

Broadband, At Home and Away

By Leah A. Lievrouw
U of California, Los Angeles

A recent study by the Organization for Economic Cooperation and Development ranks OECD member nations by their numbers of subscribers to high-speed Internet services, or *broadband* (OECD, 2001). Interestingly, South Korea has taken a spectacular lead in both the number of broadband connections and in subscription rates. Last June, *The Economist* published OECD figures for year-end 2000 showing that Korea had about 9 subscribers per 100 inhabitants (*Economist*, 2001c). Canada was next with 4.5 per 100, followed by the U.S. with just over 2 subscribers. Austria, Belgium, Denmark, the Netherlands, and Sweden each had between 1 and 2 subscribers per 100.



Last October, the OECD updated these figures (OECD, 2001). By June 2001 Korea had increased its lead to about 14 broadband subscribers per 100 inhabitants, and the report speculated that the number could rise to 20 by the end of 2001 (p. 33). Canada remained second with over 6 subscribers per 100; Sweden had moved up to third place with 4.5 subscribers

per 100 inhabitants, followed by the U.S. with just over 3 subscribers per 100. The Netherlands, Austria, Denmark, and Belgium all increased to between 2 and 3 subscribers per 100.

Many analysts believe that the continued growth of the Internet depends on the widespread availability of fast, “always on” broadband services that can carry broadcast-quality video and audio or let users move among webpages as quickly as flipping through the pages of a book. Currently, broadband access is available mainly as digital subscriber line (DSL) services provided by telecommunications (telephone) companies or as cable modem services provided by local cable television operators. (Direct satellite and wireless telephone systems also offer some broadband services.)

What accounts for the differences between Korea and other nations, especially the relatively slow progress of broadband in the U.S., where the Internet has enjoyed the greatest success and levels of use? There are several factors involved, but the OECD and other observers argue that competition, not only among companies but also among technologies and infrastructures, affects the cost, speed, and availability of broadband. Nations with more competing providers and types of

services consistently have the fastest systems, charge the lowest rates, and serve the greatest number of users.

Capacity or speed, of course, is what makes broadband “broad.” The International Telecommunications Union defines broadband as any system with a transmission rate faster than about 1,500 to 2,000 kilobits per second (Kbps)—faster than the lines used in many high-speed university and corporate networks. However, providers tend to advertise any service running at 256 Kbps or more (about four times faster than standard 56K dial-up connections) as “high-speed Internet access.” Speed is further complicated by the fact that virtually all systems are much faster downstream than upstream (i.e., from provider to subscriber and vice versa), which is why DSL is often referred to as *asymmetric DSL* (ADSL).¹

According to the OECD rankings, DSL is slower in the U.S. than in some other places, which may affect user appeal. The downstream speed of basic service in Korea is about 1500 Kbps, ranging up to about 8000 Kbps. Telecom New Zealand reports downstream speeds of 4000 Kbps; Japanese systems offer 1500 Kbps downstream. Canadian systems have a capacity of 960 Kbps, whereas the U.S., Germany, Portugal, and Hungary have downstream speeds of 768 Kbps (OECD, 2001, p. 52).

The price of broadband varies among countries. The OECD compares the price of DSL in different countries by measuring the total Kbps sent both downstream and upstream, per U.S. dollar-equivalent of monthly subscription fee in each country.² Using this method, \$1 buys about 18 Kbps per month in the U.S., but it buys anywhere from about 28 to 148 Kbps in Korea, about 59 Kbps in Japan, 34 Kbps in Sweden, 31 Kbps in Canada, 20 Kbps in Finland, and 19 Kbps per month in Germany (OECD, 2001, p. 53).

Broadband is also more widely available in some nations than in others. At the end of 2000, DSL service was available to over 90% of the population in Korea, 75% in Belgium, 52% in Italy, and 50% in Portugal. Where coverage was measured in households, DSL was available to 75% households in Austria, 74% in Spain, 69% in Canada, 65% in Denmark, 60% in Germany, and 50% in the United Kingdom and the U.S. (though the American figure is based on data from just two companies, SBC and Verizon; OECD, 2001, p. 11). Other analysts have reported that DSL was available to only a fifth of U.S. households in mid-2000 (*Economist*, 2000b); some have projected that DSL will not be available to half of American households before the end of 2002 (Schiesel, 2000).

(continued on next page)

Figures like these have led the OECD to advocate policies that promote competition as the most effective means to extend broadband access. However, in many countries competition has been hindered. Large private or government-run monopolies (“incumbents”) may run both the telecommunications and cable networks. In other places, including the U.S., a handful of private-sector firms—some with major ties to entertainment media, software firms, or other “content providers”—have dominated telecommunications or cable services in various geographic areas. Incumbents may have little incentive to offer new services that compete with their existing telephone, high-speed corporate data, or premium pay-TV businesses. They have tended to delay serious attempts to develop or offer high-speed Internet services until regulatory changes brought challengers into the market.

For example, in the wake of the WTO’s Basic Telecommunications Agreement in 1997, which committed members to competition in telecommunications, the Korean firm Hanaro had to build its own network in order to compete with the incumbent, Korea Telecom. However, instead of telephone services, Hanaro offered access to multimedia services and content via DSL. By the end of 2000, they had signed up 1.1 million subscribers, which prompted Korea Telecom to roll out its DSL services more quickly—from 500,000 subscribers in mid-2000 to 2 million by February 2001 (OECD, 2001: 33).

In the U.S. and other large countries, the high cost of building new telecommunications networks, especially the “local loop” serving individual households and other premises, has discouraged the entry of new competitors. To overcome this problem, both the U.S. Telecommunications Act of 1996 and European Union regulations implemented in 2001 require incumbents to share their existing networks with competitors, or to “unbundle the local loop,” in policy language.

As *The Economist* has noted, however, “Incumbent telecoms firms . . . detest [unbundling] and stubbornly refuse to cooperate with rivals” (*Economist*, 2001b). Regulators and consumer groups charge that American incumbents consider the \$1.2 million fine for each violation of the 1996 Act as a cost of doing business while smaller new competitors flounder. In fact, the OECD (2001) report reveals that American “incumbents raised retail prices for some DSL services during 2001,” while “growth rates for some of the leading [new competitors] slowed and some of the largest new entrants providing DSL services filed for bankruptcy protection” (p. 45). Though the FCC chairman has recommended raising the fine to \$10 million per violation, to date the U.S. Congress has taken no action. As WorldCom regulatory expert **Richard Feasey** has put it, “No regulator . . . can adequately restrain the commercial imperatives of a vertically integrated incumbent” (*Economist*, 2001b).

Some industry advocates blame technical problems, such as the capacity of the Internet “backbone” and bottlenecks at junctions linking different parts of the network, as well as the slow local loop, for the lag in the U.S. (McGarvey, 2000).

They point out that today’s Internet would be overwhelmed if even a single short video clip were downloaded by millions of viewers at once (*Economist*, 2001a). Content providers have discovered that the Internet is a far more expensive system for distributing video or multimedia than either broadcast or cable, with poor advertising revenue and consumers reluctant to pay for online content. They have grown to see the Internet as a tool for cross-promoting, rather than distributing, their products, but also charge that broadband market will remain stalled until plenty of high-quality content is available online (*Economist*, 2000a, 2000b). Indeed, Dwayne Winseck has argued that “most US telecommunications companies have abandoned their efforts to deliver video over broadband networks to people’s homes altogether” (Winseck, 2002, p. 400). Some projects are underway to build closed private networks, using satellites and the content caches around the “edge” of the Internet, that will bypass the public network to serve prime customers who are most able to pay for premium content, such as streaming video. Everyday users would be relegated to the slower “get what you pay for” public Internet (McGarvey, 2000).

Nonetheless, broadband has taken off quickly in Korea and other countries that have moved ahead to develop and install faster systems that use fiber optics, wireless, and local area network technologies that permit speeds up to 10,000 Kbps (or 10 megabytes per second, or Mbps). The Korean government has set target speeds of 155 Mbps to 5 gigabytes per second (Gbps) to be available nationwide by 2005 — speeds that would surely solve some of the technical problems cited by the Americans.

Moreover, other broadband services besides entertainment and software downloads may be just as attractive to consumers. For example, Internet telephony (placing or receiving voice or video calls online) may be a major factor in Korea, where long distance (especially international) telephone calls are very expensive. Korean DSL providers have offered free PC-to-telephone calls within the country, and heavily discounted international PC-to-telephone calls. One service offers free PC-to-PC international calls and a feature called “presence technology” that allows DSL users to let others know when they are online (and so available to send or receive calls; OECD, 2001, p. 33).

There are clear differences, then, among countries in terms of their technological infrastructures, regulatory climate for competition, business models, and consumer expectations for broadband. The Internet has already become the key global medium; the differential growth of broadband access around the world shows that its future development may not depend entirely on U.S. leadership.

¹ Several researchers have noted the political and economic implications of asymmetric Internet architecture, which obviously favors service and content providers’ interests, mass media style, over those of subscribers who want to generate and share their own content. For example, see Winseck (2002).

² DSL is used as the main example here because more detailed data is available for DSL than for cable modem services. Interested readers should review the OECD report for data on cable modem access.

References

The Economist (1999). The battle for the last mile. April 29.

The Economist (2000a). The failure of new media. August 17.

The Economist (2000b). There's nothing on. October 5.

The Economist (2001a). Reality check for video-on-demand. June 21.

The Economist (2001b). The slow progress of fast wires. February 15.

The Economist (2001c). Broadband blues. June 21.

McGarvey, J. (2000). Backbone bottlenecks burst broadband bubble. *Interactive Week*, April 17. URL (consulted October 30, 2001): <http://www.zdnet.com/zdnn/stories/news/0,4586,2550556,00.html>


Organization for Economic Cooperation and Development (2001). *The Development of Broadband Access in OECD Countries*. Report of the Directorate for Science, Technology and Industry, Committee for Information, Computer and Communications Policy, Working Party on Telecommunication and Information Services Policy (DSTI/ICCP/TISP[2001]2/final), October 29. Paris: OECD. URL (consulted December 1, 2001): <http://www.oecd.org/pdf/M00020000/M00020255.pdf>.

Schiesel, S. (2000). Broadband: How broadly? How soon? *New York Times*, January 17, C1, C5.

Winseck, D. (2002). Wired cities and transnational communications: New forms of governance for telecommunications and the new media. In L.A. Lievrouw and S. Livingstone (Eds.), *Handbook of New Media: Social Shaping and Consequences of ICTs*, pp. 393-409. London: Sage.

ATW Award
The ATW airline industry award program was born in 1974 to recognize excellence.
The passenger service category winner is selected by the magazine's editorial staff after a lengthy process to recognize not only passenger service but also safety.

WE'RE PROUD.
Asiana Airlines wins the prestigious ATW Passenger Service Award.

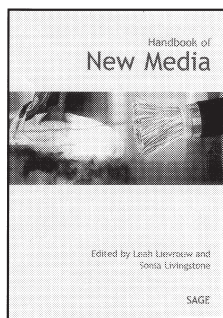


Only the best of the best airlines receive an Air Transport World award. And now, for the first time in Korean airline history, Asiana Airlines has been awarded this top recognition in the passenger service category. But while Asiana is proud of this remarkable achievement, we recognize that it would have not been possible if not for the support and patronage of our customers. And rather than become boastful and overconfident, we rededicate ourselves to continue to be the airline where customer service is the top priority. To our patrons and customers we say thank you, and look forward to showing you our gratitude in person on your next Asiana flight.

Asiana Airlines

1-800-2ASIANA (1-800-227-4262) | www.flyasiana.com

New from SAGE Publications



Handbook of New Media

Social Shaping and Consequences of ICTs

Edited by **Leah A Lievrouw** *University of California, Los Angeles* and
Sonia Livingstone *London School of Economics and Political Science*

'This is the first major review of interactive technologies and their cultural and social context. This is more than a welcome addition to one's library; it is the authoritative overview of international research perspectives on interactive media technologies by leading scholars around the world'
- **Ellen Wartella**, *University of Texas, Austin*

'The **Handbook of New Media** is a landmark for the study of information and communication technologies within the field of communication. It's international team of editors and authors has brought together insights gained from over two decades of scholarly research. This indispensable reference demonstrates an increased maturity and stature for "new media" research within the field' - **William H Dutton**, *University of Southern California*

The **Handbook of New Media** sets out boundaries of new media research and scholarship and provides a definitive statement of the current state-of-the-art of the field. Divided into six sections covering major problem areas of research, the **Handbook** includes an introductory essay by the editors and each chapter, written by an internationally renowned scholar, provides a review of the most significant social research findings and insights.

January 2002 • 592 pages • Cloth (0-7619-6510-6) • £65.00/US \$93.00

www.sagepub.co.uk

www.sagepub.com