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Automating Studio Management

Arthur Stoppe

Computers Come out of the Control Room and Into the Office

Contrary to what most people outside of the business would believe, much of the day-to-day business of running a recording studio is boring. Not only are there the usual things that are a part of running any business—scheduling, billing, bookkeeping and inventory—but there are also many tasks unique to the studio. Take, for instance, giving a price quote to a customer prior to his booking studio time. Say you have a client who has to do the audio post-production for a half-hour TV show. You get out your calculator, make an estimate of how much time the client needs, multiply that by the hourly rate, add in supplies, tax, etc., and scribble all this down on a scrap of paper. If you're lucky, you won't end up losing this paper just in case the client calls back and asks for the figures again. Or take the case of the record producer who, in the middle of recording an album project, needs a figure on just how much of his budget he has spent so far. You gather together all of his invoices, get out the calculator again and start working. Certainly, this is not the glamorous life of recording studio management that you once dreamed about.

Wouldn't it be great if you could get a computer to do these and many other tasks necessary to the management of an audio recording studio? Computers in some form or other have been at work in recording studios for some time now. They have been helping us mix, control our consoles and lock our tape recorders together. Isn't it time for them to become involved in the automation of day-to-day studio management? There are many tasks necessary for the operation of an audio studio that could be handled more efficiently through the use of computers. Scheduling, inventory, billing and bookkeeping, all of these could benefit from automation. Well, that's what we thought at Sigma Sound Studios, and we decided to do something about it.

If you are a typical business, you can computerize much of your work with available, off-the-shelf programs. In-

deed, much of the work of running a studio could be handled by existing software or modified versions. You could assemble commercially available database, word processing and accounting programs and come up with ways of using them. This approach, however, could prove to be at best, a compromise. There are many specialized tasks unique to studios that could not be handled efficiently and adequately by such an assemblage of software. Besides, who would want to deal with the complex task of getting several different programs from different software publishers to exchange data and work together as an integrated studio management system? This job alone could be as involved as developing a suitable program from scratch.

With this in mind, Sigma Sound set out to develop its own Automated Studio Management System. Of course, since none of us are accomplished computer programmers, we would employ a professional to do that part of the job. However, we still had to be involved in defining the overall "architecture" of the system, since we knew best what we needed to do, and how we would prefer to do it. We also had to be closely involved in the testing and debugging of the program.

HARDWARE CHOICES

If you are going to develop your own software, you are of course, free to choose what kind of hardware you are going to run it on. If you are hoping to perform a lot of different, complex tasks simultaneously, your first impulse might be to base your studio management system on a centralized minicomputer connected to a number of satellite terminals, instead of using desk top personal computers. We considered this course of action for a while, but decided to go to the personal computer route for several reasons. First of all, while minicomputers are more than capable of doing the job, they are also fairly expensive. At the same time, personal computers are becoming less expensive while making substantial advances in computing power and speed, as well as in the area of multi-user utilization (via the necessary hardware and software add-ons). The multi-user question was of importance because what we wanted to do could be accomplished from a single, stand-alone desk-top computer, while we recognized that there would be advantages in being able to perform several different tasks at once in different locations. For instance, the Traffic Manager would be able to schedule studio time another employee was generating

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invoices.

What kind of personal computer should one choose? We decided on the IBM PC and compatible family of computers, primarily because of their wide acceptance throughout the business computing world. The IBM PC/XT and its clones have the hard disk storage necessary for our projected system's large data files, and the newer PC/AT has the speed and other features necessary for multi-user implementation. The newest of the PC class of machines, based upon the Intel 80386 microprocessor, offer even greater computing power and more extensive capabilities in the multi-user area.

OUTLINING THE PROGRAM

Defining the architecture of a computer program involves spelling out in painstaking detail every step of the task that you wish to automate, so that a programmer can write the appropriate software. This process includes articulating things that you do instinctively, or normally take for granted. For such a multifaceted task as that envisioned for our studio management system, this proved to be very complex undertaking.

The first thing that we did was to come up with the following "wish list" of things that we wanted the program to do:

- * Maintain a customer data file of addresses, phone

numbers, contact people, etc.

- * Permit flexible pricing for each client and recording project, for cost quotations as well as for actual billing.

- * Keep track of the day-to-day studio schedule, session dates and times, setups, equipment requirements, and the like.

- * Generate client invoices based upon the studio services and supplies used on sessions, plus the previously determined pricing data.

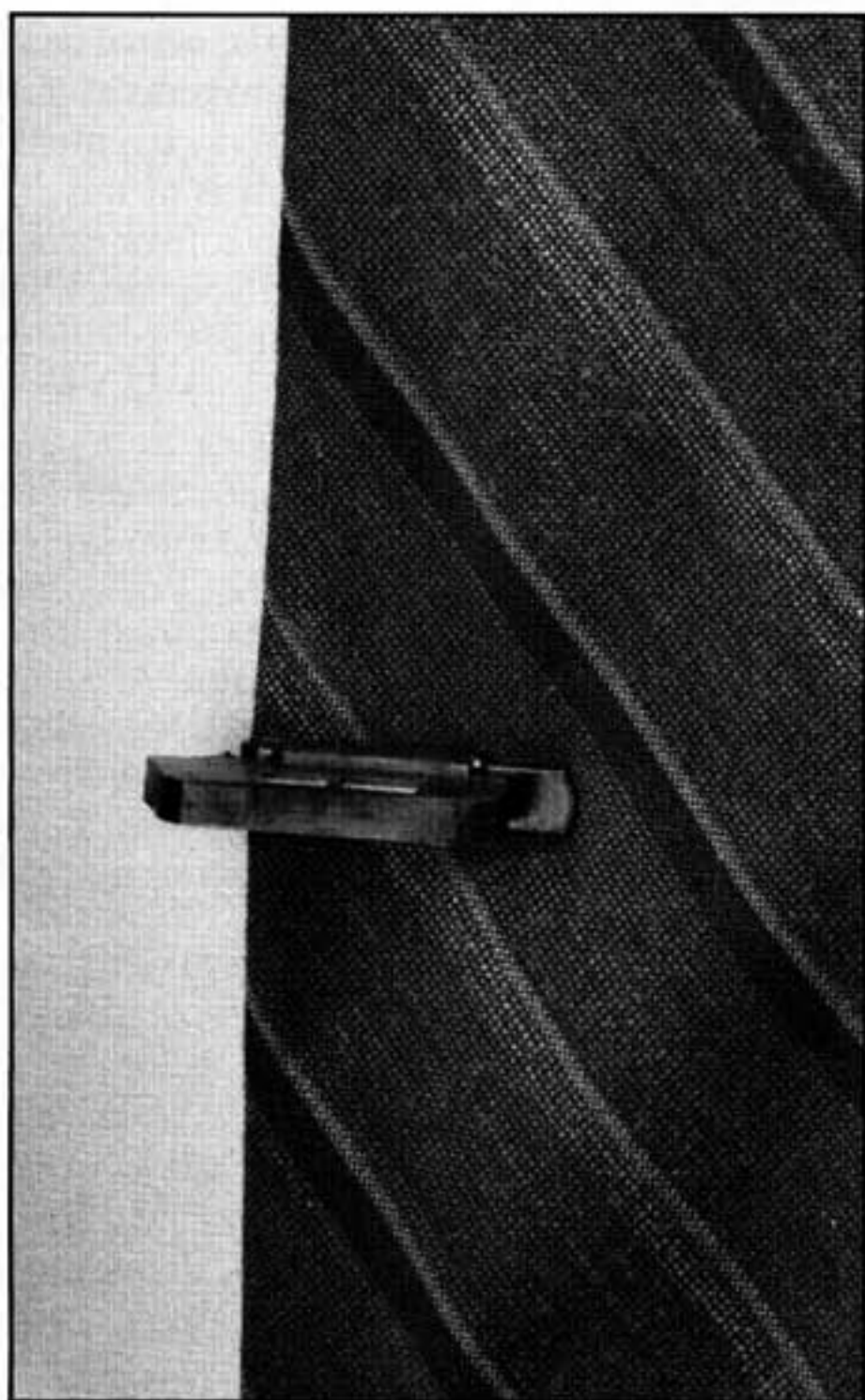
- * Maintain customer account data, based upon invoicing and subsequent client payments, and interface this data with a complete studio accounting package (Accounts Payable, Accounts Receivable, General Ledger). Also to be included as part of bookkeeping would be employee payroll.

- * Keep track of supplies inventory.

- * Maintain a tape library.

- * Generate reports based upon the various types of data in the system, such as "Which clients have done the highest dollar amount of business with us this year?" "How much 1/4-in. and 2-in. tape do we have in stock?"

An interesting problem in defining just what the program should be was the fact that it had to be used by Sigma Sound in our New York and Philadelphia studios. While both



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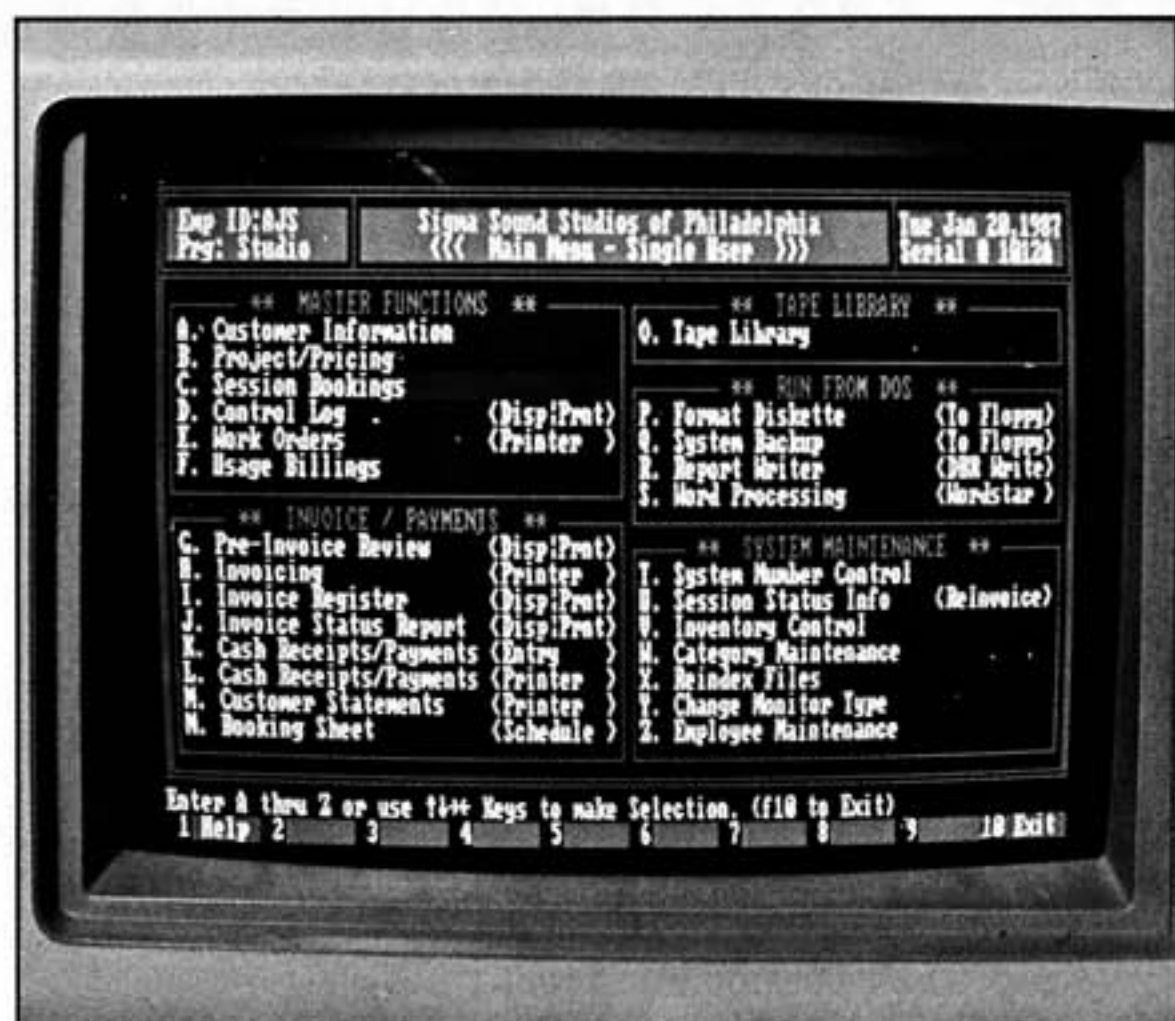


Figure 1. The main menu.

locations are part of the same company, and generally have similar operating procedures, there are some differences between NY and Philadelphia in the way in which certain things are done. For Example, New York books more time for clients in "blocks" of days or weeks at a time, while in Philadelphia most studio time is scheduled on a session-by-session basis. Each of these two ways of doing business calls for different features to be incorporated into the software. The resulting program has to accommodate both NY and Philadelphia.

TESTING AND DEBUGGING

Once the actual writing of the program was underway, we had to be closely involved in the testing and debugging of the software. There are two things that need to be done during this process. First, actual logical flaws or "bugs" in the program need to be found so that they can be fixed. Second, to find out if the program, as it is written, really addresses our needs and meets the goals that we set for it. We also needed to answer such questions as "Is the program easy to

Figure 2. The session booking screen.

| | | | | | |
|---|--------|---|-------|------------------------------------|-----------|
| Emp ID: AJS Prg: Session | | Sigma Sound Studios of Philadelphia <<< Session Review >>> | | Tue Jan 13, 1987 Serial # 1012A | |
| Project 2505 PSYCHIC CHEERLEADERS for OBSCURITY RECORDS | | | | | |
| Studio 01 Date 01/13/87 Start 07:00-P To 03:00-A Hunt 04:00-A | | | | | |
| Producer P. R. O'ducer Engineer AJS Assist SEM Other | | | | | |
| Type ** R | Source | Mix 1 | Mix 2 | Titles | |
| Size | / | / | / | How's the Weather Up There | |
| Tracks | 2 | | | Girls Just Want to Have Lunch | |
| Speed | 30 | | | | |
| Digital | | | | | |
| Noise | | | | | |
| NWB/N | 370 | | | | |
| New Prj | | O/T | Vid | TC | New 2* |
| Confirm by AJS | | on 01/13/87 | | P.O. # 67789 | Workorder |
| Release by AJS | | on 01/13/87 NO | | Deposit 2500.00 | Number |
| | | | | | 86-1486 |
| | | | | | <Fkey> |
| | | | | | Edit |
| | | | | | Mode |

Use fkeys below to enter Selection.
1 Help 2 Prev 3 Next 4Confirm 5Cancel 6Equip 7 Edit 8Setup 9 Find 10 Main

| | | | | | |
|---|--------------------------------|---|---------|------------------------------------|-----------------------|
| Emp ID: AJS Prg: Cust | | Sigma Sound Studios of Philadelphia <<< Customer Information >>> | | Tue Jan 13, 1987 Serial # 1012A | |
| Company | OBSCURITY RECORDS | Cust. No. | OBSCUR | | |
| Contact | P. R. O'DUCER | | | | |
| Title | PRESIDENT | | | | |
| Address | 12999 SOMERBACK ROAD | Sales Tax | 6.000 X | | |
| | SUITE 7777 | Tax ID # | | | |
| City/State/Zip | OUT IN THE PINES NJ 08888-0000 | Discount | 0 X | | |
| Telephone | 609 999-1234 | Unapl Credit | 0.00 | | |
| Term 2 (0=COD 1=Cash 2=M10 3=M15 4=M20 5=M30 6=M1N10 7=M1N30 8=2/10 9=2/15) | | | | | |
| YTD Sales 2138.94 | | Balance | 0.00 | On Order | 0.00 |
| Region | | Type Cust | RC | Bad Debt | Last Payment 12/17/86 |
| Salesman | Mail Code | | | Fin. Chg | Last Session / / |

Use fkeys below to Search Client File.
1 Help 2 Prev 3 Next 4Review 5Print 6 Add 7 Edit 8Delete 9 Find 10 Menu

Figure 3. The client information screen.

use? Is it user friendly?" These questions can best be answered by running the program through its paces.

At first, the testing process involves a lot of "play". This part of the debugging can often be fun. You create imaginary customers, and schedule fictitious sessions for them. You do a great amount of "what if" thinking, and create complicated test scenarios for the program that utilizes all of its features. Doing this problem will be brought to light, and that there will be few hidden bugs.

Once this initial testing is out of the way, the process becomes more serious. The next step is the actual use of the program in your everyday studio management tasks in parallel with your manual studio paperwork. Eventually, the program will have to stand on its own. It is at this stage of the testing that you really find out if the software, as it has been written, really suits your needs and your usual ways of doing things. If any additional program bugs should surface at this stage, things can get rather exciting and hectic, as these problems will interfere with getting your everyday work done. Any changes that must be made to the program at this stage, either to fix bugs or add new features, bring with them increased chances for more bugs to surface.

THE ACTUAL SOFTWARE

It is interesting to compare the organization of the actual program that we have had written to our original "wish list." The Automated Studio Management program that is the result of our efforts has the following hierarchy (order of flow) of information within the system:

- 1) Customer Information
- 2) Project
- 3) Session Bookings
- 4) Work Order
- 5) Usage Billings
- 6) Pre-Invoice Review
- 7) Invoicing and Accounting
- 8) Auxiliary and Miscellaneous Function

A "Project" is a set of rates for a particular set of sessions which cannot be quoted to a client unless information on that client (name, address, etc.) has been entered into the appropriate system data file. Recording sessions cannot then

be booked for that client unless a project has been assigned and priced. This ensures that every session booked will be billed at the correct rate. A Work Order is then issued for each session. The Work Order lists the data on the session's setup and other requirements, and provides space to record the actual studio time and materials used during the session. This information is then entered into the system in the "Usage Billings" module of the program. The supplies used by each session are automatically subtracted from the studio inventory as this is done. At this stage, a session can be invoiced, or an "Pre-Invoice Review" can be generated in case adjustments to the charges being billed need to be made before the actual invoicing. Payments by clients can then be entered against their accounts as they are received. This data is automatically logged into the accounting portion of the system.

Other features of the program, such as tape library, report generation, and maintenance and housekeeping tasks, are handled as auxiliary functions of the system. Exactly how the various functions or modules of our Automated Studio Management System have been organized can be seen in the main menu screen display. (*Figure 1.*)

USER INTERFACE

The Automated Studio Management System that we have developed is a very large and complex piece of software, but every effort has been made to make it as easy to use as possible. The program is what is termed "menu driven," that is, extensive use has been made of menus, the computer keyboard function keys, and on-screen prompts to guide the user through the system. Of particular significance is the built-in help function, which makes instructions and advice instantly available at the touch of a key. Much thought had to go into the design of the many data entry and display screens to make them logical and easy to use. Here are a couple of sample screens from the system. (*Figures 2 and 3.*)

THE ACTUAL SYSTEM HARDWARE

Our Automated Studio Management System is now in use in both Sigma Sound Philadelphia and New York in multi-user mode. In both locations, the hub of the system is an IBM PC/AT connected to satellite terminals or computers via high speed (up to 115K bits per second) RS-232 lines. The use of the RS-232 format permits the utilization of simple twisted pair wiring as opposed to the multi-pair or coaxial cable necessary for other methods of data transfer. In our particular case, this type of networking is made possible by software and hardware add-ons such as Lan-Link, Multi-link, Connect-Com, etc., produced by Software Link, Inc. There are many other suitable networking products on the market.

The New York System consists of four IBM PC-compatible terminals (Kimtron KT-7s) connected to a PC/AT acting as server to them. Since the KT-7s are what are referred to as "dumb" terminals (simple data input and display devices with no built-in computing power of their own) all of the actual information processing is done in the PC/AT which divides its computing power among itself and the terminals. All the system and program files are stored on the server's hard disk drive.

The Philadelphia hardware setup is somewhat different. It consists of a central PC/AT with both dumb terminals and other PCs as satellites. Three terminals, along with a PC/XT type computer (which can act as a terminal, but is also

available for independent use) are connected to the central server, which handles only the session scheduling and client billing functions of the system. Another PC/AT class computer is connected to the system to take care of bookkeeping (all of the bookkeeping for Sigma sound as a whole is handled in Philadelphia).

Although the actual networking necessary for multi-user implementation of our Studio Management System is made possible by the previously mentioned hardware and software add-ons, provisions did have to be made in writing our software to allow for this type of use. For instance, what happens if two users attempt to alter the same data file simultaneously? If no allowances are made for this, the result could be that one of the users will be locked out of that data (which is annoying rather than a serious problem), or the whole system could crash (which is a serious consequence, since valuable data could be lost). Data file handling within the system had to set up to properly accommodate such situations.

DOCUMENTATION

Another interesting aspect of this software development process is as follows: Initially, you will have to test and then use your program without any sort of instruction manual. At the same time, you do need some sort of instructional material in order to train your staff to participate in the program testing and use. So, you must set out to write the user's manual for the program as the software is being developed, and since the program is still in a continual state of change, your manual needs to keep changing in order to keep the manual up to date and accurate. In this dilemma, though, computers can come to your rescue. A good word-processing program can not only be an aid to writing your program documentation, but it also makes revisions to that material quick and easy. Also, with the program manual in electronic form, it also becomes easy to incorporate material from that document into an on line "help" function built into the software. Instructions and advice on program use can then pop up on the computer screen whenever needed.

FUTURE POSSIBILITIES

Initially, we set out to develop our Studio Management software for our own use, in part because there were few, if any, programs on the market like it. As the development of our program progresses, and we compare what we have to what is available, we are considering offering our package for purchase by other studios. Our plans for this have not been finalized.

CONCLUSION

There were many aspects of developing our own Studio Management software package that we did not foresee when we started the project. Now that the process is drawing to a close, the question inevitably must be asked, "Would we do it again?" The truthful answer would have to be this: we would probably have some additional second thoughts about undertaking a similar project, knowing what we know now about just what actually is involved. At the same time, though, computer are becoming more and more a part of all aspects of our daily lives, especially in the studio (anyone with a current automated console knows just what we mean). Sigma Sound has always prided itself on attempting to be at the forefront of all areas of recording studio technology. With this in mind, the answer to the question, "Would we do it again?" would have to be *probably*. ■