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An Open Discussion
with Government, Foundations, Non-profits
and Grassroots Efforts

The Will to Create the Future:

Information Highways, Economic Security, and Community

Public Issue #7:

"First Annual Conference on Telecommunications R&D in Massachusetts"

There are 563 telecommunications companies in Massachusetts employing 101,400: "the highest concentration of telecommunications companies in the country." (Governer William Weld, 9AM today).

When Katherine Raphaelson, Executive Director of the Massachusetts Telecommunication Council, and others conceived the conference they worried about filling the day with speakers. To their surprise sixty eight presenters signed up and they conducted four streams of topics. Either out of necessity or planning, each speaker had only 10 minutes which gave the conference a whirlwind sensation of ideas and events. Diligent moderators kept most presenters to schedule.

From a public policy perspective the real show was provided by the keynote speakers. Governor Weld began the conference with a fairly self-congratulatory speech (he is up for re-election) on the climate created for telecommunications including "the nation's most generous" investment tax credits for R&D, trade talks with Japan, and state regulation that encourages competition in telecommunications. Dr. Robert Kahn addressed the audience, by satellite, on "Enabling the National Information Infrastructure." Kahn is President of the Corporation for National Research Initiatives. Dr. Arati Prabhakar, Director of the National Institute of Standards and Technology, presented an elegant and lucid luncheon presentation on the current Washington philosophy on business and government.

Weld's talk elaborated a "pro-competitive" stance and talked about a state government that "get's out of the way" of progress. As an example he spoke of current initiatives to provide "easy access to public rights-of-way" for fiber optic cable and announced a $225 million Information Technology Bond bill that he was filing today to "get Massachusetts moving forward on several economic, educational, and governmental telecommunications projects." He described a proposal to establish "CommerceNet East" to catch up with the DOC CommerceNet project in California.

Fifty million dollars of the Bond bill will implement a Mass Ed on-line initiative for K-through-12 public schools and higher education. "We think this initiative can allow students to increase their creativity and analytical ability, and get away from rote memorization; gives them access to outstanding teachers in other schools; and will ultimately enable them to speak the language of computers as well as they speak English."

Dr. Kahn spoke more generally about an information infrastructure that comes, not from design, but by "evolving from many efforts." He often spoke of the desire to avoid a system that required "a sophisticated team of wizards" but one that could be both constructed and navigated with less expertise. He spoke of the inevitability of inter-connect issues, of new technologies that constantly will change how the NII evolves, and about how there will be always "private nets" and "public nets," and that the 'Internet' will include them both. He recognized the need for "low cost access" but noted that even the telephone company does not provide universal access.

On the hardware/software side, Dr. Kahn envisioned 'digital object infrastructures.' There would be repositories on the net, from multiple sources, and competition among the repositories. What was necessary is to lay out the "terms and conditions" of the network for contractual purposes, the ability to put items in and out of the repositories, and the ability to "unwrap" objects that could be processed by the recipient as desired. Dr. Kahn briefly touched on the issue of rights and privacy, and felt that security would be a serious issue regarding payments transacted on the network. In response to a question about the NII versus TV networks, Kahn saw them as developing somewhat independently along their own paths. A second question was asked on how to elicit "cost-effective" information technologies? Kahn acknowledged that 'high-end' technologies were out of reach for certain purposes and talked about needing to wait until costs drop for technologies to "take off." "We don't know what it will take." But then referred to the "lift off phenomena." He was "confident it will evolve, we just don't know how."

Dr. Prabhakar described the new public/private sector relationship. When asked about encryption, she shied from the question, pointing out that Congress had relegated that task to NIST and she preferred to focus on more positive interactions with industry. She noted that the NII was not new, but has existed for years. "People have communicated ever since the use of 'smoke signals.'"

Prabhakar emphasized that 45% or $70 billion dollars is provided for R&D out of Federal funds. The NIST was working toward new ways for industry and government to come together. She cited four major NIST programs to accomplish this. First, the National Bureau of Standards will continue working with industry in helping formulate standards and she called standards a "genuine case of infrastructure." Second, they have a merit driven Advanced Technology Partnership (ATP) program. Here they ask companies to submit proposals on ways a firm might improve themselves and help this happen by sharing in funding the change. Thirdly, the Manufacturing Extension Partnership works with small companies to help them upgrade to more advanced production technologies. Finally, the Malcolm Baldridge award program has been in place for several years and has had a significant impact on total quality deployment in industry. She stated that when she heard about the program, her first thought was that it would never work, but attributed the success to "not imposing standards" on industry but by taking the expertise of leaders in total quality and turning that expertise into a set of award criteria.

When challenged by a question from the audience about the role of government, Prabhakar saw a clear government role under, at least, three situations: 1) when the risk profile of a project is too high, 2) when there is a "long term nature" to the project, and 3) infrastructure. When asked about whether we would promote our national interests or work with other countries cooperatively she hedged. She stated it was not a "zero sum game" but that it certainly would benefit the U.S. to be first in these areas.

The technical sessions contained copious amounts of information on subjects including audio/speech, wireless, multimedia, security/privacy, applications, network protocols, and broadband networks.

Three presentations are particularly noteworthy. Chetan Gopal and Roger Price of the University of Massachusetts Lowell presented a proposed MHEG standard. MHEG, multimedia and hypermedia exchange group, is a content free standard for the exchange of multimedia objects. Price cited the extreme value in the CCITT standard for facsimile transmission. The standard only specified format, not equipment and enabled compatible transmissions among machines. In the same way, MHEG would provide compatible transmissions of media transmissions for wide area delivery. He cited the success of Minitel in having an underlying standard and the ISO/ITU (formerly CCITT) was circulating a 350 page draft.

Dr. Mark Maybury, Director, Bedford Artificial Intelligence Center at MITRE, projected the future for Internet tools and interactivity. He described the next generation of an intelligent MOSAIC they were developing with ARPA funding. The system includes natural language processing, improved visual displays, "user model adapted output to user characteristics" (e.g., their age, preferred language), and the ability for the system to infer a user's interest after user interaction.

Finally, our award for best presentation goes to B. Mecca from the IBM Watson Laboratory. Using an IBM tool called Smalltalk Change Manager, she set about improving the lives of a family when a child undergoes an invasive form of cancer treatment. A PC was placed in homes of such families in cooperation with the New England Medical Center. The "medical multimedia application" could provide family members with information about post-chemotherapy care options, with diagnosis information (when something goes wrong), and with a network connection to the hospital pediatric cancer treatment staff. A touch screen interface provided easy access and communication with the staff could be done either by typing or by transmission of recorded voice messages.