



Memorandum:

To: Technology Subcommittee, President's Commission on the Postal Service

From: Maynard H. Benjamin, President, EMA

Re: Trends in Intelligent Mail

Background

Since 1997, the Envelope Manufacturers Association and the United States Postal Service have been working on a joint venture to review technologies that could make a significant difference in lowering postal costs, adding value-based features and/or adding new services. The Intelligent Document Task Force is comprised of 12 members, six of which are postal employees and six of which are scientists and engineers from private industry. We have visited over 16 key technology labs and have worked closely with the MIT Media Lab over these past five years to give the USPS a scan of technologies that may well redefine the value of mail in the future. Two documents and related files have already been provided to the commission.

The MIT Media Lab, located on the MIT Campus in Cambridge, Massachusetts has been central to our inquiries. Professor Nicholas Negroponte and former MIT President Jerome Wiesner founded the Lab in 1980. Within the Media Lab organization is the new Center for Bits and Atoms which was formed from the "Things that Think" Consortium. The Center develops technologies that make everyday physical objects more intelligent. For example, an "Interbody network" that allows a business card to be exchanged just through a handshake from one person to another. Electronic ink that allows materials coated with this emulsion to become very low cost displays. Computer circuitry that can be "grown" on plastic or paper, thus eliminating the need for silicon to be used as a substrate for low costs processors or even nanotechnology that can create an electronic motor smaller than a human hair.

The Case for "Intelligent Mail"

Today, communication with the Internet must be achieved via the use of a personal computer, modem and mouse. We have already seen the beginnings of communication with the Internet using a cellular telephone or a personal digital assistant. Within five years, wireless networks will enable everyday physical objects to also communicate with the Internet, to signal their presence and to provide information concerning their disposition.

The Postal Service needs to start taking steps to prepare for this new world. It has already done so in its "Intelligent Mail" program by emphasizing the importance of using the POSTNET and CONFIRM codes on mail. Not every postal customer is using CONFIRM yet and the customer base needs to be better educated on the uses of this new technology. Two-dimensional indicia have already been rolled out for single piece First-Class mail where more information can be stored on the envelope. But we must still go further.

The next step will be using low cost Radio Frequency Identification Technology (RFID) to track pallets, trays and cartons of mail within postal facilities and to link together postal barcodes with RFID material control devices. But there is more:

1. Why not make postal workers more "information empowered" with smart uniforms that have RFID readers embedded in the uniform so that when the mail is delivered, a transaction is reported to the USPS and the mailer that the mail is in the box. The savings for the mailing industry would be significant.
2. Why not make postal vehicles use GPS where locations of vehicles would be known so dynamic routing or rerouting could occur? This technology is already in use in the common carrier industry and is low cost.
3. Why not create a "postal portal" which could manage a postal customer's communication needs in telling him or her what mail is in the mailbox, what email messages are yet to be answered, what e-billing transactions are yet to be paid and what other bills are due? The USPS exists at the crossroads of the paper-based and electronic communications market. This technology has already been developed and can be shown.
4. Electronic Ink display technology could be used on the sides of postal vehicles for low cost displays, billboards, signage and public service displays. It could represent a new income stream for the USPS. In addition, electronic ink display technology is here and could be integrated with postal products.
5. Why not postal stamps or printing that can look up a web site and envelopes that are "pointers" to web sites just via using a barcode or information embedded in the envelope? We can show you that technology today.
6. In a short period of time, envelopes may actually contain display screens that play commercial messages; certainly packages will contain electronic "billboards" that can flash commercial message. Couple these displays with a wireless receiver and you have personalized messages. The technology is here today and being used in parts of the advertising industry.
7. Why not use "smart paper" that contains its own RFID signature, or better yet, paper that carries its own "fingerprint" so it cannot be counterfeited? The technology was developed two years ago.
8. Why not use dynamically addressable envelopes that contain self-correcting addressing so that changes can occur on the fly? The advantages in avoiding unnecessary rerouting could be significant.

The Future of the Post

All of these technologies are available today. Many are far ahead of the market but they can be shown to the Commission at the MIT Media Laboratory and several at the EMA Offices at 500 Montgomery Street, Suite 550, Alexandria, VA.

Low cost computation will redefine the Internet and the USPS needs to have processes in place that can both evaluate and absorb new technologies at a faster rate than today. The bureaucracies of the Postal Rate Commission and the Postal Service itself need to be streamlined to move some of these initiatives forward. The USPS needs to have some capital budget for new technologies. Private industry needs more partnering opportunities and the USPS needs to establish permanent Technology Advisory Council just to assist it in evaluating new technologies of interest.