ELECTRONIC BULLETIN BOARD SYSTEM
FINAL REPORT

Sponsored by the Project Development Division
of the Iowa Department of Transportation
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Iowa DOT Project HR-345

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Iowa Department
of Transportation

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FINAL REPORT

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Abstract

Background

The Electronic Bulletin Board System (BBS) project began in December 1991 with three years of funding through the Iowa Department of Transportation's Highway Research Board (HR 345). The project was proposed jointly by the Iowa County Engineers Association Computer Program and Information Coordinating Committee (ICEA computer committee) and the Iowa Transportation Center (now called the Center for Transportation Research and Education or CTRE). Funding was continued on the project in 1995 and in 1996. The project was completed in December, 1997.

The primary objectives of the project continue to hold true:
1. Provide an electronic communication tool which would link city and county engineering offices to each other and to other governmental agencies for messaging and data sharing
2. Provide a dial-up site for reference information or files accessible on-demand
3. Provide a "stepping-stone" to the world of electronic data transfer, recognizing that most local government employees face a huge complex of technology with limited knowledge of computers and communications tools. The system was designed to be as simple as possible, and to require minimal equipment and software cost to the users.

Hardware Software

The original system was a Apex 386/25 computer with MS-DOS 5.0 software and the final configuration was a HP Vectra XM Pentium 90 with MS-NT 3.51 and Mustang - Wildcat 5.0 software.

Users

The users of the BBS were county engineers and their staff, offices in the central office of the Iowa DOT and Resident Construction Engineers at the Iowa DOT. Much of the activity was between the county engineers, and their staffs, and the Iowa DOT offices with which they have ongoing business activities.

Files

The BBS contained files for mapping, internet e-mail service, Accident Location Analysis System (ALAS) data, Iowa DOT bid lettings, and Autocad and Intergraph maps and standards.

Usage

The 800 line calls were recorded and gave the best indication of the usage and the trends that were being followed. The usage tended to be higher in the winter months when design activities are occurring and lower in the summer months when the construction is in progress.

Evaluation

The project must be viewed as a success when judged against the objectives that were established. The BBS was accessible on a dial up site by using an 800 phone line.
The BBS did provide a "stepping stone" to the world of electronic data transfer.

The Electronic Bulletin Board System

Background

The Electronic Bulletin Board System (BBS) project began in December 1991 with three years of funding through the Iowa Department of Transportation's Highway Research Board (HR 345). The project was proposed jointly by the Iowa County Engineers Association Computer Program and Information Coordinating Committee (ICEA computer committee) and the Iowa Transportation Center (now called the Center for Transportation Research and Education or CTRE). Funding was continued on the project in 1995 and in 1996. The project was completed in December, 1997.

The primary objectives of the project were to:

1. Provide an electronic communication tool which would link city and county engineering offices to each other and to other governmental agencies for messaging and data sharing

2. Provide a dial-up site for reference information or files accessible on-demand

3. Provide a "stepping-stone" to the world of electronic data transfer, recognizing that most local government employees face a huge complex of technology with limited knowledge of computers and communications tools

The system was designed to be as simple as possible, and to require minimal equipment and software cost to the users. The BBS was accessed via an 800 telephone number to encourage users to dial it up and become familiar with the operations without being concerned about the cost of access.

During the first three years, the system was set up at CTRE and tested, using the ICEA computer committee and later the county engineers for guidance. The system was introduced and demonstrated at numerous ICEA, APWA and other association meetings, and introductory and "how-to" articles were run periodically in *Technology News*, the LTAP (Local Technical Assistance Program) newsletter. Brochures were also developed that introduced transportation officials to the BBS. Early on, the huge differences in computer systems and computer knowledge and acceptance among the end-users proved the largest obstacles to full usage of the service. Adoption of the system was also slowed by the "great Iowa flood" in 1993, and we found ourselves starting over with many people nearly a year afterwards, when they again became receptive to thinking about something other than flood recovery techniques.

At the beginning of 1995, the Highway Research Board approved a two-year extension of the project with additional funding for more extensive training, the continuation of free access through 800 calling, and equipment upgrading.

Hardware and software

The following table shows the original BBS configuration and the configuration at the end of the project. The system was changed and upgraded throughout the project by the system integrator at CTRE. These changes occurred as more and more usage was established and as the users became more versatile in using the BBS. The ICEA computer committee acted as the advisory committee for the BBS program, and CTRE continued to house and maintain the system. The changes in the configuration were completed under direction of the computer committee.

ELECTRONIC BULLETIN BOARD SYSTEM CONFIGURATION

ORIGINAL   FINAL

Hardware:

ORIGINAL	FINAL
386/25 Apex Case	HP Vectra XM Pent. 90
4 M RAM W/System	40M RAM W/System
660MB SCSI Hard Disc 16MS	4GB SCSI HDD Quantum
SCSI Controller Card	AHA 2940 SCSI Controller
1.44M/3.5 Floppy Disc	1.44M/3.5 Floppy Disc
1.2M/5.25 Floppy Disc	DIGI 8 Port Serial Card
Video Card	On Board
Keyboard	Keyboard
VGA Color - 14" Monitor	NEC External CD-ROM
9600 Baud External Modem	4-28.8 External Modem
	2-Server Technology - Remote Power On/Off
External Tape Backup/TDE CMST 250	External Tape Backup/TDE CMST 250
Deskjet 500 Printer	Deskjet 500 Printer
UPS/Tripplite 750W	

Software:

ORIGINAL	FINAL
MS-DOS 5.0	MS-NT 3.51
	Mustang - Wildcat 5.

Users

The users continued to grow not only at the county level but within the Iowa DOT as more and more Iowa DOT offices began to use the BBS to distribute information. Two big steps came when the bid letting data was distributed on the BBS and when the design standards and guides became available.

There were several users of the BBS. They included:
- O County Engineers and staff
- O Iowa Department of Transportation Local Systems Office
- O Iowa Department of Transportation Contracts Office
  - Bidding data
- O Iowa Department of Transportation, Transportation Safety Office
  - ALAS data
- O Iowa Department of Transportation Design Office
  - Design Standards
  - Design Guides
- O Iowa Department of Transportation Resident Construction Engineers
  - Bidding data

Much of the activity was between the county engineers, and their staffs, and the Iowa Department of Transportation offices with which they have ongoing business activities.

Files

From the beginning, the Autocad Users Group, a collection of county employees sharing mapping files and knowledge, gave the system the most consistent and active use. However, the addition of Internet e-mail access in December 1994 caused the single greatest surge in usage since the beginning of the program. More gradual, but steady, increases in volume have arisen as Iowa DOT offices increased their participation in the program. At the end of the project, the Accident Location Analysis System (ALAS) and data, bid lettings, Iowa DOT Autocad and Intergraph maps and standards, and other information were being provided by the Iowa DOT through the BBS, as well as via CompuServe to local governments.

For a list of the files located on the BBS by the time it was shut down in December 1997, please refer to "Attachment A".

Usage

The following chart provides a glimpse of usage growth over time. This chart shows number of completed calls per month via the 800 phone line for the period of June 1994 to November 30, 1997. This chart does not include direct dialed local calls or calls from those users able to access other long distance service. Even though this does not represent total calls, it does provide an accurate picture of the usage trends over time using a consistent measurable data.
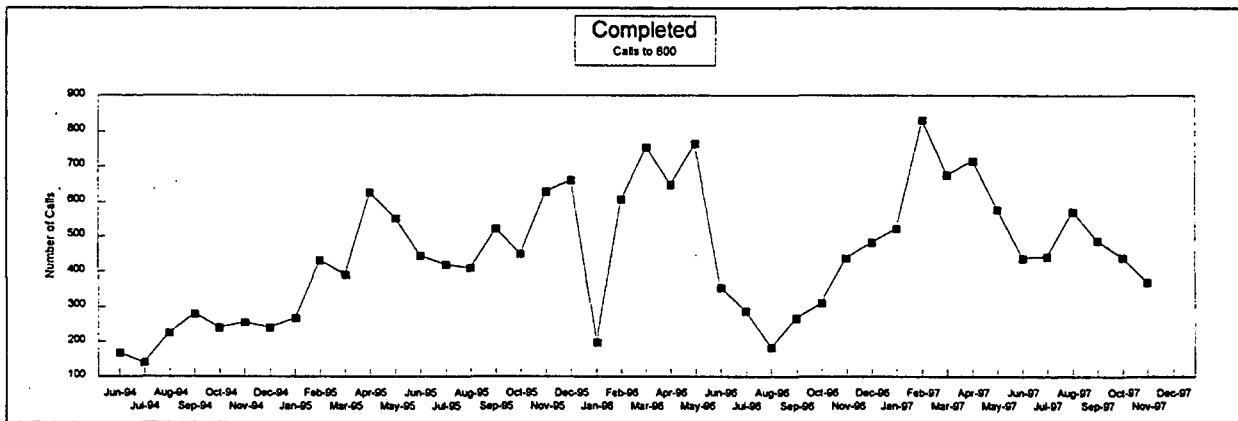
BBS 800 Phone Line Usage

Evaluation

The project must be viewed as a success when judged against the objectives established at the beginning of the electronic BBS:

1. Provide an electronic communication tool which would link city and county engineering offices to each other and to other governmental agencies for messaging and data sharing

2. Provide a dial-up site for reference information or files accessible on-demand

3. Provide a "stepping-stone" to the world of electronic data transfer, recognizing that most local government employees face a huge complex of technology with limited knowledge of computers and communications tools

The BBS did provide an electronic communication tool that electronically linked city and county engineering offices to the Iowa DOT. This linkage did bring to the surface software and hardware compatibility issues between the Iowa DOT and local agencies.

The BBS was accessible on a dial up site by using an 800 phone line. This report shows the usage on the 800 phone line, an indicator of the use of the BBS for electronic data sharing.

The BBS did provide a "stepping stone" to the world of electronic data transfer. This is most evident when considering that the Iowa County Engineer's Service Bureau will contain a BBS for electronic data transfer when the service bureau is commissioned early in 1998. The service bureau will include a BBS because the value of a BBS was established with this project.

ATTACHMENT A

Center for Transportation Research and Education
Electronic BBS

Library	File Name	Subject	File Size Compressed	File Size Expanded
General Info.	Notice.txt	General Notices	NO	4,590
	Calend.txt	Iowa DOT Hwy/County Letting Dates	NO	593
	Target.zip	Hwy.Projs Targeted/Upcoming	NO	150,000
	Coulet.txt	County/City Letting Dates	NO	4,959
	Couawd.txt	County/City Awarded Contract	NO	3,729
	Fuel.txt	Fuel Adjustment Notice	NO	1,824
	MtMMDD.txt	Meetings by Date	NO	7,280
	Prequa.txt	Prequalified Contractors	105,206	315,618
	Work.zip	Contracts by contractor	NO	80,000
	DBElst.txt	Certified DBE contractors	NO	100,000
	DBEtru.zip	DBE truck roster	NO	24,356
Local Systems	Itmlst.exe	BIAS Format Item Master	56,572	169,716
General Info.	Appdiz.zip	Material IM Appendix	NO	34,818
	Spec.lst	List of New Spec Provisns & Suppl Specs	NO	10,670
Design Aids-Tools	SPtext.exe	Listing of Current Proposal Notes	70,029	210,087
	Dstind.txt	Design Tools File Index	NO	10,108
	Dstsd.exe	Design Tools English Seed Files	173,875	521625
	Dstsdm.exe	Design Tools Metric Seed Files	82,052	246,156
	Dstpsm.exe	Design Tools English Plan/Profile Seed Files	31,898	95,694
	Dstcl.exe	Design Tools English Cell and Font Libraries	471,868	1,415,604
	Dstclm.exe	Design Tools Metric Cell and Font Libraries	345,959	1,037,877
	Dstsh.exe	Design Tools English Sheet Files	1,395,645	4,186,935
	Dstshm.exe	Design Tools Metric Sheet Files	876,841	2,630,523
	Dstuc.exe	Design Tools English User Commands	36,717	110,151
	Dstucm.exe	Design Tools Metric User Commands	37,081	111,243
Design Aids-Tabs	Tabind.txt	Tabulations File Index	NO	10,064
	Tab.exe	Tabulations Files (English)	1,522,030	4,566,117
	Tabm.exe	Tabulations Files (Metric)	445,931	1,337,793
Design Aids-Type	Typind.txt	Typical Details File Index	NO	30,531
	Typ.exe	Typical Details Files (English)	4,883,474	14,650,422
	Typm.exe	Typical Details Files (Metric)	2,303,084	6,909,252
	T1000.exe	Typical Details 1000 Series (English)	459,093	1,377,279
	T1000m.exe	Typical Details 1000 Series (Metric)	423,902	1,271,706
	T2000.exe	Typical Details 2000 Series (English)	1,124,367	3,373,101
	T2000m.exe	Typical Details 2000 Series (Metric)	809,923	2,429,769
	T3000.exe	Typical Details 3000 Series (English)	463,222	1,389,666
	T3000m.exe	Typical Details 3000 Series (Metric)	265,386	796,158
	T4000.exe	Typical Details 4000 Series (English)	579,095	1,737,285
	T4000m.exe	Typical Details 4000 Series (Metric)	479,485	1,438,455
	T5000.exe	Typical Details 5000 Series (English)	285,826	857,478
	T5000m.exe	Typical Details 5000 Series (Metric)	215,783	647,349
	T6000.exe	Typical Details 6000 Series (English)	649,337	1,948,011
	T6000m.exe	Typical Details 6000 Series (Metric)	386,524	1,159,572
	T7000.exe	Typical Details 7000 Series (English)	659,046	1,977,138
	T7000m.exe	Typical Details 7000 Series (Metric)	639,732	1,919,196

Center for Transportation Research and Education
Electronic BBS

Library	File Name	Subject	File Size	
			Compressed	Expanded
Letting Date	Tieprj.txt	Optoinally tied proposals	NO	178
	Specs.txt	New specifications	NO	2,517
	DBEset.txt	DBE setasides	NO	219
	Props.exe	Structure Proposals	50,783	152,349
	Propp.exe	PCC-Pavement Proposals	27,221	81,663
	Propa.exe	ACC-Pavement/Resurfacing Proposals	34,861	104,583
	Propr.exe	Surface Rehabilitation Proposals	19,128	57,384
	Propg.exe	Grading Proposals	32,697	98,091
	Propt.exe	Traffic Safety Proposals	18,766	56,298
	Prope.exe	Erosion Control Proposals	20,702	62,106
	Propen.exe	Bridge Painting Proposals	23,000	69,000
	Propx.exe	Maintenance Aggregate Materials Proposals	17,988	53,964
	Propy.exe	Maintenance Asphalt Mix Proposals	23,000	69,000
	Addend.lis	List of Addendums	NO	2,000
	MMDD##.add	Individual Addendum Text	NO	40,000
	Asread.txt	kAs-read Bids-Original	NO	57,782
	Bidcor.txt	As-read Bids-Corrected	NO	19,678
	MMMawd.txt	Letting Award Summary	NO	85,000
	Tabstr.exe	Structures Bid Tabs	62,880	188,640
	TabPCC.exe	PCC-Pavement Bid Tabs	27,171	81,513
	TabACC.exe	ACC-Pavement/Resurfacing Bid Tabs	31,141	93,423
	Tabreh.exe	Surface Rehabilitation Bid Tabs	19,692	59,076
	Taboth.exe	Other Bid Tabs	57,115	171,345
	Tabmai.exe	Maintenance Bid Tabs	16,883	50,649
	DBEawd.txt	DBE Commitment List	NO	20,000
	BSUM93.zip	Sum of Awarded Contract	NO	200,000

Center for Transportation Research and Education
Electronic BBS

Library	File Name	Subject	File Size Compressed	File Size Expanded
Design Aids-Type	T8000.exe	Typical Details 8000 Series (English)	316,483	949,449
	T8000m.exe	Typical Details 8000 Series (Metric)	287,064	861,192
	T9000.exe	Typical Details 9000 Series (English)	471,277	1,413,831
	T9000m.exe	Typical Details 9000 Series (Metric)	387,097	1,161,291
Design Aids-Notes	Stnind.txt	Standard Notes File Index	NO	2,320
	Stn.exe	Standard Notes English	245,657	736,971
	Stnm.exe	Standard Notes Metric	88,164	264,492