

1969

Strata

J. David Moxley

Follow this and additional works at: https://egrove.olemiss.edu/dl_tr

 Part of the [Accounting Commons](#), and the [Taxation Commons](#)

Recommended Citation

Tempo, Vol. 15, no. 4 (1969, winter), p. 20-24

This Article is brought to you for free and open access by the Deloitte Collection at eGrove. It has been accepted for inclusion in Touche Ross Publications by an authorized administrator of eGrove. For more information, please contact egrove@olemiss.edu.

STRATA

by J. David Moxley

During the past 15 or 20 years, something of an evolutionary process has been going on during which computers have undeniably altered almost every walk of life. This impact is perhaps nowhere more evident than in management, for the machines that have wrought minor miracles in the scientific world have proved to be both boon and boondoggle to the business world.

Relatively up-to-date financial analysis was among the first applications of computers that awakened businessmen to the potential of the machines. But many painful experiences in those early years also brought an awareness of a major problem: the difficult, often impossible, task of communication between non-technical managers who were not systems oriented and computer personnel who did not fully understand business needs. If computers were to be viewed not as facilities to be managed but as tools for creative management, this problem had to be overcome.

Unquestionably the computer has made contributions in the past to the evaluation of complex business prob-

lems. It has provided new perspectives on masses of data and economical trial-and-error experimentation through simulation. These advances occurred *despite* a communications gap, but are becoming increasingly common as the communications problem is solved. As managers become more successful in communicating, their use of computer-based information systems becomes more and more extensive. This step in the evaluation of business problems has a significant impact on the philosophy and style of management.

If we as auditors fail to keep pace, it is likely that a detrimentally wide gap between the management art and the auditing art will open. This article describes STRATA (System by Touche Ross for Audit Technical Assistance)—an auditor-oriented computer system designed by Touche Ross which should be a major factor in preventing that gap.

WHAT IS STRATA?

STRATA is a generalized computer software program



Touche Ross partners and managers visited ITT Data Services center in Los Angeles during a regional conference to demonstrate applications of STRATA

that allows the auditor—without help from computer specialists—to locate, retrieve and manipulate any piece of information in a client's computer files. With the same ease, he can prepare a wide variety of audit reports based on the information in the files.

The auditor writes instructions describing the analysis he wishes to conduct on a client's computer files in a precise but readily understood manner on a few simple specification forms. The forms follow a series of logical steps which parallel the way the auditor analyzes his problem. In fact, he may find that capabilities not usually available in such systems—such as subrouting—aid in his analysis.

Cards are keypunched directly from the forms and used as input to STRATA. With STRATA (stored on a disk pack) and the client's files mounted on the computer, the job is ready. Unlike other systems, there is no need to prepare a separate, technical set of cards to ready the computer for STRATA; STRATA handles automatically this "job control" function which convention-

ally requires a programmer's help.

The STRATA system passes through two phases during the job. First, as an aid to the auditor, the system analyzes the instructions. Each card is listed on a set of "diagnostic reports" and, if STRATA detects any mistakes (such as keypunching errors or inconsistencies in the auditor's requests), it clearly describes the mistakes (or possible mistakes) with error or warning messages. This phase also outlines the logical steps to be taken in the analysis, giving the auditor a double check on his own thinking. Using the auditor's instructions as guide, this phase gives more detailed instructions for the second part of STRATA. As additional assurance that the auditor and STRATA "understand" each other, these are listed in the form of a logical job-step.

Typically, the first phase takes about two minutes of computer time. STRATA will then stop so the auditor can use these aids to check his instructions and correct his errors. This assures that the instructions are free of virtually all errors *before* large quantities of data are

processed and expensive computer time is wasted. In addition, this phase automatically provides audit documentation in the form of a record which precisely details the analysis. It should be noted that the separation of this phase from actual processing means that the auditor can set up and check his instructions before processing needs to be done—even before data are available.

In the second phase STRATA processes the client's files. Since the auditor's instructions may still contain logical errors—that is, he may have written perfectly good instructions which do something he didn't intend to do—this phase may be tested by processing to completion only the first 200 records, enabling the auditor to visually check and manually test results before the entire file is run.

To illustrate the versatility of this processing phase, here is a brief summary of the operations the auditor can use in his instructions:

SORT—The data selected can be sorted into ascending or descending order on any combination of up to six fields—either alphabetic or numeric—at any time prior to printing a report.

SUMMARIZE—The data in fields for related records can be summarized at any time prior to printing a report.

UPDATE/MERGE—The data taken from one file can be updated with additional data from other client files in a variety of ways. Compared with similar operations in existing systems, this feature is unusually flexible and—among other uses—gives the auditor the ability to compare data on different files.

MATHEMATICAL OPERATIONS—The auditor can perform addition, subtraction, multiplication and division on any data in the file; mathematical operations may also use constants (for example, to multiply asset cost by 10% to determine scrap value).

CONDITIONAL OPERATIONS—The auditor can compare values in one field with those in another or with a specified constant, and select records for further processing based on the comparison.

Jim Loebbecke (right) of the National Audit Staff, types STRATA instructions into a machine as Jim Conway, Detroit, and John Schell, Kansas City, look on.



SPECIAL OPERATIONS—In addition to mathematical and conditional operations, STRATA provides the auditor with three special operations:

- (1) collection of certain basic statistics on any numeric field from all records in the file;
- (2) random selection of any specified percentage of the records in a file;
- (3) coding of data in various ways (for example, to group selected distribution areas together or convert dollar-value data to categories for a particular analysis).

CALCULATE/STRATIFY—STRATA provides the auditor with the ability to perform a single or a series of mathematical, conditional and special operations in any order specified, on one or many fields of data. A major advantage of this is that it allows him to select data for various exception reports using a variety of criteria.

REPORT PRINTING—The final STRATA output is single or multiple reports. These may be exception reports, or they may cover all records in the file. The auditor can select from a variety of ways to have data for each report sorted, arranged, and totalled.

Currently, STRATA operates on most IBM 360 systems with at least one disk drive and 32,000 locations of core storage. Standard 360 card, tape or disk files of fixed or variable length can be processed by STRATA. Files produced on other computers can be processed if they can be read correctly by a 360 system. Since computer manufacturers are striving for this compatibility, many client computer tapes made on other systems may be handled by STRATA on a 360. We are currently surveying our clients' computer facilities and will consider re-programming STRATA for other systems if warranted.

There remain two important points to discuss: training and uses of STRATA. We would like to approach this through a brief summary of the experience of our STRATA Implementation Committee, which is now concentrating on these areas.

STRATA TRAINING

STRATA training is perhaps the most stimulating and rigorous program the firm presents. Each training conference has room for 16 people and lasts one week (with five full-day and four evening sessions). About a third of this time gives the conferee direct hands-on experience with the computer, solving six problems which simulate realistic audit situations. As with certain other Touche Ross training programs, all STRATA conferees must have previously completed a 40-hour programmed instruction course in basic computer principles. At the end of STRATA training conferees are ready to use



J. David Moxley

STRATA in client situations without technical help. (Technical support for field applications is, however, available through the National Auditing Staff.)

USES OF STRATA

Although STRATA was developed as a tool for the independent auditor, it is a general information retrieval system and thus has broad retrieval application. For example, it can be used as a simulator for proposed data processing operations and report formats before expensive special programs are created. Among other applications, STRATA can produce special one-time or infrequent reports; and it is an excellent internal audit tool.

Indeed, it is as an audit tool that we have had the greatest experience with STRATA. And it is as an audit tool that the STRATA concept evolved during months of trial and development from a few programs to a comprehensive system. To date, the results with the completed system have been both satisfying and interesting.

The results have been satisfying because STRATA really works: with proper care, it is practical to use and it is understood by those using it. STRATA is particularly interesting to use because of the opportunities it offers for the creation of unconventional applications: for example, STRATA has been used to prepare a consolidation report from a card file of all the diverse accounts for a client with dozens of subsidiaries and a multi-level corporate structure.

STRATA can also be the work horse for the routine jobs, such as confirmation of accounts receivable. It can make a stratified selection of accounts (e.g., all accounts over \$10,000) as well as a random selection of accounts (e.g., 3% of all remaining accounts). Selected accounts and confirmation requests (positive and negative, long- and short-form) can be printed. Replies can be keypunched and reports of differences and second requests printed. The unique part of this, again, is that it is done *without* computer specialists.

The system is particularly adaptable to industries with unique operations and audit problems—such as bank-



In a demonstration to the partners and managers, National Audit staffman Keagle Davis (right front) describes computer operations.



Observing a STRATA demonstration, Mexico City partner Enrique Carstens leans over for a closer look at the console.

ing, brokerage and retail. We are developing a number of interesting applications for some of our clients in those industries.

In short, STRATA can be effectively applied to any audit problem where a client maintains his data in machine readable form or where raw data can be readily converted to machine readable form. As further illustration, here are some examples of applications completed or underway:

Accounts Receivable—aging, confirmation selection and printing, credit and collection analysis, statistical computations. . . .

Accounts Payable—search for unrecorded liabilities, test cut-off, check aging, selection for confirmation. . . .

Inventory—observation selection, compilation, price tests, obsolescence analysis. . . .

Property, Plant, Equipment—selection of assets for physical examination, depreciation tests. . . .

Payroll—test payroll compilation and distribution, to master file data. . . .

Sales—review margins, sales prices, product mix. . . .

TODAY AND TOMORROW: CONTINUING EVOLUTION

Although STRATA was designed primarily as an audit tool, it has developed into a complex computer system. There is every reason to expect it to continue to develop dynamically. It can be used in a wide variety of situations by independent auditors, internal auditors, data processing personnel, and top management. As their demands on it stretch toward its limits, STRATA will have to be developed to expanded capacities.

The availability of powerful computer tools carries with it additional responsibilities. First, such tools create temptations toward unprecedented uses which may demand that the user resolve fundamental questions about the philosophy of his business function. Second, though easy to use, systems such as STRATA are highly complex and demand a great deal of discipline in planning. Finally, as we have said, this only marks a step in the evolution of data processing applications; consequently, there will be a continuous and ever-increasing demand on business personnel using computers to develop their own capabilities to parallel scientific and technological developments.

STRATA provides the members of our firm with a powerful computer tool; but more than that, it provides them with a challenge to their creativity and professional talents—a challenge to develop with the fast-moving pace of the computer age.