

Developments in Business Simulation & Experiential Exercises, Volume 9, 1982

SUPER SERVICE FOR COMPUTER GAME ADMINISTRATORS

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ABSTRACT

Ideal computer service for the game administrator would free him from data, program, and paper manipulation so he may concentrate on the pedagogical purposes of his game rather than on procedural matters. Steps toward this ideal have been taken that shift many game running chores to the computer.

INTRODUCTION

Has any user of a computerized simulation game never complained of at least one of the following:

1. Lack of help:
 - a. Insufficient manpower
 - b. Untrained manpower
2. Computer mysteries:
 - a. Job control requirements
 - b. Unexplained output
 - c. Uncontrolled errors, delays, or breakdowns
3. Input problems (card or terminal):
 - a. Input errors
 - b. Lost card decks
 - c. Data mixed up

Horror stories abound, not only by game administrators who are not regular computer users but also by "computer experts" and even the game developers themselves. Stories are frequently heard of potential game users who fear the computer or resist the time investment, and hence reject use of a game on these and not on pedagogical grounds. Is there a way to bridge this gap? What would be ideal computer service for game administrators?

Desiderata for Computer Game Service

Before describing a system recently developed, the characteristics of an ideal computer service will be stated. These criteria are in addition to the assumed capability of a given computer to execute the selected simulation game as intended by its developer. This includes the assumption that the computer model source language program has been successfully compiled and stored in executable form on the computer system library.

The ultimate ideal, of course, would be for the computer to be a mind reader so that the game administrator need merely think of his desires and they would become reality--indeed, the administrator in this ideal circumstance would need to think of them only once each academic term and it all would happen. In absence of this game administrator's heaven, a more practical ideal must be described. For the usual cycle of game administration--player decisions, administrator's controls, simulation model run, player output, and administrator's output--the following would seem to be desired:

1. Decision input by players themselves, that is, no service required by the administrator such as gathering and sorting decision sheets, punching or keying data, and appending cards or files to the carryover data from the prior period.
2. Administrator's controls for such functions as setting up initial play (including number of industries and number of teams per industry), number of reports to be printed, size and number periods to be simulated each cycle, environmental or adaptive changes in the model parameters during play, any within-play scoring input required by the model, correction of player errors, adjustment of team positions at any time for any reason, or any other changes desired in game data--all these should be easily input by the game administrator without his having to understand the computer program or even the organization of the game data base.
3. Any data generated by the game model should be easily available to the game administrator at any stage of play.
4. Any summarization or other manipulation of period-by-period data, both currently and cumulatively, should be done automatically on request.
5. All past input for each period should be automatically saved and available for during-play reruns or post-play analysis.
6. Delivery of printed output to players should not pass through the administrator, but go directly to players from the computer.

With such desiderata in place, a computer game administrator could concentrate on interacting with players (not with the computer!) and on adapting his plays of a game to particular player needs, behavior, and situations. The administrator's main concern could then be with the substantive content of the simulation model and what his players are learning from their experiences with it rather than with the mechanics of running the game.

AN INITIAL ON-LINE COMPUTER SYSTEM

Described a year ago at the ABSEL meeting and again elsewhere [1,2), was a 'simulation of the simulation decision support system developed mainly to add rationality to simulation game play. Incorporated in this computer terminal based system (serviced by a time sharing computer) were functions helpful to game administrators. Since then, additional administrative features have been added, which, while not ideal, are remarkably helpful and easily used. First, the administrative features of the original decision support system will be described.

Maintaining the security of each team's decisions and results of the "simulation of the simulation" at CRT terminals prior to official decision time was handled as follows: To prevent access by one player team to the non-public decisions of another team (the public decisions being those shown on the industry report),

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players at a terminal are restricted to seeing the company reports for their teams only. This is accomplished by assigning a unique minicomputer account number to each team. However, the account number is not secret because it includes the team's usual identification number. To prevent teams from logging on competitors account numbers and thereby accessing otherwise private company decisions, two passwords are assigned each team. One password is required by the minicomputer system itself and is created by computer personnel. The other password is created by the simulation game administrator and is checked by the simulation control program. The minicomputer password is relatively permanent during a semester, while the simulation password can be changed at any time by the administrator. Thus two level security is provided, with one level being changeable promptly should a password leak occur. The computer programs themselves are secured from tampering by players by means of automatically logging players on at terminals directly into the control program and logging them off when their simulation activities are concluded. Players cannot use their simulation account numbers to write program as students do in other courses. Service routines programmed into the decision support system assist game administrators by performing the following functions:

1. Passing card input directly from the central computer to the minicomputer.
2. Loading card input (either from the central computer or from the minicomputer card reader) into files for appropriate player team account numbers.
3. Creating, listing, or altering passwords.
4. Copying industry data from one set of account numbers to another. This enables the administrator to work with any player industry without interfering with players by copying an industry to the administrator's accounts.
5. Displaying of printing instructions for using the system.

Administrators receive these services through interactive questions and answers and, like players, need only know how to log on with an appropriate account number. Neither administrators nor players need to know how to program a computer.

To this system, several new features and services have been added that take this system several steps closer to the practical ideal.

SUPER SERVICE FEATURES

Now added to the above decision support systems are features and services that do the following for the game administrator:

1. Receive all data input including decisions directly from players and the administrator (cards have vanished!).
2. Hold all data sets in the computer (no longer boxes of cards in the office).
3. Set up initial game plays (for as many industries and teams as desired) by automatically finding the desired industry data and then sorting the card images to adjust for the number of firms desired in the industry (no longer hand pulling or assembling of cards).
4. Allow computer terminal editing of all parameter and data values (no longer trying to find the proper card by reading uninterpreted holes and then punching a new card to change a value).
5. Adjust some of the computer-required job

controls by question and answer (no longer repunching cards to change computer time and lines to be printed).

6. Access all other job control commands from the terminal.
7. By ad hoc minicomputer programming, retrieve and analyze desired data, currently and cumulatively.

Row it Works

The game administrator's view of the flow of data and programs is presented in Figure 1. Individual game players were already entering "trial decisions via -computer terminals into the minicomputer as part of the previous decision support system. A new feature added for players was to now enter "official" decisions via terminals.

Two new services for each decision period were substituted for old manual functions done by the game administrator or his assistant. First, rather than keypunching decisions and other data and then submitting to the main computer center a deck of paper cards containing carryover and new decision information, the administrator now executes a single terminal program command. Re u-erely keys in "SUBMIT" which automatically reads the appropriate decision and carryover files and then allows the administrator to edit parameters and data as desired. The edit function is similar to common editor functions found on I.08t computers. Following editing, the entire official simulation computer run is sent by wire frog the minicomputer to the main computer where the game computer program is executed and paper reports. are printed. However, instead of punching carryover cards, the carryover data is now sent back over the wire to the minicomputer. The administrator is now required to "FETCH" by terminal command the "punched" output of card images so that the minicomputer may store them in a disk file.

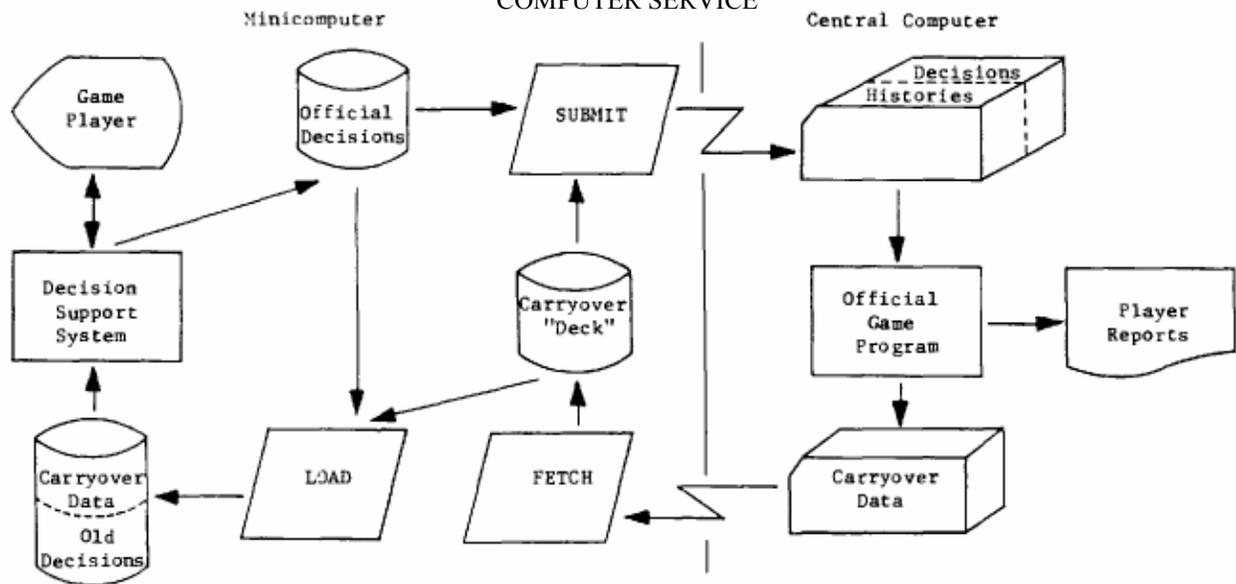
A separate function "LOAD" takes the carryover data~ appends the prior period decisions, and stores these for use by players in simulating their next decisions. LOADING operates for any or all industries and also allows the administrator to change through computer interaction the size of the period to be simulated for both trial and official decisions.

The actual execution of the main simulation occurs precisely as it did in the old manual system. There was no need to recompile the programs associated with it. The only difference is that paper computer cards are no longer needed. Electronic card images are transmitted (SUBMITTED and FETCHed) via modem and telephone lines from one computer to the other.

A new terminal service was also added that the game administrator must execute at the beginning of each new set of simulation games. This is "START" which asks the administrator to define the structure and parameters of the games. For example, the administrator must now inform the computer of the number of industries teams per industry, and which version of the game permanently stored in the computer are to be used. The computer then automatically selects the chosen industry data (which is stored to serve the maximum number of firms in the industry), removes card images as needed to set the data up for the chosen number of firms in the industry, and then alters the appropriate parameters and controls as needed, and it does this for any number of parallel industries. (Of course, the administrator did all of

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FIGURE 1
GAME ADMINISTRATOR'S VIEW OF
COMPUTER SERVICE



these tasks under the manual system by keypunching and fingering cards).

Despite all of these efforts to reduce errors and speed game administration along, even the toughest of administrators will occasionally relax his player-responsibility standards and permit a decision period to be rerun with ~corrected' decisions. ('I thought the computer knew I meant \$1.20 per hour for fringe benefits and not \$120 per hour!') A mechanism to resubmit the previous simulation run for any or all industries is also provided called, of course, "RERUN". Included in the "RERUN" option is full editing service for the entire deck; thus, the flexibility provided by "RERUN" is almost limitless.

A manual paper card backup system was also installed as an attempt to minimize any design errors in the new system that might otherwise prove fatal. With this service, conservative game administrators who might feel insecure without card decks in the office may have them.

Next Steps

The current system presently serves only THE IMAGINIT MANAGEMENT CAKE [3] at Texas Tech University. It might simply be described as a highly automated version of the old card-based system. Electronic card images are used to replace paper cards. The constraint of modelling the old system leaves the new one vulnerable to any problems previously experienced. For example, in both the old and new systems the data are organized in a more complex format than necessary. The next logical step is a reduction in the conceptual organization of the data.

For example, if the administrator wishes to change the value of the random feature control parameter (named RANDC in the game implemented), under the present system it would be necessary to determine which record (card image) contained the variable and "EDIT the entire record. A simplified conceptualization should enable the administrator to state the request in simple terms, something like:

Change RANDC to 1.0.

This simplification of the administrator's conceptualization should free the administrator to think and act in terms of parameters and variables rather than cards and records.

The general movement as in this system of data maintenance from administrator to computer has shifted the problem of information overload from man to computers. Now instead of the administrator having to manipulate vast amounts of history, decision, and carryover data, the computer is asked to perform such tasks. What is needed next is to bring to bear on simulation game administration the recent concepts of data base management systems.

SUMMARY

It is unfortunate that the development and use of computer based simulation games has been hampered by operational rather than pedagogical considerations. The development of computerized game administration techniques offers the potential of reducing operational difficulties and manpower requirements. This paper has described some beginning steps taken toward an ideal goal. The future includes simplification of data conceptualization and sophistication in data management techniques.

REFERENCES

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