepare a technology development plan for the 4th generation mobile communication, by securing cutting-edge technology for the long term.

Moreover, the government plans to invest a total of 6 billion won for technology development in the wireless Internet industry.

D. Research and Development of Network Equipment for the High Speed Information Infrastructure

The development of network equipment technology for high-speed information infrastructure is divided into the HAN/B-ISDN and MPLS projects. The HAN/B-ISDN project concerns the development and commercialization of the ATM optical transmission equipment, which is a critical component of the high-speed information network. The government invested 685 billion won during the decade from 1992 to 2001 in these projects. The MPLS is a project that deals with the development and commercialization of MPLS (Multi Protocol Label Switch) technology to obtain Internet functional improvement of the ATM exchange. This project was injected with investments of 225.55 billion won from 1999 to 2001.

E. Promoting Standardization in Information and Communications

In order to provide a favorable environment for information and communication usage and to encourage the IT industry to advance into the world market, the Korean government has developed and disseminated information and communication standardization criteria. In addition, to improve the testing and certification systems in the telecommunications sector, the government has improved the operations that regulate technical standards in such a way as to meet the rapid development of IT and the changes in the competitive structures of telecommunication market. For this reason the government revised the regulations of the Technical Standards for Telecommunication Facilities in August 2001. Moreover, the government is making improvements to the certification system for telecommunications equipment and promoting mutual recognition between nations, in order to overcome the technical barriers to trade.
2.4. Government Policies to support the IT Startup Financing: KOSDAQ & Venture Capital

2.4.1 KOSDAQ

Current status of KOSDAQ

KOSDAQ, which benchmarks Nasdaq in the U.S., opened on July 1, 1996. Like Nasdaq, KOSDAQ imposes less stringent restrictions and lower barriers for entry and exit than the standard Korean Stock Exchange, so is often used for the IPO (initial public offering) of high-tech startup firms. Therefore, the KOSDAQ functions as a capital market where proven startups can get direct financing, and also provides an opportunity for venture capital and other startup investors to exit and collect returns on their investment, as well as providing general investors with high-risk, high-return investment opportunities. Since 1999, the share of high-tech firms (so-called venture firms) listed on the KOSDAQ has increased substantially. In particular, the number of IT firms reached 30% of the total number of firms listed on the KOSDAQ.

Graph 2-1: KOSDAQ Status (number of listed firms/venture firms)

Source: KISDI
<Table 2-3> KOSDAQ Status

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>no. of listed companies (no. of listed ventures)</td>
<td>331(52)</td>
<td>359(86)</td>
<td>331(114)</td>
<td>453(173)</td>
<td>604(244)</td>
<td>721(353)</td>
<td>831(383)</td>
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<tr>
<td>no. of new listings (no. new ventures listings)</td>
<td>31</td>
<td>83</td>
<td>8(4)</td>
<td>160(58)</td>
<td>250(116)</td>
<td>181(134)</td>
<td>138(91)</td>
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<tr>
<td>no. of withdrawn listings (no. of ventures withdrawn)</td>
<td>39</td>
<td>55</td>
<td>36(2)</td>
<td>38(7)</td>
<td>99(3)</td>
<td>64(0)</td>
<td>28(6)</td>
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<tr>
<td>capitalization (million won)</td>
<td>3,101,801</td>
<td>3,494,747</td>
<td>5,407,811</td>
<td>13,061,528</td>
<td>15,128,325</td>
<td>14,735,153</td>
<td>14,011,631</td>
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<tr>
<td>aggregate market value (million won)</td>
<td>7,606,110</td>
<td>7,068,549</td>
<td>7,892,244</td>
<td>98,704,382</td>
<td>29,015,847</td>
<td>51,818,055</td>
<td>43,708,006</td>
</tr>
</tbody>
</table>

Note: All figures are as of year-end  
Source: KISDI
Venture Firms

The government established a legal definition of venture enterprises (see box below), which entitles such recognized ventures to receive government support through a special legislation enacted in 1997.

Legal Definition of a Korean Venture Business

Small size venture businesses based on high technology may be diverse in their number, specialty and the industry they belong to. The government has designated those that fall under any one of the following four categories as "venture" enterprises, and provides various policy support.

"Venture", as designated in KOSDAQ, conforms to such legal definition.

(1) Venture Capital-Backed Enterprise: an enterprise with over a prescribed share of equities held by venture capital(s).

(2) Research and Development Investment Enterprise: an enterprise with over a prescribed proportion of R&D expenses to total sales.

(3) New Technology Developing Enterprise: an enterprise whose sales or exports of its product(s) developed by using their own patent is over a prescribed proportion of total sales. Or an enterprise whose products manufactured through the new technology business program carried out by government organizations occupy over a prescribed proportion of its sales.

(4) Technology Assessed Enterprise: an enterprise that has received an evaluation mark of excellence by research and other institutions designated by the government.
2.4.2 Venture Capital Industry

Venture capital is an institutional investor that invests in startups before the initial public offering. Venture capital plays an important role in the success of startups. The success of high-tech startups in the U.S. can be attributed to the existence of the Nasdaq stock market, as well as such regional environment as Silicon Valley equipped with various supporting networks enabling a well-developed venture capital industry.

In Korea, the venture capital industry was formed by policy initiatives starting in the early 1980s, well before public awareness in startups was aroused. In the early stages, the venture capital industry served the role of carrying out the government policy of providing funding for small and medium size enterprises, and focused more on loans than investments. However, the opening of the KOSDAQ in the mid-1990s opened up ample new opportunities for investments when the venture boom of the IT sector led to a remarkable growth in the venture capital industry. As of the end of November 2002, there were 128 venture capital firms. However, the Korean venture capital industry experienced a steep decline after a period of enormous growth. The IT industry is by far the most active sector for venture capitals. In recent years, investments in the IT industry has accounted for close to two thirds of total investments.

The government has taken the role of leading investor in newly formed venture investment funds to facilitate the supply of funds, especially during the period of economic recession since the second-half of 2000. In addition, by reducing income and capital gains taxes for fund investments, the government has encouraged venture investments. Currently, the government agencies involved in venture investment funds include the Small and Medium Business Administration, Ministry of Information and Communication, and numerous other central government ministries and regional government offices.

2.5. Direct Foreign Investment Policy

Seen from any measure, the world economy is rapidly globalizing. Between 1990 and 2000, OECD trade grew by an average of 7.6% a year. Worldwide FDI inflow reached USD 1.3 trillion in 2000, and accounted for 20% of global gross domestic capital
formation, compared with the figure of 2% achieved 20 years earlier. In particular, the IT industry has been and remains at the forefront of industrial globalization. The tariff on IT products has been lifted in accordance with the Information Technology Agreement (ITA), and the expansion of FDI on IT equipment are also underway in many countries. Moreover, FDI ceilings on telecommunication services have also been reduced after the settlement by the WTO Negotiation Group for basic telecommunications.

The role of FDI in Korea has been relatively minor. After the financial crisis in 1997, however, the government initiated tax reduction measures for high-tech businesses, businesses in foreign investment zones and service businesses (exemption from or reduced national taxes for 10 years, local taxes for 15 years) to cope with the economic recession. Rent reduction policy is also underway in industrial complexes for foreign companies (Kwang-ju, Chon-an), 25 national industrial complexes, and foreign investment zones (100% exemption for high-tech businesses and 75% reduction for general manufacturing industries). M&A activities (hostile takeovers) have been allowed since May 1998.

Along with such measures, certain limitations on foreign investments in the telecommunications services markets were lifted. Currently, there are no ceilings on foreign ownership of special and value-added telecommunication service providers. And the ceiling on single-person ownership on facilities-based service providers has been abolished except as to Korea Telecom. Foreign aggregate ownership of facilities-based service provider is allowed up to 49%. Acquisition by a non-telecom company has also been allowed. There is no foreign ownership ceiling on IT equipment and software businesses.

Such liberalization policies have given rise to the rapid increase in the inflow of foreign capital to the domestic IT industry. A number of multinational companies have made inroads into the Korean IT market, and is expected to contribute greatly to the vitalization of the Korean economy.
3. International Cooperation

Korea actively cooperates with international organizations in the field of information and communications such as the International Telecommunication Union (ITU), Asia-Pacific Economic Cooperation (APEC) and Asia-Pacific Telecommunity (APT).

3.1. ITU

As a council member of the ITU, a special UN organization dealing with the telecommunications sector, Korea plays a significant role in promoting international cooperation. Currently, ITU is committed to reviewing its procedures, activities and priorities to ensure that it remains at the forefront of the industry it has nurtured, with the goal of serving the needs of its members even more effectively into the new millennium. In this context, ITU takes a leading role in preparing for the World Summit on the Information Society in 2003, which is organized by the United Nations under the personal direction of Kofi Annan, UN Secretary-General. The aim of the World Summit is to develop a common vision and understanding of the Information Society and to draw up a strategic plan of action for a concerted development towards realizing this vision. Korea will actively participate in the summit by delivering its views and sharing Korea's experience and insight in this field.

Graph 2-2  Direct Foreign Investments in the IT Sector (1997~2001)

Source: MIC

Ministry of Information and Communication
Republic of Korea
Korea intends to actively participate in major ITU conference such as World TELECOM and WRC in 2003.

In addition, Korea hopes to host the TELECOM Asia in 2004, in order to contribute to international cooperation in the field of telecommunications and to create the momentum for the globalization of the Korean telecommunications industry.

3.2. APT

Korea has actively participated in the activities of the APT, a regional telecommunications organization, since its establishment. Korea has increased its contributions, including financial contributions, to the APT in line with its enhanced international status. Korea has dispatched telecom experts to the APT Secretariat to support the wide range of APT activities. In addition, Korea has taken a leading role in various APT activities such as ASTAP, APTIF, APG and study groups. Korea is deeply involved in and has contributed to the APT reform activities including the activities of the Working Group on Constitution Revision.

Since 1982, Korea has provided IT training opportunities for trainees from APT member countries. In 1998, Korea initiated a new HRD program and committed extra-budgetary contributions to the APT for this program. Since 1998, a total of 328 trainees from APT member countries have been invited to Korea to complete training courses in IT technology and policy.

3.3. APEC TEL

The APEC Telecommunications and Information Working Group (TEL) was formed in 1990. TEL’s activities are consistent with the specific goals announced by APEC in the 1994 Bogor Declaration: Trade and Investment Liberalization and Facilitation (TILF) and Economic and Technical Cooperation (ECOTECH). The work of the TEL is accomplished by four steering groups (SG): liberalization; business facilitation; development cooperation; and human resource development.
Korea has taken an active role in the activities of the four steering groups and related task forces, or working groups. Korea has assumed the positions of the Convener of HRD SG and Vice Convener of BF SG. Korea proposes and implements various projects to each SG including Distance Learning Projects on Telecommunications Technology and APII Test-Beds.

In order to encourage cross-sectional development projects among the four steering groups and to facilitate the APII (Asia Pacific Information Infrastructure), the APII Cooperation Center was established in September 1996 in Korea. Through the APII Cooperation Center, Korea hosted and maintains the APEC TEL website, which is the sole information platform for APEC TEL member economies to post and browse APEC TEL agenda-related documents and information.

Korea hosted the 24th APEC TEL WG Meeting in Jeju for the second time in September 2001 and will participate various APEC TEL meetings in the future.

APII Test-Bed Projects

The APII Test-Bed project was first proposed at the 12th APEC TEL WG Meeting in Shanghai, China in 1995 jointly by Korea and Japan. APEC Ministers on Telecommunications and Information Industry provided full support for the APII Test-Bed Project in the Singapore Declaration of June 1998, which instructed member economies to take proactive steps to facilitate interconnectivity and interoperability among networks in the region.

Korea is operating three APII Test-Beds from Korea to Japan, Singapore and the U.S., respectively. The Korea-Japan APII Test-Bed was successfully launched in April 1998 and eight joint projects are being carried out on the Korea-Japan APII Test-Bed link capable of 8Mbps. The Korea-Singapore APII Test-Bed started in 1999 and four joint projects are ongoing between two economies on a 2Mbps-level cable. Korea-US APII Test-Bed/KREONet2 was established in May 2001. The APII Cooperation Center and KISTI (Korea Institute of Science and Technology Information) jointly created a 45Mbps link to STAR TAP (Science Technology and Research Transit Access Point) of the US NSF (National Science Foundation) from KOREN and KREONet2 (Korea Research Environment Open Network2). The high performance research network between Korea and US makes it possible to share large scale high-tech DBs and experimental instruments,
to apply high performance collaboration, and to promote NGI (Next Generation Internet) technology.

Korea plans to expand the test-bed project to other APEC member economies in the future. Currently, Korea and China have a basic understanding to open a test-bed network and are discussing the detailed schedule and specifications. Furthermore, to enhance the usage of these test-bed projects, the APII Test-Beds will be directly linked to the Trans-Eurasia Information Network (TEIN) Project, which is an initiative newly endorsed at the ASEM III in Seoul, Korea in October 2000.

3.4. Trans-Eurasia Information Network (TEIN) Project

At the third ASEM meeting held in Seoul, Korea in October 2000, Korea, the European Commission and Singapore jointly proposed the Trans-Eurasia Information Network (TEIN) project. This proposal was adopted as one of the new ASEM projects. By connecting research networks between the two continents, TEIN promises to be a useful vehicle for promoting closer inter-regional cooperation and exchanges in various fields including science and technology.

In June 2001, a Memorandum of Understanding (MOU) among the APII Cooperation Center (Korea), CRL (APII Technology Center, Japan), and APAN-JP was exchanged agreeing to link major research networks in Asia. This MOU effectively establishes an Asian regional research network for TEIN by connecting major research networks, which are engaged in the APAN consortium.

With understanding from the EC and based on the agreement between Korea and France, the initial Asia-EU link between Korea and France was launched in December 2001. This link will be connected to other Asian countries through existing major network facilities, such as the APII Test-Beds, AI3, SINET and IMNET of Japan, CERNET of China and others.
3.5. International Cooperation for IT HRD

Many developing countries are facing difficulties in the course of their IT development due to a lack of resources, technologies, and especially, the shortage of human resources within their countries. As a leader in the IT area, Korea has shown its willingness to share its experiences and insights with such developing countries. In this context, Korea has been involved in numerous international cooperation programs in HRD.

MIC started its first International Telecom Training Program in 1998. During the past four years, 357 trainees have been invited from 41 countries to be educated on key issues in telecommunication technologies, interconnection, informatization policies and more. MIC has provided funding for the purpose of providing IT training opportunities for member countries of APT. During the past four years, 332 people from 29 countries have been invited. Along with this short-term training (approximately 2 weeks), MIC currently provides scholarships for 15 students from developing countries to study at Korean graduate schools specializing in the IT field.

Moreover, the Development Gateway Foundation, whose core mission is to reduce poverty and support sustainable development through the use of information and communication technologies (ICT), launched the second center of its Research and Training Network in Korea on November 13 of 2002. The Development Gateway Foundation Korean Training Center (DGF KTC) will focus on training and capacity building and is implemented by the Korea Information Society Development Institute (KISDI). The DGF KTC will provide training on e-government and ICT policies, and offer its first course in December 2002. In addition, Korea plans to further expand these IT Training Programs and to add new programs for the benefit of developing countries.
Organization Chart of MIC
# Relevant Institutions

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<tr>
<td>Electronics and Telecommunications Research Institute</td>
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<td>Korea Information Society Development Institute</td>
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<tr>
<td>Institute of Information Technology Assessment</td>
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<tr>
<td>International Cooperation Agency for Korea IT</td>
<td><a href="http://www.icakorea.or.kr">http://www.icakorea.or.kr</a></td>
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IT Industry in Korea’s Economy

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Current Status of IT Service, Equipment & Software

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