Planning and Implementing an Insurance Application On a Datatron If We Could Do It Over Again

H. ARTHUR HATCH

Mr. Hatch is a graduate of the Armstrong College in Berkeley, California, and the United States Merchant Marine Academy. He is a licensed Marine Engineer. He has a service background with the Merchant Marines and the Navy. During the Korean War he was recalled to duty. Since 1949 he has worked for Argonaut Underwriters, Inc., Menlo Park, California. Previously he held positions as Claims Examiner, Internal Auditor, in Purchasing and Supplies, Systems and Procedures, Budget Control, Division Statistician, Assistant to Division Manager, and Personnel Manager. Mr. Hatch was transferred to Argonaut's Home Office in February 1955 to work with Stanford Research Institute in evaluation of data processing systems approach and to form a data processing group. He is a member of the Association for Computing Machinery and Electronic Applications Research Forum, the latter an informal San Francisco group. Mr. Hatch is now the Data Processing Analyst of Argonaut Underwriters, Inc.

I am particularly pleased to have been invited to address this third annual N. M. A. A. Electronic Business Systems Conference. I was privileged to speak at your last conference in San Francisco—and when it was all over, I thought of many things I would like to have included and a few I might well have left unsaid. Either these weaknesses went undetected or your program committee graciously overlooked them—in any event, I'm back again and happily so. The reasons I'm so pleased to be with you again are twofold: (1) I feel a sort of mission in life to spread the gospel, as it were,

and I think this particular organization is a most fertile field from which to recruit computer operating and programming personnel. (2) The second reason is that we at Argonaut have survived some enlightening and sometimes harrowing experiences in the last 12 months and I think that a frank discussion of these experiences can be of some real value to you as users or potential users of Electronic Data Processing equipment.

Before such a discussion can be intelligently undertaken, I should relate some pertinent information about Argonaut operations.

PP 5 & 6 S. R. I. Report "Workmen's Compensation Insurance (including figures).

One of the most interesting aspects of Argonaut is its size; comparatively speaking it's small—but growing. Our premium volume (or income) for 1955 was 16,512,000; for 1956, 17,109,000. The corresponding policy count for these years was 1955, 20,689; 1956, 18,955. As you can see, the net effect of this increase in premium and decrease in policy count is to raise the average value of each policy. Another revealing bit of statistics is the relationship between the number of employees and the premium volume, a relationship we call "dollar value per employee." In 1955 this figure was 66,000 dollars; in 1956, 74,000 dollars.

I cite these few statistics to illustrate the quest, in all business, for economy of operation—a quest which, I am happy to state, has been at least partially successful at Argonaut. We recognized some years ago, however, that if we were to maintain our competitive position, we must investigate the potential of computing machinery, with its possibilities of savings even greater than those offered by punched card systems.

With this background in mind, let's pause a moment and contemplate what I feel is a fairly profound and sage observation (not my own, I must admit). "It's what you learn after you think you know it all that really counts." Doing a little honest soul-searching, we, at Argonaut, must admit that this is just about our true position at this time. We have taken the big plunge—purchased and installed equipment that, when properly handled and used, spells out the magic phrase, "integrated electronic data processing." What have we done with it and what have we learned from our experiences? Would we proceed in the same manner if we could retrace our steps? These questions constitute the theme of this paper and I shall proceed on this basis.

The first item for consideration in our retrospective mood is the question of consultants. I'm sure you have all listened to the pros and cons of this issue. In very few instances, however, have I heard valid and logical arguments in support of a position. In the case of Argonaut, there did not seem to be any alternative. We

had an interest, but an impressive lack of know-how where computers were concerned. We felt that we couldn't even intelligently investigate the situation without some help. Therefore, we contracted with Stanford Research Institute for a feasibility study. The results of this study were published as a report and indicated clearly that electronic data processing equipment was within the economic realm of possibility for Argonaut. There were two restrictions, however; (1) this equipment must be in the medium-size category (implying also, medium speed and medium price), and (2) this equipment must be used as the information processing center of a truly integrated data processing system embodying all major jobs that were being done on punched card equipment and some that were being manually performed. A critical analysis of these findings revealed no faults or errors, so we proceeded on this basis. The next logical step, as suggested in this feasibility report, was to request proposals from manufacturers of this "medium" equipment. Never having been accused of being kind to manufacturers or their sales representatives, I shall not mar my reputation now, but will rather proceed with the full explanation of this phase of the project. Requests for proposals were sent to five manufacturers: IBM, Electrodata, Remington-Rand, Underwood, and Marchant. All manufacturers replied with proposals.

Thus began the period of evaluation; determination of a course of best action and alternative action. IBM's 650 with tapes was almost immediately ruled out, because at that time it was available only on a lease basis and we felt our best course was to purchase. Incidentally, the current purchase price of the proposed 650 system is also prohibitive for us. Remington-Rand's File-Computer system was dropped from consideration because of cost. Datatron, Elecom, and Miniac all seemed to meet all of our requirements. Why did we choose Datatron? If we could make the choice again, would it be the same? In retrospect, it may seem somewhat ridiculous to ask these questions, but, of course, at the time, the decision was one of some moment to us. As you know, the Underwood Elecom died a quiet death with no headlines—the Marchant Miniac is anybody's guess—while on the other side, the success of Datatron is well-known to all of you. For those of you who have a mind for such things, the real answer to how we happened to make a good decision in this case is found in Vol. 4, No. 3 of Operations Research under the title "Note on Selection of Capital Equipment with Uncertain Delivery Date." Incidentally, the author of the article is one of our consultants. Thus far we have built a fairly strong case for consultants, and we most certainly count as one of our most intelligent actions, the contract we made to obtain consulting aid. We were so pleased, in fact; that when we placed an order for equipment, we extended our consulting contract to include the system planning and programming phase of our project.

Now the real fun began. The information system at

Argonaut was classified by major job types as follows:

I. New and renewal policy writing
II. Payroll Audit
III. Collections
IV. Claims
V. Dividends
VI. Policy Expiration and Rating Bureau Reports
VII. Reports to management and governing bodies

Obviously, this fully integrated system approach was going to require a fairly good-sized staff of highly competent people if programs were to be written for all of these jobs in a year's time. Management was quickly and easily convinced and assigned a total of eight persons to begin this somewhat monumental task. With one exception, these persons were drawn from within our own ranks. The single exception is worthy of mention. The man assigned by ElectroData to write and present their proposal, did such an outstanding job that we hired him. While manufacturers may frown on such action, I recommend it to equipment buyers or lessors.

After two or three months, however, the urgency of the situation seemed to lose its ranking in the minds of those responsible for assignment of personnel and our staff was gradually depleted as various persons were withdrawn and reassigned so as to make more immediately effective use of their skills. This in itself was not so bad. As most of you know so well, business competition, just as a military battle, presents situations that simply must be met, boldly and quickly, with good personnel. Our programming and system planning group amounted to a personnel pool of high quality and was thus a natural place to turn. We made two serious errors during this early programming period. Our first was the assumption that we could include not only our tabulating department supervisor but his assistant in the programming group without having a well-qualified man to take over the tab dept. We thought that these two could do some part-time long-distance supervising and found out that it just would not work. Just about the time we realized this obvious truth, the supervisor left us for other employment. Of course, we rushed the former assistant supervisor back to take active charge of the tab. dept., but he's still trying to put the pieces together.

Our second error of that period was not taking immediate steps to replace personnel as they were plucked away from our group. The situation was deceiving—the kind of thing that can so easily happen to a first-timer. As these persons were removed from our group, the rest of us reviewed progress and work schedules and, with blissful ignorance, unanimously agreed "all is well." In reality, however, as we were later to discover, it was only "well" on the surface. It was indeed well from a programmers point of view, but not so from the point of view of a systems man. In the event that you may have missed the obviously sad conclusion—at that point, we were not good system-thinking people. Rather we were quite competent, but starry-eyed programmers. Needless to say, a jolt such as the one I have just de-

scribed, made system thinkers out of us in a hurry. The striking difference, it seems to me, is that a programmer may turn out some very outstanding and elegant work, but it's of little, if any, value unless an affirmative answer can be given to these two questions: (1) does it "fit" with other programs? and (2) is it feasible to use the peripheral equipment implied by this program?

Let's be specific and consider a possible situation. A program may be written to handle insurance claims. This program may purport to handle such highly useful transactions as: post newly incurred claims into a tape record, effect changes to existing claim records on tape, interrogate existing claim records on tape and pay claim benefits when due, and other similar functions. It is very likely that such a program would require the existence and use of a master policy tape from which this claim program would extract certain vital information. Well, does such a master policy tape exist? Fortunately, this kind of fundamental question is almost always recognized early in the game; so, because we're smart persons, let's say it does exist. Does this tape contain all the information required by the claim program? At this point we're apt to have a problem. We did at Argonaut. If the program output is in the form of printed matter, is the program consistent with the form? Or, if the form should be revised, who knows about it? You may say, "we wouldn't ever overlook things as important as that." Resist the temptation. I said it once. It's not an easy kind of statement to live with. I could take the remainder of my time enumerating the things of this sort that we overlooked the first time around. If we were starting from scratch, I think we might take our very best programmer, relieve him of all programming responsibility, and assign him the task of analyzing and coordinating all the aspects of program interdependability. I'm sure the return would be high.

As to this peripheral equipment. I'm speaking principally of information collection devices such as tape-punching typewriters and adding machines. You will recall that the question dealt with feasibility of the use of this equipment. Frankly, Argonaut has had no real problem in this regard. Our input information collection requirements are such that the solution is quite simple and obvious. However, I can think of a situation or two that is not so simple. For example, let's assume that our problem is that of several offices, remote from our data processing center, each of which daily receives bills that are to be approved for payment against claims. This is the kind of situation where the volume of items is apt to be high. We'll make it simple and say that, if the bill is approved, the data processing center can issue a check and perform all necessary information posting if it receives such a bare amount of information as policy number, claim number, payee number, and amount to be paid. Obviously, this is a fine job for an adding machine tape punch. A high volume of bills can be disposed of in this manner by a single operator in a reasonable length of time. However, insurance people have an aversion to simple, straightforward solutions

such as this. For instance, they seem to thrive on alphabetical prefixes and suffixes. Obviously, an add-punch will no longer perform our job. If a tape-punching typewriter is required, we might just as well type the entire check. If that is one, we've eliminated the need for this very elegant program. Not only that, but we've imposed heavy accuracy requirements on the typist if a by-product information tape is desired. You just don't get best efficiency from tape-punching equipment when preparing an end-result document. I think perhaps some sort of limited alpha device on add-punches might find wide use in the paper shuffling institutions of our nation.

Some of our more interesting and frightening experiences have occurred in the realm that might be termed "getting the word out." In fact, I'm beginning to feel that the armed forces have a pretty good thing going in their "Plan of the Day." Almost two years ago, a couple of us at Argonaut devised a master policy numbering scheme that would account uniquely for every policy for 83 years without a repetition of numbers. This numbering system contained provision for 100 groupings such as geographical zone, type of business, etc. In spite of the availability of this master numbering system, a memorandum crossed my desk less than a week ago, announcing the inauguration of a completely foreign system for a new type of policy we are about to start using. To add insult to injury this new numbering scheme employs the same ten digit number we devised and simply adds a digit. Well, any fool knows our computer can't handle an eleven digit number! Someone didn't know. And this person is awfully close to home. Somehow he just didn't get the word.

To further illustrate this point in a different manner, I'll relate some of our debugging experiences. When our computing equipment arrived, we had an impressive amount of debugging yet to be done. We set up a system of time allotment for various persons and programs and dug in. One of our more experienced men along with the consultants developed procedures for debugging that were designed to make the most efficient use of time and equipment. After a few weeks, we reviewed progress and were not entirely pleased. It was soon discovered that there was an almost universal disregard for our debugging procedures. Some said they didn't realize the ground rules were official yet. Others said they knew about the rules but went ahead doing the same old thing because they were not familiar with the new methods and simply felt safer taking the old road. Here again, the word didn't get out or, worse yet, if it got out, no offer of assistance went with it. It seems that everyone in this business is slogan conscious these days; not to be left out, we've adopted one that has some real significance "If all else fails, FOLLOW DIRECTIONS." The aforementioned situation has, of course, been corrected; but not without some loss of time and attendant cost. Were we in a position to start this project over again, we would certainly pay more attention to this area.

There is a tendency on the part of many firms to justify the acquisition of computing equipment on the basis of the savings of a single job to pay for the system. I admit that there is merit in this approach; it ultimately saves money. However, in order to achieve maximum savings, many of these firms will eventually expand their systems many fold both in terms of equipment and scope of work performed. Argonaut, on the other hand, by virtue of economic necessity has had to include all major parts of its information system, in this first effort. I can't think of a more difficult task than that of coordinating the build-up of such an information system to the point of computer production work. Neither can I think of a more rewarding task. Perhaps the greatest reward to be gained is management acceptance. This point is neatly summed up in an article in a recent issue of *Computing News* which states; "The greatest sales talk to management from the computer room is a voluminous output of work, correctly and rapidly done. With the exception of the pure research problem, it is the job of most computer installations to crank out the production, and keep cranking it out."

I think we're somewhat fortunate to be in the position of having to convert our entire information system at once rather than one job at a time. In spite of the chaos that is occasioned by having so many irons in the fire at one time, I think that this method, if even halfway controlled, is potentially the quickest and most economical way to get the job done. We are firm in this approach and would do it again, if faced with the same situation.

Work scheduling has presented problems. Trying to schedule production and debugging during the same eight hour shift is not always easy. Debugging sessions have been kept to a strict hour and half maximum. Production runs, on the other hand, don't always end at the scheduled time. This seems to be principally due to two things: (1) program stops due to faulty input information, and (2) inaccurate timing estimates. Our efforts to correct these situations have been fairly successful. Our first effort was to add more pre-input controls to the system. This implies more card handling with, of course, more expense, but the return on this investment is in the form of fewer costly job stops. Our second effort was a re-evaluation of our original time estimates. On the whole, they appeared to be as accurate as could be expected and we were able to attribute any discrepancies to additional input volume due to conversion. By this I mean that an average predicted workload was increased by picking up some old records, etc. In addition, the obvious step of utilizing second shift time has been taken. One of the nice things about owning a computer, as opposed to leasing, is the free use of second and third shift time.

While we're on the subject, I may as well explore a few of the pros and cons of purchase vs. lease. In our case, it was simple; we couldn't afford to lease. The only possible advantage I can think of in leasing is the uncertainty of the used computer market four or five years from now when we might want to acquire new equipment. Actually, we feel that if we ever do want to replace our present equipment, there will be any number of small companies that will be anxious to purchase our equipment at a bargain price. What do we feel are the advantages of owning the equipment? Well, certainly one of the greatest advantages is this freedom of use, I just mentioned. Another distinct advantage is the freedom to have your own maintenance engineers. Contrary to popular belief, maintenance, in our case at least, is not a headache at all, but quite the opposite. Our operating records show a 7 per cent unscheduled down time and 23 per cent scheduled maintenance. Another nice feature is that we accomplish this at a savings of about 65 per cent as compared to contract maintenance cost. One of the real payoffs of having our own maintenance engineers is one that we hadn't foreseen at all. Programmers always wish they had just one or two more commands at their disposal, no matter which machine they may be working on. We have found that often these desired new commands can be constructed without too much effort or redesign. Our maintenance staff has added two new commands and we contemplate one or two more in the near future. We have also successfully accomplished a modification to our tape system which makes it considerably more useful to us. So you see why we feel we made a good decision in buying and providing our own maintenance.

As a summary, I'll just read this list of items, classified as "good" or "goof."

On the "good" list we can include:
1. Consulting services
2. Overall approach to problems
3. Decision as to which equipment to get
4. Purchase, rather than lease
5. Have our own maintenance personnel

On the "goof" list, I must include:
1. Handling of staffing problems
2. Coordination of programming and overall systems effort
3. Computer scheduling

I thank you for the opportunity of appearing before you and extend a warm invitation to visit our installation when you're in the Bay Area next.

WORKMEN'S COMPENSATION INSURANCE

Under the laws of the State of California, every employer is considered liable for injuries sustained by his employees. In order to make sure that every employer is able to meet his obligations in the event of an accident, the state requires that employers obtain workmen's compensation insurance. This insurance is offered by a number of private insurance carriers, and also by the State of California through its State Compensation Insurance Fund. Argonaut Insurance at present ranks second in premium volume among the private carriers of workmen's compensation insurance in the state.

The basic information flow involved in Argonaut's operations are illustrated in Figure 1 which you have. The company writes its insurance only through local agents and brokers, called collectively "producers."

Producers are independent agents, who are free to choose from a number of carriers to write the insurance. The producer writes out an application for the prospective assured and mails or telephones it to one of the main offices of the company. There an underwriter reviews the application and decides whether or not the company wishes to write a policy for the prospective assured. If the underwriter approves the application, a policy is writen for a one-year period. If, at the end of that year, the producer and the assured want the policy renewed, the underwriter will review the policy and its losses and will decide whether to write the policy for another year.

The premium on a workmen's compensation policy is usually computed on the basis of the amount of the assured's payroll. At various times during the year the assured is requested to report to the company the amount of his payroll by type of work done. Payroll auditors at the main office of the company review these payroll reports and determine the amount of the premium due. An invoice is then sent to the producer, who must in turn collect the premiums from the assured. The company has a Collections Department which keeps track of these payments due and makes sure that they are received from the producer.

If an employee of an assured is injured, he is sent by his employer to one of the doctors designated by the company. Both the employer and the doctor send a report of the injury to the Claims Deparmtent in one of the two main offices of the company. There, a claim examiner inspects the report to make sure that the injured employee is covered by a policy written by the company. If the claimant is covered, the company will pay all of his medical bills and send him weekly compensation checks for wages lost after the first week of temporary disability. If the claimant is determined to be permanently disabled, he will continue to receive payment during a period of readjustment, even if he is able to work again. If the claimant's permanent disability is major, payments may continue for the remainder of his life.

Argonaut Underwriters, Inc., operate the company for the benefit of the policy holders, in return for a fee based on gross premium volume. Profits which remain after payment of this fee and after payment of losses are the property of the policy holders and are returned each year in the form of dividends. The percent of premium returned as dividend for each policy is based on the cost of handling the policy, as reflected in earned premium, and on the amount paid out in claims on the policy.

This simplified description of the operations of the company touches only on the standard processing of an average policy.