

Математика/2. Перспективы информационных систем
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Industrial ICT

We are in the midst of a global information revolution driven by the convergence and proliferation of information and communication technologies. The telecommunications sector is changing at warp speed, driven by technological innovation that results in new equipment and services and also by new entrants and alliances between companies with experience in a wide range of information industries from telecommunications to broadcasting to computer hardware and software to publishing. Three major trends are driving these changes:

- The rapid introduction of new technologies and services;
- The restructuring of the telecommunications sector;
- Globalization of economies and of communications.

Together these developments are not only changing the world of telecommunications, but the ways people work, learn, and interact.

“The death of distance as a determinant of the cost of communications will probably be the single most important economic force shaping society in the first half of the next century.” The death of distance could have profound implications for both individuals and organizations. The ability to work “anytime, anywhere” allows “road warriors” to work without offices on planes, in hotels, and at client sites, and enables information workers to telecommute from their homes rather than traveling to work. This flexibility can be two-edged for individuals, who can work wherever they choose but may never escape the “virtual workplace.” Organizations may reduce their

overhead costs and improve their productivity, but they must also learn how to manage their decentralized work force.

One major technological trend is the extension of “information superhighways” in the form of broadband networks; another is the increasing ubiquity of communications using wireless technologies (that will, however, initially provide access to squirts rather than floods of information). Personal communications networks using microcellular technology will allow people in urban areas not only to talk on pocket-sized telephones, but to transmit and receive data using wireless modems. In rural and developing areas, these services may be available from low earth-orbiting (LEO) satellite systems.

On an international level, the death of distance has profound implications for the globalization of industries and national economies. Rural regions in Europe and North America may lure businesses with their pleasant environment and lower labor costs; however, they are no longer competing only with cities in their own countries. Companies may hire information workers in developing countries where labor is far cheaper, not only for data entry and word processing, but for writing computer programs. Conversely, developing countries now find themselves competing in global markets, where quality and suitability of products may be as important as price.

Telecommunications networks now link manufacturers with assembly plants, designers with factories, software engineers with hardware vendors, suppliers with retailers, retailers with customers. No longer is it necessary to have all the expertise in house. Software engineers in Silicon Valley complain that they are laid off while contractors transmit code from Russia and India. Freelance designers can now send clothing patterns directly to an automated garment factory. Customers can order anything from airline tickets to winter clothing online and do their own banking and bill paying electronically.

These trends open opportunities for innovative entrepreneurs around the world. For consumers, they offer more choice and lower prices because there is no overhead cost for sales clerks and order takers. Yet these changes pose threats to traditional

businesses as well as to employees. Increasingly, companies that want to compete on price will have to “work smarter” to reduce costs and respond to market changes, while others will have to rethink how to add value to attract customers. High levels of customer service and individualized attention are likely to become more important. As Wells Fargo found, a bank that offers assistance from a human twenty-four hours a day in addition to online electronic banking can attract new customers. And computer vendors that offer free and easy-to-reach customer support may be able to charge a premium, or at least not lose customers to commodity discounters.

More than half the computers in U.S. offices are linked to local area networks (LANs). Increasingly, businesses are also linking into the Internet to reach counterparts in other organizations, specialized databases, and potential customers. Each month, some 2,000 businesses join the more than 20,000 that have already set up “virtual shop” on the Internet [1].

Federal Express’s 30,000 employees around the world are linked via the Internet to “intranet” sites within the company’s Memphis headquarters; some 12,000 customers a day track their own packages using Federal Express’s Internet Web site, rather than calling a human operator. Ford Motor Company engineers in Asia, Europe and the United States worked together electronically to design the Taurus automobile. Pharmaceutical Company Eli Lilly uses information compiled on its Intranet sites to schedule clinical trials and submissions for approval of new drugs in countries around the world. Visa International provides an information service called Visa Vue for its 19,000 member banks on an internal Web site.

References:

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