How Korea built the Broadband that America wanted

On May 5, 2003, the New York Times ran an article titled 'America's Broadband Dream Is Alive in Korea'. It stated that Korea has the '*world's most comprehensive high-speed Internet network, supplying affordable and reliable access that far surpasses what is available in United States'*.

The raw statistics are one measure of Korea's claim to be the leading broadband and mobile communications nation e.g. more than **35m internet subscribers** - **10m of those on broadband**; more than **32m mobile subscribers** including 10m already on 'next generation' broadband wireless services. As of Dec 2002, 12.5% of the population were regularly using electronic signatures, and cybertrading turnover totalled US$52.6***tn***.

Growth in Broadband in Korea since 1999				
	1999	***2000***	***2001***	***2002***
Connections	0.37m	4.0m	7.5m	10.6m
Sales US$	0.36bn	0.85bn	2.35bn	3.8bn
Penetration Rate	19% by Population, 79% by Households.			

However, it is worth noting, and rarely mentioned, that Korea is not actually leading in all respects. The 'leading nation' tags certainly fits. However, in May 2003, the International Telecommunications Union, named Japan as the nation providing '*the best overall broadband service in the world*' [1].

Korea has highest **penetration rate** of broadband services at 79% percent of households, compared to 33% in Taiwan, 20% in Japan, and 15% in the US.

The South Korean government is the most interventionist in the world in relation to broadband. Its policy objective is to have broadband connections of 155 megabytes to five gigabytes available nationally by 2005. It has also made a direct investments of US$600m million to promote digital content, and is to pump $30bn into its broadband infrastructure by 2010 in a combination of government and private investment.

What is most remarkable about Korea is the national drive that has succeeded in making IT a focus of economic growth. Governments have successively made IT-related infrastructure, industry and innovation a key platform for the growth of the wealth of the nation, particularly in exports.

In the early 1990s government attention turned to the post-industrial economy, having set and achieved their targets in the heavy manufacturing and fabricating industries. Despite being flattened in 1998 by the IMF crisis, the growth and performance of the IT industry has continued vigorously:

- 17% of GDP is related to IT products & services (*highest in the OECD*);

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- IT-related exports of grew from US$30.5bn in 1998 to US$46.4 in 2002 comprising 30% of exports;
- The value of ecommerce transactions is running at about US$40b per quarter (with B2C representing 3%). This represents 30% of GDP;
- IT-related employment stands at 1.2 million people, with growth expected to 1.5m people by 2005.

The government recently reaffirmed its vision to promote the IT industry as a **key growth engine** for the country's economy, pursuing the "Broadband IT Powerhouse Vision 2007". Information and Communication Minister Dae-je Chin said the Broadband IT Powerhouse vision will focus on DTV, next-generation communication services, intelligent robots, post-PC and software.

America, the wired nation tangled in competition

Compared to the US, Korea is a broadband dream come true. America's uneven adoption of broadband has industry executives looking envious.

While often disdainful of government intervention, many high-technology leaders in the United States now argue that Korean policy makers got it right by actively promoting the technology. The effort to bring broadband to the American home is bogged down in the fight between the regional Bell companies and their rivals. By its inability to bring a pervasive and interoperable high-speed broadband cellular phone to US consumers and industry, the US has surrendered its technology and commercial leadership.

Conversely, Korea achieved success built on factors such as:

- An effective structural basis for new broadband competition;
- The government's vision of an information society;
- Consumer pull deriving from a education boom and techno-curiosity;
- A united national shared vision between government and industry.

The key factors can be categorised under three headings: government, environmental, and corporate. These are examined below, in sequence.

Korean government initiatives set the scene

Government policies and actions to build an 'information nation' date back into the mid-1990s. The sequence and timing of programs has played a large part in their success, because they have **built layers of capability and absorptive capacity** in the people and nation.

The Korea Information Infrastructure (KII) plan of March 1995 set in place support to build a high-capacity national communications backbone, created a research environment, and encouraged innovation in IT & communications.

Around 1996 the 'PC for everyone' program was announced. The local PC industry rapidly expanded to supply the nation. This bought the first

generation of Koreans to the PC in the home. (*The downside of this program was that most of that local PC industry has never escaped their domestic coddling and have not succeeded in creating global business.*)

In 1997, Korea Telecom (known now as just KT) started ADSL trials, tapping into the early-adopters market. Then in 1998 there was a Government-led drive to ensure that the nation became computer literate, and computing training and education was subsidized – and boomed.

Thus, by this time, the general environment was primed for a major push. This push was launched as the 'Informatization and Liberalisation Policy'. What followed then was as sequence of mid-game moves by Government which proved compelling and brilliant, as measured by the results today.

KT launched ADSL commercially in 1999 to take advantage of the PCs in the homes, and the increasing computer literacy, particularly the boom in Internet literacy. Within 12 months KT had 1m broadband subscribers.

The year 1999 was a watershed, in retrospect, in Government setting the supply side environment, and also from the convergence of environmental and corporate factors as noted below. Prior to 1999, the market conditions had made broadband investments unattractive, so the government acted.

The government provided some US$2bn of funding for a new high-capacity backbone network, which meant that telecoms firms did not have to use the infrastructure of the incumbent. It provided "soft loans" to new operators to build new infrastructure. In both 1999 and 2000, $100m worth of soft loans were made available to operators to deploy new local networks.

One of the most far-sighted decisions was the establishment of a framework for **facilities-based competition**. The Government saw poor progress on the part of the incumbents sharing their networks, as 'service-based competition', and so eliminated entry barriers for new network operators.

They set up '*facilities-based competition*' through new network operators, as opposed to '*service-based competition*' through sharing the same network.

This single policy set the scene for an enormous build-out of capacity, and very active innovation in technology, equipment and service. In contrast, the network-sharing model, proclaimed by many other countries, provides the incumbents with no incentive for technology and equipment innovations.

In simple terms, the policy encouraged new operators instead of network sharing. The government also set a flat-rate charging policy, helping to limit predatory behaviour by the incumbents, and encouraged low tariffs.

More generally, the Ministry of Information and Communications set about promoting IT R&D and start-ups – *in 2003 $393m is earmarked for IT R&D*.

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One of the deliberate and important decisions since the 1999 era was the **unbundling of the local loop**. When the issue of access to the 'last mile' became a potential inhibitor to the new entrants, the government again acted quickly to open access through policy. This occurred in November 2001, *after previous policies failed to stimulate enough competition*.

Environmental factors build the pressure

Korea, like Japan, is a nation of technology savvy consumers, always willing to buy and try new technology advances whether in cars, refrigerators, rice cookers, or mobile communications equipment and services.

In addition to this curiosity, in Korea around 1999 there was a group of converging environmental forces which provoked the broadband boom. One force was the education fever to learn English, and to understand more Western culture. The government promoted this drive as a key to the future competitive effectiveness of Korea. The Internet provided the perfect keyhole for the young to observe and interact with the West, in a benign, non-personal and entertaining way. This demand ran ahead of supply.

Another force in 1999 was the **Internet boom**, which had been in progress in the US. It took off in earnest at this time in Korea. The Government changed the venture laws and associated regulations to promote the development of a huge start-up industry. Over the following 3 years, more than 12,000 new firms received venture funding, with 92% in the IT. The majority of these focused on the Internet, broadband and mobile communications, and during that period 1000 listed on KOSDAQ.

Along with the Internet boom and the start-up boom came a **cyber stock-trading boom** that in Korea's case could only be called a frenzy. Korea boasts the highest penetration of online stock trading, at 67% of total trading, and 80% of KOSDAQ, accounting for about US$10bn of online trading each day.

Consumer pull was strong - bearing in mind that **by 1999 Korea already had 10m Internet users**. There was a strong period of education which had now passed and users were looking for, and often demanding, faster and more interesting services than were possible on dial-up connections.

By 1999, the successful emergence of high-speed broadband services via cable modems (offered by Thrunet using Powercom's cable network) both satisfied demand and fired more demand for multimedia on-line services.

The pull of this demand, combined with the fact that 49% of Koreas lived in highly concentrated apartment complexes, provided a favourable opportunity for quickly building a mass market in broadband services.

The government actions then provided the right regulatory and promotional frameworks, and a **virtuous circle evolved** – like a whirlwind.

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Corporate forces unleash the momentum

The seminal year for the convergence of corporate forces was also 1999. As mentioned, there were already 10m Internet users. Thrunet had introduced broadband using their cable access. Internet cafes had sprung up in 1000s, were extremely popular, and had insatiable demand for high speed and volume Internet access. This put pressure on the incumbent telcos to think through the issue of high speed Internet, and to act.

For example, prior to 1999, KT had heavily promoted ISDN services, but this had flopped and the business was stagnant. With the strong growth of mobile communications, KT was also starting to see a decline in its wireline business. It was looking for a new growth engine '*beyond the telephone*'. During 1999 it selected broadband as that new business platform.

Hanaro, a new local exchange carrier, faced similar business dynamics to KT, and it was also engaged in an active search for a new revenue stream.

Both KT and Hanaro were both pressured and threatened by the government's desire, and its legislation, to open up the broadband market. New operators in broadband would not only severely cannibalise the incumbents' core revenue streams, but would deprive them of new business.

KT acted, and launched ADSL commercially in 1999, taking advantage of the 'pull' environment. By 2003 they had 5m broadband subscribers, including 1m on VDSL at 25mbps. Hanaro had 3m, and others 2.5m. By 2003 there were 35,000 Internet cafes, a broadband industry in itself.

Indeed, KT now has a saying that they ***'found gold in copper'***.

Conclusion

Korea achieved its leadership as a nation in broadband and mobile communications by deliberately coordinating key government and industry factors, and by an environmental setting which conduced the opportunity.

The government and the private sector united in the desire to create 'the information society' by a broadband and communication revolution.

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[1] *Japan, and perhaps some other countries, can challenge the Korean image of holding the mantle of superiority in all aspects of broadband services, for example:*

- *Japan overtook Korea in number of broadband users in April 2003;*
- *There are 38m subscribers to DoCoMo's interactive i-mode handsets **alone** (May 2003), as compared to the 32m subscribers for Korea as a whole;*
- *Japan has about 10m 3G mobile subscribers, including nearly 8m on KDDI's 3G service;*
- *Japan also has the lowest broadband access charges in the world as a percentage of average household income, according to the ITU, whereas Korea ranks 18th;*
- *A recent global study by London-based analysts showed that, across the globe, Japan had the lowest public access wireless LAN charges;*
- *Japan deregulated and unbundled the 'last mile' local loop 12 months before Korea.*

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