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THE INFO SUPERHIGHWAY: FOR THE PEOPLE

inside RISKS

The opportunities are attractive, but some pavers of the Information Superhighway (ISH) are too eager to pour concrete. They risk making rough roads that will alienate the very users they seek. These technologically oriented ISH devotees may be building dramatic overpasses and painting stripes without figuring out where the highway should be going. I believe greater attention should be paid to identifying appropriate services, designing a consistent user interface, and developing a clearer model of the diverse user communities.

Vice President Al Gore has been a positive force in promoting the ISH with his challenge to connect every classroom, clinic, hospital, and library by the year 2000. Gore's vision of high school students dialing into the Library of Congress to do their homework is appealing, but it needs to be refined to guide designers. The Library of Congress has not had the charter to serve high school students, and access to the current catalog system will not contribute much to high school homework even if students can master the archaic command interface.

But digital access to existing books is a rear-view-mirror concept. We should think ahead to more appropriate uses of networked libraries. A thoughtfully conceived library, with interactive experiences for students, support tools for teachers, and message systems for both, could radically improve education. New educational theories revolving around cooperation and construction may help to guide developers of the new educational technology.

When a clear vision has been defined, then productive coordination among commercial developers can be more meaningful. Validated user-interface standards are the level and compass for arriving at consistency. However, the term "user interface" appears only once in the 96-page Progress Report on the National Information Infrastructure put out in September 1994. "Easy to use" is easy to say, but the effort required for success is large and the problems are amplified by the need to coordinate across competing organizations.

The starting place for user-interface initiatives should be task analysis, to identify the primary and secondary services needed by the user communities. Based on the task analysis, designers can prepare detailed requirements to support coordination, prototypes to validate concepts, and a guidelines document to ensure consistency, followed by usability and marketing tests. All this should be managed by an organization or person (a chief usability officer) who has the trust of all parties.

Current Internet and commercial networks are delivering interesting services, but the need to learn different interfaces severely limits utilization and discourages users from signing up for more than one system. The situation is similar to the 19th-century train system before standardization of tracks — you just couldn't get very far without a disruptive transition.

Universal access for the ISH will be realized only if significant user-interface efforts are also directed at supporting a variety of important needs. Tailored user interfaces can provide useful services to the elderly, poor, minorities, rural residents, and disabled individuals. The ISH can be a model of how advanced technologies "serve human needs," a phrase taken from Lewis Mumford. Maybe ISH visionaries can counter the technology critics by thinking ahead about the environmental and the social impacts. Is someone writing an environmental-impact statement for the ISH? Is someone thinking about a social-impact statement?

What percent of the system will be set aside for innovative public access, community groups, grass-roots political organizations, and nonprofit agencies? Will job training, community development, and social services be given adequate attention? The poor are already info-poor, but there is a chance for change if the ISH is universally accessible, much the same as current highways or phones.

The success of the ISH will depend not only on how much fiber is laid down and how many gigabytes are put up, but on well-designed consistent user interfaces, while accommodating the diverse needs of potential users. If users must take long training courses and then struggle with multiple interfaces to utilize inappropriate services, the ISH will fall short of Gore's lofty goals. We can make a difference by acting now to coordinate user-interface efforts and consider adequately the needs of all the users. ▣

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He addresses some questions raised in past Inside RISKS columns by Peter Neumann and Barbara Simons, June and July 1994, respectively.