DALHOUSIE ARTS CENTRE

INFORMATION NEEDS ANALYSIS

FOR

AUTOMATION OF CLERICAL AND TECHNICAL TASKS

Bryan McLennon
5/August/86

CC: Donna
Bob

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0. INTRODUCTION

0.1 PURPOSE:

This report will examine the basic flow and storage of information within the Dalhousie Arts Centre (DAC) organization and will suggest directions to be taken in designing and implementing a database system to enhance these functions.

0.2 SCOPE

This report addresses only information that is both textual (e.g. dates, names and activities, but not poster designs or lighting plots) and recurrent in the running of the DAC (eg. show times and seats sold for a show, but not one-time word processing such as correspondence negotiating a particular show or a particular press release).

Two information areas that are not addressed at all at this time but could probably benefit from automation in the future are the technical hardware inventory and the Box Office income accounting operations.

0.3 RESTRICTIONS

The report will not discuss the hardware or software that has already been selected for this application, nor will it detail the design of components.

1. ORGANIZATION OBJECTIVES

This section describes the ultimate purposes which activities and information serve within the organization. An information system must be developed and evaluated based on its ability to contribute to the accomplishment of these objectives.

In the following discussion the word "event" means any activity that has a definite start and finish time such as a week-long run of the National Ballet or the moving of a piano to room 121.

The Dalhousie Arts Centre is a body within Dalhousie University whose primary objective is to provide culture and entertainment to residents of the Halifax area. This is done directly by producing a performance series throughout the year, and by the rental of the Rebecca Cohn Auditorium and other facilities in the Dalhousie Arts Centre building.

Although it is in part funded externally, the organization's health and value is dependent on its box office receipts and rental fees, and therefore it must strive to attain the same goals as privately operated service organizations. These goals include client satisfaction, maximum market penetration, and organizational economy. In the DAC these aims are realized as follows:

- **CLIENT SATISFACTION:**

    DAC's clients for any given event will include at least one of:
    - the audience,
    - the artist,
    - the renter.

    Because most of the events in which the DAC is involved are extremely deadline oriented (usually curtain time), client satisfaction is critically dependent on providing all services completely, correctly and on time. In this respect the "event" may be compared to a marriage ceremony wherein anyone causing delay will invariably be remembered unfavourably, and probably for a very long time. Providing these services is complicated by the fact that the nature of the event does not dictate the requirements for it. A given show may or may not require transportation, special lighting, a masseur in the dressing room, or chinese food for twelve.

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MARKET PENETRATION:

A number of different products are offered through the services of DAC and these products are directed at diverse and often mutually exclusive markets. The success of a given event is related to the ability to address and impress its potential audience. It is also desirable for the sake of economy and image that markets other than the target market be avoided when selling an event.

ORGANIZATIONAL ECONOMY:

DAC must not only satisfy clients and attract large audiences, but must do so economically. In terms of a performance event, the overhead associated with bringing both artist and audience into the hall must be minimized without impinging on the effectiveness of the organization. It is important that the costs of activities be known.

From these objectives we can state that a DAC information system must:

- Distribute information through the organization;
- Schedule resources for events;
- Recognize and report on due and overdue deadlines;
- Assist in market analysis;
- Present a valid picture of expenses on an activity by activity basis.

2.ACTIVITIES & INFORMATION

This section discusses the types of activities carried out at DAC. The types of information used in these activities will then be examined to determined the most logical groupings of information so that they can be discussed in subsequent sections with the ultimate intention of deriving a database design.

Almost all activities at DAC can be considered directed at the organization's objectives as described in the previous section. Exceptions to this include special services for charitable organizations and providing services to the University community, in particular, the theatre and music departments in the same building. Outside of these, activities in the DAC organization fall into three basic categories - event support, maintenance and planning.

EVENT SUPPORT

In the case of events that involve performances, event support can be defined as all activities for which DAC is responsible that get the artist onto and off of the stage and the audience into and out of the house. In the case of non-performance events, event support usually can simply be defined as doing the task assigned (moving a piano, renting the Sculpture Court).

Event support can further be broken down into three areas -

- Production of shows: Getting the artist to the stage
- Selling of Shows: Getting the audience into the house
- Other services

Other services include rentals of spaces (Sculpture Court and the lounge), equipment and staff, and minor services performed for other Arts Centre tenants.

The information needs of these different types of event support will now be reviewed.

PRODUCTION OF SHOWS The production of shows requires scheduling manpower and other resources, placing orders for goods, services and equipment, and an accounting of income and costs.

SELLING OF SHOWS The selling of shows as similar scheduling and accounting requirements to the production of shows, but also needs information about how, where, when and to whom the show should be sold.

This also includes a knowledge of how the shows are selling at present.

OTHER
SERVICES   Other services are essentially a subset of the Production of Shows. The information needs of providing minor services are scheduling, orders and, occasionally accounting, but on a much smaller and less critical scale.

In summary, event support information needs can be grouped into two categories, OPERATIONS and AUDIENCE. OPERATIONS information needs are primarily scheduling and reporting, and AUDIENCE needs are a source of market intelligence.

MAINTENANCE

In general, maintenance is those activities not directly attributable to particular services carried out by the DAC for clients, but necessary for the continued day-to-day operation of the organization.

Maintenance can be broken down into two basic categories - plant maintenance and records maintenance.

PLANT MAINTENANCE includes building and equipment maintenance, and though these are not usually events in the sense that an evening with the ballet is, they normally require the scheduling of resources and/ordering of services or goods much as an event does. In most cases, plant maintenance scheduling must dovetail with normal events and they may also require or benefit from an accounting of costs and expenses. Because of this, the information needs of plant maintenance are really the same OPERATIONS needs that event support has, and it is quite economical for both types of activities to be considered together.

RECORDS MAINTENANCE means the updating of basically static reference information, and, for the purposes of this study, includes five areas - Financial, Audience, Casual Staff, and External Contacts.

FINANCIAL
RECORDS
MAINTENANCE   In this context, Financial Records refers to a log of expenditures made and income received according to certain criteria. It is a "log" of these transactions rather than a formal set of books because the university maintains the latter. This log can be reconciled with the university's accounting system through "budget sheets" which are issued periodically. Because the information held in this file does not correspond squarely or solely with the event support account-

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ing, FINANCIAL information must be considered separate from OPERATIONS information.

AUDIENCE RECORDS MAINTENANCE

This is the maintenance of those records used in the selling of shows discussed above.

CASUAL STAFF RECORDS MAINTENANCE

Casual Staff are used in a number of departments to assist with event support. Because of this, it to consider this type of information as OPERATIONS information.

CONTACT RECORDS MAINTENANCE

CONTACT information is simply mail and phone lists. They are not normally very structured records, but are very essential to the day to day running of the organization.

PLANNING

Planning for DAC falls into three groups - Season Planning, Capital Improvements and Funding. One of the basic materials of all planning is a record of past performance, an OPERATIONS HISTORY that can be reviewed in order to make informed and reasonable judgments about and plans for the future.

SEASON PLANNING

Season Planning requires knowledge of existing bookings as contained in the OPERATIONS inform-ation, as well as a knowledge of OPERATIONS HISTORY.

CAPITAL IMPROVEMENTS

Capital Improvements are generally a perceived and often vary obvious needs. Planning for them and justifying them may be made easier with a knowledge of OPERATIONS HISTORY.

FUNDING

The activity of seeking funding normally requires proof of both the need and ability to use the funding to good purpose. This is OPERATIONS HISTORY information.

From the foregoing, we can see that Information falls into five basic groups:

OPERATIONS

Schedules for and results of current events.

OPERATIONS HISTORY

Record of cost and success of previous events and seasons.

FINANCIAL

Record of certain expenditures and income for reference purposes.

AUDIENCE   Audience addresses and preferences.

CONTACTS   Names and addresses of agents, dealers,
                  business associates and staff.

An automated information system must recognize these five
groupings of information and accommodate them in order to
successfully reflect the real working situation.

The table below summarizes how the DAC activities relate to the
above groups of information. Although not noted, the CONTACT
information is used in almost all activities.

ACTIVITY   INFORMATION

EVENT SUPPORT
        - Production of shows   OPERATIONS
        - Selling of shows   OPERATIONS, AUDIENCE
        - Rental of spaces, equipment and staff OPERATIONS

MAINTENANCE
        - Building Maintenance   OPERATIONS
        - Equipment Maintenance   OPERATIONS
        - Records Maintenance
            - Financial   FINANCIAL
            - Audience   AUDIENCE
            - Casual Staff   OPERATIONS
            - External Contacts   CONTACTS

PLANNING
        - Season   OPERATIONS, OPS
                                              HISTORY
        - Capital improvements   OPS HISTORY
        - Funding   OPS HISTORY

Each of these information groups and their associated activities
will be examined more closely in the following sections.

3. OPERATIONS INFORMATION

Operations information is critical in meeting the deadlines and providing results information needed to meet the organizational objectives outlined in section one. This section discusses in outline the types of information needed for the scheduling of and reporting on activities in the DAC.

For purposes of this discussion, a "minor event" is an event involving few staff, nominal use of space, and normally only of direct interest to one department. Examples of minor events include piano moving, minor repairs, special "outside" projects such as assistance to charity groups. Minor events usually require only the scheduling of staff or space and may include a nominal fee for services.

"Major events", on the other hand, are those that require the coordination of several departments, are initiated by some sort of contract or similar agreement with an outside body, and involve the use of space, services and/or staff to make money. Major events include DAC shows, Festivals and Space rentals (Cohn, Sculpture Court and Lounge).

An information system should distinguish between minor and major events in order to allow individual departments to manage affairs that fall exclusively into their own jurisdiction while enabling the Administration group to retain centralized coordination of shows, rentals and the like. These two types of events do not need separate sets of procedures, but rather minor events should be conceived as a subset of major event functions that can be initiated and terminated by a single department. Minor events will not be further described in this document except where clarification is needed to distinguish them from major events.

The three most important considerations in creating a suitable information system to handle major events are:

1)   **Information Flow** (dispersing contractual information and collecting results information)
2)   **Task Scheduling and Management**
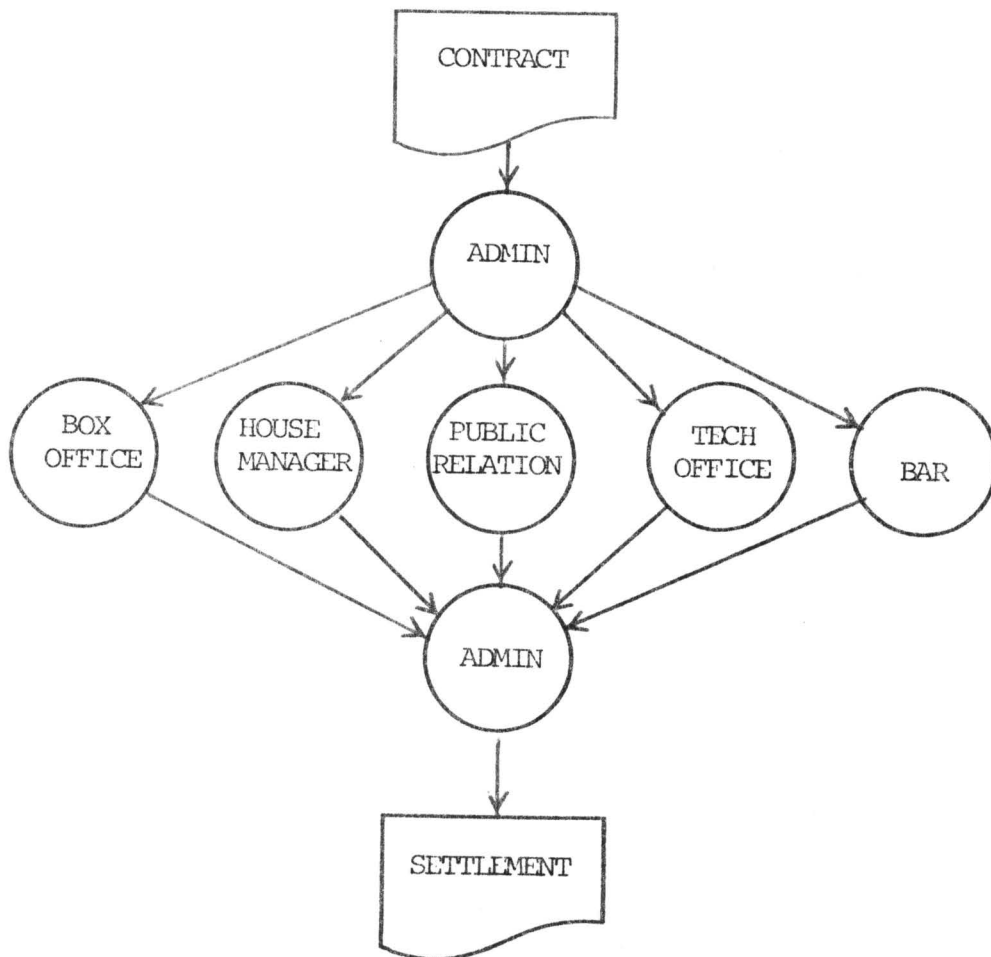4)   **Archiving Performance Results**

These topics are addressed in the following sections.

3. OPERATIONS INFORMATION
3.1 INFORMATION FLOW:

The major event is normally initiated by a contract being completed by the director and front office and information being dispersed to the appropriate departments. The dispersed inform- ation may be simply the performance date, time and intermissions for the bar, or may be a wide range of riders for the technical office. The major event is normally terminated by information regarding revenue and expenses being collected by the Front Office and a settlement being issued. At present, the settlement for rentals is a complete breakdown of expenses and revenue but for DAC productions is normally only a statement of income. All parties have expressed a desire to have complete settlements on DAC events as well for planning and analysis. This report will assume full settlements on all major events.

The basic flow of information in a major event is:

```
                    ┌─────────────┐
                    │  CONTRACT   │
                    └──────┬──────┘
                           │
                           ▼
                       ( ADMIN )
          ┌──────┬────────┼────────┬──────┐
          ▼      ▼        ▼        ▼      ▼
      ( BOX   ( HOUSE  ( PUBLIC  ( TECH  ( BAR )
       OFFICE) MANAGER) RELATION) OFFICE)
          └──────┴────────┼────────┴──────┘
                          ▼
                      ( ADMIN )
                          │
                          ▼
                   ┌─────────────┐
                   │ SETTLEMENT  │
                   └─────────────┘
```

Of course, information will often be needed to supplement that which is provided through the Front Office, but it is the contract and information sheet that normally initiate Event oriented activities.

A system for handling major events should provide a suitable controlled information flow by giving a central authority exclusive power to create and delete major events on a database while allowing each department to add and update its own inform- ation regarding the event. When an event is added, deleted or modified in a major way (eg. change of date), all departments on the system should be notified.
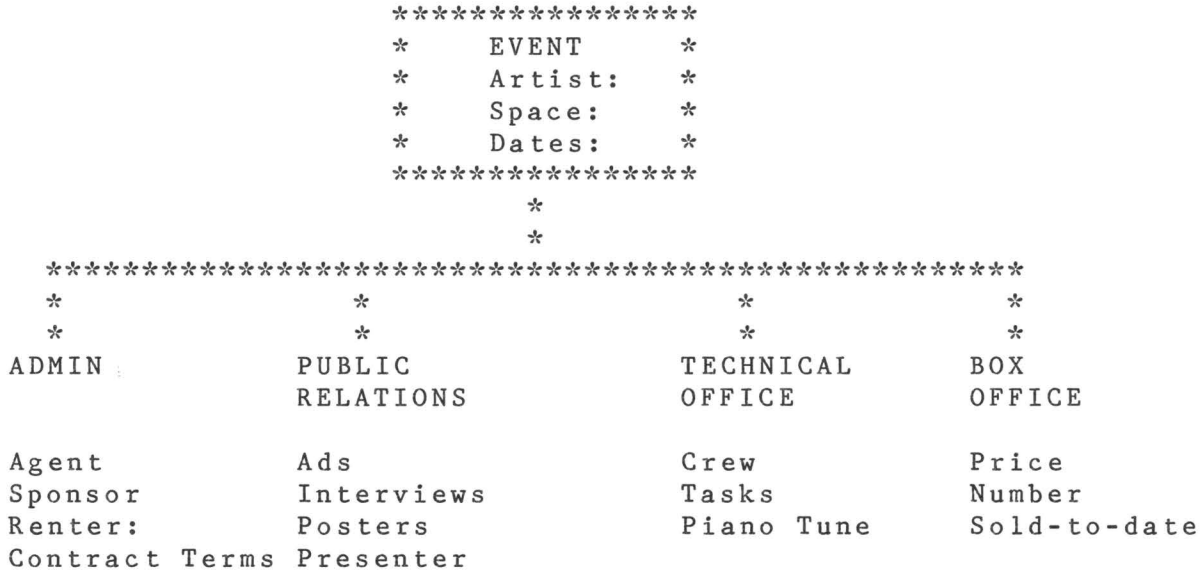
Since the administration group will be initiating the event and entering basic information such as date and time, it will be most efficient if all standard information such as ticket prices, hotel names and flight times be entered by them as well. It may also be desirable for the administration group to note that non-standard riders must be acted on, while leaving it up to the individual department to determine what tasks are associated with the rider. In any case it will be up to the departments to acknowledge notification and to schedule activities related with the event.

When the event has completed, each department should be required to enter its settlement information into the system, unless the information has already been entered or calculated. Ticket sales could be recorded after close of the box office and casual staff costs could be entered as time sheet information. In the case of goods or services expenditures, (food, equipment, advertising), the amounts would be noted as the expenditure is incurred (See Task management in next section). A "signing" authority should be required to verify that the settlement values are correct.

Technical office staff management is a good example of how different functions can be integrated to provide a number of different types of information. In this scenario, a crew call is made up for an event based on contractual information from the front office, and the names of staff to be called entered into the system. A crew call sheet including home phone numbers can be generated for each event, as can any given crew members schedule for the next time period. After each performance, the crew member is required to complete a time sheet on the system that not only records his in and out times, but also the amount of time to be allocated to one or more shows, with the balance of hours being allocated to maintenance. At the end of the event, the hours allocated to that event are compiled into the tech office's settlement and automatically made available for the final settlement. At the end of the pay period, all hours incurred by casual staff are compiled into time sheets which can be printed

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out, possibly directly onto Dalhousie forms.

The information relating to events may be considered as a hierarchy, with the event at the top, departments next down and then different types of information listed together within departments, as follows:

```
                    ****************
                    *    EVENT     *
                    *    Artist:   *
                    *    Space:    *
                    *    Dates:    *
                    ****************
                           *
                           *
       **********************************************************
       *                 *                    *                 *
       *                 *                    *                 *
  ADMIN             PUBLIC              TECHNICAL           BOX
                    RELATIONS           OFFICE              OFFICE

  Agent             Ads                 Crew                Price
  Sponsor           Interviews          Tasks               Number
  Renter:           Posters             Piano Tune          Sold-to-date
  Contract Terms    Presenter
```

This diagram is in no way intended to be a complete representation of departments and information. It is for illustration only.

3. OPERATIONS INFORMATION
3.2 TASK MANAGEMENT

Once contractual information has been distributed to the depart-
ments it must be acted on as a set of time-limited tasks. For
example, if a show is contracted for eight months hence, a time
must be set for starting to prepare for it. When the preparation
time arrives, individual requirements such as equipment, staff
and press releases must be calculated and scheduled or ordered.
In some cases it will be necessary to defer to the artist, agent
or renter to clarify or confirm needs before scheduling. After
ordering some service external to DAC, it may be necessary to
verify that the order is being processed, particularly if
delivery is being scheduled for the event date. Finally, the task
must be completed.

To clarify this, consider the following three cases:

1) Artist Interview.

    - Need and availability of an interview is recognized.
    - The interview is scheduled.
    - The interview is verified on the day prior to the artist's
      arrival.
    - The interview is held and task is complete.

2) Special Equipment

    - Contract rider is received.
    - Order is placed for equipment.
    - Sufficiently in advance of event, order is verified with
      supplier.
    - Equipment is received and task is complete.

3) Casual Staff required

    - Staff requirements are determined.
    - Personnel are scheduled.
    - Staff turnout is verified on show date.
    - Event is completed and time sheets completed.

While some of the illustrations may be trivial, it can be seen
that the crux of delivering the goods properly and on time is
generally the same in all cases. Therefore, the information
system should provide a Task Management function applicable to
any part of the organization as follows:

    1) **Task Statement**
        The need for something to be done is recognized and
        entered into the system as a task to be completed.

2) Task Scheduling

A date is set for the task to be done and the necessary resources are allocated. If the resources or timing cannot be determined, then the task must remain unscheduled and be flagged as such. Task Scheduling also includes the ordering of services or goods from outside DAC.

3) Task Verification

If necessary, a deadline is determined for verifying that the task is being processed or has been completed. If no date is specified, then the verification date is will be the Event date.

4) Task Completion

Completion is acknowledged and, if appropriate, a settlement value (dollars or hours) is attached to it.

The system should, on a daily basis, list all the unscheduled tasks and any tasks that are to be verified or completed on that date.

If an event is cancelled, it should be necessary to remove all tasks associated with that event before the cancellation is completed.

3. OPERATIONS INFORMATION
3.3 ARCHIVING PERFORMANCE RESULTS

After a major event is complete as much information as is practical should be saved to an archival diskette, while certain information such as the settlement would be automatically transferred to an online historical file (OPERATIONS HISTORY) for planning and analysis purposes.

Also, it may be desirable to save selected information such as daily ticket sales and publicity schedule special files before archiving. This, for example, would permit comparisons of the effectiveness of different advertising approaches.

4. OPERATIONS HISTORY

This information would be created by the archiving process of the OPERATIONS database. It could contain selected information such as settlement information, contractual terms, staff requirements and special comments which would be maintained in a form that would allow it to be easily transferred to spreadsheet for ad hoc reporting and modelling. The ability to place all or portions of this information into a spreadsheet should eliminate the need to build sophisticated analysis into the database itself.

While this information has some use for quick back reference, its real use will come when a good base has built up and it can contribute to the planning process.

5. AUDIENCE INFORMATION

The organizational objective of increasing market penetration can be well aided by having a reliable and useful picture of the market.

A file containing potential audience members' names, addresses and preferences will provide a base for direct marketing via mail or phone. The file must be accessible by a word processing facility in order to incorporate its information directly into printed materials. The file must be easy to update and search on particular fields, such as geographic location and entertainment preferences. Depending on the facilities of the OMNIS 3 database package, it may be necessary to build a facility to aid in selecting and analyzing categories of information in the database.

6. FINANCIAL INFORMATION

The financial information requirements are quite straight forward. A set of books to record expenditures and income can be kept in a simple database. As budget sheets are received from the university, the entries can be verified quite easily.

7. CONTACTS

Standard automated contact enable easy form letter mailings and, when indexed well, easy searching.

While it is possible to set up a common centralized contact list that has the advantage of no redundant information, it will probably be easiest and most efficient to set up a system wherein contact lists can be created at will by any user. If possible, these lists could be made "public" and viewed by all users, or "private" to be viewed only by the creator. A standard format should be used to enable different lists to be combined. The lists should be accessible from word processing for use in batch mailings and facility should be provided so that the lists or parts thereof can be output to paper.

8. SECURITY

This section looks at the security needs of a DAC information database system. Since the ability to implement security is very dependent on the database package and network system used, any suggestions below may or may not be available on the system when developed. While it may be possible to build good security within the database system itself, the files may be accessible outside the system by other means and therefore not thoroughly protected. This may have to be dealt with by operating procedures outside the database system itself.

Three aspects of security will be considered here:

    Who can see what.
    Who can change what.
    Who did what.

WHO CAN SEE WHAT: READ ACCESS

While this system would not contain much in the way of "hot" financial information, it would contain enough information about contractual terms and operating procedures to potentially harm negotiating and public relations positions were it available to the wrong people. Although this is a relatively closed system in that there are only six or so stations in offices, a large number of casual and temporary staff will have access to it over time. It is therefore important that access to sensitive information be restricted to certain staff or locations.

A way of handling this would be to set up three levels of security on each grouping of information, such as:

    PUBLIC   - Can be read by all
    RESTRICTED   - Can be read at certain locations
    PRIVILEGED   - Can be read only by certain people.

In this model, each computer would see a slightly different view of the system. For example, the Box Office would not be aware that there was technical information on the system, let alone know what it was. This not only directly denies access to unauthorized stations, but doesn't even raise their curiosity about information that they can't see. This contrasts with a system where everyone has the same view of the system but only certain people can access certain data.

PRIVILEGED information might include settlement information, which may be available in each location or restricted to certain

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locations, but can only be accessed by entering a password.

WHO CAN CHANGE WHAT: UPDATE ACCESS

As mentioned above, only the administrative group will be able to create a new major event. Beyond this, it will be necessary to decide who can enter and change information for an existing event. Again, the same system as used for read access can be applied to write access. Thus the tech office may be empowered to update technical requirements and information, but perhaps only a privileged user can authorize the release of technical settlement information after an event.

If one has update access to some information, one would automatically have read access to it.

The read and update access could work together as in the following example. Update of daily ticket sales information may be RESTRICTED to the Box Office alone, while read access may be RESTRICTED to the administration group, the Director and Public Relations, and PRIVILEGED to the Technical Office. This means that user at the technical office computer would have to supply a password in order to view that information, whereas it would be automatically available to the front office staff.

The guiding principle should be that read access to information is restricted to the area that creates and maintains the information unless otherwise specified. For example, since Public Relations would have no reason to see the Technical Office's information, it would have no access to it.

WHO DID WHAT: AUDIT TRAILS

The term "audit trail" refers to a record of activity on the system that can be searched at any time to determine the cause of a certain problem or state.

If the DAC system currently under consideration included managing ticket sales, it would be very important to maintain an audit trail in case a hardware malfunction resulted in the loss of a day's transactions, but as it is, it is unnecessary to implement a full trail. However, a simple audit system that can be switched on and off should be included in order to track problems of a technical or administrative nature. Such a trail would list to a printer the types of accesses or updates being done as they are completed. This is an optional, but potentially very useful feature.

9. SUMMARY:

The following is a summary of the needs which the information system must meet in order to accomplish its objectives:

1) Distribute information regarding events;
2) Schedule resources for events;
3) Notify concerned parties of changes;
4) Recognize and report on due or overdue deadlines;
5) Differentiate between minor and major events;
6) Display & update information based on needs of user;
7) Collect result information from events (eg costs);
8) Archive selected information for future analysis;
9) Produce standard documentation (form letters, settlements);
10) Maintain market, historical, and contact information;
11) Minimize paper document creation, re-creation and flow;
12) Provide security for sensitive information without compromising ease-of-use.

The system should include five databases:

OPERATIONS
OPERATIONS HISTORY
FINANCIAL
AUDIENCE
CONTACTS

The OPERATIONS database is an "active" database, in that it not only retains information, but carries out automatic functions based on the date and type of activity being dealt with. The other four are essentially "passive" repositories of information.

The OPERATIONS database is a centralized collection of information related to events. This is in the form of contractual information, tasks, and results information. Contractual information causes tasks to be initiated which in turn cause results to be attained.

10. CONCLUSION

An information system for the Dalhousie Arts Centre as described above could be implemented to some degree on any multi-user database package with record level lockout capabilities.

As the OMNIS 3 package is as yet unavailable, it is not possible to state exactly how much could be accomplished with it and with what effort. Therefore I submit the following proposal for consideration with the provision that it may be reconsidered when the software (OMNIS 3) becomes available:

I propose to provide a system fulfilling the requirements listed in the Summary section of this report in as much as they do not supercede limitations of the OMNIS 3 software in a period not longer than 2 months from the date that both the software and hardware become available for the following fee:

    $1900.00 -   Operations & Operations History Databases
    $ 500.00 -   Financial, Contacts and Market Databases

This price will include program documentation and an operations guide.

I have broken these out separately so that you can consider implementing them at different times if desired.

This proposal is for consideration and discussion only. A formal contract will be completed if an agreement is made.