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ABSTRACT

This handbook offers guidance to public broadcasting managers on computer acquisition and development activities. Based on a 1981 survey of planned and current computer uses conducted by the Corporation for Public Broadcasting (CPB) Information Clearinghouse, computer systems in public radio and television broadcasting stations are listed by station code and computer manufacturer, and uses are sorted by the following applications areas: auction management, membership management, mailing list/labels, volunteer management, budget/cost accounting, general accounting, payroll, word processing, air switching, facilities scheduling, inventory control, manpower scheduling, ascertainment research, audience research, program/record library, and program schedule/logs. Other lists include stations using a second computer, computer vendors in public broadcasting sorted by station applications, systems/software marketed by stations, and computer user contacts sorted by station code and last name. The following articles are reprinted from the clearinghouse newsletter: "A Systems Development Method for Public Broadcasting Stations" (Thomas D. Ster and James F. Drayer); "M.I.S. Planning--Some Tips for Public Broadcasting Stations" (M. Osman Yousuf); "A Computerized Program Scheduling and Switching System" (Dennis Schweikardt); and "Radio + Records = Computer" (Gary L. Grigsby). A glossary and station computer utilization survey are included. (LMM)

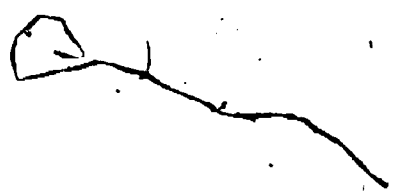
COMPUTERS

IN PUBLIC BROADCASTING

WHO
WHAT
WHERE

September 1982

M. Osman Yousuf



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CONTENTS

FOREWORD

This report represents the culmination of a two-year project to provide information to public broadcasting managers on computer systems in the industry—who has them, what kinds are in use, and what they are being used for. A study conducted in 1979 indicated a need for this information and served as the foundation for CPB's information gathering and dissemination activities on the subject.

The data processing industry at that time was somewhat confused, reflecting a gradual change from the large mainframe computers predominant during the 1960s to minicomputer systems refined during the 1970s and some experimentation with microcomputers, the latter having appeared on the commercial scene in 1978. Computer systems installed at public broadcasting stations, illustrating this evolution, spanned the range of system sizes and capabilities available at that time.

The data processing industry is still in a state of flux. Full-function, general purpose microcomputer business systems have been developed and continue to appear on the commercial scene, with major announcements coming only weeks apart. Whereas hobby and personal computer manufacturers such as Radio Shack (Tandy) and Apple Computers once dominated the microcomputer market, strong entries recently have been made by IBM, Digital Equipment Corporation, and Japanese and European manufacturers. Selecting the most appropriate system has become even more complex by the major word processing vendors such as Wang, Lexitron (Ratheon), Lanier, and NBI including data processing capabilities in their recent offerings. Additionally, data communications vendors have introduced all-digital local networks that permit interconnecting diverse equipment from a variety of sources. In such an environment, good advice is the hardest commodity to come by. Providing this advice has been the mission of the CPB Computer Information Clearinghouse.

The presentations and lists in this report are intended to provide general guidance and an indication of where specific uses of computers may be found. The articles are reprinted from the Clearinghouse newsletter Computers in Public Broadcasting, and the computer system data assembled from an industrywide survey conducted in 1981. The only general trend evident is acquiring and using computers as quickly as possible, usually starting in the membership and finance areas. Similarly, no particular brand of hardware or software clearly excels for use in public broadcasting stations. Managers should investigate as many as possible before making a purchase decision. In order to make such

an investigation, managers should be fully aware of the ultimate uses of compufer systems in their stations, the relative order in which different applications will be developed, and as much about these applications as possible. While the discussion papers included in this Handbook provide excellent guidance for studying needs and controlling developmental activities, hardware and software selection continue to be the province of individual managers.

As a general rule, the decision guidelines to follow are the same as with any other technical system:

1. Go with industry standards where possible, and with tried and proven systems where no standards exist.

2. Obtain contract guarantees for maintenance, service, updates and continuing vendor support. If these make a particularly favorable system more expensive, pay it. The risks of poor support and early obsolescence are too great to do otherwise.

The Corporation extends its appreciation to those who supplied information for this report. We hope you will find it useful.

Richard H.C. Seabrook
Director
Computer and Information Services

INTRODUCTION

The CPB Computing and Telecommunications Planning Task Force was created in August 1979 to study the use of computers and telecommunications in public broadcasting and to make recommendations on promoting and coordinating the development of such activities. The Public Broadcasting Service (PBS), National Public Radio (NPR) and the National Telecommunications and Information Administration (NTIA) were represented on the task force, which published its final report in March 1980. Later that year in September, CPB announced the creation of the Computer Information Clearinghouse, to review and implement the major recommendations of the task force.

Public radio and television stations have shown great interest in the Clearinghouse and in using computer/telecommunications technology to address current problems. Station managers, program directors, development directors and financial managers who have worked with the Clearinghouse understand the basic capabilities of computers as management tools and recognize the need to develop systems in many of their activities. But the variety of different computers, applications, and development staffs evident in the industry indicates that most stations are working independently to implement the services they need. Some stations already use sophisticated systems, others are installing and testing applications, and a few are ready to join with other stations in joint development/acquisition efforts. Still others have had computer applications for some time and are on the threshold of expansion, movement to second generation systems or integration of independent applications into a stationwide system. Finally, there are stations just beginning to consider their first applications, and seeking guidance on whether or how to proceed.

The purpose of this handbook is to provide guidance to the stations for current computer acquisition and development activities, be it for making a decision to buy a $5,000 microcomputer or to install a $250,000 large mainframe. The handbook is not designed as a highly procedural, "how-to" book. Rather, it is a single reference document containing information on types of computer systems and applications in use at the stations, brief technical and capability summaries of individual systems, systems development approaches, commercial vendors supporting public broadcasting, user contact listings, and so on. The primary objective of the handbook is to share

information we have collected on computer developments and accomplishments in public broadcasting, to help stations move forward intelligently without extensive, immediate direct support (technical and financial).

Most of the information contained in this document is sorted by station code, separately under Radio and Television. The code contains a five-digit number for each station. When looking up a station, be sure to note whether it is radio or television because two stations may have the same five-digit code, even though they are not related. To identify stations by code, please refer to the computer user contact listing.

We hope that through knowledge of what other stations are doing in this area, public broadcasting managers will be encouraged to take advantage of systems and applications already in use, reducing design and development costs. Such efforts also would have a standardizing effect and would tend to eliminate major sources of divergence in station computer development and implementations.

M. Osman Yousuf
Manager, Special Projects
Computer and Information Services

Station Computer Utilization Survey: HIGHLIGHTS

The CPB Computer Information Clearinghouse conducted a study in September 1981 of current and planned uses of computer systems by public television and radio stations. A questionnaire (See Appendix) on hardware configurations, application software developments, computer expenses and key contacts was mailed to all CPB-qualified television and radio stations. Following are the highlights of that study:

Stations Surveyed

Television:	172
Radio:	235

Response

Television:	141 (81%)
Radio:	162 (68%)

Stations Using Computers

Television:	106 (75% based on response)
Radio:	98 (60% based on response)

Type of Computers in Use

	UNITS			
	Mainframe	Mini	Micro	
Television:	65 (50%)	48 (37%)	16 (13%)	=129
Radio:	69 (62%)	27 (24%)	16 (14%)	=112
	134	75	32	=241

Computer Ownership

	UNITS			
	Station	Licensee	Service Bureau	Other
Television:	55 (43%)	51 (40%)	21 (16%)	2 (1%)
Radio:	35 (31%)	63 (56%)	11 (10%)	3 (3%)
	90	114	32	5

Computer Expenses

	Television	Radio
Estimated Total Operating Costs for F.Y. 1981	$4,134,000	$1,176,000
Estimated Average Station Operating Costs F.Y.1981	$ 39,000	$ 12,000
Estimated Average Station Investment Costs to Date (for sta. owning computers)	$ 53,000	$ 21,000

Most Widely Used Computers in Public Broadcasting

	MNFCR	UNITS
Television:		
	IBM	41
	HONEYWELL	9
	TEXAS INSTRMT	9
	DIGITAL (DEC)	8
	BURROUGHS	7
Radio:		
	IBM	35
	DIGITAL (DEC)	11
	HONEYWELL	9
	BURROUGHS	8
	RADIO SHACK	7

Most Used Programming Languages

COBOL and BASIC

Applications Fully Developed

	Radio	Television
Auction Management	1	15
Membership Management	2	41
Mailing List/Labels	42	54
Volunteer Management	2	4
Budget/Cost Accounting	24	32
General Accounting	36	47
Payroll	43	55
Word Processing	15	14
Air Switching	0	1
Facilities Scheduling	0	1
Inventory Control	9	18
Manpower Scheduling	0	0
Ascertainment	1	1
Audience Research	2	2
Program/Record Library	9	9
Program Schedule/Logs	5	6

COMPUTER SYSTEMS IN PUBLIC BROADCASTING

Sorted by Station Code

Radio & Television

Source: Station Computer Utilization Survey, 1981

COMPUTER SYSTEMS IN PUBLIC RADIO
SORTED BY STATION CODE

CODE	MNFCR	MODEL	MEMORY	STORAGE	OPS SYS	OWNER
00130	HONEYWELL	66	–	–	–	2
00200	APPLE	II PLUS	48K	–	APPLE	1
00300	DEC	10	–	–	TOPS-10	2
00400	HARRIS	220/7	384K	540M	VULCAN	2
00450	IBM	SYS-7	–	–	SYS-7 MSP	2
00500	BURROUGHS	B-1860	.5M	–	MCT-2	3
00625	IBM	360/40	256K	260M	DOS	3
00630	APPLE	II PLUS	48K	29M	APPLE	2
00645	BURROUGHS	3800	1000K	–	MCPVI	2
00648	CDC	CYBER	–	–	WORD11	2
00800	TI	990-10	256K	56M	SCHULER	1
00900	HONEYWELL	6200	128K	240M	SVP1P	1
00900	IBM	3/15D	256K	500M	IBM/CCP	3
01000	RD SHACK	TRS80/II	64K	2M	TRSDOS	1
01060	BURROUGHS	6700	2000K	–	MCP	2
01100	IBM	370/148	2048K	–	OS/VS1	2
01150	H-P	3000	512K	170K	MPE IV	1
01200	IBM	360	–	–	–	2
01450	BURROUGHS	B-80	126K	–	MCP	3
01450	BURROUGHS	B-80	126K	–	MCP	3
01475	IBM	370/58	–	–	MVS	2
01500	AMDAHL	–	–	–	–	2
01600	IBM	3033	–	8M	MVS	2
01850	IBM	3031	6000K	8400M	OS-MVS	2
01900	IBM	360/67	2000K	–	OS	2
02030	NASCO	AS/5000	6M	6033M	MVS	2
02060	CDC	CYBER 171	–	800M	NAM	2
02200	CDC	CYBER 172	160K	–	KRONOS 2	2
02350	HONEYWELL	1648-A	–	–	–	2
02375	IBM	3031	4M	–	VS/1	2
02450	RD SHACK	TRS80/II	64K	4M	TRSDOS/CPM	1
02500	IBM	370/58	4M	–	–	2
02675	IBM	4331	1MK	1.7BM	DOS VS/E	2
02685	DEC	11/70	140K	352M	RSTS	2
02830	IBM	3/15D	192K	200M	IBM/CCP	4
02900	IBM	3031	–	–	DOS/VS	2
03250	IBM	–	–	–	–	2
03345	HONEYWELL	68/80	–	–	–	1
03400	IBM	4341	–	–	DOS	2
03450	IBM	4241	–	–	DOS	2
03600	CDC	CYBER 175	–	–	–	2
03800	DEC	VAX 11/780	2000K	352M	VMS	1
03900	ONTEL	OP-1/64	64K	1M	MODS/.3	1
04000	SWTP	6800	54K	3M	SMOKE DOS	1
04350	UNIVAC	–	–	–	–	2
04600	DEC	10	3800K	200M	TOPS-10	2
04700	IBM	370/148	100K	–	OS/VS	2
04750	UNIVAC	1100/60	786K	2011M	EXEC8	2
04760	DEC	10	–	192M	TOPS10	2

CODE	MNFCR	MODEL	MEMORY	STORAGE	OPS SYS	OWNER
04820	IBM	3033/S	12M	-	VS-1	2
04875	IBM	6(WP)	-	-	-	4
04900	HARRIS	800	768K	76M	VORCAN	2
05350	RD SHACK	TRS80/II	64K	2M	TRSDOS	1
05500	DEC	PDP 11/70	1000K	44M	-	2
05700	IBM	370/148	1000K	-	DOS/VS	2
05750	DEC	20	250K	-	TOPS	2
05850	CDC	CYBER 173	64K	700M	NOS	2
06100	PRIME	550	750K	-	PRIMOS	3
06200	CDC	CYBER 173	131K	-	NOS	2
06250	H-P	3000/30	512K	120M	MPE IV	1
06350	DATA GEN	CS-40	64K	20M	ICOS	1
06520	RD SHACK	TRS80/I	64K	.5M	TRSDOS V2	1
06523	IBM	360/30	65	-	DOS	3
06650	UNIVAC	9080	4M	2200M	VS-9	2
06655	BURROUGHS	B6700	2M	720M	MCP	2
06750	DEC	11/44	1024K	600M	RSTS/E	2
06900	IBM	370/158	-	-	-	2
07000	WANG	25.-1	-	-	-	1
07500	IBM	360	-	-	VOS	3
07650	HONEYWELL	66/DPS	2300K	2124M	TDS	2
07850	RD SHACK	TRS80/II	64K	.47M	TRSDOS V2	1
07875	HONEYWELL	60/66	3M	-	CP6	2
08100	XEROX	SIGMA 6	512K	-	CP-V	2
08150	IBM	360/40	256K	200M	DOS	3
08200	HONEYWELL	3200	264K	-	OS	2
08320	IBM	SYSTEM-34	64K	-	SSP	1
08450	HONEYWELL	6200	128K	240M	SPVIP	1
08530	IBM	SYSTEM-34	64K	128M	SSP	3
08580	IBM	370	-	-	-	2
08600	APPLE	II PLUS	48K	.1M	APPLE	1
08700	H-P	3000	-	-	-	2
08750	IBM	4341	4096K	3740M	VM370SP	2
09000	XEROX	860	-	250M	CP/M	1
09100	CDC	CYBER	-	-	-	2
09160	AMDAHL	470V/6	6144K	-	JES3	2
09200	TI	DS-990/10	320K	-	SCHULER	1
09250	IBM	-	-	-	-	2
09350	IBM	4341	4M	16M	OS/VS1	2
09400	MICRODATA	1600	64K	50M	PICK R-77	1
09515	IBM	6(WP)	-	-	-	1
09525	H-P	3000	-	2M	MPE IV	2
09550	IBM	3/15B	64K	45M	IBM	3
09650	H-P	3000	512K	-	MPE III	2
09700	AMDAHL	470	-	-	-	2
09950	DEC	-	-	-	-	4
10100	BURROUGHS	4700	600K	-	OS 6.2	2
10175	WANG	OIS-140/3	-	80M	-	1
10200	MICRODATA	REALITY	80K	50M	PICK & DBM	1

** OWNER: 1: In-House (sta); 2: Licensee; 3: Service Bureau; 4: Other

COMPUTER SYSTEMS IN PUBLIC TELEVISION
SORTED BY STATION CODE

CODE	MNFCR	MODEL	MEMORY	STORAGE	OPS SYS	OWNER
00100	TI	990-8	256K	100M	SEAKO	1
00140	HONEYWELL	-	640K	2000M	GCOS	2
00200	HONEYWELL	66-20	-	-	-	2
00250	HONEYWELL	66	-	-	-	2
00300	AMDAHL	470-D7B	-	-	MVS	2
00400	DEC	10	-	-	TOPS-10	2
00500	UNIVAC	9060	512K	570M	LS4	3
00750	WANG	2200 MVP	220K	-	OS-R1.7	3
00900	IBM	SYSTEM-34	256K	256M	SSP	1
01200	H-P	3000/30	512K	120M	H-P	1
01300	BURROUGHS	B-6807	1500K	-	MCS 30	2
01400	TI	990-10	256K	56M	SCHULER	1
01500	IBM	3/15D	256K	500M	IBM-CCP	3
01600	IBM	370/145	-	-	DOS/VS	2
01700	RD SHACK	TRS-80/2	64K	2M	TRSDOS	1
01775	DATAPOINT	5500	-	-	-	1
01800	HITACHI	ITEL/AS6	-	4M	EPSILON	3
01900	IBM	370/145	IM.	233M	DOC/VSE	2
02000	H-P	3000	512K	170M	MPE-IV	1
02200	DATA GEN	S-140	256K	-	RDOS 6.3	1
02250	IBM	SYSTEM-34	128K	128M	SSP	2
02300	IBM	360	2200K	3000M	MVS	2
02400	BURROUGHS	B-80	126K	-	MCP	3
02500	BASIC FOUR	610	96K	70M	BOSS	1
02600	IBM	371/58	-	-	MVS	2
02800	BURROUGHS	6700	-	-	-	2
02900	AMDAHL	MARK-V	-	-	-	2
03200	TI	990-10	256K	-	-	1
03650	IBM	370/138	512K	512M	DOS/VSE	2
03900	CDC	OMEGA-480	-	-	VOS/VS	3
04100	CDC	CYBER-171	-	-	NOS	2
04400	CDC	CYBER-172	160K	-	KRONOS 2.1	2
04500	HONEYWELL	LEVEL-62	80K	-	ACOS 5.20	4
04600	IBM	360/40	128K	-	DOS	3
04700	IBM	370	384K	-	-	2
05000	HONEYWELL	1648-A	-	-	-	2
05100	TI	990-8	196K	96M	SEAKO	1
05300	WANG	2200 MVP	64K	27M	-	1
05400	RD SHACK	TRS-80/2	48K	.5M	NEWDOS80	1
05500	HONEYWELL	-	-	-	-	3
05550	IBM	360/30	64K	-	DOS	3
05600	TI	990-10	320K	84M	SCHULER	1
05700	DEC	1091	256K	2.5M	-	3
05800	IBM	4341	-	-	DOS	2
05900	IBM	-	-	-	EPSILON	3
06000	DEC	VAX 11/780	2000K	352M	VMS	1
06100	BURROUGHS	B-1865	524K	130M	HOLVICK	1
06300	PRIME	650	314M	300M	PRIMOS	2
06400	XEROX	SIGMA-6	256K	900M	CP V	2

CODE	MNFCR	MODEL	MEMORY	STORAGE	OPS SYS	OWNER
06500	IBM	370/148	1000K	–	VS1	2
06600	UNIVAC	1100/60	786K	2011M	EXEC8	2
06700	DEC	11/50	128K	400M	RSTS/E	2
07000	IBM	3033/S	12M.	–	VS-1	2
07400	BASIC FOUR	610	128K	70M	BASICDATA	1
07500	ALPHA MCRO	1050	256K	90M	WESTERN	1
08100	BURROUGHS	B-800	160K	47M	CMS/MCP	1
08300	COMMODORE	CBM 8032	32K	1M	CBM 40	1
08500	DEC	10	215K	1400M	TOPS 10	2
08600	IMSAI	8080	56K	.5M	CP/M	1
08700	IBM	4341	4000K	2000M	MVS SR1	2
08750	AMDAHL	470-V5	6000K	3000M	MVT-MVS	2
08800	IBM	4331	–	–	DOS	2
09000	IBM	360/30	65	–	DOS	3
09100	H-P	3000/30	512K	120M	MPE IV	1
09300	ICL	2904	392K	360M	EXECUTIVE	1
09800	DATA GEN	CS-40	64K	20M	ICOS	1
09900	IBM	370	–	–	DOS	3
10100	APPLE	PLUS II	48K	10M	DOS 3.3	1
10200	IBM	SYSTEM-34	48K	–	SSP	1
10400	WANG	25-3	–	5M	WANG(WP)	1
10500	IBM	370	4M	3000M	OSMVS	2
10700	IBM	3032	–	–	OS/VS	1
10800	IBM	360	–	–	VOS	3
11100	NCR	101	32K	–	B-1	3
11200	WANG	OIS(WP)	–	4.2	–	1
11500	IBM	360/20	–	–	–	3
11600	IBM	SYSTEM-34	64K	–	SSP	1
11900	HONEYWELL	6200	128K	240M	SPV1P	1
12000	IBM	34	64K	128M	SSP	3
12100	WANG	VS-80	512K	150M	VS	2
12200	IBM	SYSTEM-34	–	–	–	3
12300	AMDAHL	470-V6	12MB	110MB	OS/VS2 MVS	2
12400	IBM	370/148	2000K	2100M	VS-1	2
12500	IBM	158/3	4000K	5.6M	VSI	2
12600	APPLE	PLUS II	48K	.1M	APPLE	1
12900	TI	990-10	256K	100M	SCHULER	1
13000	H-P	3000	256K	–	MPE-III	3
13100	AMDAHL	470-V6	6144K	–	JES3	2
13300	TI	990-10	320K	–	SCHULER	1
13400	IBM	SYSTEM-34	96K	–	–	3
13500	IBM	4341	4M	16M	OS/VS1	2
13600	DATAPOINT	1132			DATABUS	1
14100	MICRODATA	1600	64K	50M	PICK R-77	1
14200	MICRODATA	8000	256K	128M	PIC	1
14300	DEC	20	256K	300M	TOPS-20	2
14500	IBM	SYSTEM-34	96K	28M	RELEASE 7	4
14600	IBM	3/15B	64K	45M	IBM	3
15000	AMDAHL	470-V8	12M	15KM	MVS/SP	2
15100	IBM	5120	64K	2.4M	–	1
15200	H-P	250	198K	2.5M	HP250	1

CODE	MNFCR	MODEL	MEMORY	STORAGE	OPSSYS	OWNER
15500	DATA GEN	NOVA C3	128K	12.5M	WILSON	1
15550	DATA GEN	4323	128K	12.5M	WILSON	1
15700	IBM	360	2000K	-	OS/MV	2
15800	WANG	140-3(WP)	288K	80M	WANG	1
15900	MICRODATA	REALITY	80K	50M	PICK & DRM	1
16000	HONEYWELL	6600-DPS	1024K	-	4JS	2

**OWNER: 1: In-House(sta); 2: Licensee; 3: Service Bureau; 4: Other

COMPUTER SYSTEMS IN PUBLIC BROADCASTING

Sorted by Computer Manufacturer

Radio & Television

Source: Station Computer Utilization Survey, 1982

COMPUTER SYSTEMS IN PUBLIC RADIO
SORTED BY COMPUTER MANUFACTURER

CODE	MNFCR	MODEL	MEMORY	STORAGE	OPS SYS	OWNER
01500	AMDAHL	-	-	-	-	2
09700	AMDAHL	470	-	-	-	2
09160	AMDAHL	470V/6	6144K	-	JES3	2
00200	APPLE	II PLUS	48K	-	APPLE	1
00630	APPLE	II PLUS	48K	29M	APPLE	2
08600	APPLE	II PLUS	48K	.1M	APPLE	1
00645	BURROUGHS	3800	1000K	-	MCPVI	2
10100	BURROUGHS	4700	600K	-	OS 6.2	2
01060	BURROUGHS	6700	2000K	-	MCP	2
00500	BURROUGHS	B-1860	.5M	-	MCT-2	3
01450	BURROUGHS	B-80	126K	-	MCP	3
01450	BURROUGHS	B-80	126K	-	MCP	3
06655	BURROUGHS	B6700	2M	720M	MCP	2
00648	CDC	CYBER	-	-	WORD11	2
09100	CDC	CYBER	-	-	-	2
02060	CDC	CYBER 171	-	800M	NAM	2
02200	CDC	CYBER 172	160K	-	KRONOS 2	2
06200	CDC	CYBER 173	131K	-	NOS	2
03600	CDC	CYBER 175	-	-	-	2
05850	CDC	CYBER 73	64K	700M	NOS	2
06350	DATA GEN	CS-40	64K	20M	ICOS	1
09950	DEC	-	-	-	-	4
00300	DEC	10	-	-	TOPS-10	2
04760	DEC	10	-	192M	TOPS10	2
04600	DEC	10	3800K	200M	TOPS-10	2
02685	DEC	11/70	140K	352M	RSTS	2
06750	DEC	11/44	1024K	600M	RSTS/E	2
05750	DEC	20	250K	-	TOPS	2
05500	DEC	PDP 11/70	1000K	44M	-	2
03800	DEC	VAX 11/780	2000K	352M	VMS	1
01150	H-P	3000	512K	170K	MPE IV	1
08700	H-P	3000	-	-	-	2
09525	H-P	3000	-	2M	MPE IV	2
09650	H-P	3000	512K	-	MPE III	2
06250	H-P	3000/30	512K	120M	MPE IV	1
00400	HARRIS	220/7	384K	540M	VOLCAN	2
04900	HARRIS	800	768K	76M	VOLCAN	2
02350	HONEYWELL	1648-A	-	-	-	2
08200	HONEYWELL	3200	264K	-	OS	2
07875	HONEYWELL	60/66	3M	-	CP6	2
00900	HONEYWELL	6200	128K	240M	SVP1P	1
08450	HONEYWELL	6200	128K	240M	SPVIP	1
00130	HONEYWELL	66	-	-	-	2
07650	HONEYWELL	66/DPS	2300K	2124M	TDS	2
03345	HONEYWELL	68/80	-	-	-	1
03250	IBM	-	-	-	-	2
09250	IBM	-	-	-	-	2

CODE	MNFCR	MODEL	MEMORY	STORAGE	OPS SYS	OWNER
09550	IBM	3/15B	64K	45M	IBM	3
00900	IBM	3/15D	256K	500M	IBM/CCP	3
02830	IBM	3/15D	192K	200M	IBM/CCP	4
01850	IBM	3031	6000K	8400M	OS-MVS	2
02375	IBM	3031	4M	-	VS/1	2
02900	IBM	3031	-	-	DOS/VS	2
01600	IBM	3033	-	8M	MVS	2
04820	IBM	3033/S	12M	-	VS-1	2
01200	IBM	360	-	-	-	2
07500	IBM	360	-	-	VOS	3
01900	IBM	360/67	2000K	-	OS	2
06523	IBM	360/30	65	-	DOS	3
00625	IBM	360/40	256K	260M	DOS	3
08150	IBM	360/40	256K	200M	DOS	3
04700	IBM	370/148	100K	-	OS/VS	2
08580	IBM	370	-	-	-	2
05700	IBM	370/148	1000K	-	DOS/VS	2
06900	IBM	370/158	-	-	-	2
01100	IBM	370/148	2048K	-	OS/VS1	2
02500	IBM	370/58	4M	-	-	2
01475	IBM	370/58	-	-	MVS	2
02675	IBM	4331	1MK	1.7BM	DOS VS/E	2
03400	IBM	4341	-	-	DOS	2
03450	IBM	4341	-	-	DOS	2
08750	IBM	4341	4096K	3740M	VM370SP	2
09350	IBM	4341	4M	16M	OS/VS1	2
04875	IBM	6(WP)	-	-	-	4
09515	IBM	6(WP)	-	-	-	1
00450	IBM	SYS-7	-	-	SYS-7 MSP	2
08320	IBM	SYSTEM-34	64K	-	SSP	1
08530	IBM	SYSTEM-34	64K	128M	SSP	3
09400	MICRODATA	1600	64K	50M	PICK R-77	1
10200	MICRODATA	REALITY	80K	50M	PICK/DBM	1
02030	NASCO	AS/5000	6M	6033M	MVS	2
03900	ONTEL	OP-1/64	64K	1M	MODS /.3	1
06100	PRIME	550	750K	-	PRIMOS	3
06520	RD SHACK	TRS80/I	64K	.5M	TRSDOS V2	1
02450	RD SHACK	TRS80/II	64K	4M	TRSDOS/CRM	1
05350	RD SHACK	TRS80/II	64K	2M	TRSDOS	1
07850	RD SHACK	TRS80/II	64K	.47M	TRSDOS V2	1
01000	RD SHACK	TRS80/II	64K	2M	TRSDOS	1
04000	SWTP	6800	54K	3M	SMOKE DOS	1
00800	TI	990-10	256K	56M	SCHULER	1
09200	TI	DS-990/10	320K	-	SCHULER	1
04350	UNIVAC	-	-	-	-	2
04750	UNIVAC	1100/60	786K	2011M	EXEC8	2
06650	UNIVAC	9080	4M	2280M	VS-9	2
07000	WANG	25-1	-	-	-	1
10175	WANG	OIS-140/3	-	80M	-	1
09000	XEROX	860	-	250M	CP/M	1
08100	XEROX	SIGMA 6	512K	-	CP-V	2

** OWNER: 1: In-House (sta); 2: Licensee; 3: Service Bureau; 4; Other

COMPUTER SYSTEMS IN PUBLIC TELEVISION
SORTED BY COMPUTER MANUFACTURER

CODE	MNFCR	MODEL	MEMORY	STORAGE	OPS SYS	OWNER
07500	ALPHA MICRO	1050	256K	90M	WESTERN	1
00300	AMDAHL	470-D7B	-	-	MVS	2
08750	AMDAHL	470-V5	6000K	3000M	MVT-MVS	2
12300	AMDAHL	470-V6	12MB	110MB	OS/VS2 MVS	2
13100	AMDAHL	470-V6	6144K	-	JES3	2
15000	AMDAHL	470-V8	12M	15KM	MVS/SP	2
02900	AMDAHL	MARK-V	-	-	-	2
10100	APPLE	PLUS II	48K	10M	DOS 3.3	1
12600	APPLE	PLUS II	48K	.1M	APPLE	1
02500	BASIC FOUR	610	96K	70M	BOSS	1
07400	BASIC FOUR	610	128K	70M	BASICDATA	1
02800	BURROUGHS	6700	-	-	-	2
06100	BURROUGHS	B-1865	524K	130M	HOLVICK	1
01300	BURROUGHS	B-6807	1500K	-	MCS 30	2
02400	BURROUGHS	B-80	126K	-	MCP	3
08100	BURROUGHS	B-800	160K	47M	CMS/MCP	1
04100	CDC	CYBER-171	-	-	NOS	2
04400	CDC	CYBER-172	160K	-	KRONOS 2.1	2
03900	CDC	OMEGA-480	-	-	VOS/VS	3
08300	COMMODORE	CBM 8032	32K	1M	CBM 40	1
15550	DATA GEN	4323	128K	12.5M	WILSON	1
09800	DATA GEN	CS-40	64K	20M	ICOS	1
15500	DATA GEN	NOVA C3	128K	12.5M	WILSON	1
02200	DATA GEN	S-140	256K	-	RDOS 6.3	1
13600	DATAPOINT	1132			DATABUS	1
01775	DATAPOINT	5500	-	-	-	1
00400	DEC	10	-	-	TOPS-10	2
08500	DEC	10	215K	1400M	TOPS 10	2
05700	DEC	1091	256K	2.5M	-	3
06700	DEC	11/50	128K	400M	RSTS/E	2
14300	DEC	20	256K	100M	TOPS-20	2
06000	DEC	VAX 11/780	2000K	352M	VMS	1
15200	H-P	250	198K	2.5M	HP250	1
02000	H-P	3000	512K	170M	MPE-IV	1
13000	H-P	3000	256K	-	MPE-111	3
01200	H-P	3000/30	512K	120M	H-P	1
09100	H-P	3000/30	512K	120M	MPE IV	1
01800	HITACHI	ITEL/AS6	-	4M	EPSILON	3
00140	HONEYWELL	-	640K	2000M	GCOS	2
05500	HONEYWELL	-	-	-	-	3
05000	HONEYWELL	1648-A	-	-	-	2
11900	HONEYWELL	6200	128K	240M	SPV1P	1
00250	HONEYWELL	66	-	-	-	2
00200	HONEYWELL	66-20	-	-	-	2
16000	HONEYWELL	6600-DPS	1024K	-	4JS	2
04500	HONEYWELL	LEVEL-62	80K	-	ACOS 5.20	4
05900	IBM	-	-	-	EPSILON	3
12500	IBM	158/3	4000K	5.6M	VSI	2
14600	IBM	3/15B	64K	45M	IBM	3

CODE	MNFCR	MODEL	MEMORY	STORAGE	OPS SYS	OWNER
01500	IBM	3/15D	256K	500M	IBM-CCP	3
10700	IBM	3032	-	-	OS/VS	1
07000	IBM	3033/S	12M	-	VS-1	2
12000	IBM	34	64K	128M	SSP	3
02300	IBM	360	2200K	3000M	MVS	2
10800	IBM	360	-	-	VOS	3
15700	IBM	360	2000K	-	OS/MV	2
11500	IBM	360/20	-	-	-	3
05550	IBM	360/30	64K	-	DOS	3
09000	IBM	360/30	65	-	DOS	3
04600	IBM	360/40	128K	-	DOS	3
04700	IBM	370	384K	-	-	2
09900	IBM	370	-	-	DOS	3
10500	IBM	370	4M	3000M	OSMVS	2
03650	IBM	370/138	512K	512M	DOS/VSE	2
01600	IBM	370/145	-	-	DOS/VS	2
01900	IBM	370/145	IM.	233M	DOC/VSE	2
06500	IBM	370/148	1000K	-	VSJ	2
12400	IBM	370/148	2000K	2100M	VS-1	2
02600	IBM	371/58	-	-	MVS	2
08800	IBM	4331	-	-	DOS	2
05800	IBM	4341	-	-	DOS	2
08700	IBM	4341	4000K	2000M	MVS SPJ	2
13500	IBM	4341	4M	16M	OS/VS1	2
15100	IBM	5120	64K	2.4M	-	1
00900	IBM	SYSTEM-34	256K	256M	SSP	1
02250	IBM	SYSTEM-34	128K	128M	SSP	2
10200	IBM	SYSTEM-34	48K	-	SSP	1
11600	IBM	SYSTEM-34	64K	-	SSP	1
12200	IBM	SYSTEM-34	-	-	-	3
13400	IBM	SYSTEM-34	96K	-	-	3
14500	IBM	SYSTEM-34	96K	28M	RELEASE 7	4
09300	ICL	2904	392K	360M	EXECUTIVE	1
08600	IMSAI	8080	56K	.5M	CP/M	1
14100	MICRODATA	1600	64K	50M	PICK R-77	1
14200	MICRODATA	8000	256K	128M	PICK	1
15900	MICRODATA	REALITY	80K	50M	PICK & DBM	1
11100	NCR	101	32K	-	B-1	3
06300	PRIME	650	314M	300M	PRIMOS	2
01700	RD SHACK	TRS-80/2	64K	2M	TRSDOS	1
05400	RD SHACK	TRS-80/2	48K	.5M	NEWDOS80	1
01400	TI	990-10	256K	56M	SCHULER	1
03200	TI	990-10	256K	-	-	1
05600	TI	990-10	320K	84M	SCHULER	1
12900	TI	990-10	256K	100M	SCHULER	1
13300	TI	990-10	320K	-	SCHULER	1
00100	TI	990-8	256K	100M	SEAKO	1
05100	TI	990-8	196K	96M	SEAKO	1
06600	UNIVAC	1100/60	786K	2011M	EXEC8	2
00500	UNIVAC	9060	512K	570M	LS4	3
15800	WANG	140-3(WP)	288K	80M	MAING	1
00750	WANG	2200 MVP	220K	-	[redacted].7	3
05300	WANG	2200 MVP	64K	27M	-	1

CODE	MNFCR	MODEL	MEMORY	STORAGE	OPS SYS	OWNER
10400	WANG	25-3	-	5M	WANG(WP)	1
11200	WANG	OIS(WP)	-	4.2	-	1
12100	WANG	VS-80	512K	150M	VS	2
06400	XEROX	SIGMA-6	256K	900M	CP V	2

**OWNER: 1: In-House (sta); 2: Licensee; 3: Service Bureau; 4: Other

COMPUTER APPLICATIONS IN PUBLIC BROADCASTING

By Major Application Areas

Radio & Television

Source: Station Computer Utilization Survey, 1982

SUMMARY

The technological and financial environment of the 1980s presents a number of challenges for public broadcasting:

- funding reductions from federal, state and local govenment sources;
- increased accountability to funding sources at all levels;
- new program sources and materials, many distributed by satellite-based networks;
- increased desire to be more fully and rapidly responsive to local needs; and
- increasing costs of production, operation and administration.

These challenges compel stations to operate more efficiently than ever before, to maintain more detailed and more accessible records, and to handle large amounts of information more efficiently.

The Computing and Telecommunications Planning Task Force has worked to determine current use of computers and telecommunications systems and how the industry can improve its operations through effective use of such systems.

The review of industry practices indicates that successful applications of computer and telecommunications technology exist in membership, finance, programming, distribution, research, administration, inventory, scheduling, etc.—virtually every conceivable area vital to station operations.

These applications, if adopted for broader use, implemented by the latest techniques, modified to exploit the most cost-effecitve modern technology, and standardized to the maximum extent possible, will produce industrywide benefits. The work of the task force was the first step in such a consolidated, integrated approach to the application of computer technology in public broadcasting.

Station Applications of Computer Systems

Computer system configurations and applications vary widely within public broadcasting, as systems are being developed to meet specific station needs. Such needs can be functionally categorized into four major groups:

1. **Finance and Administration**—general ledger, payroll, cost accounting;
2. **Development**—membership, pledges, auctions, underwriting, promotion, volunteers;
3. **Programming**—program scheduling, traffic, library, ascertainment/audience research;
4. **Operations**—facilities scheduling, production scheduling, operations, engineering.

Finance and Administration

The chief financial and administrative applications include accounts payable and receivable, general ledger accounting, payroll, purchasing, budgeting and cost accounting.

The complexities of the applications will depend on the number and type of transactions involved and the sophistication desired by management. Individual station requirements may vary widely because of the differences in station involvement in program acquisition, production, nonbroadcast services, etc. Stations may operate internal profit centers (requiring transfer pricing schemes), large numbers of separate projects (with separate financial monitoring and reporting requirements) and significant purchasing departments (processing several hundreds of invoices per week).

The capabilities of computerized accounting systems now available indicate that they can serve most current requirements. Specific packages would need modification, no doubt. Current capabilities, however, should serve until "industry standard" packages are made available to the public broadcasting industry.

Computer system support for such purposes would be obtained most effectively from external services such as commercial computer facilities or licensees' systems. The purchase or lease of computer systems for financial and administrative support would probably be appropriate only if implementation of a wider range of station services is envisioned.

Development

A tremendous amount of information must be collected and processed to support the full range of development activities. Today, many public broadcasting stations can justify computer support for the development on an economic basis alone. This is particularly true where significant volumes of mail are generated regularly and large amounts of pledges must be handled, resulting in substantial billing records, renewal records, etc. All stations will not desire or need all the possible computer support services. But even the smallest stations may find it economical to consider computer support for some membership, pledge and promotion functions.

A computer-based information system can generate a wide arrary of development-oriented management and operational support. A station can simply purchase the services from an outside organization. Many firms offer commercial services related to membership and mailing activities, and there are several involved directly in public broadcasting.

A station also can obtain computer services from a computer system accessible through its licensee (e.g., university or state computer system). The application programs could be developed by the service bureau, the station or external contractors if existing commercial programs were not felt to be suitable.

Finally, a station can acquire its own computer. The exact configuration required would depend on the size of the database and the range of applications. A configuration featuring a minicomputer, hard disc storage, medium speed line printer and terminal would generally satisfy a wide range of requirements. This might be supplemented by a tape storage unit.

The choice of approaches should be based on several factors. First, and most important, is satisfactory service. The chosen approach should assist the station, not create additional problems through late response, unreliability, etc. Second, the cost of the approach must be appropriate to the services provided. The costs should be greater than those involved in manual methods only to the extent that additional benefits are provided. Finally, consideration should be given to other current or future computer-related activity of the station. A computer should not be acquired without considering its expansion capability to accommodate other applications. Deferring acquisition in favor of service bureau applications might be in order if additional planning is required to permit definition of larger-scale, multi-function support systems.

Programming

Computer support for programming functions has two major orientations: program scheduling, and ascertainment and audience research. Computer support of program scheduling activities must recognize, as a primary factor, the increasing amounts and diversity of information on program materials available to stations. This information may flow from national sources, such as PBS and NPR, or from regional/state networks (e.g., SECA, EEN), individual syndicators, independent organizations and local producers within the station. Satellite distribution has rendered this situation even more complex.

The complexity of program scheduling also increases as stations work to respond to diverse community interests. As more programming decisions are made in response to community needs and events, the more frequent are schedule changes. Deadlines for program scheduling, the size and variety of the information base, and the predominantly interactive nature of the tasks required are of primary consideration in providing computer support to program scheduling.

Computer support of ascertainment and audience research activities does not demand the same "timeliness" as does program sheduling. Reseach is more cyclical in nature and involves batch data processing as opposed to the interactive information handling of program scheduling.

The sophistication associated with ascertainment and audience research relates to the type and extent of statistical analysis performed on the data. Most ascertainment/audience research activities involve classic data input, processing and output activities. The sophistication involved is largely a matter of design and application of the statistical tools used in the processing of data. Standard data

processing services, either supplied through commercial bureaus or the licensee could be used to satisfy both of these functions since they do not inherently require locally based capabilities. The computer configuration required for optimal handling of ascertainment and audience research is quite different from that associated with the interactive information handling involved in program scheduling. A program scheduling system configuration would probably most effectively revolve around a minicomputer using a database management system. This technology should provide both the response time, capability for interactive operation, potential for national network communications and the ability to handle and process large data files that appear to characterize program scheduling.

Operations

Computer support could be applied in a very straightforward fashion to scheduling resources and maintaining various inventories. Files could be created for facilities, equipment, parts/spares, tape, film, technicians/operators, and other categories. Master schedules could be produced based on priority demands from previous operations logs, maintenance procedures, production schedules, etc. Inventories would be updated based on use and completed schedules, purchasing activities and maintenance reports.

This type of computer support is similar to that for program scheduling and could be accommodated by such a configuration. The additional storage requirements would be small, on the order of several hundred thousand characters. The intimate relationship between operations/maintenance scheduling and program scheduling strongly suggests an integration of these applications.

Where computer systems have been applied in operational control, they are used to turn on and off and to switch various pieces of equipment that have been loaded or otherwise made ready by operators. The computer function is not one of information processing but rather one of process control. The natures of these two kinds of systems are fundamentally different and as a result, imply the use of somewhat different sets of computer system components. Rather than being heavily oriented toward flexibility in the use of peripheral storage, input and output devices, process control computers are concerned with the speed of the central processor and increasing the efficiency of this part of the overall system. Special features such as direct memory access, processor status registers, sophisticated hardware interrupt structures, hardware stacks, fast registers, high-speed cache memory, interval timers and a real-time clock are often incorporated. Software in such systems is invariably tailor-made at each installation and is likely to need redesign whenever new functions are required. The result is that operational control functions usually require dedicated separate computers that are especially configured.

PROGRAMMING LANGUAGE CODE EXPLANATION

1. COBOL
2. FORTRAN
3. BASIC
4. PL/1
5. APL
6. Database Management System (DBMS)
7. Assembler
8. RPG II
9. WYLBUR
10. ENGLISH
11. SAS
12. Machine Lanaguage
13. Q
14. ALGOL
15. Mag Card II
16. MARK IV
17. NEAT
18. DATABUS
19. RPL
20. OTHER

AUCTION MANAGEMENT APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	03800	DEC	VAX 11/780	VMS	FD	C	20

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	01500	AMDAHL	-	-	PD	C	1
R	09160	AMDAHL	470V/6	JES3	PD	C	9
R	06350	DATA GEN	CS-40	ICOS	PD	C	1
R	00900	HONEYWELL	6200	SVP1P	PD	C	8
R	07650	HONEYWELL	66/DPS	TDS	PD	-	-
R	00900	IBM	3/15D	IBM/CCP	PD	C	8
R	10200	MICRODATA	REALITY	PICK & DBM	PD	C	19
R	03900	ONTEL	OP-1/64	MODS/.3	PD	C	20

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	03900	CDC	OMEGA-480	VOS/VS	FD	C	-
T	08500	DEC	10	TOPS 10	FD	C	6
T	14300	DEC	2060	TOPS-20	FD	C	3
T	06000	DEC	VAX 11/780	VMS	FD	C	20
T	15200	H-P	250	HP250	FD	C	3
T	01200	H-P	3000/30	H-P	FD	C	3
T	01800	HITACHI	ITEL/AS6	EPSILON	FD	C	-
T	16000	HONEYWELL	6600-DPS	4JS	FD	S	1
T	04500	HONEYWELL	LEVEL 62	ACOS 5.20	FD	C	-
T	10700	IBM	3032	OS/VS	FD	C	1
T	04600	IBM	360/40	DOS	FD	C	1
T	14500	IBM	SYSTEM 34	RELEASE 7	FD	C	8
T	09300	ICL	2904	EXECUTIVE	FD	C	8
T	08600	IMSAI	8080	CP/M	FD	C	3
T	06400	XEROX	SIGMA 6	CP V	FD	C	1

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	13100	AMDAHL	470V/6	JES3	PD	C	9
T	02900	AMDAHL	MARK-V	-	PD	C	1
T	07400	BASIC FOUR	610-E	BASICDATA	PD	M	3
T	08100	BURROUGHS	B-800	CMS/MCP	PD	S	20
T	06100	BURROUGHS	B1865	HOLVICK	PD	C	1
T	09800	DATA GEN	CS-40	ICOS	PD	C	1
T	06700	DEC	11/50	RSTS/E	PD	C	3
T	02000	H-P	3000	MPE-IV	PD	C	1
T	11900	HONEYWELL	6200	SPV1P	PD	C	8
T	01500	IBM	3/15D	IBM-CCP	PD	C	8
T	02250	IBM	SYSTEM 34	SSP	PD	C	1
T	15900	MICRODATA	REALITY	PICK & DBM	PD	C	19
T	12900	TI	990 10	SCHULER	PD	S	1
T	05600	TI	990/10	SCHULER	PD	S	1

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

MEMBERSHIP MANAGEMENT APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	00500	BURROUGHS	B-1860	MCT-2	FD	C	8
R	00648	CDC	CYBER	WORDU	FD	C	3
R	02060	CDC	CYBER 171	NAM	FD	C	1
R	00300	DEC	10	TOPS-10	FD	M	3
R	03800	DEC	VAX 11/780	VMS	FD	C	20
R	01150	H-P	3000	MPE IV	FD	C	1
R	04900	HARRIS	800	VOLCAN	FD	C	-
R	07650	HONEYWELL	66/DPS	TDS	FD	C	1
R	09550	IBM	3/15B	IBM	FD	M	-
R	00900	IBM	3/15D	IBM/CCP	FD	M	1
R	02830	IBM	3/15D	IBM/CCP	FD	M	-
R	01850	IBM	3031	OS-MVS	FD	C	1
R	02900	IBM	3031	DOS/VS	FD	C	1
R	01600	IBM	3033 N	MVS	FD	-	-
R	03400	IBM	4341	DOS	FD	C	4
R	03450	IBM	4341	DOS	FD	C	4
R	09515	IBM	6(WP)	-	FD	S	20
R	08320	IBM	SYSTEM-34	SSP	FD	M	8
R	06100	PRIME	550	PRIMOS	FD	C	2
R	02450	RD SHACK	TRS80/II	TRSDOS/CPM	FD	C	3
R	01000	RD SHACK	TRS80II	TRSDOS	FD	S	3
R	09200	TI	DS-990/10	SCHULER	FD	@	1

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	01500	AMDAHL	-	-	PD	C	1
R	09160	AMDAHL	470V/6	JES3	PD	C	9
R	00200	APPLE	II PLUS	-	PD	C	3
R	00630	APPLE	II PLUS	APPLE	PD	S	-
R	02200	CDC	CYBER 172	KRONOS 2.1	PD	C	3
R	06200	CDC	CYBER 173	NOS	PD	C	2
R	03600	CDC	CYBER175	-	PD	C	2
R	05850	CDC	CYBER73	NOS	PD	S	-
R	06350	DATA GEN	CS-40	ICOS	PD	C	1
R	09950	DEC	-	-	PD	C	3
R	04760	DEC	10	TOPS10	PD	C	20
R	05750	DEC	20	TOPS	PD	C	2
R	08700	H-P	3000	-	PD	-	-
R	06250	H-P	3000/30	MPE IV	PD	C	1
R	08200	HONEYWELL	3200	OS	PD	C	1
R	07875	HONEYWELL	60/66	CP6	PD	S	-
R	00900	HONEYWELL	6200	SVPIP	PD	C	8
R	08450	HONEYWELL	6200	SPVIP	PD	C	8
R	00130	HONEYWELL	66	-	PD	S	-
R	04820	IBM	3033/S	VS-1	PD	C	1
R	01200	IBM	360	-	PD	C	1
R	07500	IBM	360	VOS	PD	-	1
R	06523	IBM	360/30	DOS	PD	-	8
R	08150	IBM	360/40	DOS	PD	C	7
R	08580	IBM	370	-	PD	-	-

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	05700	IBM	370-148	DOS/VS	PD	-	7
R	02500	IBM	370/58	-	PD	C	1
R	04875	IBM	6 (WP)	-	RD	S	-
R	00450	IBM	7	SYS-7 MSP	PD	S	1
R	08530	IBM	SYSTEM-34	SSP	PD	M	8
R	10200	MICRODATA	REALITY	PICK & DBM	PD	C	10
R	03900	ONTEL	OP-1/64	MODS/.3	PD	C	3
R	06520	RD SHACK	TRS80/I	TRSDOS V2	PD	C	3
R	07850	RD SHACK	TRS80/II	TRSDOS V2	PD	M	3
R	07000	WANG	25-1	-	PD	C	3
R	10175	WANG	OIS-140/3	-	PD	C	3
R	08100	XEROX	SIGMA 6	CP-V	PD	C	1

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	07500	ALPHA MCRO	1050	WESTERN	FD	M	-
T	12300	AMDAHL	470-V6	OS/VS2 MVS	FD	C	3
T	02500	BASIC FOUR	610	BOSS	FD	M	3
T	07400	BASIC FOUR	610-E	BASICDATA	FD	M	3
T	06100	BURROUGHS	B1865	HOLVICR	FD	C	1
T	03900	CDC	OMEGA-480	VOS/VS	FD	C	-
T	08300	COMMODORE	CBM 8032	CBM 40	FD	C	3
T	15550	DATA GEN	4323	WILSON	FD	M	1
T	15500	DATA GEN	NOVA C3	WILSON	FD	M	1
T	01775	DATAPOINT	5500	-	FD	-	-
T	08500	DEC	10	TOPS 10	FD	M	6
T	00400	DEC	10	TOPS-10	FD	M	3
T	06000	DEC	VAX 11/780	VMS	FD	C	20
T	15200	H-P	250	HP250	FD	C	3
T	02000	H-P	3000	MPE-IV	FD	C	1
T	01800	HITACHI	ITEL/AS6	EPSILON	FD	M	-
T	16000	HONEYWELL	6600-DPS	4JS	FD	S	1
T	05900	IBM	-	EPSILON	FD	S	2
T	14600	IBM	3/15B	IBM	FD	M	-
T	01500	IBM	3/15D	IBM-CCP	FD	M	1
T	07000	IBM	3033/S	VS-1	FD	C	1
T	02300	IBM	360	MVS	FD	C	4
T	11500	IBM	360-20	-	FD	S	8
T	04600	IBM	360/40	DOS	FD	C	1
T	10500	IBM	370	OSMVS	FD	C	20
T	09900	IBM	370	DOS	FD	C	1
T	05800	IBM	4341	DOS	FD	C	4
T	11600	IBM	SYSTEM-34	SSP	FD	M	8
T	00900	IBM	SYSTEM-34	SSP	FD	C	8
T	10200	IBM	SYSTEM-34	SSP	FD	C	8
T	09300	ICL	2904	EXECUTIVE	FD	C	8
T	08600	IMSAI	8080	CP/M	FD	C	3
T	14200	MICRODATA	8000	PIC	FD	C	-
T	01700	RD SHACK	TRS80III	TRSDOS	FD	S	3
T	12900	TI	990 10	SCHULER	FD	S	1
T	05600	TI	990/10	SCHULER	FD	S	1
T	00100	TI	DS-990 /8	SEAKO	FD	S	1
T	13300	TI	DS-990/10	SCHULER	FD	C	1
T	00750	WANG	2200 MUP	OS-R1.7	FD	C	3

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
T	05300	WANG	2200 MVP	-	FD	C	3
		PARTIALLY DEVELOPED SYSTEMS (TELEVISION)					
T	08750	AMDAHL	470-V/5	MVT-MVS	PD	-	-
T	00300	AMDAHL	470/D7B	MVS	PD	C	1
T	13100	AMDAHL	470V/6	JES3	PD	C	9
T	02900	AMDAHL	MARK-V	-	PD	C	1
T	01300	BURROUGHS	B 6807	MCS 30	PD	C	1
T	08100	BURROUGHS	B-800	CMS/MCP	PD	C	1
T	04100	CDC	CYBER 171	NOS	PD	C	1
T	04400	CDC	CYBER 172	KRONOS 2.1	PD	C	3
T	09800	DATA GEN	CS-40	ICOS	PD	C	1
T	02200	DATA GEN	S-140	RDOS 6.3	PD	-	-
T	13600	DATAPOINT	1132	DATABUS	PD	C	17
T	06700	DEC	11/50	RSTS/E	PD	C	3
T	14300	DEC	2060	TOPS-20	PD	C	1
T	13000	H-P	3000	MPE-III	PD	S	-
T	01200	H-P	3000/30	H-P	PD	C	3
T	09100	H-P	3000/30	MPE IV	PD	C	1
T	00140	HONEYWELL	-	GCOS	PD	C	-
T	05500	HONEYWELL	-	-	PD	C	-
T	11900	HONEYWELL	6200	SPVIP	PD	C	8
T	00250	HONEYWELL	66	-	PD	S	-
T	04500	HONEYWELL	LEVEL 62	ACOS 5.20	PD	C	-
T	10700	IBM	3032	OS/VS	PD	C	1
T	12000	IBM	34	SSP	PD	M	-
T	10800	IBM	360	VOS	PD	-	1
T	09000	IBM	360/30	DOS	PD	-	8
T	05550	IBM	360/30	DOS	PD	C	8
T	04700	IBM	370	-	PD	-	-
T	12400	IBM	370-148	VS-1	PD	C	3
T	03650	IBM	370/138	DOS/VSE	PD	C	-
T	08800	IBM	4331	DOS	PD	C	1
T	08700	IBM	4341	MVS SP1	PD	C	3
T	02250	IBM	SYSTEM 34	SSP	PD	C	1
T	13400	IBM	SYSTEM 34	-	PD	C	-
T	14500	IBM	SYSTEM 34	RELEASE 7	PD	C	8
T	12200	IBM	SYSTEM-34	-	PD	C	-
T	15900	MICRODATA	REALITY	PICK & DBM	PD	C	19
T	11100	NCR	101	B-1	PD	C	17
T	00500	UNIVAC	9060	LS4	PD	C	1
T	15800	WANG	140III(WP)	WANG	PD	C	-
T	11200	WANG	OIS115(WP)	-	PD	C	1
T	06400	XEROX	SIGMA 6	CP V	PD	C	1

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

MAILING LIST/LABELS APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	00500	BURROUGHS	B-1860	MCT-2	FD	C	8
R	00648	CDC	CYBER	WORD11	FD	C	3
R	02060	CDC	CYBER 171	NAM	FD	C	1
R	04760	DEC	10	TOPS10	FD	C	20
R	02685	DEC	11,70	RSTS	FD	S	3
R	05500	DEC	PDP 11/70	-	FD	S	3
R	03800	DEC	VAX 11/780	VMS	FD	C	20
R	09525	H-P	3000	MPE IV	FD	-	-
R	08700	H-P	3000	-	FD	-	-
R	01150	H-P	3000	MPE IV	FD	C	1
R	00400	HARRIS	220/7	VULCAN	FD	C	1
R	04900	HARRIS	800	VULCAN	FD	C	-
R	07650	HONEYWELL	66/DPS	TDS	FD	C	1
R	09550	IBM	3/15B	IBM	FD	M	-
R	00900	IBM	3/15D	IBM/CCP	FD	M	1
R	02830	IBM	3/15D	IBM/CCP	FD	-	-
R	01850	IBM	3031	OS-MVS	FD	C	1
R	02900	IBM	3031	DOS/VS	FD	C	1
R	01600	IBM	3033 N	MVS	FD	-	-
R	08150	IBM	360/40	DOS	FD	M	7
R	01100	IBM	370/148	OS/VS1	FD	C	1
R	08750	IBM	4341	VM370SP	FD	S	3
R	03400	IBM	4341	DOS	FD	C	4
R	03450	IBM	4341	DOS	FD	C	4
R	09350	IBM	4341	OS/VS1	FD	S	1
R	04875	IBM	6 (WP)	-	FD	S	-
R	09515	IBM	6(WP)	-	FD	1	20
R	08530	IBM	SYSTEM-34	SSP	FD	M	8
R	08320	IBM	SYSTEM-34	SSP	FD	M	8
R	10200	MICRODATA	REALITY	PICK & DBM	FD	C	19
R	02030	NASCO	AS/5000	MVS	FD	S	1
R	03900	ONTEL	OP-1/64	MODS/.3	FD	C	20
R	06100	PRIME	550	PRIMOS	FD	C	2
R	06520	RD SHACK	TRS80/I	TRSDOS V2	FD	C	3
R	02450	RD SHACK	TRS80/II	TRSDOS/CPM	FD	S	3
R	01000	RD SHACK	TRS80III	TRSDOS	FD	S	3
R	04000	SWTP	6800	SMOKE DOS	FD	C	1
R	09200	TI	DS-990/10	SCHULER	FD	C	1
R	04350	UNIVAC	-	-	FD	C	-
R	06650	UNIVAC	9080	VS-9	FD	S	-
R	10175	WANG	OIS-140/3	-	FD	C	3
R	08100	XEROX	SIGMA 6	CP-V	FD	S	-

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	01500	AMDAHL	-	-	PD	C	1
R	09160	AMDAHL	470V/6	JES3	PD	C	9
R	00200	APPLE	II PLUS	-	PD	S	3
R	00630	APPLE	II PLUS	APPLE	PD	S	-

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	00645	BURROUGHS	3800	MCPVI	PD	-	1
R	01450	BURROUGHS	B-80	MCP	PD	S	-
R	01450	BURROUGHS	B-80	MCP	PD	S	-
R	09100	CDC	CYBER	-	PD	C	1
R	02200	CDC	CYBER 172	KRONOS 2.1	PD	-	-
R	06200	CDC	CYBER 173	NOS	PD	C	2
R	03600	CDC	CYBER175	-	PD	C	2
R	05850	CDC	CYBER73	NOS	PD	S	-
R	06350	DATA GEN	CS-40	ICOS	PD	C	1
R	09950	DEC	-	-	PD	C	3
R	04600	DEC	1099	TOPS-10	PD	C	3
R	05750	DEC	20	TOPS	PD	S	2
R	09650	H-P	3000	MPE III	PD	-	1
R	08200	HONEYWELL	3200	OS	PD	C	1
R	07875	HONEYWELL	60/66	CP6	PD	S	-
R	00900	HONEYWELL	6200	SVP1P	PD	C	8
R	08450	HONEYWELL	6200	SPVIP	PD	C	8
R	00130	HONEYWELL	66	-	PD	S	-
R	09250	IBM	-	-	PD	S	-
R	03250	IBM	-	-	PD	S	-
R	04820	IBM	3033/S	VS-1	PD	C	1
R	01200	IBM	360	-	PD	C	1
R	06523	IBM	360/30	DOS	PD	-	8
R	00625	IBM	360/40	DOS	PD	C	-
R	08580	IBM	370	-	PD	-	-
R	05700	IBM	370-148	DOS/VS	PD	-	-
R	02500	IBM	370/58	-	PD	C	1
R	02675	IBM	4331	DOS VS/E	PD	S	1
R	00450	IBM	7	SYS-7 MSP	PD	S	1
R	07850	RD SHACK	TRS80/II	TRSDOS V2	PD	M	3
R	04750	UNIVAC	1100/60	EXEC8	PD	-	-
R	07000	WANG	25-1	-	PD	C	3

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	07500	ALPHA MCRO	1050	WESTERN	FD	S	-
T	08750	AMDAHL	470-V/5	MVT-MVS	FD	C	1
T	12300	AMDAHL	470-V6	OS/VS2 MVS	FD	S	7
T	10100	APPLE	PLUS II	DOS 3.3	FD	S	3
T	02500	BASIC FOUR	610	BOSS	FD	S	3
T	07400	BASIC FOUR	610-E	BASICDATA	FD	M	3
T	01300	BURROUGHS	B 6807	MCS 30	FD	C	1
T	08100	BURROUGHS	B-800	CMS/MCP	FD	S	20
T	03900	CDC	OMEGA-480	VOS/VS	FD	C	-
T	15550	DATA GEN	4323	WILSON	FD	M	C
T	01775	DATAPOINT	5500	-	FD	-	-
T	08500	DEC	10	TOPS 10	FD	M	6
T	06700	DEC	11/50	RSTS/E	FD	-	3
T	14300	DEC	2060	TOPS-20	FD	C	3
T	06000	DEC	VAX 11/780	VMS	FD	C	20
T	15200	H-P	250	HP250	FD	C	3
T	13000	H-P	3000	MPE-III	FD	S	-
T	02000	H-P	3000	MPE-IV	FD	C	1
T	01200	H-P	3000/30	H-P	FD	C	3

M	CODE	MNFCR	MODEL	OPS.SYS	TYPE	PROG	LANG
T	01800	HITACHI	ITEL/AS6	EPSILON	FD	M	-
T	05500	HONEYWELL	-	-	FD	S	-
T	16000	HONEYWELL	6600-DPS	4JS	FD	S	1
T	04500	HONEYWELL	LEVEL 62	ACOS 5.20	FD	C	-
T	05900	IBM	-	EPSILON	FD	S	2
T	14600	IBM	3/15B	IBM	FD	M	-
T	01500	IBM	3/15D	IBM-CCP	FD	M	1
T	07000	IBM	3033/S	VS-1	FD	C	1
T	12000	IBM	34	SSP	FD	M	-
T	02300	IBM	360	MVS	FD	C	4
T	11500	IBM	360-20	-	FD	S	8
T	04600	IBM	360/40	DOS	FD	C	1
T	10500	IBM	370	OSMVS	FD	C	20
T	09900	IBM	370	DOS	FD	C	1
T	08800	IBM	4331	DOS	FD	C	1
T	05800	IBM	4341	DOS	FD	C	4
T	13500	IBM	4341	OS/VS1	FD	S	1
T	11600	IBM	SYSTEM-34	SSP	FD	M	8
T	10200	IBM	SYSTEM-34	SSP	FD	C	8
T	00900	IBM	SYSTEM-34	SSP	FD	C	8
T	09300	ICL	2904	EXECUTIVE	FD	C	8
T	08600	IMSAI	8080	CP/M	FD	C	3
T	06300	PRIME	650	PRIMOS	FD	-	20
T	01700	RD SHACK	TRS80III	TRSDOS	FD	S	3
T	12900	TI	990 10	SCHULER	FD	S	1
T	05600	TI	990/10	SCHULER	FD	S	1
T	03200	TI	990/10	-	FD	S	-
T	00100	TI	DS-990 /8	SEAKO	FD	S	1
T	13300	TI	DS-990/10	SCHULER	FD	C	1
T	00500	UNIVAC	9060	LS4	FD	C	1
T	15800	WANG	140III(WP)	WANG	FD	C	-
T	00750	WANG	2200 MUP	OS-R1.7	FD	C	3
T	05300	WANG	2200 MVP	-	FD	C	3
T	10490	WANG	25III	WANG(WP)	FD	S	20
T	12100	WANG	VS-80	VS	FD	C	-

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	00300	AMDAHL	470/D7B	MVS	PD	C	1
T	13100	AMDAHL	470V/6	JES3	PD	C	9
T	02900	AMDAHL	MARK-V	-	PD	C	1
T	02400	BURROUGHS	B-80	MCP	PD	S	-
T	06100	BURROUGHS	B1865	HOLVICK	PD	C	1
T	04100	CDC	CYBER 171	NOS	PD	C	1
T	04400	CDC	CYBER 172	KRONOS 2.1	PD	-	-
T	08300	COMMODORE	CBM 8032	CBM 40	PD	C	3
T	09800	DATA GEN	CS-40	ICOS	PD	C	1
T	02200	DATA GEN	S-140	RDOS 6.3	PD	-	-
T	13600	DATAPOINT	1132	DATABUS	PD	C	17
T	05700	DEC	1091	-	PD	-	1
T	00140	HONEYWELL	-	GCOS	PD	C	-
T	11900	HONEYWELL	6200	SPV1P	PD	C	8
T	00250	HONEYWELL	66	-	PD	S	-
T	10700	IBM	3032	OS/VS	PD	C	1

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
T	15700	IBM	360	OS/MV	PD	-	-
T	09000	IBM	360/30	DOS	PD	-	8
T	05550	IBM	360/30	DOS	PD	C	8
T	04700	IBM	370	-	PD	-	-
T	01600	IBM	370-145	DOS/VS	PD	S	-
T	12400	IBM	370-148	VS-1	PD	C	1
T	03650	IBM	370/138	DOS/VSE	PD	C	-
T	01900	IBM	370/145	DOC/VSE	PD	C	1
T	06500	IBM	370/148	VS1	PD	S	1
T	08700	IBM	4341	MVS SP1	PD	C	4
T	02250	IBM	SYSTEM-34	SSP	PD	C	1
T	13400	IBM	SYSTEM-34	-	PD	C	-
T	14500	IBM	SYSTEM-34	RELEASE 7	PD	C	8
T	12200	IBM	SYSTEM-34	-	PD	C	-
T	14200	MICRODATA	8000	PICK	PD	C	-
T	15900	MICRODATA	REALITY	PICK & DBM	PD	C	19
T	11100	NCR	101	B-1	PD	C	17
T	06600	UNIVAC	1100/60	EXEC8	PD	-	-

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation.

VOLUNTEER MANGAEMENT APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	00648	CDC	CYBER	WORD11	FD	C	3
R	08150	IBM	360/40	DOS	FD	M	7

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	03800	DEC	VAX 11/780	VMS	PD	C	20
R	09550	IBM	3/15B	IBM	PD	M	–
R	01850	IBM	3031	OS-MVS	PD	C	–
R	10175	WANG	OIS-140/3	–	PD	C	3

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	01200	H-P	3000/30	H-P	FD	C	3
T	16000	HONEYWELL	6600-DPS	4JS	FD	S	1
T	09300	ICL	2904	EXECUTIVE	FD	C	8
T	10400	WANG	25III	WANG(WP)	FD	C	12

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	06000	DEC	VAX 11/780	VMS	PD	C	20
T	01800	HITACHI	ITEL/AS6	EPSILON	PD	C	–
T	14600	IBM	3/15B	IBM	PD	M	–
T	14500	IBM	SYSTEM 34	RELEASE 7	PD	C	8
T	15900	MICRODATA	REALITY	PICK & DBM	PD	C	19
T	15800	WANG	140III(WP)	WANG	PD	C	–
T	06400	XEROX	SIGMA 6	CPV	PD	–	1

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

BUDGET/COST ACCOUNTING APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	10100	BURROUGHS	4700	OS 6.2	FD	S	1
R	00500	BURROUGHS	B-1860	MCT-2	FD	S	-
R	02060	CDC	CYBER 171	NAM	FD	S	2
R	02685	DEC	11 70	RSTS	FD	S	3
R	06750	DEC	11/44	RSTS/E	FD	S	3
R	00400	HARRIS	220/7	VULCAN	FD	-	1
R	04900	HARRIS	800	VULCAN	FD	C	-
R	02350	HONEYWELL	1648-A	-	FD	S	1
R	03250	IBM	-	-	FD	S	-
R	09550	IBM	3/15B	IBM	FD	M	-
R	00900	IBM	3/15D	IBM/CCP	FD	M	8
R	04700	IBM	37-148	OS/VS	FD	S	-
R	08580	IBM	370	-	FD	-	-
R	05700	IBM	370-148	DOS/VS	FD	S	-
R	02675	IBM	4331	DOS VS/E	FD	S	1
R	08750	IBM	4341	VM370SP	FD	S	3
R	03400	IBM	4341	DOS	FD	S	1
R	03450	IBM	4341	DOS	FD	S	1
R	08530	IBM	SYSTEM-34	SSP	FD	S	8
R	09400	MICRODATA	1600	PICK R-77	FD	C	-
R	02030	NASCO	AS/5000	MVS	FD	S	1
R	03900	ONTEL	OP-1/64	MODS/3	FD	C	3
R	01000	RD SHACK	TRS80III	TRSDOS	FD	S	3
R	08100	XEROX	SIGMA 6	CP-V	FD	-	1

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	09160	AMDAHL	470V/6	JES3	PD	C	9
R	00630	APPLE	II PLUS	APPLE	PD	S	-
R	00645	BURROUGHS	3800	MCPVI	PD	-	1
R	09950	DEC	-	-	PD	S	8
R	04760	DEC	10	TOPS10	PD	C	20
R	08700	H-P	3000	-	PD	-	-
R	00900	HONEYWELL	6200	SVP1P	PD	C	8
R	08450	HONEYWELL	6200	SPVIP	PD	C	8
R	03345	HONEYWELL	68/80	-	PD	C	-
R	08150	IBM	360/40	DOS	PD	M	-
R	09515	IBM	6(WP)	-	PD	S	20
R	00450	IBM	7	SYS-7 MSP	PD	S	3
R	09200	TI	DS-990/10	SCHULER	PD	C	1
R	10175	WANG	OIS-140/3	-	PD	C	3

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	08750	AMDAHL	470-V/5	MVT-MVS	FD	C	1
T	02500	BASIC FOUR	610	BOSS	FD	M	3
T	07400	BASIC FOUR	610-E	BASICDATA	FD	M	3
T	01300	BURROUGHS	B 6807	MCS 30	FD	S	1
T	08100	BURROUGHS	B-800	CMS/MCP	FD	C	1
T	04100	CDC	CYBER 171	NOS	FD	S	-

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
T	02200	DATA GEN	S-140	RDOS 6.3	FD	-	2
T	13600	DATAPOINT	1132	DATABUS	FD	C	20
T	15200	H-P	250	HP250	FD	C	20
T	05000	HONEYWELL	1648-A	-	FD	S	1
T	00200	HONEYWELL	66-20	-	FD	S	-
T	16000	HONEYWELL	6600-DPS	4JS	FD	C	1
T	05900	IBM	-	EPSILON	FD	S	1
T	14600	IBM	3/15B	IBM	FD	M	-
T	01500	IBM	3/15D	IBM-CCP	FD	M	8
T	12000	IBM	34	SSP	FD	S	-
T	10500	IBM	370	OSMVS	FD	S	20
T	09900	IBM	370	DOS	FD	S	1
T	04700	IBM	370	-	FD	S	-
T	05800	IBM	4341	DOS	FD	S	1
T	15100	IBM	5120	-	FD	M	5
T	02250	IBM	SYSTEM 34	SSP	FD	S	1
T	09300	ICL	2904	EXECUTIVE	FD	C	8
T	14100	MICRODATA	1600	PICK R-77	FD	C	-
T	06300	PRIME	650	PRIMOS	FD	-	-
T	01700	RD SHACK	TRS80III	TRSDOS	FD	S	3
T	05600	TI	990/10	SCHULER	FD	S	1
T	00100	TI	DS-990 /8	SEAKO	FD	S	1
T	00500	UNIVAC	9060	LS4	FD	-	-
T	10400	WANG	25III	WANG(WP)	FD	C	12

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	13100	AMDAHL	470V/6	JES3	PD	C	9
T	03900	CDC	OMEGA-480	VOS/VS	PD	S	-
T	01775	DATAPOINT	5500	-	PD	-	-
T	06700	DEC	11/50	RSTS/E	PD	-	3
T	01800	HITACHI	ITEL/AS6	EPSILON	PD	M	-
T	11900	HONEYWELL	6200	SPV1P	PD	C	8
T	12500	IBM	158/3	VSI	PD	-	-
T	15700	IBM	360	OS/MV	PD	S	-
T	04600	IBM	360/40	DOS	PD	S	1
T	01600	IBM	370-145	DOS/VS	PD	C	-
T	14200	MICRODATA	8000	PICK	PD	M	-
T	15900	MICRODATA	REALITY	PICK & DBM	PD	C	19
T	05400	RD SHACK	TRS-80/2	NEWDOS80	PD	M	3
T	12900	TI	990 10	SGHULER	PD	S	1
T	05100	TI	990 8	SEAKO	PD	M	1
T	13300	TI	DS-990/10	SCHULER	PD	C	1
T	15800	WANG	140III(WP)	WANG	PD	C	-
T	12100	WANG	VS-80	VS	PD	C	-

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

GENERAL ACCOUNTING APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	00630	APPLE	II PLUS	APPLE	FD	S	-
R	10100	BURROUGHS	4700	OS 6.2	FD	S	1
R	00500	BURROUGHS	B-1860	MCT-2	FD	S	-
R	09100	CDC	CYBER	-	FD	M	20
R	02060	CDC	CYBER 171	NAM	FD	S	2
R	04760	DEC	10	TOPS10	FD	C	20
R	00300	DEC	10	TOPS-10	FD	-	-
R	02685	DEC	11 70	RSTS	FD	S	3
R	06750	DEC	11/44	RSTS/E	FD	S	3
R	00400	HARRIS	220/7	VULCAN	FD	-	1
R	04900	HARRIS	800	VULCAN	FD	C	-
R	02350	HONEYWELL	1648-A	-	FD	S	1
R	03250	IBM	-	-	FD	S	-
R	09550	IBM	3/15B	IBM	FD	M	-
R	00900	IBM	3/15D	IBM/CCP	FD	M	8
R	04820	IBM	3033/S	VS-1	ED	S	1
R	01200	IBM	360	-	FD	S	-
R	08150	IBM	360/40	DOS	FD	M	-
R	04700	IBM	37-148	OS/VS	FD	S	-
R	08580	IBM	370	-	FD	-	-
R	05700	IBM	370-148	DOS/VS	FD	S	-
R	06900	IBM	370-158	-	FD	S	-
R	02675	IBM	4331	DOS VS/E	FD	S	1
R	08750	IBM	4341	VM370SP	FD	S	3
R	03400	IBM	4341	DOS	FD	S	1
R	03450	IBM	4341	DOS	FD	S	1
R	09350	IBM	4341	OS/VS1	FD	M	1
R	08530	IBM	SYSTEM-34	SSP	FD	S	8
R	09400	MICRODATA	1600	PICK R-77	FD	M	-
R	02030	NASCO	AS/5000	MVS	FD	S	1
R	03900	ONTEL	OP-1/64	MODS /.3	FD	C	3
R	00800	TI	990-10	SCHULER	FD	M	-
R	09200	TI	DS-990/10	SCHULER	FD	C	1
R	04750	UNIVAC	1100/60	EXEC8	FD	-	-
R	06650	UNIVAC	9080	VS-9	FD	S	-
R	08100	XEROX	SIGMA 6	CP-V	FD	-	1

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	09160	AMDAHL	470V/6	JES3	PD	C	9
R	01450	BURROUGHS	B-80	MCP	PD	S	-
R	01450	BURROUGHS	B-80	MCP	PD	S	-
R	03600	CDC	CYBER175	-	PD	-	-
R	08700	H-P	3000	-	PD	-	-
R	07875	HONEYWELL	60/66	CP6	PD	S	-
R	00900	HONEYWELL	6200	SVP1P	PD	C	8
R	08450	HONEYWELL	6200	SPVIP	PD	C	8
R	03345	HONEYWELL	68/80	-	PD	C	-
R	09515	IBM	6(WP)	-	PD	S	20
R	00450	IBM	7	SYS-7 MSP	PD	S	3

FULLY DEVELOPED SYSTEMS (TELEVISION)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
T	08750	AMDAHL	470-V/5	MVT-MVS	FD	C	1
T	12300	AMDAHL	470-V6	OS/VS2 MVS	FD	C	1
T	00300	AMDAHL	470/D7B	MVS	FD	-	-
T	02500	BASIC FOUR	610	BOSS	FD	M	3
T	07400	BASIC FOUR	610-E	BASICDATA	FD	M	3
T	01300	BURROUGHS	B 6807	MCS 30	FD	S	1
T	08100	BURROUGHS	B-800	CMS/MCP	FD	C	1
T	04100	CDC	CYBER 171	NOS	FD	S	-
T	03900	CDC	OMEGA-480	VOS/VS	FD	S	-
T	15500	DATA GEN	NOVA C3	WILSON	FD	M	1
T	02200	DATA GEN	S-140	RDOS 6.3	FD	-	2
T	13600	DATAPOINT	1132	DATABUS	FD	C	20
T	00400	DEC	10	TOPS-10	FD	-	-
T	14300	DEC	2060	TOPS-20	FD	M	7
T	15200	H-P	250	HP250	FD	C	20
T	05000	HONEYWELL	1648-A	-	FD	S	1
T	00200	HONEYWELL	66-20	-	FD	S	-
T	16000	HONEYWELL	6600-DPS	4JS	FD	C	1
T	04500	HONEYWELL	LEVEL 62	ACOS 5.20	FD	S	-
T	05900	IBM	-	EPSILON	FD	S	1
T	14600	IBM	3/15B	IBM	FD	M	-
T	01500	IBM	3/15D	IBM-CCP	FD	M	8
T	12000	IBM	34	SSP	FD	S	-
T	15700	IBM	360	OS/MV	FD	S	-
T	04600	IBM	360/40	DOS	FD	S	1
T	10500	IBM	370	OSMVS	FD	S	20
T	09900	IBM	370	DOS	FD	S	3
T	04700	IBM	370	-	FD	S	-
T	03650	IBM	370/138	DOS/VSE	FD	S	-
T	06500	IBM	370/148	VS1	FD	S	1
T	08800	IBM	4331	DOS	FD	S	1
T	05800	IBM	4341	DOS	FD	S	1
T	13500	IBM	4341	OS/VS1	FD	M	1
T	15100	IBM	5120	-	FD	M	5
T	02250	IBM	SYSTEM 34	SSP	FD	S	1
T	10200	IBM	SYSTEM-34	SSP	FD	S	8
T	09300	ICL	2904	EXECUTIVE	FD	C	8
T	14100	MICRODATA	1600	PICK R-77	FD	M	-
T	06300	PRIME	650	PRIMOS	FD	-	-
T	01400	TI	990-10	SCHULER	FD	M	-
T	05600	TI	990/10	SCHULER	FD	S	1
T	00100	TI	DS-990 /8	SEAKO	FD	S	1
T	13300	TI	DS-990/10	SCHULER	FD	C	1
T	06600	UNIVAC	1100/60	EXEC8	FD	-	-
T	00500	UNIVAC	9060	LS4	FD	-	-
T	05300	WANG	2200 MVP	-	FD	S	3
T	10400	WANG	25III	WANG(WP)	FD	S	12

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	13100	AMDAHL	470V/6	JES3	PD	C	9
T	02400	BURROUGHS	B-80	MCP	PD	S	-

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
T	15550	DATA GEN	4323	WILSON	PD	S	1
T	01775	DATAPOINT	5500	-	PD	-	-
T	06700	DEC	11/50	RSTS/E	PD	-	3
T	01800	HITACHI	ITEL/AS6	EPSILON	PD	M	-
T	11900	HONEYWELL	6200	SPV1P	PD	C	8
T	01600	IBM	370-145	DOS/VS	PD	C	-
T	12200	IBM	SYSTEM-34	-	PD	S	-
T	14200	MICRODATA	8000	PICK	PD	M	-
T	12900	TI	990 10	SCHULER	PD	S	1
T	05100	TI	990 8	SEAKO	PD	S	1
T	12100	WANG	VS-80	VS	PD	C	-
T	06400	XEROX	SIGMA 6	CP V	PD	S	1

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

PAYROLL APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	00630	APPLE	II PLUS	APPLE	FD	S	-
R	00645	BURROUGHS	3800	MCPVI	FD	S	1
R	10100	BURROUGHS	4700	OS 6.2	FD	S	1
R	00500	BURROUGHS	B-1860	MCT-2	FD	-	-
R	01450	BURROUGHS	B-80	MCP	FD	S	-
R	01450	BURROUGHS	B-80	MCP	FD	S	-
R	09100	CDC	CYBER	-	FD	M	20
R	02060	CDC	CYBER 171	NAM	FD	S	2
R	06350	DATA GEN	CS-40	ICOS	FD	C	-
R	04760	DEC	10	TOPS10	FD	C	20
R	00300	DEC	10	TOPS-10	FD	-	-
R	02685	DEC	11 70	RSTS	FD	S	3
R	06750	DEC	11/44	RSTS/E	FD	S	3
R	03800	DEC	VAX 11/780	VMS	FD	C	20
R	01150	H-P	3000	MPE IV	FD	-	-
R	00400	HARRIS	220/7	VULCAN	FD	-	1
R	04900	HARRIS	800	VULCAN	FD	C	-
R	02350	HONEYWELL	1648-A	-	FD	S	1
R	03250	IBM	-	-	FD	S	-
R	09550	IBM	3/15B	IBM	FD	S	-
R	00900	IBM	3/15D	IBM/CCP	FD	M	8
R	01850	IBM	3031	OS-MVS	FD	S	1
R	04820	IBM	3033/S	VS-1	FD	S	1
R	01200	IBM	360	-	FD	S	-
R	00625	IBM	360/40	DOS	FD	C	-
R	04700	IBM	37-148	OS/VS	FD	S	-
R	08580	IBM	370	-	FD	-	-
R	05700	IBM	370-148	DOS/VS	FD	S	-
R	02675	IBM	4331	DOS VS/E	FD	S	1
R	08750	IBM	4341	VM370SP	FD	S	3
R	03400	IBM	4341	DOS	FD	S	1
R	03450	IBM	4341	DOS	FD	S	1
R	09350	IBM	4341	OS/VS1	FD	M	1
R	00450	IBM	7	SYS-7 MSP	FD	S	1
R	08530	IBM	SYSTEM-34	SSP	FD	S	8
R	09400	MICRODATA	1600	PICK R-77	FD	M	-
R	02030	NASCO	AS/5000	MVS	FD	S	1
R	04000	SWTP	6800	SMOKE DOS	FD	C	1
R	00800	TI	990-10	SCHULER	FD	M	-
R	09200	TI	DS-990/10	SCHULER	FD	C	1
R	04750	UNIVAC	1100/60	EXEC8	FD	-	-
R	06650	UNIVAC	9080	VS-9	FD	S	-
R	08100	XEROX	SIGMA 6	CP-V	FD	-	1

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	09160	AMDAHL	470V/6	JES3	PD	C	9
R	03600	CDC	CYBER175	-	PD	-	-
R	08700	H-P	3000	-	PD	-	-
R	07875	HONEYWELL	60/66	CP6	PD	S	-

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	00900	HONEYWELL	6200	SVP1P	PD	C	8
R	08450	HONEYWELL	6200	SPVIP	PD	C	8
R	00130	HONEYWELL	66	-	PD	S	-
R	03345	HONEYWELL	68/80	-	PD	C	-
R	06523	IBM	360/30	DOS	PD	-	-
R	09515	IBM	6(WP)	-	PD	S	20

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	08750	AMDAHL	470-V/5	MVT-MVS	FD	C	1
T	00300	AMDAHL	470/D7B	MVS	FD	-	-
T	02500	BASIC FOUR	610	BOSS	FD	M	3
T	07400	BASIC FOUR	610-E	BASICDATA	FD	M	3
T	01300	BURROUGHS	B 6807	MCS 30	FD	S	1
T	02400	BURROUGHS	B-80	MCP	FD	S	-
T	04100	CDC	CYBER 171	NOS	FD	S	-
T	03900	CDC	OMEGA-480	VOS/VS	FD	S	-
T	09800	DATA GEN	CS-40	ICOS	FD	C	-
T	02200	DATA GEN	S-140	RDOS 6.3	FD	-	2
T	13600	DATAPOINT	1132	DATABUS	FD	C	20
T	01775	DATAPOINT	5500	-	FD	-	-
T	00400	DEC	10	TOPS-10	FD	-	-
T	14300	DEC	2060	TOPS-20	FD	M	7
T	06000	DEC	VAX 11/780	VMS	FD	C	20
T	15200	H-P	250	HP250	FD	C	20
T	02000	H-P	3000	MPE-IV	FD	-	-
T	05500	HONEYWELL	-	-	FD	S	1
T	05000	HONEYWELL	1648-A	-	FD	S	1
T	00200	HONEYWELL	66-20	-	FD	S	-
T	16000	HONEYWELL	6600-DPS	4JS	FD	C	1
T	05900	IBM	-	EPSILON	FD	S	1
T	14600	IBM	3/15B	IBM	FD	S	-
T	01500	IBM	3/15D	IBM-CCP	FD	M	8
T	12000	IBM	34	SSP	FD	S	-
T	15700	IBM	360	OS/MV	FD	S	-
T	11500	IBM	360-20	-	FD	S	8
T	10500	IBM	370	OSMVS	FD	S	20
T	09900	IBM	370	DOS	FD	S	3
T	04700	IBM	370	-	FD	S	-
T	03650	IBM	370/138	DOS/VSE	FD	S	-
T	06500	IBM	370/148	VS1	FD	S	1
T	08800	IBM	4331	DOS	FD	S	1
T	05800	IBM	4341	DOS	FD	S	1
T	13500	IBM	4341	OS/VS1	FD	M	1
T	15100	IBM	5120	-	FD	C	5
T	02250	IBM	SYSTEM 34	SSP	FD	S	1
T	14500	IBM	SYSTEM 34	RELEASE 7	FD	S	-
T	10200	IBM	SYSTEM-34	SSP	FD	S	8
T	12200	IBM	SYSTEM-34	-	FD	S	-
T	09300	ICL	2904	EXECUTIVE	FD	C	8
T	14100	MICRODATA	1600	PICK R-77	FD	M	-
T	14200	MICRODATA	8000	PICK	FD	S	-
T	11100	NCR	101	B-1	FD	S	3
T	06300	PRIME	650	PRIMOS	FD	-	-

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
T	01400	TI	990-10	SCHULER	FD	M	-
T	05600	TI	990/10	SCHULER	FD	S	1
T	00100	TI	DS-990 /8	SEAKO	FD	S	1
T	13300	TI	DS-990/10	SCHULER	FD	C	1
T	06600	UNIVAC	1100/60	EXEC8	FD	-	-
T	00500	UNIVAC	9060	LS4	FD	-	-
T	05300	WANG	2200 MVP	-	FD	S	3
T	10400	WANG	25III	WANG(WP)	FD	S	20
T	12100	WANG	VS-80	VS	FD	C	-
T	06400	XEROX	SIGMA 6	CP V	FD	S	1
			PARTIALLY DEVELOPED SYSTEMS (TELEVISION)				
T	12300	AMDAHL	470-V6	OS/VS2 MVS	PD	C	1
T	13100	AMDAHL	470V/6	JES3	PD	C	9
T	06700	DEC	11/50	RSTS/E	PD	-	3
T	01800	HITACHI	ITEL/AS6	EPSILON	PD	M	-
T	11900	HONEYWELL	6200	SPV1P	PD	C	8
T	00250	HONEYWELL	66	-	PD	S	-
T	12500	IBM	158/3	VSI	PD	-	-
T	09000	IBM	360/30	DOS	PD	-	1
T	12900	TI	990 10	SCHULER	PD	S	1
T	05100	TI	990 8	SEAKO	PD	S	1

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

WORD PROCESSING APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	00200	APPLE	II PLUS	-	FD	S	3
R	02060	CDC	CYBER 171	NAM	FD	M	-
R	04760	DEC	10	TOPS10	FD	C	20
R	05500	DEC	PDP 11/70	-	FD	S	3
R	09250	IBM	-	-	FD	S	-
R	06900	IBM	370-158	-	FD	S	-
R	08750	IBM	4341	VM370SP	FD	S	3
R	09350	IBM	4341	OS/VS1	FD	M	1
R	09515	IBM	6(WP)	-	FD	S	20
R	03900	ONTEL	OP-1/64	MODS /.3	FD	S	-
R	06520	RD SHACK	TRS80/I	TRSDOS V2	FD	S	-
R	02450	RD SHACK	TRS80/II	TRSDOS/CPM	FD	S	12
R	01000	RD SHACK	TRS80II	TRSDOS	FD	S	3
R	10175	WANG	OIS-140/3	-	FD	C	-
R	08100	XEROX	SIGMA 6	CP-V	FD	S	8

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	00630	APPLE	II PLUS	APPLE	PD	S	-
R	02685	DEC	11 70	RSTS	PD	S	3
R	03800	DEC	VAX 11/780	VMS	PD	C	20
R	08700	H-P	3000	-	PD	-	-
R	00625	IBM	360/40	DOS	PD	S	-
R	02030	NASCO	AS/5000	MVS	PD	S	-
R	04000	SWTP	6800	SMOKE DOS	PD	M	3

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	07500	ALPHA MCRO	1050	WESTERN	FD	S	-
T	12300	AMDAHL	470-V6	OS/VS2 MVS	FD	S	-
T	07400	BASIC FOUR	610-E	BASICDATA	FD	S	3
T	08300	COMMODORE	CBM 8032	CBM 40	FD	S	-
T	15200	H-P	250	HP250	FD	S	-
T	05900	IBM	-	EPSILON	FD	S	-
T	10500	IBM	370	OSMVS	FD	S	-
T	06300	PRIME	650	PRIMOS	FD	-	-
T	01700	RD SHACK	TRS80III	TRSDOS	FD	S	3
T	05600	TI	990/10	SCHULER	FD	S	1
T	15800	WANG	140III(WP)	WANG	FD	C	-
T	10400	WANG	25III	WANG(WP)	FD	S	12
T	11200	WANG	OIS115(WP)	-	FD	S	-
T	12100	WANG	VS-80	VS	FD	S	-

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	06000	DEC	VAX 11/780	VMS	PD	C	20
T	01600	IBM	370-145	DOS/VS	PD	S	-

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

AIR SWITCHING APPLICATIONS

PARTIALLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	00450	IBM	7	SYS-7 MSP	PD	M	12
R	04000	SWTP	6800	SMOKE DOS	PD	C	12

FULLY DEVELOPED SYSTEMS (TELEVISION)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
T	16000	HONEYWELL-	6600-DPS	4JS	FD	C	1

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
T	14200	MICRODATA	8000	PICK	PD	C	-
T	05100	TI	990 8	SEAKO	PD	C	-

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

FACILITIES SCHEDULING APPLICATIONS

PARTIALLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	09400	MICRODATA	1600	PICK R-77	PD	C	- -
R	10200	MICRODATA	REALITY	PICK & DBM	PD	C	19
R	03900	ONTEL	OP-1/64	MODS /.3	PD	C	3

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	02800	BURROUGHS	6700	-	FD	C	14

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	00300	AMDAHL	470/D7B	MVS	PD	C	-
T	14100	MICRODATA	1600	PICK R-77	PD	C	-
T	14200	MICRODATA	8000	PICK	PD	C	-
T	05400	RD SHACK	TRS-80/2	NEWDOS80	PD	C	3

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

INVENTORY CONTROL APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	10100	BURROUGHS	4700	OS 6.2	FD	-	1
R	02350	HONEYWELL	1648-A	-	FD	C	1
R	03250	IBM	-	-	FD	S	-
R	09550	IBM	3/15B	IBM	FD	M	-
R	02900	IBM	3031	DOS/VS	FD	C	1
R	09400	MICRODATA	1600	PICK R-77	FD	M	-
R	02030	NASCO	AS/5000	MVS	FD	S	1
R	01000	RD SHACK	TRS80II	TRSDOS	FD	M	3
R	10175	WANG	OIS-140/3	-	FD	C	3

PARTIALLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	00645	BURROUGHS	3800	MCPVI	PD	-	1
R	06750	DEC	11/44	RSTS/E	PD	S	3
R	09650	H-P	3000	MPE III	PD	-	-
R	00130	HONEYWELL	66	-	PD	M	-
R	04700	IBM	37-148	OS/VS	PD	-	-
R	05700	IBM	370-148	DOS/VS	PD	-	-
R	02675	IBM	4331	DOS VS/E	PD	S	1
R	03400	IBM	4341	DOS	PD	C	1
R	03450	IBM	4341	DOS	PD	C	1
R	04000	SWTP	6800	SMOKE DOS	PD	M	3
R	04750	UNIVAC	1100/60	EXEC8	PD	-	-
R	08100	XEROX	SIGMA 6	CP-V	PD	-	1

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	08750	AMDAHL	470-V/5	MVT-MVS	FD	C	1
T	12300	AMDAHL	470-V6	OS/VS2 MVS	FD	C	1
T	03900	CDC	OMEGA-480	VOS/VS	FD	S	-
T	15200	H-P	250	HP250	FD	C	20
T	01800	HITACHI	ITEL/AS6	EPSILON	FD	C	-
T	05000	HONEYWELL	1648-A	-	FD	C	1
T	00200	HONEYWELL	66-20	-	FD	-	-
T	16000	HONEYWELL	6600-DPS	4JS	FD	C	1
T	12500	IBM	158/3	VSI	FD	-	-
T	14600	IBM	3/15B	IBM	FD	M	-
T	15100	IBM	5120	-	FD	C	5
T	09300	ICL	2904	EXECUTIVE	FD	C	8
T	14100	MICRODATA	1600	PICK R-77	FD	M	-
T	06300	PRIME	650	PRIMOS	FD	-	-
T	01700	RD SHACK	TRS80III	TRSDOS	FD	M	3
T	05100	TI	990 8	SEAKO	FD	C	1
T	05600	TI	990/10	SCHULER	FD	S	1
T	15800	WANG	140III(WP)	WANG	FD	C	-

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
T	00300	AMDAHL	470/D7B	MVS	PD	C	-
T	15550	DATA GEN	4S23	WILSON	PD	M	1
T	00250	HONEYWELL	66	-	PD	M	-
T	15700	IBM	360	OS/MV	PD	-	-
T	04700	IBM	370	-	PD	-	-
T	05800	IBM	4341	DOS	PD	C	1
T	02250	IBM	SYSTEM 34	SSP	PD	C	1
T	14200	MICRODATA	8000	PICK	PD	C	-
T	06600	UNIVAC	1100/60	EXEC8	PD	-	-

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

MANPOWER SCHEDULING APPLICATIONS

PARTIALLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	03800	DEC	VAX 11/780	VMS	PD	C	20
R	03900	ONTEL	OP-1/64	MODS /.3	PD	C	3

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	06000	DEC	VAX 11/780	VMS	PD	C	20
T	16000	HONEYWELL	6600-DPS	4JS	PD	C	1
T	14200	MICRODATA	8000	PICK	PD	C	-
T	05400	RD SHACK	TRS-80/2	NEWDOS80	PD	C	3

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

ASCERTAINMENT RESEARCH APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	09525	H-P	3000	MPE IV	FD	-	-

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	04760	DEC	10	TOPS10	PD	C	20
R	02030	NASCO	AS/5000	MVS	PD	S	1
R	10175	WANG	OIS-140/3	-	PD	C	3

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	16000	HONEYWELL	6600-DPS	4JS	FD	C	1

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	08100	BURROUGHS	B-800	CMS/MCP	PD	C	20
T	04100	CDC	CYBER 171	NOS	PD	-	-
T	14200	MICRODATA	8000	PICK	PD	C	-
T	05400	RD SHACK	TRS-80/2	NEWDOS80	PD	C	3
T	15800	WANG	140III(WP)	WANG	PD	C	-

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

AUDIENCE RESEARCH APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	09525	H-P	3000	MPE IV	FD	-	-
R	08100	XEROX	SIGMA 6	CP-V	FD	-	1

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	00630	APPLE	II PLUS	APPLE	PD	C	3
R	04900	HARRIS	800	VULCAN	PD	S	-
R	01200	IBM	360	-	PD	S	-
R	08530	IBM	SYSTEM-34	SSP	PD	C	8
R	02030	NASCO	AS/5000	MVS	PD	S	1
R	03900	ONTEL	OP-1/64	MODS /.3	PD	S	20
R	10175	WANG	OIS-140/3	-	PD	C	3

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	16000	HONEYWELL	6600-DPS	4JS	FD	C	1
T	05400	RD SHACK	TRS-80/2	NEWDOS80	FD	C	3

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	08750	AMDAHL	470-V/5	MVT-MVS	PD	C	1
T	12300	AMDAHL	470-V6	OS/VS2 MVS	PD	C	4
T	08100	BURROUGHS	B-800	CMS/MCP	PD	C	20
T	15700	IBM	360	OS/MV	PD	C	-
T	14500	IBM	SYSTEM 34	RELEASE 7	PD	C	8
T	15800	WANG	140III(WP)	WANG	PD	C	-

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

PROGRAM/RECORD LIBRARY APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	04760	DEC	10	TOPS10	FD	C	20
R	02685	DEC	11 70	RSTS	FD	S	3
R	05500	DEC	PDP 11/70	-	FD	M	3
R	03800	DEC	VAX 11/780	VMS	FD	C	20
R	02375	IBM	3031	VS/1	FD	C	1
R	05700	IBM	370-148	DOS/VS	FD	C	1
R	09515	IBM	6(WP)	-	FD	S	20
R	01000	RD SHACK	TRS80II	TRSDOS	FD	M	3
R	04000	SWTP	6800	SMOKE DOS	FD	C	1

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	06200	CDC	CYBER 173	NOS	PD	C	2
R	09950	DEC	-	-	PD	C	1
R	02350	HONEYWELL	1648-A	-	PD	C	2
R	03250	IBM	-	-	PD	C	-
R	01200	IBM	360	-	PD	C	-
R	04700	IBM	37-148	OS/VS	PD	C	-
R	08580	IBM	370	-	PD	C	-
R	03900	ONTEL	OP-1/64	MODS /.3	PD	C	20
R	06520	RD SHACK	TRS80/I	TRSDOS V2	PD	C	3
R	07850	RD SHACK	TRS80/II	TRSDOS V2	PD	M	3
R	07000	WANG	25.-1	-	PD	C	3
R	08100	XEROX	SIGMA 6	CP-V	PD	-	-

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	15000	AMDAHL	470-V8	MVS/SP	FD	S	-
T	06000	DEC	VAX 11/780	VMS	FD	C	20
T	15200	H-P	250	HP250	FD	C	3
T	16000	HONEYWELL	6600-DPS	4JS	FD	C	1
T	02300	IBM	360	MVS	FD	C	4
T	09300	ICL	2904	EXECUTIVE	FD	C	1
T	01700	RD SHACK	TRS80III	TRSDOS	FD	M	3
T	00100	TI	DS-990 /8	SEAKO	FD	S	1
T	10400	WANG	25III	WANG(WP)	FD	C	20

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	12300	AMDAHL	470-V6	OS/VS2 MVS	PD	C	1
T	07400	BASIC FOUR	610-E	BASICDATA	PD	M	3
T	08100	BURROUGHS	B-800	CMS/MCP	PD	S	20
T	04100	CDC	CYBER 171	NOS	PD	-	-
T	05000	HONEYWELL	1648-A	-	PD	C	2
T	14200	MICRODATA	8000	PICK	PD	C	-

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see code explanation

PROGRAM SCHEDULE/LOGS APPLICATIONS

FULLY DEVELOPED SYSTEMS (RADIO)

M	CODE	MNFCR	MODEL	OPS SYS	TYPE	PROG	LANG
R	05500	DEC	PDP 11/70	-	FD	M	3
R	01200	IBM	360	-	FD	C	-
R	05700	IBM	370-148	DOS/VS	FD	C	7
R	01100	IBM	370/148	OS/VS1	FD	C	1
R	09350	IBM	4341	OS/VS1	FD	C	1

PARTIALLY DEVELOPED SYSTEMS (RADIO)

R	03800	DEC	VAX 11/780	VMS	PD	C	20
R	02350	HONEYWELL	1648-A	-	PD	C	2
R	08580	IBM	370	-	PD	C	-
R	10200	MICRODATA	REALITY	PICK & DBM	PD	C	19
R	03900	ONTEL	OP-1/64	MODS /.3	PD	C	20
R	06520	RD SHACK	TRS80/I	TRSDOS V2	PD	C	3
R	01000	RD SHACK	TRS80II	TRSDOS	PD	M	3
R	07000	WANG	25.-1	-	PD	C	3
R	10175	WANG	OIS-140/3	-	PD	C	3

FULLY DEVELOPED SYSTEMS (TELEVISION)

T	12300	AMDAHL	470-V6	OS/VS2 MVS	FD	C	1
T	14300	DEC	2060	TOPS-20	FD	C	3
T	15200	H-P	250	HP250	FD	C	3
T	16000	HONEYWELL	6600-DPS	4JS	FD	C	1
T	13500	IBM	4341	OS/VS1	FD	C	1
T	00100	TI	DS-990 /8	SEAKO	FD	S	1

PARTIALLY DEVELOPED SYSTEMS (TELEVISION)

T	15000	AMDAHL	470-V8	MVS/SP	PD	M	-
T	07400	BASIC FOUR	610-E	BASICDATA	PD	C	3
T	04100	CDC	CYBER 171	NOS	PD	-	-
T	06000	DEC	VAX 11/780	VMS	PD	C	20
T	05000	HONEYWELL	1648-A	-	PD	C	2
T	09300	ICL	2904	EXECUTIVE	PD	C	1
T	14200	MICRODATA	8000	PICK	PD	C	-
T	01700	RD SHACK	TRS80III	TRSDOS	PD	M	3
T	05100	TI	990 8	SEAKO	PD	M	-
T	15800	WANG	140III(WP)	WANG	PD	-	-

PROG: C = Custom; M = Modified; S = Standard. LANGuage: see acode explanation

STATIONS USING A SECOND COMPUTER

Sorted By Computer Manufacturer

Radio & Television

Source: Station Computer Utilization Survey, 1981

SECOND COMPUTER USERS
SORTED BY MANUFACTURER
TELEVISION STATIONS

M	CODE	CALL	CITY	ST	TYPE	MANUFACTURER	MODEL
T	13100	KAMU-TV	COLLGE STA	TX	1	AMDAHL	470V/7
T	12100	WPSX-TV	UNIV PARK	PA	3	APPLE	II
T	12500	SDE-TV	UERMILLION	SD	3	APPLE	II PLUS
T	10500	WBGU-TV	BOWLING GN	OH	3	APPLE	II PLUS
T	01500	KQED-TV	SAN FRNCSO	CA	1	BURROUGHS	4800
T	11200	OETA	OKLAM CITY	OK	1	BURROUGHS	6805
T	06300	WFUM-TV	FLINT	MI	3	CPT (WP)	5000
T	14100	KBYU-TV	PROVO	UT	2	DEC	10
T	12300	SC-ETV	COLUMBIA	SC	2	DEC	11/44
T	08800	KENW-TV	PORTALES	NM	3	H-P	85
T	06000	WGBH-TV	BOSTON	MA	1	HONEYWELL	62
T	12600	KUSD-TV	VERMILLION	SD	1	IBM	148/3
T	10400	WOUB-TV	ATHENS	OH	1	IBM	370
T	05400	KY-ETV	LEXINGTON	KY	1	IBM	370
T	14300	WETK-TV	WINOOSKI	VT	1	IBM	370
T	03200	WGTV-TV	ATHENS	GA	1	IBM	370/158
T	12000	WVIA-TV	SCRANTON	PA	2	IBM	SYSTEM-3
T	15200	KSPS-TV	SPOKANE	WA	2	MICRODATA	-
T	00250	KTOO-TV	JUNEAU	AK	2	POINT 4	POINT 4
T	04600	WFYI-TV	INDINAPLIS	IN	2	PRIME	I-1000
T	05500	WKPC-TV	LOUISVILLE	KY	3	RD SHACK	TRS80
T	16000	WMVS-TV	MILWAUKEE	WI	2	TI	990
T	00300	KAET-TV	TEMPE	AZ	2	TI	990/10

RADIO STATIONS

M	CODE	CALL	CITY	ST	TYPE	MANUFACTURER	MODEL
R	09160	KAMU-FM	COLLGE STA	TX	1	AMDAHL	470V/7
R	03900	WUOM-FM	ANN ARBOR	MI	1	AMDAHL	V/8
R	04600	WMUK-FM	KALAMAZOO	MI	3	APPLE	III
R	00900	KQED-FM	SAN FRNCSO	CA	1	BURROUGHS	4800
R	09400	KBYU-FM	PROVO	UT	1	DEC	10
R	02060	WCBU-FM	PEORIA	IL	2	DEC	11/44
R	00450	KANG-FM	ANGWIN	CA	2	H-P	3000
R	03800	WGBH-FM	BOSTON	MA	1	HONEYWELL	62
R	04900	KSJN-FM	ST PAUL	MN	1	IBM	360
R	04760	WEMU-FM	YPSILANTI	MI	1	IBM	4341
R	00130	KTOO-FM	JUNEAU	AK	2	POINT 4	POINT 4
R	06100	WAMC-FM	ALBANY	NY	3	RD SHACK	TRS80
R	01600	WUSF-FM	TAMPA	FL	3	RD SHACK	TRS80/II
R	04000	WAUS-FM	BERRIEN SP	MI	2	XEROX	SIGMA 6/7

TYPE: 1 = Large mainframe; 2 = Mini Computer; 3 = Micro Computer

COMPUTER VENDORS IN PUBLIC BROADCASTING

Following is a partial list of consulting firms and/or computer vendors we know about who have developed systems for public broadcasting stations. Doubtless there are several more which other stations know about. Anyone interested should contact the firms directly for more current information on their services, public broadcasting clients and rates.

COMPUTER VENDORS IN PUBLIC BROADCASTING

VENDORS \ APPLICATIONS	Auction Mgmt	Membership Mgmt	Mailing List/Labels	Volunteer Mgmt	Budget/Cost Actg	General Actg	Payroll	Word Processing	Air Switching	Facilities Sched	Inventory Control	Manpower Sched	Ascertainment Rs	Audience Rs	Program/Record Lib	Program Sched/Log
BASIC DATA SYSTEMS, INC.	X	X	X		X	X	X	X			X				X	X
ACCESS INTERNATIONAL, INC.	X	X	X		X	X	X				X					
HOLVICK CORPORATION		X	X			X	X	X			X					
MICHAEL J. MENZIES, INC.			X			X										
NEWKIRK PRODUCTS, INC.		X	X													
SCHULER AND ASSOCIATES	X	X	X	X	X	X	X									X
SEAKO, INC.		X	X		X	X	X	X							X	X
TOUCHETTE CORPORATION		X	X			X										
WESTERN COMPUTING		X	X		X	X	X	X			X					
WILSON MICROSYSTEMS, INC.	X	X	X	X	X	X	X	X			X					

Access International, Inc.

208 Union Wharf
Boston, Massachusetts 02109
617/367-3690
Contact: Mr. Michel Bastarache, Vice President
Number of Years in Business - Five Years
Number of Employees - Fifteen
Business Areas - Distributor (Digital Equipment-DEC); Software Packages using 4th generation languages; Service Bureau; Consulting; Turnkey Systems
Public Broadcasting Clients - WGBH TV/FM (Boston, MA)

Basic Data Systems, Inc.

70 Worthington
Maryland Heights, Missouri 63043
314/434-8300
Contact: Mr. Hap Mather, Director of Marketing
Number of Years in Business - Five Years
Number of Employees - Twenty-Five
Business Areas - OEM (Basic Four, Wang); Software Packages; Turnkey Systems; Consulting
Public Broadcasting Clients - KETC-TV (St. Louis, MO)

Holvick Corporation

400 Renaissance Center, Suite 2760
Detroit, Michigan 48234
313/259-9090
Contact: Mr. Tim Holvick, President
Number of Years in Business - Five Years
Number of Employees - Forty
Business Areas - OEM (Burroughs, Datapoint); Software Packages; Custom Programming; Turnkey Systems; Consulting
Public Broadcasting Clients - WTVS-TV (Detroit, MI)

Michael J. Menzies, Inc.

5140 Birch Street
Newport Beach, California 92660
714/752-2434
Contact: Mr. Michael Menzies, President
Number of Years in Business - Six Years
Number of Employees - Two
Business Area - Financial Software Packages; Custom Programming; Consulting
Public Broadcasting Clients - KCTS-TV (Seatle, WA); KOCE-TV (Huntington Beach, CA)

Newkirk Products, Inc.

P.O.Box 1892
Albany, New York 12201
518/489-5546
Contact: Ms. Ellie Dribben, Marketing Representative
Number of Years in Business - Eleven Years
Number of Employees - Forty
Business Areas - OEM (Prime, Radio Shack); Direct Mail Marketing; Publishing; Service Bureau; Custom Programming
Public Broadcasting Clients - WAMC-FM (Albany, NY)

Schuler and Associates

225 East Airport Freeway
Irving, Texas 75062
214/258-8600
Contact: Ms. Patricia Callahan, Vice President
Number of Years in Business - Five Years
Number of Employees - Twenty
Business Areas - OEM (Texas Instruments, Priam); Turnkey Systems; Software Packages; Custom Programming
Public Broadcasting Clients - KERA-TV/FM (Dallas, TX); WDCN-TV (Nashville, TN); WMVS-TV (Milwaukee, WI); WYES-TV (New Orleans, LA); KAET-TV (Phoenix, AZ); KRMA-TV (Denver, CO); KUED-TV (Salt Lake, UT); KCTS-TV (Seattle, WA); WHYY-TV (Philadelphia, PA); KSPS-TV (Spokane, WA); KLRN/KLRU-TV (Austin, TX); KPBS-TV/FM (San Diego, CA); KUHT-TV (Houston, TX); WMHT-TV/FM (Schenectady, NY); WXXI-TV/FM (Rochester, NY); WCET-TV (Cincinnati, OH); WEDU-TV (Orlando, FL); WPTD-TV (Dayton, OH); WVIZ-TV (Cleveland, OH)

Seako, Inc.

517 Beacon Parkway West
Birmingham, Alabama 35209
205/945-8200
Contact: Mr. Tom Patterson, President
Number of Years in Business - Ten Years
Number of Employees - Twelve
Business Areas - OEM (Texas Instruments, NEC, ASTRA); Turnkey Systems, Service Bureau, Consulting; Custom Programming
Public Broadcasting Clients - Alabama ETV; Iowa Public Broadcasting Network

Touchette Corporation

5701 Enterprise Parkway
Dewitt, New York 13214
315/445-0291
Contact: Mr. Tom Odgen, Sales Representative
Number of Years in Business - Thirteen Years
Number of Employees - Over One Hundred
Business Areaa - OEM (Basic Four); Service Bureau; Consulting; Software Packages; Turnkey Systems
Public Broadcasting Clients - WNPI/WNPE-TV (Watertown, NY); WCNY-TV (Liverpool, NY)

Western Computing

537 East Osborn Road
Phoenix, Arizona 85012
602/274-0383
Contact: Mr. Robert Hoyt, President
Number of Years in Business - Thirteen Years
Number of Employees - Fifteen
Areas of Business - Distributor (Alpha-Micro); Turnkey Systems; Service Bureau; Custom Programming
Public Broadcasting Clients - KOZK-TV (Springfield, MO); KAET-TV (Phoenix,AZ)

Wilson Microsystems, Inc.

290 Elwood Davis Road, Suite 209
Liverpool, New York 13088
315/451-6445
Contact: Mr. James Wilson, President
Number of Years in Business - Five Years
Number of Employees - Eight
Business Areas - OEM (Data General); Turnkey Systems; Custom Programming Software Packages; Consulting
Public Broadcasting Clients - WVPN-FM (Charleston, WV); WSWP-TV (Beckley, WV); WCNY-TV (Liverpool, NY)

SYSTEMS/SOFTWARE MARKETED BY TELEVISION STATIONS

STATION: KVIE-TV, SACRAMENTO, CA
CONTACT: HORST BRUENJES
TELEPHONE: 916-929-5843

APPLICATION AREA(S):

A) AUCTION MANAGEMENT
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) HEWLETT-PACKARD 3000
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A) QUERY,IMAGE,EDIT
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B)

DOCUMENTATION:

STATION: CONNECTICUT NETWORK, HARTFORD, CT
CONTACT: ALFRED STEEL
TELEPHONE: 203-278-5310

APPLICATION AREA(S):

A) MEMBERSHIP MANAGEMENT SYSTEMS
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) HEWLETT-PACKARD 3000
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A) COBOL, IMAGE, V/3000
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) $30,000
B)

DOCUMENTATION: AVAILABLE

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STATION: WGBH-TV, BOSTON, MA
CONTACT: ROY WASDYKE
TELEPHONE: 617-492-2777 X 2852

APPLICATION AREA(S):

A) MEMBERSHIP MANAGEMENT
B) FINANCIAL MANAGEMENT

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) VAX 11/750; VAX 11/780 (DIGITAL)
B) VAX 11/750; VAX 11/780 (DIGITAL)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A) ADMINS
B) ADMINS

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B) UPON REQUEST

DOCUMENTATION: AVAILABLE

STATION: WTVS-TV, DETROIT, MI
CONTACT: DIANE BLISS
TELEPHONE: 313-873-7200

APPLICATION AREA(S):

A) DONOR SERVICES (MEMBERSHIP MANAGEMENT)
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) BURROUGHS - B 1000; B 6000; B 7000
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A) DMS II (BURROUGHS)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A) 254 K
B)

APPROXIMATE ACCQUISITION PRICE:

A) $22,000
B)

DOCUMENTATION: AVAILABLE

****

STATION: KLVX-TV, LAS VEGAS, NV
CONTACT: JOHN HILL
TELEPHONE: 702-737-1010

APPLICATION AREA(S):

A) MAILING LIST/LABELS
B) FUND RAISER (MOMT)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) COMMODORE CBM/8032
B) COMMODORE CBM/8032

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A) NONE
B) NONE

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A) 32K/8050 DISC
B) 32K/8050 DISC

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST (WILLING TO EXCHANGE PROGRAMS)
B) UPON REQUEST (WILLING TO EXCHANGE PROGRAMS)

DOCUMENTATION: SAMPLE RUNS AND PROGRAM LISTINGS AVAILABLE

****

STATION: KNME-TV, ALBUQUERQUE, NM
CONTACT: JON COOPER
TELEPHONE: 505-277-2121

APPLICATION AREA(S):

A) MEMBERSHIP MANAGEMENT (RESOURCE INFORMATION SYSTEM)
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) IBM 370; IBM 4341; IBM 30XX
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A) CICS, IMS
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) $7,000
B)

DOCUMENTATION: AVAILABLE

****

STATION: WNED-TV, BUFFALO, NY
CONTACT: SCOTT ELLIOTT
TELEPHONE: 716-881-5000

APPLICATION AREA(S):

A) MEMBERSHIP/AUCTION MANAGEMENT
B) FINANCIAL MANAGEMENT

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) HEWLETT-PACKARD 3000
B) HEWLETT-PACKARD 3000

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B) UPON REQUEST

DOCUMENTATION: AVAILABLE

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STATION: WNPE-TV, WATERTOWN, NY
CONTACT: SUSAN LEE
TELEPHONE: 315-782-3142

APPLICATION AREA(S):

A) MEMBERSHIP MANAGEMENT SYSTEMS
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) IBM 360, IBM 370
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B)

DOCUMENTATION: AVAILABLE

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STATION: PRAIRIE PUBLIC TELEVISION, FARGO, ND
CONTACT: HAROLD MACKENTHUN
TELEPHONE: 701-232-8921

APPLICATION AREA(S):

A) MEMBERSHIP MANAGEMENT SYSTEM
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) IBM SYSTEM 32, IBM SYSTEM 34
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B)

DOCUMENTATION: AVAILABLE

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STATION: WOUB-TV, ATHENS, OHIO
CONTACT: RICHARD MADDEN
TELEPHONE: 614-594-6107

APPLICATION AREA(S):

A) MAILING LIST/VOLUNTEER MANAGEMENT
B) BUDGET/COST ACCOUNTING

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) WANG 25/III
B) WANG 25/111

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) APPLICABLE HANDLING CHARGES ONLY
B) APPLICABLE HANDLING CHARGES ONLY

DOCUMENTATION: AVAILABLE

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STATION: KUED-TV, SALT LAKE CITY, UTAH
CONTACT: FRED ESPLIN
TELEPHONE: 801-581-7777

APPLICATION AREA(S):

A)
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A)
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A)
B)

DOCUMENTATION:

***** The station is currently developing application software in the areas of membership management, operations and programming which will be made available to interested public broadcasting stations. The applications are being developed on a MICRODATA -8000 computer under PIC operating system.

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STATION: WMVS-TV, MILWAUKEE, WISCONSIN
CONTACT: DAVID BAULE
TELEPHONE: 414-271-1036

APPLICATION AREA(S):

A) PROGRAMMING (including scheduling, audience research,library,traffic,rating,etc)
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) HONEYWELL - 6600 (other large systems possible)
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A) 1024K
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B)

DOCUMENTATION: AVAILABLE

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STATION: WVPT-TV, HARRISONBURG, VIRGINIA
CONTACT: ROGER McINTOSH
TELEPHONE: 703-434-5391

APPLICATION AREA(S):

A) AUCTION MANAGEMENT
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) IBM SYS 32/34/38
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A) 32K
B)

APPROXIMATE ACCQUESITION PRICE:

A) UPON REQUEST
B)

DOCUMENTATION: AVAILABLE

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STATION: KPFA-FM, BERKELEY, CALIFORNIA
CONTACT: STEPHEN CHESSIN
TELEPHONE: 415-848-6767

APPLICATION AREA(S):

A) PACIFICA SUBSCRIPTION FULFILLMENT SYSTEM
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) IBM 360, IBM 370
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A) DOS, PL/1
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A) 64K
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B)

DOCUMENTATION: SOURCE CODE AVAILABLE ALONG WITH REPORT FORMATS

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STATION: WCBU-FM, PEORIA, ILLINOIS
CONTACT: JOEL HARTMAN
TELEPHONE: 309-673-7100

APPLICATION AREA(S):

A) NPR SATELLITE RECORDING CONTROLLER (air switching)
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) APPLE II+PLUS
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A) 32K
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B)

DOCUMENTATION: AVAILABLE

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STATION: KUNI/KHKE-FM, CEDAR FALLS, IOWA
CONTACT: DOUGLAS L. VERNIER
TELEPHONE: 319-273-6400

APPLICATION AREA(S):

A) MEMBERSHIP MANAGEMENT
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) TRS 80 MODEL II
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A) 64K
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B)

DOCUMENTATION: AVAIALABLE

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STATION: WGBH-FM, BOSTON, MASSACHUSETTS
CONTACT: ROY WASDYKE
TELEPHONE: 617-492-2777

APPLICATION AREA(S):

A) MEMBERSHIP MANAGEMENT
B) FINANCIAL MANAGEMENT

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) DEGITAL,VAX
B) DEGITAL, VAX

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A) ADMINS
B) ADMINS

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B) UPON REQUEST

DOCUMENTATION: AVAILABLE

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STATION: WAUS-FM, BERRIEN SPRINGS, MICHIGAN
CONTACT: DANIEL CRESS
TELEPHONE: 616-471-3400

APPLICATION AREA(S):

A) RECORD LIBRARY SYSTEM
B)

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) XEROX SIGMA 6 and 7
B)

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A) BASIC
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B)

DOCUMENTATION: AVAILABLE

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STATION: WNED-FM, BUFFALO, NEW YORK
CONTACT: SCOTT ELLIOT
TELEPHONE: 716-881-5000

APPLICATION AREA(S):

A) MEMBERSHIP/AUCTION MANAGEMENT
B) FINANCIAL MANAGEMENT

COMPUTERS ON WHICH THIS SYSTEM(S) IS DESIGNED TO OPERATE (vendors & model):

A) HEWLETT-PACKARD 3000
B) HEWLETT-PACKARD 3000

OTHER VENDOR SUPPLIED SOFTWARE REQUIRED BY THIS SYSTEM(S):

A)
B)

MINIMUM CPU MEMORY REQUIRED FOR PROGRAM EXECUTION:

A)
B)

APPROXIMATE ACCQUISITION PRICE:

A) UPON REQUEST
B) UPON REQUEST

DOCUMENTATION: AVAILABLE

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COMPUTER USER CONTACT LISTING

Sorted by Station Code

Radio & Television

COMPUTER USERS CONTACT (RADIO STATIONS)
SORTED BY CODE

CODE	CALL	CITY	ST	CONTACT	TITLE	PHONE
00130	KTOO-FM	JUNEAU	AK	HARRIS,DENIS	ASST TO G.M	907-586-1670
00200	KMCR-FM	MESA	AZ	DODSON,R	CHIEF ENG	602-969-9099
00300	KUAT-AM	TUCSON	AZ	HABER,ETHEL	ADMIN MGR	602-626-1434
00400	KASU-FM	JONESBORO	AR	ROGERS,DOUG	CHIEF ENG	501-972-3070
00450	KANG-FM	ANGWIN	CA	LYONS,BILL	CHIEF ENG	707-965-7141
00500	KPFA-FM	BERKELEY	CA	CHESSIN,S	SUBSCP COORD	415-848-6767
00625	KUSC-FM	LOS ANGLES	CA	SMITH,WALL	GEN MGR	213-743-5852
00630	KSBR-FM	MSSN VIEJO	CA	MOORE,M	OPS MGR	714-831-5727
00648	KXPR-FM	SACRAMENTO	CA	IBARRA,ANITA	DEV DIR	916-454-6222
00800	KPBS-FM	SAN DIEGO	CA	HALE,ELDON	ADMIN MGR	714-265-6431
00900	KQED-FM	SAN FRNCSO	CA	SMITH,B	FIN OFFICER	415-864-2000
01000	KCSM-FM	SAN MATEO	CA	CHEIFET,S	GEN MGR	415-574-6202
01100	KUNC-FM	GREELEY	CO	MYERS,DON	COMP CTR DIR	303-351-2336
01200	WAMU-FM	WASHINGTON	DC	HARMON,SUSAN	GEN MGR	202-686-2690
01600	WUSF-FM	TAMPA	FL	YOUNG,JOHN	STA MGR	813-974-2215
01850	WBEZ-FM	CHICAGO	IL	NOLAN,CAROLE	GEN MGR	312-641-4088
02030	WGLT-FM	NORMAL	IL	PAXTON,BEN	GEN MGR	309-438-2255
02060	WCBU-FM	PEORIA	IL	HARTMAN,J	GEN MGR	309-673-7100
02375	WOI-AM	AMES	IA	FORSLING,D	STA MGR	515-294-5555
02400	WOI-FM	AMES	IA	FORSLING,D	STA MGR	515-294-5555
02450	KUNI-FM	CEDAR FALL	IA	VERNIER,DOUG	BRDCAST DIR	319-273-6400
02475	KHKE-FM	CEDAR FALL	IA	VERNIER,DOUG	BRDCAST DIR	319-273-6400
02675	KWIT-FM	SIOUX CITY	IA	BAKER,FRANK	GEN MGR	712-274-2600
02685	KHCC-FM	HUTCHINSON	KS	HORNING,D	GEN MGR	316-662-6646
02830	KANZ-FM	PIERCEVILE	KS	HOPE,QUENTIN	STA DIR	316-335-6571
02900	KMUW-FM	WICHITA	KS	WILHANS,W	AUDITOR	316-689-3031
03250	WKMS-FM	MURRAY	KY	SMITH,BRUCE	GEN MGR	502-762-4661
03345	KRVS-FM	LAFAYETTE	LA	BRIGHAM,J	GEN MGR	318-234-9495
03400	WMEH-FM	ORONO	ME	WINCHESTER,E	GEN MGR	207-866-4493
03450	WMEA-FM	PORTLAND	ME	WINCHESTER,E	GEN MGR	207-866-4493
03600	WFCR-FM	AMHERST	MA	GOLDFARB,R	GEN MGR	413-545-0100
03800	WGBH-TV	BOSTON	MA	WASDYKE,ROY	INFO SYS MGR	617-492-2777
03900	WUOM-FM	ANN ARBOR	MI	KLATT,RAY	OPS DIR	313-764-9210
04000	WAUS-FM	BERRIEN SP	MI	CRESS,DAN	STUDIO DIR	616-471-3400
04350	WFBE-FM	FLINT	MI	KILMER,SUSAN	STA MGR	313-762-1148
04600	WMUK-FM	KALAMAZOO	MI	ATWELL,RICK	DEV MGR	616-383-1921
04750	WCMU-FM	ALPENA	MI	MILLER,D	ACCOUNTANT	517-774-3105
04760	WEMU-FM	YPSILANTI	MI	JACQUES,DICK	STA MGR	313-487-2229
04820	WDTH-FM	DULUTH	MN	LIVINGSTON,T	STA MGR	218-726-7181
04875	KAXE-FM	GRAND RAP	MN	HIGBIE,BOB	DEV DIR	218-326-1234
04900	KSJN-FM	ST PAUL	MN	NORDANG,L	BUS MGR	612-221-1540
05350	KBIA-FM	COLUMBIA	MO	KARWOSKI,R	OPS MGR	314-882-3431
05500	KXCV-FM	MARYVILLE	MO	STADLMAN,R	BRDCAST,DIR	816-582-2076
05750	KUFM-FM	MISSOURI	MT	LUBRECHT,C	CHIEF ENG	406-243-4931
05850	KNPR-FM	LAS VEGAS	NV	MARCHESE,L	GEN MGR	702-456-6695

06100	WAMC-FM	ALBANY	NY	GALLETLY,D	STA MGR	518-356-4310
06250	WNED-FM	BUFFALO	NY	ELLIOTT,S	DEV DIR	716-881-5000
06350	WCNY-FM	SYRACUSE	NY	FANECCA,TOM	VP MARKETING	315-457-0440
06520	WRVO-FM	OSWEGO	NY	KRAUSS,JOHN	OPS DIR	315-341-3232
06523	WXXI-FM	ROCHESTER	NY	GARDELLA,DEB	BUS MGR	716-325-7500
06650	WUNC-FM	CHAPEL HIL	NC	WARNER,TIM	PROG,DIR	919-966-5454
06655	WFAE-FM	CHARLOTTE	NC	BUMGARDNER,K	RESOURCE DIR	704-597-2555
06750	KEYA-FM	BELCOURT	ND	MCCARTNEY,T	MANAGER	701-477-5686
07500	WOSU-FM	COLUMBUS	OH	STEPHENS,J	SYST ANALYST	614-422-9678
07650	WKSU-FM	KENT	OH	WILLIAMS,M	MBSHP SURVSR	210-672-3114
07850	KOSU-FM	STILLWATER	OK	SCHROEDER,D	CHIEF ENG	405-624-6352
07875	KWGS-FM	TULSA	OK	ANDERSON,D	GEN MGR	918-592-5947
08150	KBOO-FM	PORTLAND	OR	BLANDING,P	DEV COORD	503-223-1155
08450	WQED-FM	PITTSBURGH	PA	SCHMIDT,RAY	-	412-622-1345
08580	KESD-FM	BROOKINGS	SD	JOHNSON,DAN	STA MGR	605-688-4149
08700	WSME-FM	COLEGEDALE	TN	SELF,DON	GEN MGR	615-396-2320
08750	WETS-FM	JOHNSN CTY	TN	ELLIS,DICK	STA MGR	615-926-2184
09000	WPLN-FM	NASHVILLE	TN	BOLT,ALVIN	GEN MGR	615-244-4700
09100	KUT-FM	AUSTIN	TX	STRONG,CARR	-	512-471-1631
09160	KAMU-FM	COLLGE STA	TX	ZENT,ROD	STA MGR	713-845-5611
09200	KERA-FM	DALLAS	TX	HOLMAN,DEBIE	DEV DIR	214-744-1300
09250	KTEP-FM	EL PASO	TX	BARRIENTOS,R	STA MGR	915-747-5152
09350	KNCT-FM	KILLEEN	TX	SMITH,NOEL	ENG MGR	817-526-1179
09400	KBYU-FM	PROVO	UT	REED,RICHARD	CCTV,MGR	801-378-4261
09515	WVPR-FM	WINDSOR	VT	DILLEY,RAY	MANAGER	802-674-6772
09525	WMRA-FM	HARSONBURG	VA	LANHAM,DON	GEN MGR	703-433-6320
09550	WHRO-FM	NORFOLK	VA	KRALL,KEN	VP ADMIN	804-489-9476
09700	KWSU-AM	PULLMAN	WA	FRANKO,SUSAN	PROG DIR	509-335-2681
09950	KPBX-FM	SPOKANE	WA	SPERRAZZO,T	-	509-328-5729
10175	WERN-FM	MADISON	WI	STEFFEN,BOB	MBSHP COORD	608-266-5346
10200	WHA-AM	MADISON	WI	MCMULLIN,B	COMP SRV MGR	608-263-2107

COMPUTER USERS CONTACT (TELEVISION STATIONS)
SORTED BY CODE

CODE	CALL	CITY	ST	CONTACT	TITLE	PHONE
00100	ALA-NTW	BIRMINGHAM	AL	WEGENER,ED	GEN MGR	205-328-8756
00140	KAKM-TV	ANCHORAGE	AK	SACKETT,ELMO	GEN MGR	907-276-7070
00250	KTOO-TV	JUNEAU	AK	HARRISON,D	ASST TO G.M	907-586-1670
00300	KAET-TV	TEMPE	AZ	TURNER,GLEN	BUS MGR	602-965-1012
00400	KUAT-TV	TUCSON	AZ	HABER,ETHEL	ADMIN MGR	602-626-1434
00750	KMTF-TV	FRESNO	CA	FEDAN-ANN	DEV DIR	209-488-3018
01200	KVIE-TV	SACRAMENTO	CA	BRUENJES,H	DIR OF ADMIN	916-929-5843
01400	KPBS-TV	SAN DIEGO	CA	HALE,ELDON	ADMIN MGR	714-265-5768
01500	KQED-TV	SAN FRNCSO	CA	SMITH,B	FIN OFFICER	415-864-2000
01600	KTEH-TV	SAN JOSE	CA	ORME,M	GEN MGR	408-299-2754
01700	KCSM-TV	SAN MATEO	CA	CHEIFET,S	GEN MGR	415-574-6202
01775	KBDI-TV	BROOMFIELD	CO	BOWS,BOB	STA MGR	303-469-5234
01800	KRMA-TV	DENVER	CO	JOHNSON,DON	FIN DIR	303-892-6666
01900	KTSC-TV	PUEBLO	CO	VIGIL,FRANK	OPS MGR	303-543-8800
02000	CT NTW	HARTFORD	CT	STEEL,AL	VP DEV	203-278-5310
02250	WHMM-TV	WASHINGTON	DC	WATKINS,M	OPS DIR	202-636-6098
02300	WUFT-TV	GAINSVILLE	FL	BROWN,JOHN	PROGRAMMER	904-392-5848
02400	WJCT-TV	JACKSONVLL	FL	FORRESTOR,J	CONTROLLER	904-354-2806
02500	WPBT-TV	MIAMI	FL	CODY,LINDA	INFO SYS MGR	305-949-8321
02900	WFSU-TV	TALAHASSE	FL	MCHUGH,D	-	904-644-1890
03200	WGTV-TV	ATHENS	GA	GRAHAM,ED	CHIEF ENG	404-542-1931
03650	KAID-TV	BOISE	ID	ALLEN,LYNN	ADMIN SEC	208-385-3344
03900	WTTW-TV	CHICAGO	IL	BUEHRER,D	VP FINANCE	312-583-5000
04600	WFYI-TV	INDINAPLIS	IN	MEEK,FRANK	GEN MGR	317-261-0500
05100	IPBN	DES MOINES	IA	FRENCH,PAUL	BUS MGR	515-281-4500
05300	KPTS-TV	WICHITA	KS	PIERCE,DEBRA	MBSHP COORD	316-838-3090
05400	KY-ETV	LEXINGTON	KY	CLARK,MIKE	PROG RESEACH	606-233-3000
05500	WKPC-TV	LOUISVILLE	KY	BRUCHIERI,M	TREASURER	502-459-9572
05600	WYES-TV	NEW ORLEAN	LA	SHIRLEY,S	COMPUTER MGR	504-486-5511
05700	WCBB-TV	LEWISTON	ME	ANDRIANOS,A	BUS MGR	207-783-9101
05800	ME-NTW	ORONO	ME	WINCHESTER,E	GEN MGR	207-866-4493
06000	WGBH-TV	BOSTON	MA	WASDYKE,ROY	INFO SYS MGR	617-492-2777
06100	WTVS-TV	DETROIT	MI	BLISS,DIANE	DEV DIR	313-873-7200
06300	WFUM-TV	FLINT	MI	LAWRENCE,G	STA MGR	313-762-3028
06400	WGVC-TV	ALLENDALE	MI	HORNER,PAT	ASST TO GM	616-895-6691
06500	WNMU-TV	MARQUETTE	MI	FANT,DAVID	OPS/PROD MGR	906-227-1300
06600	WCMU-TV	ALPENA	MI	MILLER,DIANE	ACCOUNTANT	517-774-3105
06700	WUCM-TV	UNIV CNTR	MI	ROGERS,NANCY	MBSHP COORD	517-686-9355
07000	WDSE-TV	DULUTH	MN	JAUSS,G	GEN MGR	218-724-8568
07400	KETC-TV	ST LOUIS	MO	MCMASTER,A	STA MGR	314-725-2460
07500	KOZK-TV	SPRNGFIELD	MO	HARTMAN,PAUL	GEN MGR	417-865-2100
08100	KUON-TV	LINCOLN	NE	FEW,PAUL	ASST MGR	402-472-3611
08300	KLVX-TV	LAS VEGAS	NV	HILL,JOHN	OPS MGR	702-737-1010

08500	WENH-TV	DURHAM	NH	BROWN,M	ASST TO MGR	603-862-2026
08600	WNJT-TV	TRENTON	NJ	BARON,RAY	ELEC ENG	609-984-0308
08700	KNME-TV	ALBUQURQUE	NM	COOPER,JON	GEN MGR	505-277-2121
08750	KRWG-TV	LAS CRUCES	NM	DRYDEN,JIM	GEN MGR	505-646-2233
08800	KENW-TV	PORTALES	NM	RYAN,DUANE	BROADCST DIR	505-562-2112
09180	WNED-TV	BUFFALO	NY	ELLIOTT,S	DEV DIR	716-881-5000
09300	WNET-TV	NEW YORK	NY	BONANNO,F	MIS DIR	212-560-2760
09600	WXXI-TV	ROCHESTER	NY	GARDELLA,DEB	BUS MGR	716-325-7500
09800	WCNY-TV	SYRACUSE	NY	FANECCA,TOM	VP MARKETING	315-457-0440
09900	WNPE-TV	WATERTOWN	NY	LEE,SUSAN	DEV DIR	315-782-3142
10100	WTVI-TV	CHARLOTTE	NC	TERRELL,J	DEV ASST	704-372-2442
10200	KFME-TV	FARGO	ND	MACKENTHUN	BUS MGR	701-232-8921
10400	WOUB-TV	ATHENS	OH	MADDEN,RICK	ASST DIR	614-594-6107
10500	WBGU-TV	BOWLING GN	OH	SEXTON,CHRIS	BUS MGR	419-372-0121
10600	WCET-TV	CINCINNATI	OH	SHAFFER,DEE	VP ADMIN	513-381-4033
10800	WOSU-TV	COLUMBUS	OH	STEPHENS,J	SYST ANALYST	614-422-9678
11200	OETA	OKLAM CITY	OK	STATON,S	DEPUTY DIR	405-848-8501
11500	WLVT-TV	BETHLEHEM	PA	AYKROYD,GIL	ASST DIR ENG	215-867-4677
11600	WQLN-TV	ERIE	PA	HATRICK,D	DATA ANALYST	814-868-4657
11900	WQED-TV	PITTSBURGH	PA	SCHMIDT,RAY	-	412-622-1345
12000	WVIA-TV	SCRANTON	PA	SEYMOUR,G	ENG DIR	717-826-6144
12100	WPSX-TV	UNIV PARK	PA	DUDLEY,BOB	ASST DIR	814-865-1659
12200	WSBE-TV	PROVIDENCE	RI	CORRADO,AL	BUSINESS DIR	401-277-3636
12300	SC-ETV	COLUMBIA	SC	HICKSON,JED	COMP SYS DIR	803-758-7122
12400	S.D.PTV	BROOKINGS	SD	BAILEY,R.	PUB REL DIR	605-688-4191
12500	SDE-TV	VERMILLION	SD	SULLIVAN,R	PURCHASING	605-624-4497
12600	KUSD-TV	VERMILLION	SD	SULLIVAN,R	PURCHASING	605-624-4497
12900	WDCN-TV	NASHVILLE	TN	BURMBLOW,C	ASST TO GM	615-259-9325
13000	KLRN-TV	AUSTIN	TX	LEWIS,JIM	STA MGR	512-471-4811
13100	KAMU-TV	COLLGE STA	TX	ZENT,ROD	STA MGR	713-845-5611
13300	KERA-TV	DALLAS	TX	HOLMAN,DEBIE	DEV DIR	214-744-1300
13400	KUHT-TV	HOUSTON	TX	CRIDER,ANN	DEV MGR	713-748-0350
13500	KNCT-TV	KILLEEN	TX	SMITH,NOEL	ENG MGR	817-526-1179
13600	KTXT-TV	LUBBOCK	TX	HENSON,JOHN	STA MGR	806-742-2209
14100	KBYU-TV	PROVO	UT	[redacted],RICHARD	CCTV MGR	801-378-4261
14200	KUED-TV	SALT LAKE	UT	ESPLIN,FRED	STA MGR	801-581-7777
14300	WETK-TV	WINOOSKI	VT	CAMPBELL,W	ENG DIR	802-656-3311
14500	WVPT-TV	HARRISNBRG	VA	MCINTOSH,R	DEV DIR	703-434-5391
14600	WHRO-TV	NORFOLK	VA	KRALL,KEN	VP ADMIN	804-489-9476
15000	KWSU-TV	PULLMAN	WA	FRANKO,SUSAN	PROG DIR	509-335-2681
15100	KCTS-TV	SEATTLE	WA	AUGUSZTINY,P	FINANCE DIR	206-543-7524
15200	KSPS-TV	SPOKANE	WA	VALLEY,RON	TELECOM DIR	509-755-3790
15500	WSWP-TV	BECKLEY	WV	ALBERCHT,A	GEN MGR	304-255-1501
15550	WMUL-TV	HUNTINGTON	WV	HALEY,BILL	GEN MGR	304-696-6630
15800	WI-NTW	MADISON	WI	STEFEEN,R	MIS COORD	608-266-5346
15900	WHA-TV	MADISON	WI	MCMULLIN,B	COMP SRV MGR	608-263-2107
16000	WMVS-TV	MILWAUKEE	WI	BAULE,DAVID	INSTR DIR	414-271-1036

COMPUTER USER CONTACT LISTING

Sorted By Last Name

Radio & Television

COMPUTER USERS CONTACT (RADIO STATIONS)
SORTED BY LAST NAME

NAME	TITLE	CALL	CITY	ST	PHONE
ANDERSON,D	GEN MGR	KWGS-FM	TULSA	OK	918-592-5947
ATWELL,RICK	DEV MGR	WMUK-FM	KALAMAZOO	MI	616-383-1921
BAKER,FRANK	GEN MGR	KWIT-FM	SIOUX CITY	IA	712-274-2600
BARRIENTOS,R	STA MGR	KTEP-FM	EL PASO	TX	915-747-5152
BLANDING,P	DEV COORD	KBOO-FM	PORTLAND	OR	503-223-1155
BOLT,ALVIN	GEN MGR	WPLN-FM	NASHVILLE	TN	615-244-4700
BRIGHAM,J	GEN MGR	KRVS-FM	LAFAYETTE	LA	318-234-9495
BUMGARDNER,K	RESOURCE DIR	WFAE-FM	CHARLOTTE	NC	704-597-2555
CHEIFET,S	GEN MGR	KCSM-FM	SAN MATEO	CA	415-574-6202
CHESSIN,S	SUBSCP COORD	KPFA-FM	BERKELEY	CA	415-848-6767
CRESS,DAN	STUDIO DIR	WAUS-FM	BERRIEN SP	MI	616-471-3400
DILLEY,RAY	MANAGER	WVPR-FM	WINDSOR	VT	802-674-6772
DODSON,R	CHIEF ENG	KMCR-FM	MESA	AZ	602-969-9099
ELLIOTT,S	DEV DIR	WNED-FM	BUFFALO	NY	716-881-5000
ELLIS,DICK	STA MGR	WETS-FM	JOHNSN CTY	TN	615-926-2184
FANECCA,TOM	VP MARKETING	WCNY-FM	SYRACUSE	NY	315-457-0440
FORSLING,D	STA MGR	WOI-AM	AMES	IA	515-294-5555
FORSLING,D	STA MGR	WOI-FM	AMES	IA	515-294-5555
FRANKO,SUSAN	PROG DIR	KWSU-AM	PULLMAN	WA	509-335-2681
GALLETLY,D	STA MGR	WAMC-FM	ALBANY	NY	518-356-4310
GARDELLA,DEB	BUS MGR	WXXI-FM	ROCHESTER	NY	716-325-7500
GOLDFARB,R	GEN MGR	WFCR-FM	AMHERST	MA	413-545-0100
HABER,ETHEL	ADMIN MGR	KUAT-AM	TUCSON	AZ	602-626-1434
HALE,ELDON	ADMIN MGR	KPBS-FM	SAN DIEGO	CA	714-265-6431
HARMON,SUSAN	GEN MGR	WAMU-FM	WASHINGTON	DC	202-686-2690
HARRIS,DENIS	ASST TO G.M	KTOO-FM	JUNEAU	AK	907-586-1670
HARTMAN,J	GEN MGR	WCBU-FM	PEORIA	IL	309-673-7100
HIGBIE,BOB	DEV DIR	KAXE-FM	GRAND RAP	MN	218-326-1234
HOLMAN,DEBIE	DEV DIR	KERA-FM	DALLAS	TX	214-744-1300
HOPE,QUENTIN	STA DIR	KANZ-FM	PIERCEVILE	KS	316-335-6571
HORNING,D	GEN MGR	KHCC-FM	HUTCHINSON	KS	316-662-6646
IBARRA,ANITA	DEV DIR	KXPR-FM	SACRAMENTO	CA	916-454-6222
JACQUES,DICK	STA MGR	WEMU-FM	YPSILANTI	MI	313-487-2229
JOHNSON,DAN	STA MGR	KESD-FM	BROOKINGS	SD	605-688-4149
KARWOSKI,R	OPS MGR	KBIA-FM	COLUMBIA	MO	314-882-3431
KILMER,SUSAN	STA MGR	WFBE-FM	FLINT	MI	313-762-1148
KLATT,RAY	OPS DIR	WUOM-FM	ANN ARBOR	MI	313-764-9210
KRALL,KEN	VP ADMIN	WHRO-FM	NORFOLK	VA	804-489-9476
KRAUSS,JOHN	OPS DIR	WRVO-FM	OSWEGO	NY	315-341-3232
LANHAM,DON	GEN MGR	WMRA-FM	HARSONBURG	VA	703-433-6320
LIVINGSTON,T	STA MGR	WDTH-FM	DULUTH	MN	218-726-7181
LUBRECHT,C	CHIEF ENG	KUFM-FM	MISSOURA	MT	406-243-4931
LYONS,BILL	CHIEF ENG	KANG-FM	ANGWIN	CA	707-965-7141

MARCHESE,L	GEN MGR	KNPR-FM	LAS VEGAS	NV	702-456-6695
MCCARTNEY,T	MANAGER	KEYA-FM	BELCOURT	ND	701-477-5686
MCMULLIN,B	COMP SRV MGR	WHA-AM	MADISON	WI	608-263-2107
MILLER,D	ACCOUNTANT	WCMU-FM	ALPENA	MI	517-774-3105
MOORE,M	OPS MGR	KSBR-FM	MSSN VIEJO	CA	714-831-5727
MYERS,DON	COMP CTR DIR	KUNC-FM	GREELEY	CO	303-351-2336
NOLAN,CAROLE	GEN MGR	WBEZ-FM	CHICAGO	IL	312-641-4088
NORDANG,L	BUS MGR	KSJN-FM	ST PAUL	MN	612-221-1540
PAXTON,BEN	GEN MGR	WGLT-FM	NORMAL	IL	309-438-2255
REED,RICHARD	CCTV,MGR	KBYU-FM	PROVO	UT	801-378-4261
ROGERS,DOUG	CHIEF ENG	KASU-FM	JONESBORO	AR	501-972-3070
SCHMIDT,RAY	-	WQED-FM	PITTSBURGH	PA	412-622-1345
SCHROEDER,D	CHIEF ENG	KOSU-FM	STILLWATER	OK	405-624-6352
SELF,DON	GEN MGR	WSME-FM	COLEGEDALE	TN	615-396-2320
SMITH,B	FIN OFFICER	KQED-FM	SAN FRNCSO	CA	415-864-2000
SMITH,BRUCE	GEN MGR	WKMS-FM	MURRAY	KY	502-762-4661
SMITH,NOEL	ENG MGR	KNCT-FM	KILLEEN	TX	817-526-1179
SMITH,WALL	GEN MGR	KUSC-FM	LOS ANGLES	CA	213-743-5852
SPERRAZZO,T	-	KPBX-FM	SPOKANE	WA	509-328-5729
STADLMAN,R	BRDCAST,DIR	KXCV-FM	MARYVILLE	MO	816-582-2076
STEFFEN,BOB	MBSHP COORD	WERN-FM	MADISON	WI	608-263-5346
STEPHENS,J	SYST ANALYST	WOSU-FM	COLUMBUS	OH	614-422-9678
STRONG,CARR	-	KUT-FM	AUSTIN	TX	512-471-1631
VERNIER,DOUG	BRDCAST DIR	KUNI-FM	CEDAR FALL	IA	319-273-6400
VERNIER,DOUG	BRDCAST DIR	KHKE-FM	CEDAR FALL	IA	319-273-6400
WARNER,TIM	PROG,DIR	WUNC-FM	CHAPEL HIL	NC	919-966-5454
WASDYKE,ROY	INFO SYS MGR	WGBH-FM	BOSTON	MA	617-492-2777
WILHANS,W	AUDITOR	KMUW-FM	WICHITA	KS	316-689-3031
WILLIAMS,M	MBSHP SURVSR	WKSU-FM	KENT	OH	210-672-3114
WINCHESTER,E	GEN MGR	WMEH-FM	ORONO	ME	207-866-4493
WINCHESTER,E	GEN MGR	WMEA-FM	PORTLAND	ME	207-866-4493
YOUNG,JOHN	STA MGR	WUSF-FM	TAMPA	FL	813-974-2215
ZENT,ROD	STA MGR	KAMU-FM	COLLGE STA	TX	713-845-5611

COMPUTER USERS CONTACT (TELEVISION STATIONS)
SORTED BY LAST NAME

ALBERCHT,A	GEN MGR	WSWP-TV	BECKLEY	WV	304-255-1501
ALLEN,LYNN	ADMIN SEC	KAID-TV	BOISE	ID	208-385-3344
ANDRIANOS,A	BUS MGR	WCBB-TV	LEWISTON	ME	207-783-9101
AUGUSZTINY,P	FINANCE DIR	KCTS-TV	SEATTLE	WA	206-543-7524
AYKROYD,GIL	ASST DIR ENG	WLVT-TV	BETHLEHEM	PA	215-867-4677
BAILEY,R	PUB REL DIR	S.D.PTV	BROOKINGS	SD	605-688-4191
BARON,RAY	ELEC ENG	WNJT-TV	TRENTON	NJ	609-984-0308
BAULE,DAVID	INSTR DIR	WMVS-TV	MILWAUKEE	WI	414-271-1036
BLISS,DIANE	DEV DIR	WTVS-TV	DETROIT	MI	313-873-7200
BONANNO,F	MIS DIR	WNET-TV	NEW YORK	NY	212-560-2760
BOWS,BOB	STA MGR	KBDI-TV	BROOMFIELD	CO	303-469-5234
BROWN,JOHN	PROGRAMMER	WUFT-TV	GAINSVILLE	FL	904-392-5848
BROWN,M	ASST TO MGR	WENH-TV	DURHAM	NH	603-862-2026
BRUCHIERI,M	TREASURER	WKPC-TV	LOUISVILLE	KY	502-459-9572
BRUENJES,H	DIR OF ADMIN	KVIE-TV	SACRAMENTO	CA	916-929-5843

BUEHRER,D	VP FINANCE	WTTW-TV	CHICAGO	IL	312-583-5000
BURMBLOW,C	ASST TO GM	WDCN-TV	NASHVILLE	TN	615-259-9325
CAMPBELL,W	ENG DIR	WETK-TV	WINOOSKI	VT	802-656-3311
CHEIFET,S	GEN MGR	KCSM-TV	SAN MATEO	CA	415-574-6202
CLARK,MIKE	PROG RESEACH	KY-ETV	LEXINGTON	KY	606-233-3000
CODY,LINDA	INFO SYS MGR	WPBT-TV	MIAMI	FL	305-949-8321
COOPER,JON	GEN MGR	KNME-TV	ALBUQURQUE	NM	505-277-2121
CORRADO,AL	BUSINESS DIR	WSBE-TV	PROVIDENCE	RI	401-277-3636
CRIDER,ANN	DEV MGR	KUHT-TV	HOUSTON	TX	713-748-0350
DRYDEN,JIM	GEN MGR	KRWG-TV	LAS CRUCES	NM	505-646-2233
DUDLEY,BOB	ASST DIR	WPSX-TV	UNIV PARK	PA	814-865-1659
ELLIOTT,S	DEV DIR	WNED-TV	BUFFALO	NY	716-881-5000
ESPLIN,FRED	STA MGR	KUED-TV	SALT LAKE	UT	801-581-7777
FANECCA,TOM	VP MARKETING	WCNY-TV	SYRACUSE	NY	315-457-0440
FANT,DAVID	OPS/PROD MGR	WNMU-TV	MARQUETTE	MI	906-227-1300
FEDAN-ANN	DEV DIR	KMTF-TV	FRESNO	CA	209-488-3018
FEW,PAUL	ASST MGR	KUON-TV	LINCOLN	NE	402-472-3611
FORRESTOR,J	CONTROLLER	WJCT-TV	JACKSONVLL	FL	904-354-2806
FRANKO,SUSAN	PROG DIR	KWSU-TV	PULLMAN	WA	509-335-2681
FRENCH,PAUL	BUS MGR	IPBN	DES MOINES	IA	515-281-4500
GARDELLA,DEB	BUS MGR	WXXI-TV	ROCHESTER	NY	716-325-7500
GRAHAM,ED	CHIEF ENG	WGTV-TV	ATHENS	GA	404-542-1931
HABER,ETHEL	ADMIN MGR	KUAT-TV	TUCSON	AZ	602-626-1434
HALE,ELDON	ADMIN MGR	KPBS-TV	SAN DIEGO	CA	714-265-5768
HALEY,BILL	GEN MGR	WMUL-TV	HUNTINGTON	WV	304-696-6630
HARRISON,D	ASST TO G.M	KTOO-TV	JUNEAU	AK	907-586-1670
HARTMAN,PAUL	GEN MGR	KOZK-TV	SPRNGFIELD	MO	417-865-2100
HATRICK,D	DATA ANALYST	WQLN-TV	ERIE	PA	814-868-4657
HENSON,JOHN	STA MGR	KTXT-TV	LUBBOCK	TX	806-742-2209
[redacted]SON,JED	COMP SYS DIR	SC-ETV	COLUMBIA	SC	803-758-7122
[redacted],JOHN	OPS MGR	KLVX-TV	LAS VEGAS	NV	702-737-1010
HOLMAN,DEBIE	DEV DIR	KERA-TV	DALLAS	TX	214-744-1300
HORNER,PAT	ASST TO GM	WGVC-TV	ALLENDALE	MI	616-895-6691
JAUSS,G	GEN MGR	WDSE-TV	DULUTH	MN	218-724-8568
JOHNSON,DON	FIN DIR	KRMA-TV	DENVER	CO	303-892-6666
KRALL,KEN	VP ADMIN	WHRO-TV	NORFOLK	VA	804-489-9476
LAWRENCE,G	STA MGR	WFUM-TV	FLINT	MI	313-762-3028
LEE,SUSAN	DEV DIR	WNPE-TV	WATERTOWN	NY	315-782-3142
LEWIS,JIM	STA MGR	KLRN-TV	AUSTIN	TX	512-471-4811
MACKENTHUN,H	BUS MGR	KFME-TV	FARGO	ND	701-232-8921
MADDEN,RICK	ASST DIR	WOUB-TV	ATHENS	OH	614-594-6107
MCHUGH,D	-	WFSU-TV	TALAHASSE	FL	904-644-1890
MCINTOSH,R	DEV DIR	WVPT-TV	HARRISNBRG	VA	703-434-5391
MCMASTER,A	STA MGR	KETC-TV	ST LOUIS	MO	314-725-2460
MCMULLIN,B	COMP SRV MGR	WHA-TV	MADISON	WI	608-263-2107
MEEK,FRANK	GEN MGR	WFYI-TV	INDINAPLIS	IN	317-261-0500
MILLER,DIANE	ACCOUNTANT	WCMU-TV	ALPENA	MI	517-774-3105
ORME,M	GEN MGR	KTEH-TV	SAN JOSE	CA	408-299-2754
PIERCE,DEBRA	MBSHP COORD	KPTS-TV	WICHITA	KS	316-838-3090
REED,RICHARD	CCTV MGR	KBYU-TV	PROVO	UT	801-378-4261
ROGERS,NANCY	MBSHP COORD	WUCM-TV	UNIV CNTR	MI	517-686-9355
RYAN,DUANE	BROADCST DIR	KENW-TV	PORTALES	NM	505-562-2112
SACKETT,ELMO	GEN MGR	KAKM-TV	ANCHORAGE	AK	907-276-7070
SCHMIDT,RAY	-	WQED-TV	PITTSBURGH	PA	412-622-1345

SEXTON,CHRIS	BUS MGR	WBGU-TV	BOWLING GN	OH	419-372-0121
SEYMOUR,G	ENG DIR	WVIA-TV	SCRANTON	PA	717-826-6144
SHAFFER,DEE	VP ADMLN	WCET-TV	CINCINNATI	OH	513-381-4033
SHIRLEY,S	COMPUTER MGR	WYES-TV	NEW ORLEAN	LA	504-486-5511
SMITH,B	FIN OFFICER	KQED-TV	SAN FRNCSO	CA	415-864-2000
SMITH,NOEL	ENG MGR	KNCT-TV	KILLEEN	TX	817-526-1179
STATON,S	DEPUTY DIR	OETA	OKLAM CITY	OK	405-848-8501
STEEL,AL	VP DEV	CT NTW	HARTFORD	CT	203-278-5310
STEFEEN,R	MIS COORD	WI-NTW	MADISON	WI	608-266-5346
STEPHENS,J	SYST ANALYST	WOSU-TV	COLUMBUS	OH	614-422-9678
SULLIVAN,R	PURCHASING	SDE-TV	VERMILLION	SD	605-624-4497
SULLIVAN,R	PURCHASING	KUSD-TV	VERMILLION	SD	605-624-4497
TERRELL,J	DEV ASST	WTVI-TV	CHARLOTTE	NC	704-372-2442
TURNER,GLEN	BUS MGR	KAET-TV	TEMPE	AZ	602-965-1012
VALLEY,RON	TELECOM DIR	KSPS-TV	SPOKANE	WA	509-755-3790
VIGIL,FRANK	OPS MGR	KTSC-TV	PUEBLO	CO	303-543-8800
WASDYKE,ROY	INFO SYS MGR	WGBH-TV	BOSTON	MA	617-492-2777
WATKINS,M	OPS DIR	WHMM-TV	WASHINGTON	DC	202-636-6098
WEGENER,ED	GEN MGR	ALA-NTW	BIRMINGHAM	AL	205-328-8756
WINCHESTER,E	GEN MGR	ME-NTW	ORONO	ME	207-866-4493
ZENT,ROD	STA MGR	KAMU-TV	COLLGE STA	TX	713-845-5611

SELECTED ARTICLES

FROM

COMPUTERS IN PUBLIC BROADCASTING

A SYSTEMS DEVELOPMENT METHOD FOR PUBLIC BROADCASTING STATIONS

By Thomas D. Ster and James F. Drayer

Station management teams are facing mounting pressure to improve their information systems. Increased reporting requirements, the need to expand development efforts and improve operations are straining station resources and business procedures. Because effective systems can ease these pressures, many managers are searching for ways to enhance their business systems.

A complex range of cost-effective alternatives exist. The Information Processing industry has provided the basis for many of the choices. There are microcomputers, minicomputers, service bureaus, distributed processing networks, word processors and other variations. The cost of computing power has dropped dramatically.

The decisions to be made also seem complex. Should the system be manual or mechanized; donated or commercial software; minicomputer, licensee hardware or service bureau? The buzz-words such as in-house, turn-key, vanilla, modified, etc. are often overwhelming. Intended as a guide, this article describes a practical approach for implementing systems that can help guide station management through these issues.

What is a Systems Development Methodology?

A systems development methodology is a step-by-step approach for implementing information processing systems. The specific method described here is made up of a series of tasks which, when followed intelligently, will increase management's chances of installing a successful system. By following a logical sequence of tasks, issues crystallize, alternatives sharpen and many of the tough decisions become much simpler.

Who Can Benefit?

This method can help a station of any size and at any stage of system sophistication. An assumption is made, however, that a station will be searching beyond its own resources to develop working systems. With this approach, station management will consider software operating at other stations, commercial software, service bureaus and other methods. An approach to adopting proven software is usually considered because of the higher costs associated with "custom" solutions.

There are instances where custom systems are warranted. Unique needs may prohibit the successful installation of a proven system. Whether the final result is a proven or custom solution, a systems development methodology can make the job much easier.

The Tasks

The approach, shown in Exhibit I, consists of seven major tasks. The essence of this method is that system choices are compared with a "standard", the station's unique needs and desires. To do this, project personnel must define station needs, identify the choices, make the comparison and select the best alternative.

Responsibility for work done in these tasks is assumed by several project roles. Three roles are essential:

Management Director or Management Committee—The person or group with major decision-making responsibility. This person should have in-depth knowledge of the station and the public broadcasting industry.

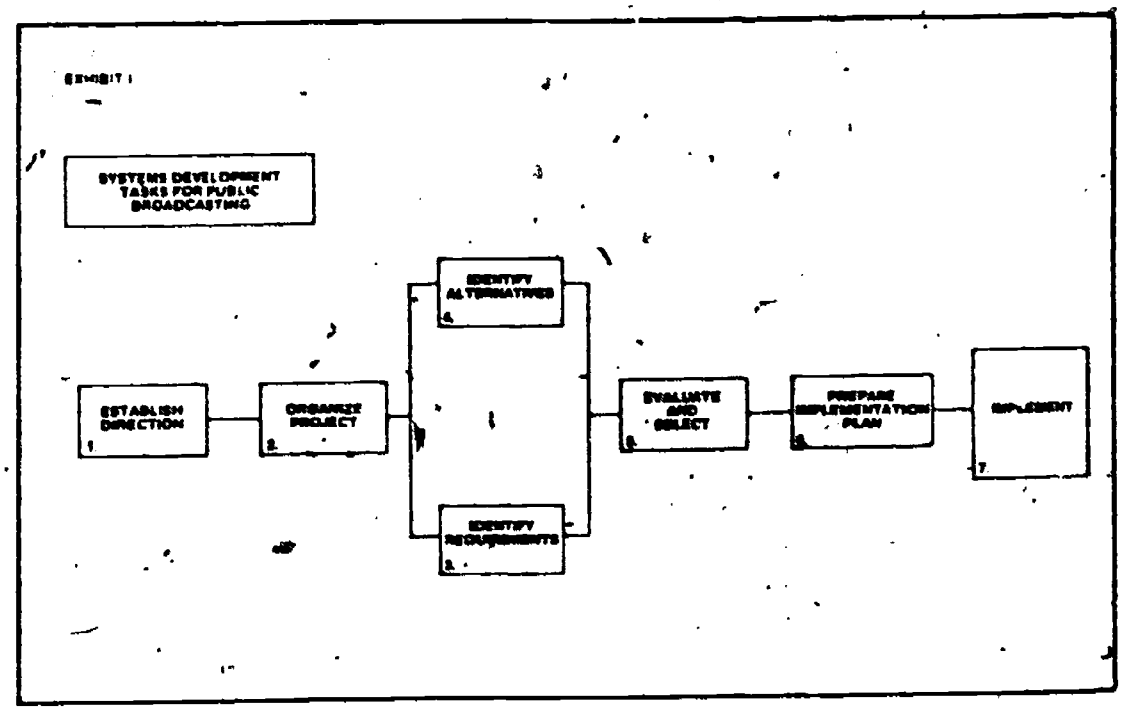
Project Manager—The person with day-to-day project responsibility, i.e., responsible for getting the work done properly and on time. Systems and project management experience are recommended for this role.

Project Member or Team—The person(s) who perform detailed project work.

***Task 1:* Establish Direction**—This task is to define the project scope and objectives. What are the activities, the key benefits and constraints which must concern the project team? Although someone with systems skills is helpful in this task, it is the Management Director, with his or her thorough knowledge of the business, who supplies key direction.

The director first summarizes the internal and external factors which impact the station. Environmental considerations such as the CPB's uniform financial reporting guidelines, volunteer time valuation requirements for matching funds, key trends, new programming methods and increased funding needs must be understood. The station's current facilities, volunteer base, employee skills, cash position and other resources are also considered.

Short- and long-term goals, strategies and tactics are studied. Stations having a finite supply of resources must establish



priorities for systems development. The director converts station strategies into a list of selection criteria. These "strategic criteria" are used to select the truly important systems needed by a station. Is increased funding or reduced costs most important? What about improved operating control or better decision-making support? ... or meeting external reporting requirements?

Next, the current state of each department or activity area should be examined, keeping in mind benefits which flow from better procedures. For example, Development department activities such as membership, auction and volunteers may improve substantially with new systems for servicing members, scheduling auctions or reporting volunteer time. The result could be a dramatic increase in revenues. Programming activities such as scheduling and library maintenance may become more efficient, raising broadcast quality at a lower cost.

The last step is to create an overall Systems Development Strategy which will inform the project team about key considerations, objectives and the scope of future effort. The physical, fiscal and personnel constraints and general level of benefit desired are summarized. Specific departmental activities are targeted for systems development based upon expected benefits compared with identified "strategic criteria". In this way future systems are directed toward the important activities as selected by management.

***Task 2:* Organize the Project**—Specific project details must be planned. The Project Manager translates management strategy into an action program. Project management skills are most important in this task.

The manager first defines the project work steps and products. The Systems Development Strategy directs the analysis to specific activity areas and toward possible system choices within the bounds of management constraints. Five or six different activities (e.g., auction, membership, program scheduling, etc.) may be the focus of more detailed study.

The manager then identifies the skills required to do each step and makes project assignments. Decisionmakers and analysts are chosen. The manager must also estimate the time needed to perform each step.

These plans are then summarized into a work program which lists tasks, steps, products and points for management review and approval. It identifies people and their estimated level of effort. From the program a short-term work schedule is prepared which communicates the work to the project team. This clearly informs project team and station personnel of the project plans. By setting time deadlines, it also becomes a tool for monitoring project control. The program also helps determine personnel and resource needs. For example, if volunteer services must be used, the station can now ask for a commitment in hours from an employee or volunteer. Finally, if changes occur as work progresses, the program becomes a basis for understanding new levels of effort, shifting responsibilities and changing deadlines.

Task 3; **Identify Requirements**—A thorough study is made of each department's needs. This becomes the "blueprint" for the future system. Through interviews, documentation review, industry contacts and functional decomposition techniques (see Exhibit II), the team creates a complete description of station requirements. Project management, business and systems skills are used to translate these needs into an overall systems specification.

The first step is to determine in detail the functions and requirements. What does each activity do and what does it need to perform? By interviewing staff, reviewing input forms and reports and talking with other stations and industry groups, team members define each activity. They should also review daily, weekly and other periodic transactions, tasks, and control documents. Finally, organizational concerns, plans and problems of the staff must be understood.

This information is then divided into function and subfunction diagrams (see Exhibit II). These are effective communication tools for verifying that all activity requirements are understood. It is also important that future as well as current needs be identified to allow for change and growth.

The final step is a complete review of strategy considerations, systems literature and other sources to determine key technical and general information needed for more detailed evaluation. The station's requirements for security, performance, system controls, printing quality, system documentation, system flexibility and other important technical

EXHIBIT II **FUNCTIONAL DECOMPOSITION**

ACTIVITY	FUNCTION	SUB-FUNCTION /FEATURE
AUCTION	DONOR CONTROL	Inform Volunteers About Donors
		Record Inventory Received From Donor
		Report Large Contribution Donors
	INVENTORY CONTROL	Record Inventory Type; Item, Certificate, etc.
		Maintain Inventory Location
		Maintain Inventory Category
	SCHEDULING	Schedule Inventory By Time, Board, Table
		Automatically Spread Across Schedule
		Create On-Air Auctioneer Report
VOLUNTEER	VOLUNTEER CONTROL	Maintain Static Volunteer Information
		Report Volunteers By Interest
		Categorize Auction Volunteers By Donor Location
	VOLUNTEER LABOR REPORTING	Process Time Per C.P.B. Specifications
		Maintain Volunteers in Station Departments
		Produce Volunteer Labor Reports

considerations should be identified. General information about costs, training, future support, references, past vendor history and other concerns should be documented.

The product, a concise and complete specification of the station's business, technical and general needs, becomes the benchmark for evaluating possible solutions. Also, it serves as an important planning tool. It is unlikely there will be one solution, whether it is a software product, service bureau or manual process which meets every requirement. The specification will aid in determining how the unsatisfied needs will be met.

Task 4: **Identify Alternatives**—This task entails creating a list of possible system suppliers. The project team must have the systems skills necessary to discern which alternatives may work, which may supply a partial solution and which to exclude.

The first step is to determine from a wide range of alternatives which solutions are appropriate. Improved manual procedures may be sufficient. Simple mechanized reporting, labeling services or mechanized bookkeeping may be adequate. Service bureaus, donated station software, commercial or custom-coded software might provide the answer. If in-house computing is desired, either new or used hardware can be installed. Also, ways of building a complete solution from several alternatives should be examined. By contacting stations, vendors, the CPB Office of Computer and Information Services and reviewing software publications, the team constructs a set of reasonable options.

The team then evaluates its list in light of the Systems Development Strategy. The risks associated with each alternative are considered. Options beyond the station's means or lacking important functions are dropped. For example, a large station wishing to mechanize several activities may exclude manual processes or simple vendor services, concentrating on reputable software or custom applications. A smaller station may decide not to consider a commercial software package; a service bureau might be more appropriate. The final step then is to summarize the analysis into a list of specific sources for further contact.

After this task, options are narrowed to a manageable number; three to six alternatives are reasonable. This list should include only those choices worthy of further consideration.

Task 5: **Evaluate and Select**—Detailed evaluation and final selection is a task assumed by both the project team and management director. The Project Team evaluates each option and summarizes its findings so that the director can make a selection.

The team first creates a checklist or Request For Proposal (RFP) questionnaire from the set of detailed functional, technical and general requirements. This is then sent to potential suppliers. Each proposal is reviewed for a complete understanding of the alternative. Operation procedures, flowcharts, references, price lists, equipment configurations, report samples, performance results, training material, vendor support, guarantees and other documentation should be requested as support for the proposal.

The next step is to evaluate the alternatives in detail. Several techniques can be used to highlight the relative strengths and weaknesses of each response. Exhibit III illustrates one way to evaluate data. Follow-up with vendors, references, hardware suppliers and others may be necessary to gain more information. The team then summarizes the important strengths, weaknesses, costs, organizational impact and risks of each option for management review. If required, the cost of modifying each to fit station requirements should be developed.

Finally, the director and project manager review the summary and the Director selects the preferred alternative. Another step, visiting the vendor and an installed site, is suggested. This assures the station that their choice is indeed satisfactory. Seeing the system work, resolving questions face-to-face and discussing implementation strategy helps resolve any concerns. Contract talks can then begin. Before any contract is signed, legal counsel can ensure that all functions promised by a vendor are contained in the contract.

Task 6: **Prepare Implementation Plan**—The team's labor so far has produced the choice of a satisfactory solution and a detailed understanding of what will be supplied. Now the team, perhaps with help from the supplier, must concentrate on installing and converting the

EXHIBIT III — WEIGHT EVALUATION

ACTIVITY	FUNCTION	SUB FUNC	WEIGHT	SOURCE A GRADE	SOURCE A COMMENT	SOURCE B GRADE	SOURCE B COMMENT
AUCTION	DONOR	1	REQUIRED	A		A	
		2	REQUIRED	A		A	
		3	IMPORTANT	A		C	
		•					
		•					
	INVENTORY	1	REQUIRED	C		C	
		2	REQUIRED	A		B	
		3	REQUIRED	A		A	
		•					
		•					
	SCHEDULING	1	REQUIRED	A			
		2	REQUIRED	B			
		3	DESIRED	A			
		•					
		•					

EVALUATE BY:

1) SUMMARIZING KEY WEAKNESSES AND STRENGTHS

or

2) ASSIGNING WEIGHT EVALUATION FACTORS AND CALCULATING SCORES BY SOURCE

REQUIRED = 3	A = 3
IMPORTANT = 2	B = 2
DESIRED = 1	C = 1

solution to a working system. In this task, the team plans the effort required to install the chosen system at the station. Vendor services necessary for a successful installation such as training, documentation and on-going software support are part of this plan. The plan includes at least three major sections: Organizational Requirements, Resource Needs and the Implementation Timetable.

The organization must change to accept new procedures. The change may be slight, new methods replacing old. However, substantial restructuring may be needed; the addition of a new department. Systems, for example. The project team examines how the organization should be structured, what new responsibilities and roles will be assumed and how work will change for each affected person.

Physical resources are planned. New equipment is listed, described and its location stated. Building modifications, additional software and supplies or miscellaneous equipment required to maintain the system in production are described. In short, planning for total property, plant and equipment needs is performed.

The Implementation Timetable may contain both a short-term installation and long-term project plan. The supplier's product may be reputable but, if it is not converted smoothly, people working with the system will be dissatisfied. Just as the project manager had scheduled this project, he also must have a short-term plan of the installation tasks, steps, products, procedures, staff and time schedule. If vendor personnel are involved, the manager includes steps to accept installed software and/or hardware and audit vendor performance against the contract.

Looking beyond the short-term installation schedule, the manager compares the system to be installed against specifications developed in Task Three. Being familiar with software, service bureau, and manual solutions, the manager can address possible ways to develop systems still needed by the station, but not available from the chosen supplier. These projects are scheduled over a long-term time horizon and a brief description of each is included in the plan. With this plan, management, the Project Team and the station staff clearly understand how the new system will be installed at the station and what systems will be developed in the future.

Task 7: **Implement the System**—The selection made, resources and people scheduled, the final task is to implement the system. Actually a series of tasks, a typical short-term installation plan encompasses a number of major concerns. Hardware and software installation details, forms and staff procedures, conversion preparation, training, testing, converting, production monitoring and other tasks are required to make the system operational.

While a vendor may provide training, support and documentation, the Management Director and Project Team are ultimately responsible for making the system work smoothly and efficiently. Installation tasks must be performed to ensure all people understand their role when the system is in production. Effort is coordinated to order and put in place all equipment and supplies before conversion. Steps are taken to check that the system is indeed as specified in the contract. Staff confusion can be kept to a minimum (meaning general acceptance) if installation is planned and carried out in a thorough manner.

Conclusion

Following this approach will increase a station's ability to develop a satisfactory system solution. Although described here as a number of tasks, products and roles, the project can be formal or informal. It can be staffed by a large team with Management Committee direction or by one person. It may encompass a part of an activity or any number of activities.

While the situation facing a particular station may call for modifying this method, it has been used successfully. As the basis of a systems development approach for your station, it has several strengths. First and most important, it avoids "backward analysis", i.e., searching for a solution by analyzing likely candidates without defining what the station really needs. It also assigns work and decisions to the right level by letting management guide, review and make major decisions, delegating detailed decisions and work down to the Project Team. Finally, by dividing work into logical groups, the project can be managed successfully.

The history of systems development is filled with "horror stories" about businesses spending large amounts of money to install poorly designed, programmed, controlled or documented systems. Lack of documentation alone can destroy the usefulness of an otherwise satisfactory system. Projects of this importance deserve a clear and rational method, staffed by people with the right skills and directed by top station management.

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M.I.S. Planning
Some Tips for Public Broadcasting Stations

By M. Osman Yousuf

There is no universally accepted procedure for designing and developing a Management Information System (MIS). The area is complex with many alternative solutions and systems choices available to a systems developer. These alternatives, however, need to be assessed very carefully using a systems approach, an approach whereby a decision maker "chooses a course of action by investigating his full problem, searching out objectives and alternatives, and studying them in the light of their consequences, using an appropriate framework—insofar as possible, analytic—to bring expert judgment and intuition to bear on the problem." (See Quade, E.S. and W.I. Boucher, *Systems Analysis and Policy Planning*. New York: American Elsevier Publishing Company, Inc., 1968, p. 2.) The process of developing information systems is not only complex but also requires substantial monetary and personnel commitments. Such commitments cannot take place on an evolutionary basis but instead need to be nurtured within a carefully defined framework—an MIS plan. Such a framework can be achieved only if corporate management recognizes the necessity of MIS planning activities and cooperates fully with this process. If management does not appreciate the need for investigating the information-handling problems of the station or strongly feels that such support systems are not a viable project for the station to undertake, there is really no purpose in initiating an MIS planning scheme. Thus management involvement and approval are absolutely fundamental elements in any systems development process.

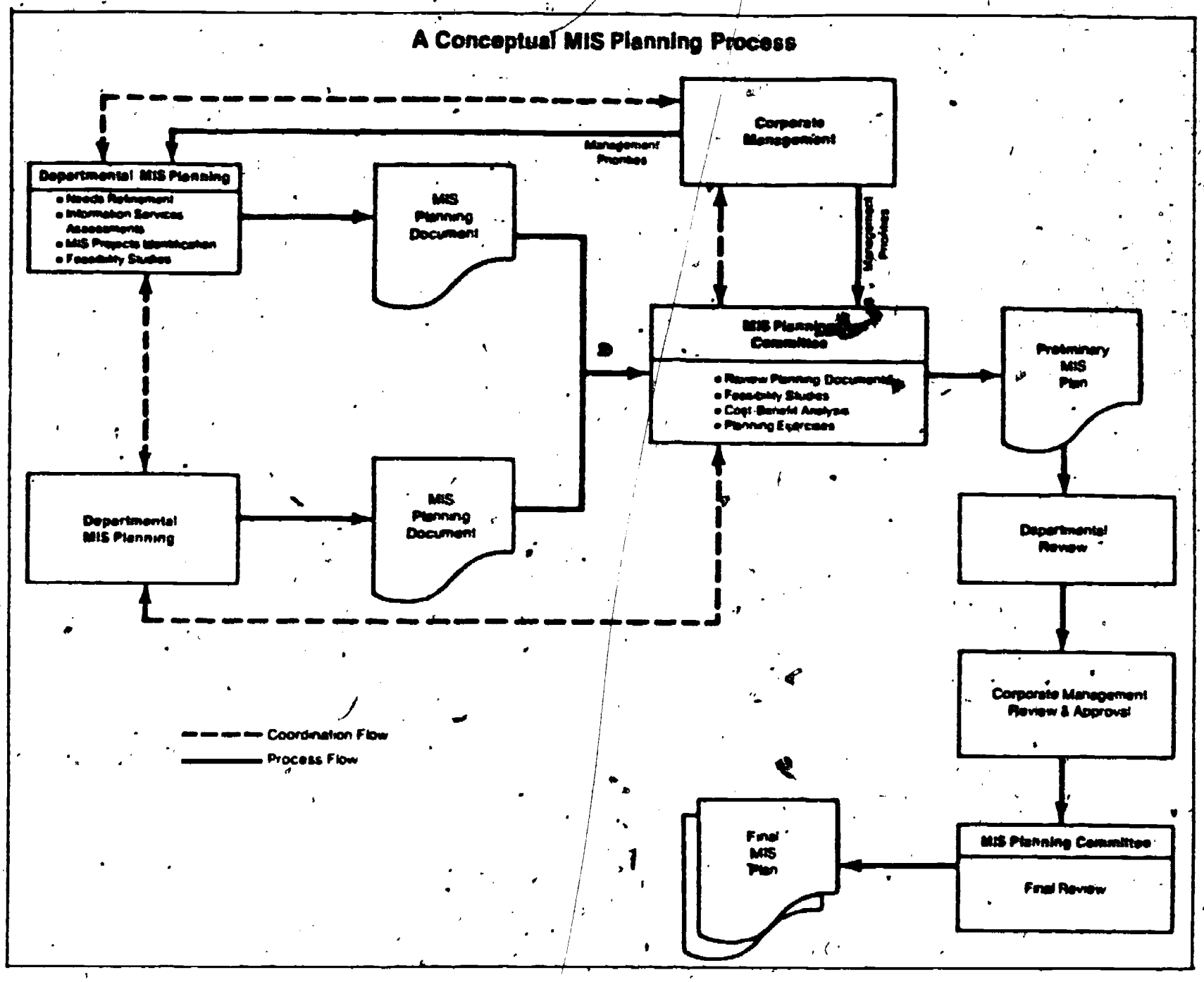
Management Information System (MIS) advocates in public broadcasting must proceed with caution. They must realize that MIS projects will have to compete with other activities planned for the limited resources available to a station. Overenthusiastic advocates must be cautious in estimating the relative capabilities of different computer systems available to support station functions and also must be fully aware of the relative abilities of the station to implement them. Justification for and successful implementation of MIS projects generally can be achieved easily when such activities are understood within a defined planning framework. Such a planning framework must be part of a total business plan for the station, a plan that ties MIS planning directly to meeting the common objectives and budgetary considerations of the station.

Because MIS projects normally have an organization-wide impact, it is imperative that the planning process consider the organization of the station and the functional objectives of each department. A systems developer must always recognize the importance of interoffice coordination in developing a workable management information system, one that will have systems interface compatibilities. It is possible for a station to develop membership and general ledger systems separately, but most likely it will encounter difficulties in interfacing the two systems for entering general ledger transactions directly from the membership files if such a usage was not considered before.

Budget considerations are another very important element of an MIS plan. The cost of developing and running a management information system needs to be fully examined in the planning process, and a budget for MIS projects needs to be developed in accordance with corporate business schedules and budgetary guidelines. Why consider a $100,000 MIS plan for next year if management must limit the expenses to $50,000? Whenever possible, costs should be estimated by each project, over the expected useful life of the retained information, including capital acquisition and annual operating costs. Project priorities and alternative costs should be included in the initial proposal for review by the management.

Finally, MIS planning should not be a one-shot activity; it should be a continuous process. All MIS plans must be able to accommodate shifts in departmental objectives. In addition, planned activities must be flexible in accordance with project performance assessments and adaptable to changes in general business conditions. It is my belief that MIS planning can be most productively achieved if conducted through a coordinating planning body: a MIS Planning Committee. The committee should include representatives from corporate and departmental management and systems analysts and users. The committee should have a general awareness of computer systems development and should be (or become) knowledgeable about computer applications used to support information-handling applications in other stations, the national public broadcasting organizations and other industries. Whenever possible, staff should acquire computer systems expertise through formal training and systems seminars. In the absence of any systems expertise on staff, the committee should seek such expertise from other sources. The functions of the committee should include analyzing the need for data and information services, preparing short- and long-term MIS plans, writing requests for proposals, evaluating vendors and monitoring systems development and implementation activities.

The planning cycle should begin with each department reviewing its annual information needs and assessing the adequacy of information-handling services available to the department. MIS planning activities should result in well-defined statments of each department's long- and short-term goals and how such objectives could be met through information services. Specific MIS projects, with alternatives, need to be set out clearly in a planning document. Project descriptions should include purpose, scope, priority, current process and resource estimates for each project. The planning document should contain recommendations based on feasibility



studies conducted according to guidelines established by the MIS planning committee. Departments *must* work closely with each other in developing their individual planning documents.

Upon completion, the planning documents should be submitted to the MIS planning committee. The committee would review all departmental MIS projects for inclusion in the final MIS plan of the station. Besides reviewing each project strictly on the basis of information needs, the committee also must consider such larger implications as budgeting guidelines, resource availability, workload factors, project continuity, management priorities, and so forth. Upon review and analysis of all the systems development considerations, the MIS committee would develop a preliminary MIS plan where all the viable projects are identified, defined and justified for inclusion in the plan. Project priority justifications, design and system implementation considerations, resource estimates and cost-benefit analyses should also be included for each project.

The preliminary plan should be reviewed and discussed with the departments against individual departmental planning documents. Necessary modifications to the plan, if any, should be made at this time to achieve consensus.

Finally, the preliminary plan should be sent to corporate management for review and approval. The approved plan would then be released by the MIS committee as the final plan and scheduled for implementation.

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A Computerized Program Scheduling and Switching System

By Dennis Schweikardt

In 1974, Spokane, Wash., was researching the need for a cable franchise. The local public television station, KSPS, was designated to study operation costs, projected use, known operating budget capabilities and possible institutional involvement.

Five channels were proposed for public access, one as a city government channel, another as a public health channel and the remaining three (later expanded to five) as educational channels.

Area noncommercial educational institutions, including colleges 70 miles away, were contacted to help manage and program the five channels.

Subsequently, the Cable Advisory Board for Learning and Education (CABLE) was formed to represent 15 institutions, including Spokane School District #81, Washington State University, Eastern Washington University, the Univesity of Northern Idaho and several community and private colleges.

The Cable Advisory Board received an HEW Telecommunications Demonstration Project Grant of $169,000 to provide for the establishment of a "Head-End" origination facility located at the KSPS-TV studios, and other hardware. They purchased over 20 3/4" U-matic videotape units for the transmission and recording of taped programming, microwave links and a computer to manage the information and control the systems operation.

After a feasibility study, two computers were employed in June 1979—the larger computer for information management, decision making and system control, and the smaller computer for controlling the broadcast equipment and providing a video signal for transmitting of character generation text.

The larger computer is a Hewlett-Packard 250 microprocessor with a 280 cps matrix printer, a 1.25 megabyte ten-inch floppy disk, a 128 K operating system, a 32 K user memory and a 24 line, 80 character screen console. An additional 1.25 megabyte floppy disk drive, a 64 K memory board to facilitate multi-processing, an asynchronous communication board for the computer- to-computer link and one additional terminal also were purchased.

The smaller computer is a Metro Data 120, a microprocessor-based computer with a 16 K operating system and 16 K user memory for the storage of character generation text and time-based instructions for its operation. A custom interface board for the control of a 10 × 100 matrix switcher (produced by American Data, Huntsville, Ala.), a relay board that allows for the control of up to 32 relays and the modification of the 120's firmware to facilitate the computer-to-computer communication link were purchased as options. The cost was just under $70,000.

A computer programmer analyst was hired to deal with the vendor and to re-examine the original design concepts and make changes where necessary. The analyst worked with the users to understand current processes and to develop and document system objectives.

Several goals guided the system design: cost effectiveness, small operational staff, ease of learning and use, the ability to perform the transmission functions automatically to free the switching operator to check quality while exercising overall control, and an instantaneous manual override capability.

The computer system was developed in four major sections using the "H-P Basic" language, Hewlett-Packard "Data Base" software and "Form" (screen formatting) software. Of these, the "Data Base" required the most care to understand fully the relationship and possible use of the database before its creation. The four sections are the tape library, scheduling, utilization, and machine control and switching. A fifth section was developed later to handle KSPS station logs.

The **Tape Library System** was developed to allow the independent creation, maintenance and reporting of the institutions' tape libraries with the capability for cross-referencing. By using floppy disks, there is space for approximately 2,500 to 5,000 tapes, while upgrading the hard disk (10-to-100 megabyte) would substantially increase this limit.

Six types of information on each program are recorded in the library: series/program title, production information, purchasing information, copyright restrictions, text descriptions and subject content indexes.

The system is designed as a quick dial-access system, whereby a user can call and ask the operator for information on the availability of programs relating to a particular subject or viewer level (high school, college, general adult, etc.). A list of available programs meeting the criteria is displayed for quick selection and access to such detailed information as text description, production information, copyright restrictions, etc. Typical access speed is less than five seconds with printed copy available at the push of a button.

The Tape Library System also can produce several printed reports such as a catalog of available programming sorted by program content, an alphabetical catalog index, subject catalog index, production agency lists, program cost lists, alphabetical and subject title lists, labels generated for the tape storage room and a complete detail list. Extract capabilities for all reports are flexible so the user can receive as little or as much information as desired.

The **Scheduling System** was developed to create program schedules on seven channels up to six months in advance. It also was designed as a dial-access system, whereby a user can call an operator and ask to transmit a particular program on a certain date and time. The operator enters the name of the person making the request (teacher), the school or institution and the program code. The computer checks the library for series title, program title and duration; it also brings into memory copyright restrictions. If the program is not in the library, the computer scans the schedule file to see if the program is scheduled and if so, displays the series and program title.

The operator enters the date, time and channel for the airing, and the computer checks copyright information to validate proper user and date-range restrictions; it also checks the schedule for availability.

The schedule file includes program information (program titles and lengths) and requests user information such as member institution, library affiliation and the name of the person making the request. If the computer has problems scheduling a request, an appropriate message is displayed. The entire validation and schedule entry process usually takes less than five seconds. Future systems also might assign a channel, based on schedule availability. The Scheduling System has display and delete functions and printing routines to allow the creation of schedule logs.

The **Utilization System** was developed to allow an analysis and reporting of scheduling events. This is important for financial reasons since member institutions are charged for operating expenses based on usage. Until the computer's installation, these figures were rough estimates. In addition, this system is useful in determining program usage, since in large libraries programs are often purchased but seldom used. With this system, individual institutions can see precisely which programs run and how often they are scheduled. The reporting capability used in conjunction with the library reports can determine program costs versus usage.

The **Machine Control and Switching System** was developed for control and operation of the "Head-End" facility. The computer is responsible for all aspects of the actual transmission of programming. Twenty-one 3/4" U-matic video tape machines are connected to the computer with start/stop capabilities; six audio cart machines are provided for the "voice over" feature; a 10 × 100 video switcher directs programming flows; seven independent character generators provide TV guide listings or Public Service Announcements when no programming has been scheduled; and a video terminal displays status information and accepts control commands.

The Switching System is initiated each morning by the creation of a "control file" by simply entering the current date. This contains the times of all machine control activities that take place that day on all seven channels. When the process is completed (usually ten minutes), the scheduler informs the switching operator of initiation. The computer asks if there is a new character generation to be passed to the smaller computer. (The character generation for all seven channels is maintained by the H-P-250 computer on disk. Thirty-two pages of character generation text are available for allocation between the seven channels.) The computer then asks for page assignments for text displays that the operator wishes to be displayed for each channel between programs. After the process is completed (usually in two to five minutes), the Switching System is ready.

A status display appears and remains on the control terminal for the entire day and tells the operator what is on the air, when it started, when it will end and what device it is using on each of the seven channels. It also tells the operator of any upcoming events.

Five minutes before a program is transmitted, an early warning message appears on the screen, and a bell rings if a response is necessary. The message tells the operator that a particular program has been scheduled for a certain time and that the computer needs a VTR assignment for the tape. The switching operator mounts and "cues" the requested program (as displayed on the terminal and listed in the log) and enters the VTR number into the computer. The VTR assignments can be made in advance, after which the early warning message becomes a comment message. Seven seconds before the program is scheduled, the particular VTR is started by the computer, and precisely at the scheduled time, a command (from the computer) is issued to the switcher to connect the VTR's video and audio to the correct channel, completing the process. The early warning message is removed, and the status updated to reflect the program's transmission.

When a program is finished (as indicated by duration specifications), character generation is again placed on the channel, and the status screen is updated. The entire process is simultaneous on all seven channels. In case of a problem, the operator can intervene manually at any point. The operator can shut down all or only parts of the computer's control through terminal instructions—for example, leaving all terminal messages and warnings displayed but eliminating or reducing machine control. Future enhancements could include audio encoding the tape for termination, program identification and automatic VTR assignment capability.

The **KSPS Station Log System** was developed to provide creation, maintenance and printing of the station log. While this was probably the simplest and most straightforward system, it should prove to be one of the biggest time savers by avoiding much of the manual typing required with log production. The system automatically checks for schedule availability and can report times within a schedule that still require programming.

A bit of advice from the system developers: when starting a similar project, get professional computer assistance at the earliest point—the feasibility study and conceptual design stages. This is important for three reasons. First, there is a great deal of equipment on the market; it pays to have a selection team who knows what to look for. Second, both user (prospective buyer) and the vendor must have a clear understanding of a computer's capabilities and limitations. Third, a programmer can assure a smooth and clean development process. The programmer must work with users from the earliest possible time to develop a system that meets their needs.

Other things to keep in mind are hidden costs such as maintenance (both hardware and software); environmental changes that may be necessary for the computer, such as isolated power lines and air conditioning requirements; the normal computer operating costs of paper, disks, printer ribbons, etc; and staff training costs.

Is it worth all the work? At the Spokane School District #81 and KSPS the answer is an unqualified "Yes." We

can provide services that we never could before, at a cost we can afford. Our computer system is easy to use, versatile and is expandable when we are ready. We have created a system that does the scheduling and control job we need—and does it very well—an outstanding accomplishment!

During this system development we gave demonstrations to people and agencies from Alaska, South Carolina, Atlanta, San Diego, Washington, D.C., MIT, and many others. We are pleased by the interest the project has generated. For information on development or possible future use, please call or write the following:

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Radio + Records = Computer

By Gary L. Grigsby

Cataloging phonorecords is a tedious job even in a library staffed with professional catalogers. Errors and inconsistencies lead to illogically placed and difficult-to-retrieve items. The record collections of radio stations are especially troublesome since station staffs seldom include trained librarians or musicologists. Large album collections fall prey to series of forgotten systems initiated by different music directors. A station suffering from this problem should consider converting to a computer-supported cataloging system.

One factor to consider before a decision to implement a computerized system is the size of the album collection. A record collection of any size is suitable for conversion to computer-supported systems; however, one that numbers in the thousands and is likely to increase in size yearly is a prime candidate for conversion. Music format is another factor that requires consideration in studying the feasibility of computerized cataloging systems. While the "top 40" format may deal with few albums, jazz and classical formats often mean album collections numbering in the thousands. Additionally, a program format that includes music requests requires rapid selection location. Requests for specific artists, composers, groups, titles and different types of mood music, or requests for a special combination of instruments, voices or composers would be facilitated by a computerized cataloging system.

In identifying the requirements of a catalog, KCMW-FM, Warrensburg, Mo., determined that separate treatment was needed for its three major categories, classical, jazz and MOR/pop. Classical catalogs needed *alphabetical listings* sorted by composer with alphabetical sorting of the works under the composer, a *time* sort based on the length of the performance and a sort based on the shelf acquisition *number*. Other useful sorts were possible from the record company number on each album and the performer and orchestra information. These output sorts have since been written into the station's program.

There were similarities and differences between the jazz and MOR categories. Sorting by artist or group was necessary for both categories; however, for jazz, listing the album title was sufficient, while for MOR, listing the individual song titles was necessary. In the jazz category, it may be important to list multiple artists separately. If individual song titles are listed, timings should also be included for scheduling ease in automated formats or in production.

The advantage of the sort by composer is obvious when multiple composers are on the same album. The time sort is helpful when programming "fill" music between other set program blocks. The shelf number sort provides an inventory listing that helps identify missing albums. The sort on the record company number is useful in ordering new materials; duplications can be avoided by checking this list.

Record numbering aids in retrieval and reshelving procedures. Various possibilities exist, and decisions should be tailored to the station's needs. The Library of Congress shelves records by each record company's name and then the company's number. Albums can be retrieved before cataloging activities are complete by using the record company's catalog.

A sequential numbering system may be useful. KCMW-FM uses this type of numbering tailored to its various categories. As a result, jazz has a separate set of numbers from classical, which is separate from MOR/rock/pop. The categories into which the station has divided the collection include the following: **C**, Classical; **J**, Jazz; **O**, Opera; **P**, Production; **R**, Records (MOR/rock/soul/pop); **S**, Show; **T**, Transcription; **X**, Christmas; and **Y**, Religious; and so on. A separate grouping for transcriptions was necessary since some have expiration dates requiring careful control. Any of the 26 alphabet characters can be used to set up other categories as needed. KCMW-FM also added a second letter designator to the album category codes to represent the artist or group name in jazz or MOR/rock. For example, the jazz shelf number for the Gary Burton Quintet has the two letter code JB. The MOR/rock label for an Average White Band album has the code RA. John Denver has the code RD. The first letter is the major classification: jazz (J), MOR/rock (R) and classical (C). The second letter derives from the artist's last name or the group's name. If a person's name is the first part of a group name, then the name is handled like an artist's last name, for example Burton Quintet, Gary. For consistency, classical records are handled similarly, the source of the second letter being the first composer's name on side one of the album. For example, an album with Beethoven on side one and Schubert on side two is coded CB. However, the station is using the asterisk symbol (*) to represent the anthology subcategory. An album with more than one composer is listed in the anthology group. This affects only new albums; existing albums will not be transferred to this coding. A four-digit number follows any of the above two-character letter codes. A book of the assigned numbers is kept to facilitate browsing. There is a page for each category and an asterisk for anthologies in each. Bookkeeping is laborious, but the jazz and MOR/rock shelves are much more accessible than before.

KCMW-FM has a classical collection of approximately 3,000 albums with an average five selections per album. All selections total approximately 15,000 items. Since each entry would require three cards, 45,000 cards would be generated to create the classical file. One method used to reduce the size of this file was to enter the large work or general album title instead of the individual selections. For example, a song cycle may include 15 to 20 individual titles. It may be desirable to list these selections at a later time; notation can be made at the end of a field that would not alter the sorting order and would indicate that additional selections have not been listed.

A computer system may not seem financially feasible for many stations. Some stations already have systems of their own, some use time sharing or have direct access to data processing facilities. KCMW-FM is licensed to the Board of Regents of Central Missouri State Uni-

versity (CMSU) and has access to the data processing facilities on campus. Computer programming for KCMW-FM evolved into a mutually beneficial relationship between the station and the university.

KCMW-FM computer programs are written in COBOL language and use punched cards as input data. With an anticipated 30,000-card data deck in our initial file creation (three cards per data record), the input data cards have been transferred to magnetic tape. An update and delete function has been added for the tape file.

A coding sheet was developed to capture the two alpha and four numeric characters for the shelf number, 43 characters for a composer's name or an artist/group name, 72 characters for a title, 62 characters for the performer/conductor/accompanist information, and five numeric characters for the time.

It takes an average of one hour to code 20 to 30 data records. Keypunching can be accomplished in about half the time for the same number of data records. Since part-time help is involved in the coding and keypunching procedures, continual supervision of various stages is necessary. The station's music director reviews almost all coding sheets before keypunching takes place. Erroneous coded entries and those deleted from the file are printed out for audit purposes; an item cannot disappear from the file, either as a data exception or a deletion, without being printed in this fashion.

Broadcast Information Systems are effective tools for managing station functions. Similar systems are being developed for the elimination of redundant and repetitive activities and for operational and decision-making support. Development and implementation of computerized music library systems would be a good beginning for many public radio stations. Remember the formula: Radio + Records = Computer!

Gary Grigsby is the director of arts and performance, KCMU-FM, Warrensburg, Mo.

GLOSSARY

This glossary contains over 100 definitions of terms that are often used and are relevant either to data processing products and systems or to the management of data processing activities. These definitions have been compiled by the Computer Information Clearinghouse to reflect current usage as well as to conform to "standard" definitions accepted by the computing industry

GLOSSARY

Access—generally the obtaining of data. A few examples: random-devices, such as disc and drum; serial-devices, such as magnetic tape

Access Methods—the technique and/or program code for moving data between main storage and I/O devices.

Access Time—the interval between when data is called for or requested to be stored in a storage device and when delivery or storage is completed, i.e. the read/write time. (See also Response Time).

Algol—a programming language designed for the concise, efficient expression of arithmetic and logical processes and the control of these processes. Taken from algorithmic language.

Algorithm—a specific set of defined rules or processes for the solution of a problem in a finite number of steps.

APL—A Programming Language. A problem solving language designed for use at remote terminals; it offers an unusually extensive set of operators and data structures for handling arrays and for performing mathematical functions.

Application Package—a commercially available set of applications programs. In most cases the routines in the application packages are written in a generalized way and will need to be modified to meet each user's specific needs.

Applications Software—a program or group of programs written for or by a user that applies to his own work, that tells the computer how to do specific jobs, e.g., payroll, inventory control.

ASCII—American (National) Standard Code for Information Interchange, X3.4-1968. This is a seven-bit-plus parity code established by the American National Standards Institute (formerly American Standards Association) to achieve compatibility between data services. Consists of 96 displayed characters (64 without lower case) and 32 non-displayed control characters (also called USASCII.) Although adopted in the early 1960's and, for a while, strongly supported by the U.S. government, the code has primarily been used by vendors other than IBM (who has supported the code to some degree). Possibly, the code has survived because of the large Teletype teleprinter user base. Originally, it was a seven-level code. Later, an eighth bit was added, which could be fixed or represent character parity. Now, parity is a standard part of the code.

Assembler—a computer program that coverts symbolically coded computer source programs into object level, executable code. (Machine Language).

Assembler Language—a source language that includes symbolic statements in which there is a one-to-one correspondence with computer instructions. This language lies midway between high level language and Machine Language (perhaps closer to the latter).

Asynchronous Transmission—a mode of data communications transmission in which time intervals between transmission characters may be of unequal length.

BASIC (Beginner's All-purpose Instruction Code)—a comon algebra-like high level time-sharing computer programming language.

Batch Processing—a technique in which a number of similar data or transactions are collected over a period of time and aggregated (batched) for sequential

processing as a group during a machine run.

Baud rate—a measure of transmission speed equal to number of discrete conditions of signal events (bits) per second.

Benchmark—a point of reference from which measurements can be made. Involves the use of typical problems for comparisons of hardware performance. Used in determining which computer can best serve a particular purpose.

Bit—The smallest possible unit of information represented by a 0 or 1.

Binary—a numbering system using 2 as its base and only the symbols 0 and 1.

Buffer—a high speed area of strorage that is temporarily reserved for use in performing the input/output operation, into which data is read or from which data is written.

Byte—a sequence of bits operated upon as a unit and usually shorter than a computer word. The representation of a character. Often, a sequence positive charges. The binary digits appear in strings of 0's and 1's. Most computers do their calculations in binary.

Chips—microprocessors that are complete computers on single chip of silicon. No larger than an inch sequare, they contain all the essential elements of a central processor, including the control logic, instruction decoding and arithmetic processing circuity.

CICS (Customer Information Control System)—an IBM data base/data communication (DB/DC) program product that provides an interface between the operating system access methods and applications programs to allow remote or local display terminal interaction with the data base in the central processor.

COBOL (Common Business Oriented Language.) A data processing language that makes use of English Language statements. It is especially adapted to business and commerical problems.

COM (Computer Output Microfilm)—normal printed output of a computer reduced to one of several available microforms by a special output device that takes the place of the line-printer.

Compilers—programs that accept instructions in high-level language and convert each instruction into a multitude of machine language instructions, from which the computer can run the jobs.

Conversational Mode—communication between a terminal and a computer in which each entry from the terminal elicits a response from the computer and vice versa.

Core Memory—the computer's internal information storehouse. Known as "real" memory as opposed to "Virtual Storage (VS)." (See Rendom Access Memory).

CPU (central processing unit)—the heart of the general purpose computer that controls the interpretation and execution of instructions.

CPU Time—the amount of time devoted by the central processing unit to execution of instructions as oposed to waiting for other (typical I/O) processes to complete.

CRT display device—a television-like picture tube used in visual display terminals on which images are produced on a cathode ray tube.

Cursor—a position indicator frequently employed in CRT terminals to indicate a character to be corrected or a position in which data is to be entered.

Data—1) a general term that is used to

denote any or all facts, numbers, letters, symbols, etc. which can be processed or produced by a computer, 2) source data or raw data as contrasted with information obtained by the processing of data.

Database—a nonredundant collection of interrelated data items processable by one or more applications.

Database Administrator—the custodian of the organization's data—or that part of it which his system relates to. He controls the overall structure of the data.

Database Management System—a systematic approach to storing, updating and retrieval of information stored as data items, usually in the form of records in a file, where many users have access to common data banks.

Data Communication—the transmission and reception of data, often including operations such as coding, decoding and validation. Much data communications is carried over ordinary telephone lines, but often it requires specially conditioned leased lines where, in effect, several telephone lines are linked "side by side" to provide the required wide carrier bandwidth to carry a high speed flow of information traffic.

Data File—a collection of related data records organized in a specific manner.

Data Management System—assigns responsibility for data input and integrity, within the organization, to establish and maintain the data bases.

Data Processing—the execution of a programmed sequence of operations upon data. A generic term for computing in business situations and other applications with machines such as bookkeeping machines, digital computers, etc.

Data Set—in data organization and storage, a collection of records with logical relationships.

Disk Storage—information recorded on continously rotating magnetic platters. Handles huge amounts of storage on-line. Storage is random access.

Distributed Systems—refers to various arrangements of computers within an organization in which the organization's computer complex has many separate computing facilities all working in a cooperative manner, rather than the conventional single computer at a single location.

Documentation—the process of collecting and organizing documents or the information recorded in documents.

Down Time—the period during which a computer, communications line, or other device is malfunctioning or not operating correctly because of mechanical or electronic failure, as opposed to available time, idle time, or stand-by-time.

EBCDIC (Extended Binary Coded Decimal Interchange Code)—includes all COBOL characters. The code provides for 256 different bit patterns. This 8-bit code is primarily used by IBM and vendors of IBM compatible computer.

Facsimile (fax)—a system of telecommunication used to transmit images for reproduction on paper.

Feasibility Study—an investigation of the advantages and disadvantages of using an alternative approach over a present approach.

Flowchart—a systems analysis or programming tool to graphically present a procedure in which symbols are used to designate the logic of how a problem is solved.

FORTRAN—FORmula TRANslating language. A common language primarily used to express computer programs by arithmetic formulas.

IMS (Information Management System)—an IBM program product that supports data base management.

Information Retrieval System—a complete application for cataloging vast amounts of stored data so that any part or all of the data can be called out at any time.

Input—the data to be processed. Also the transfer of data to be processed from keyboard or an external storage device to an internal storage device.

Input Device—a device such as a card reader, CRT, teletypewriter, etc., which converts data from the form in which it has been received into electronic signals that can be interpreted by the computer.

Interactive—pertaining to an application in which each entry elicits a response, as in an inquiry system or an airline reservation system. (Also see Conversational Mode).

Inverted File—in information retrieval, a method of organizing a cross-index file in which a keyword identifies a record; the items, numbers, or documents pertinent to that keyword are indicated.

Job Control Language (JCL)—a programming language used to code job control statements. These statements supply information to the operating system and the operators about the program; e.g., name of user, how much memory is required, estimated run time, priority, tapes required, other programs, etc.

Light Pen—a tool for CRT terminal operators that causes the computer to change or modify the display on the cathode-ray tube by the operator pointing the tool at the screen.

LISP (List Processing)—an interpretive language developed for manipulation of symbolic strings and recursive data.

List—a data structure in which each item of data can contain pointers to other items.

LSI (Large-Scale Integration)—refers to a chip with more than 100 components.

Machine Language—a binary language all digital computers must use.

Magnetic Tape—flexible plastic tape, often 0.5 in. wide recorded in 7 or 9 channels or horizontal rows, that extends the length on the tape. One side is uniformly coated with magnetic material on which data is stored.

Mainframe—the central processing unit of a large computer as opposed to a minicomputer or microcomputer.

Management Information System (MIS)—a data processing system that is designed to furnish management and supervisory personnel with current information to aid in the performance of management functions. Data are recorded and processed for operational purposes, problems are isolated and referred to upper management for decision making and information is fed back to reflect progress in achieving major objectives.

Master File—a main reference file of information used in a computer system. It provides information to be used by the program and can be updated and maintained to reflect the results of the processing operation.

Memory—the circuitry and devices that accept and hold binary numbers and are capable of storing data as well as programs. Memory must allow rapid access to information.

Message Switching—a method of receiving a

message over communications networks, transmitting it to an intermediate point, storing it until the proper outgoing line and stations are available and then transmitting it again towards its destination. The destination of each message is indicated by an address integral to the message.

Microcomputer—a complete tiny computing system, consisting of hardware and software, that usually sells for less than $5000 and whose main processing blocks are made of semiconductor integrated circuits. In function and structure it is somewhat similar to a minicomputer, with the main difference being price, size, speed of execution, and computing power. The hardware of a microcomputer consists of the processing unit which is usually assembled on a printed circuit board with memory and auxiliary circuits, power supplies, control console, and peripheral devices similar to those on larger machines.

Microfiche—a rectangular transparency approximately 4" x 6" containing multiple rows of greatly reduced page images of reports, catalogs and books.

Microprocessor—the central unit of microcomputer that contains the logical elements for manipulating data and performing arithmetical or logical operations on it.

Minicomputer—a small programmable general purpose computer typically used for dedicated applications, which typically sells for less than $25,000. Usually it is a parallel binary system with 8, 12, 16, 18, 24 or 36-bit word length incorporating semiconductor or magnetic core memory offering from 256K to 1M bytes of storage and a cycle time of 0.2 to 8 microseconds or less.

Multi-access—the ability for several users to communicate with the computer at the same time, each working independently on his own job.

Multiplexing—the division of a transmission facility into two or more channels either by horizontally splitting the frequency band transmitted by the chanel into narrower bands, each of which is used to constitute a distinct channel (frequency-division multiplexing), or by allotting this common channel to several different vertical information channels, one at a time (time-division multiplexing).

Multiprocessing System—a computing system employing two or more interconnected processing units each having access to a common, jointly-addressable memory, to execute programs simultaneously. Also, loosely refers to parallel processing.

Multiprogramming—a technique used to balance the CPU's speed with the slower peripherals by allowing several programs to run on the computer system at the same time. The goal is to make more efficient use of the system, by keeping more parts of it busy most of the time.

Networking—hooking geographically separated computers together over transmission lines.

Object Code—machine language output from a complier or assembler which is itself executable machine code or is fully complied and is ready to be loaded into the computer.

OCR (Optical Character Recognition) a process of light-sensitive recognition by machines of printed or written characters from an output device, such as a cash register or adding machine, that serves as direct input to a computer system.

OEM (Original Equipment Manufacturer)—a purveyor of a product made for assembly into a final system or larger subassembly by another manufacturer.

Off-line—pertaining to equipment or devices not under direct control of the central processing unit.

On-line—the operation of peripherals or terminals in direct interactive communication and under control of the central processing unit via a communication channel.

Operating System—software that controls the operation of a data processing system and that may provide the following services: determine what jobs are running and what parts of the computer system are working on each job at any given time, impose standards and procedures on machine operation, take care of the numerous little details lumped together as "housekeeping", invoke standard troubleshooting actions in cases of malfunction. They're usually very complex, and use big quantities of core and disk storage. Sometimes call Supervisor, Executive, Monitor, Master Control Program, depending on the computer manufacturer.

Output—data emitted from a storage device, transferred from primary to secondary storage, or which is the product of an information processing operation; reports produced by a computer peripheral device.

Peripheral Equipment—usually called simply "peripherals." These are external (to the CPU) devices performing a wide variety of input, output and other tasks. On-line peripherals are connected electronically to the CPU. Others are off-line (not connected). Examples are card punches, card readers, magnetic tape and high speed printers.

PL/1 (Programming Language 1)—a high-level programming language, designed for use in a wide range of commercial and scientific computer applicatons which has features of FORTRAN and COBOL plus others.

Polling—a centrally controlled method of permitting terminals on a multi-terminal line to transmit without contending for the line. The polling device contacts terminals according to the order specified by the user.

Program—a set of instructions arranged for directing a digital computer to perform a desired operation or operations.

RAM (Random-Access-Memory)—a storage technique in which the time required to obtain data is independent of the location usually refers to magnetic core or semiconductor storage devices.

Random Access—pertaining to a storage device where data or blocks of data can be read in any particular order (e.g., disk). Random access devices do not have to be read from the beginning to find a specific address as is necessary with paper tape and magnetic tape.

Read-Time—the processing of transactions as they occur rather than batching them.

Record—a collection of related items of data (fields) treated as a unit.

Remote Access—pertaining to communication with a computer by terminal stations that are distant from that computer.

Remote Job Entry (RJE)—input of a batch job from a remote site and receipt of the output via a line printer or card punch at a remote site.

Report Generator—a program that generates a report. It takes care of formatting and other details and can do some processing of data, such as adding up colums or rows of numbers.

Response Time—the amount of time elapsed

between generation of an inquiry at a data communications terminal and receipt of a response at that same terminal. Response time, thus defined includes: transmission time to the computer, processing time at the computer, access time to obtain any file records needed to answer the inquiry, and transmission time back to the terminal.

Sequential Access—a term used to describe files such as magnetic tape which must be searched serially from the beginning to find any desired record.

Software—a term coined to contrast computer programs with the physical components of a computer system. Software programs are stored sets of instructions which govern the operation of a computer system and make the hardware run. Software is a key determining factor in getting more computer power per dollar. The processor programs, library routines, manuals and other service programs supplied by a computer manufacturer to facilitate the use of a computer. In addition, it may refer to other programs specially developed to fit the users needs. All the documents associated with a computer.

Sort—a processing run or operation to order data in numerical, alphabetic, or alphanumeric groups according to a given standard or rule.

Source Document—an original record of some type which is to be converted into machine readable form.

Spooling—the reading and writing of input and output streams on auxiliary storage devices, concurrently with job execution, in a format convenient for later processing or output operations.

System Design—the specification of the working relations between all the parts of a system in terms of their characteristic actions. Key steps in developing a comprehensive system design are as follows: identify network of information systems, identify key problem areas related to processes, identify subsystems, review information management system, develop preliminary action for definition phase.

Systems Analysis—complete analysis of all activity phases of an organization to determine precisely what must be accomplished and how to accomplish it; and development of a detailed procedure for all collection, manipulation and evaluation of data associated with its operation.

Teleprocessing—the processing of data that is received from or sent to remote locations by way of telecommunication lines.

Terminal—a device equipped with a keyboard and an output device (e.g. display or printer) that is connected to a computer system for the input and/or output of data.

Time-Sharing—a method of operation in which the resources of a computer facility are shared by several users via terminals for different purposes at (apparently) the same time.

User Programs—programs that have been written by the user as contrasted to those supplied by the manufacturer.

Utility Routine—software used to perform some frequently required process in the operation of a computer system—e.g., sorting, merging, etc.

Virtual Storage—addressable space that appears to the user as real storage, from which instructions and data are mapped into real storage locations.

Word Processing Terminal—a device used for the the preparation and dissemination of letters, memoranda, reports and articles using automated typewriters and storage devices.

APPENDIX

Station Computer Utilization Survey

Please Return By September 4, 1981
TO: M. Osman Yousuf
CPB, Computer Information Clearinghouse
1111 16th Street, N.W.
Washington, D.C. 20036
(202) 293 6160

STATION COMPUTER UTILIZATION SURVEY

Name of Respondent _____ _____
Last Name First Name

Position/Title _____ Telephone (___) _____

Station Call Letters _____ City _____ State _____ Zip_____

I. Currently the station ☐ "Has" or ☐ "Has No" access to and/or utilization of computer facilities.

If you currently have access to computer facilities or have definite plans to do so, please complete the rest of this questionnaire.

II. Operating Environment (if there is more than one answer to any of the questions, please indicate additional information in the space provided at the end of this questionnaire).

a. Type of Computer ☐ Mainframe ☐ Mini ☐ Micro
(check one)

b. Manufacturer's Name _____
c. Model No. _____
d. CPU Memory Size _____ Kilobytes
e. Storage Capacity Size _____ Megabytes
f. Operating System Software
Name _____

g. The Computer is:
(check one)
☐ in-house (station-owned/leased)
☐ licensee time shared (eg. university, state)
☐ commercial service bureau

I:I. **Application Software. Please check all appropriate boxes. The following definitions are being provided to assist you in checking the right answers.**

Manual: non-computerized system

Planned: a system currently non-computerized, however a computerized system is being designed, developed and planned for implementation.

P/D A partially developed computerized system. A system where all desirable functions of the particular application are not yet fully computerized.

F/D: A fully developed computerized system. All major functions of the application supported by a computer including generation of management reports are computerized now.

Standard: A packaged applications program was purchased from a vendor or was already in existence at a service bureau or at a licensee (eg university), or acquired from another station.

Modified: A packaged application program developed by a vendor or a service bureau, a licensee or another station, was acquired, modified and adapted to meet your needs.

Custom: An application program was custom designed and developed from scratch specifically to meet your local needs.

Application Areas	Check ONE Type of Computer System				Check ONE Type of Computer Program			Name Source, Language e.g. COBOL, BASIC
DEVELOPMENT								
1. Auction Mgmt.	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
2. Membership Mgmt.	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
3. Mailing List/Labels	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
4. Volunteer Mgmt.	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
FINANCE AND ADMINISTRATION								
1. Budget/Cost Acc'ting	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
2. General Acc'ting	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
3. Payroll	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
4. Word Processing	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
OPERATIONS								
1. Air Switching	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
2. Facilities Sched.	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
3. Inventory Control	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
4. Manpower Sched.	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
PROGRAMMING								
1. Ascertainment Res.	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
2. Audience Res.	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
3. Program/Record Lib.	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	
4. Program Sched./Logs	☐ Manual	☐ Planned	☐ P/D	☐ F/D	☐ STD	☐ MOD	☐ Custom	

IV. Computer Expenses

a. Estimate the total annual cost of maintaining your station applications on computer (including computer staff and hardware supplies, leasing and fair market value of any inkind/indirect contributions)

$_____

b. Estimate your stations direct capital investment in computer equipment, if any.

$_____

Fill this portion of the questionnaire only if you intend to distribute/. market any of your application software to other station/entities. Include additional information (if any) on the space provided at the end:

	Application software name(s)	Approximate acquisition price	Computers on which this system is designed to operate (vendors & model)	Name other vendor supplied software required by this system	Minimum CPU memory required for program execution	Application documentation available (circle one)
1.						YES / NO
2.						YES / NO
3.						YES / NO
4.						YES / NO
5.						YES / NO

Additional Comments/Information: