

Both mobile phones and the Internet attracted new users at double-digit rates in 2002, albeit more slowly than in the 1990s. The number of mobile or cellular phone subscribers worldwide in 2002 topped 1.15 billion, an increase of 21 percent over 2001.¹ (See Figure 1.) For the first time, mobile phones outnumbered fixed-line phone connections (1.05 billion).² At the same

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time, use of the Internet expanded, thanks in part to a 16.5-percent increase in host computers in 2002 to 171.6 million, drawing more than 600 million people online regularly.³ (See Figure 2.)

Within just one decade, the ranks of people communicating by wireless phones and wired computers have swelled significantly. In 1992, only one in 237 people worldwide used a mobile phone, and one in 778 used the Internet; by 2002, the numbers had soared to one in 5 and one in 10, respectively.⁴ Today, well over 90 percent of all nations have local cell phone and Internet service, whereas in 1992, a person could use a cell phone in only one third of all countries and hook up to the Internet through a local number in just 19 percent.⁵

By linking computers with phones, the Internet sped the convergence of communications and computing technologies in the 1990s.⁶ Now, as mobile phones proliferate, more people are making wireless connections to the Internet.⁷ Since 2002, a growing number of U.S. cities have set up systems in parks and public spaces that give free Internet access to people with wireless modems in their laptop computers.⁸ In Europe, more people send and receive short text messages with their cell phones than use the Internet from personal computers.⁹

Cell phones have helped bridge the telephonic divide between rich and poor. Building towers for them is cheaper than stringing copper wires for fixed-line phones, so start-up mobile services can recoup their investments and expand their coverage more quickly. As the average price of mobile phones has dropped by nearly 10 percent a year, it has fallen within reach of more people.¹⁰ Between 1992 and 2001, phone penetration—the number of fixed lines and of mobiles per 100 people—accelerated

in developing nations.¹¹ (See Figure 3.)

Gaps in phone access have closed more quickly in some countries than others, with striking differences among the nations in transition from planned to market economies. Central European nations, quick to invite mobile competition, saw dramatic gains in phone penetration in the 1990s; Hungary, for instance, went from 9.6 phone connections per 100 people in 1990 to 67.4 per 100 in 2000.¹² During the same period, in former Soviet republics in Central Asia, where the state still controls most telecom services, phone penetration did not grow beyond 20 per 100.¹³

Mobile service has dramatically increased access to phones in Africa. Uganda, the one nation where all three of Africa's leading cellular companies compete, in 1999 became the first country in that continent to have more mobile than fixed-line customers.¹⁴ Some 30 other African nations have followed, as more people have hooked into the phone network in a few years of cellular expansion than in all the decades since independence.¹⁵ Mobiles outnumber fixed lines in Africa today at a higher ratio than on any other continent.¹⁶

A greater gap separates those with and without Internet access, but this digital divide is also narrowing. In 2001, the industrial world had 41 Internet users per 100 people, whereas developing nations had 2.3 per 100—still a 17 to 1 ratio, but much better than the 40 to 1 ratio in 1995.¹⁷ By linking rural farmers to market information, craftworkers to customers, patients to doctors, and students to teachers, the Internet can aid economic development.

Cheap computers with nonproprietary software, designed to be shared at public libraries, cyber cafes, and telecenters, could bring the Internet to even more people. Indian scientists have built a handheld "Simputer"—short for Simple, Inexpensive, Multilingual Computer—for poor, rural users that is expected to reach the market in 2003.¹⁸ While the computer itself will cost about \$200, people will be able to rent time on one—for instance, to check commodity prices or consult doctors—and to store their own data on \$1–2 cards.¹⁹

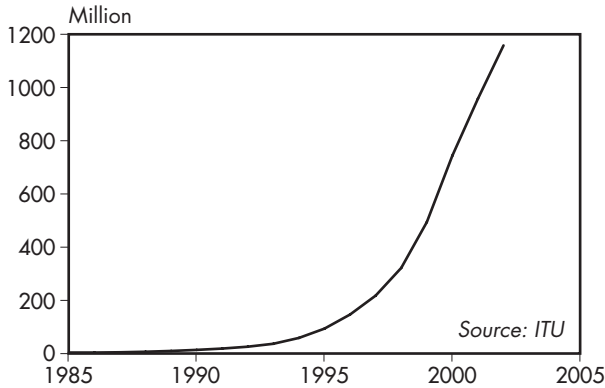


Figure 1: Cellular Phone Subscribers Worldwide, 1985–2002

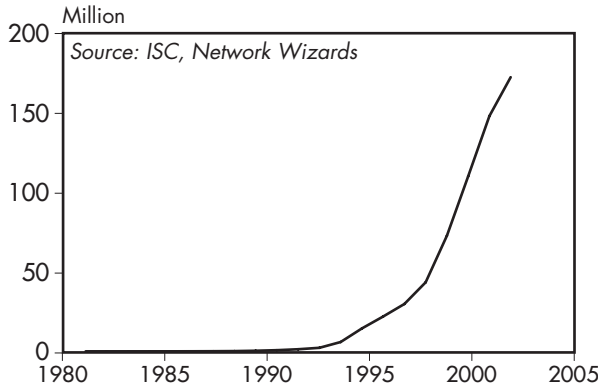


Figure 2: Internet Host Computers, 1981–2002

Cellular Phone Subscribers and Internet Host Computers Worldwide, 1985–2002

Year	Cellular Phone Subscribers (million)	Internet Host Computers (number)
1985	1	2,308
1986	1	5,089
1987	2	28,174
1988	4	80,000
1989	7	159,000
1990	11	376,000
1991	16	727,000
1992	23	1,313,000
1993	34	2,170,000
1994	56	5,846,000
1995	91	14,352,000
1996	144	21,819,000
1997	215	29,670,000
1998	319	43,230,000
1999	491	72,398,092
2000	741	109,574,429
2001	955	147,344,723
2002	1,155	171,638,297

Source: International Telecommunication Union, Internet Software Consortium, and Network Wizards.

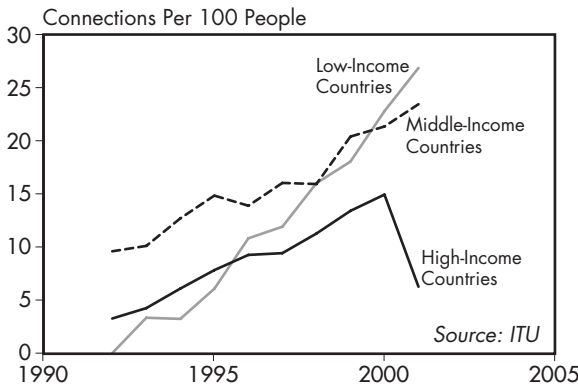


Figure 3: Annual Growth Rate in Phone Connections (Cellular and Fixed-Line) by Income Level of Country, 1992–2001

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1. Figures for 1985–90 from International Telecommunication Union (ITU), *World Telecommunication Indicators '98*, Socioeconomic Time-series Access and Retrieval System (STARS) database, downloaded 24 August 1999; 1991–2002 from idem, “Key Global Telecom Indicators for the World Telecommunication Service Sector,” Geneva, at <www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom99.html>, viewed 4 February 2003.
2. ITU, *World Telecommunication Indicators '98*, op. cit. note 1; idem, “Key Global Telecom Indicators,” op. cit. note 1.
3. Host computer count from Internet Software Consortium (ISC), “Internet Domain Survey: Number of Internet Hosts,” at <www.isc.org/ds/host-count-history.html>, viewed 4 February 2003. A single host can wire several computers to the Internet. Number of users from Nua, Ltd., “How Many Online?” at <www.nua.ie/surveys/how_many_online/index.html>, viewed 4 February 2003. Users are individuals who use the Internet on a weekly basis; as the user estimates can vary, host computers provide a more reliable measure of the Internet’s reach.
4. Population in 1992 and 2002 from U.S. Bureau of the Census, *International Data Base*, electronic database, Suitland, MD, updated 10 October 2002; mobile phone and Internet users in 1992 from ITU, *World Telecommunication Development Report* (Geneva: 2002), pp. 6–7, and in 2002 from ITU, “Key Global Telecom Indicators.” op. cit. note 1, and from ISC, op. cit. note 3.
5. ITU, op. cit. note 4, pp. 7, 13.
6. Frances Cairncross, *The Death of Distance: How the Communications Revolution Will Change Our Lives* (Cambridge, MA: Harvard Business School Publishing, 1997).
7. ITU, *Internet for a Mobile Generation* (Geneva: 2002).
8. John Markoff, “More Cities Set Up Wireless Networks,” *New York Times*, 6 January 2003.
9. “The Fight for Digital Dominance,” *The Economist*, 23 November 2002.
10. H. Asher Bolande, “Handsets from China Driving Down Prices,” *Wall Street Journal*, 30 January 2003.
11. ITU, op. cit. note 4, p. 17; Tim Kelly, ITU, e-mail to author, 14 February 2003.
12. ITU, op. cit. note 4, pp. 56–57.
13. Ibid.
14. Ibid., p. 15.
15. Ibid., pp. 15–16.
16. ITU, “Cellular Subscribers” (Geneva: 12 December 2002).
17. ITU, op. cit. note 4, p. 27.
18. Joanna Slater, “Computing For All,” *Far Eastern Economic Review*, 24 October 2002.
19. Cait Murphy, “The Hunt for Globalization That Works,” *Fortune*, 28 October 2002.