APPENDIX A. THE DATA OF COLLECTIONS MANAGEMENT

One way of thinking about Collections Management is to consider the data which it requires and the input and output formats that data takes. While it is impossible to list every data element which might be of importance to the management of any kind of collection and would serve little purpose to do so, there are some higher level data structures that can usefully be examined and some principles regarding data element definition that can locate the elements that will need to be defined by most collections management systems. Presently, libraries, archives and graphics materials collections can point to a degree of standardization provided by the MARC Formats for Bibliographic Description (MFBD) and MARC Authorities format, for additional guidance, but museums must decide what they require without any data standards to guide them.

Cultural repository collections management systems will require the following records (in alphabetical order):

ACTIONS
AGENTS
AUTHORITIES
EVENTS
FUNDS
OBJECTS
PROPERTY
SPACE
SYSTEM USER

Each of these records may be thought of as consisting of a number of record segments, or groups of data elements which act together. Segments are defined by the functions which they charactertisically perform.

ACTION records consist of a control segment and an action profile segment. The control segment contains the data identified in Exhibit 2 in the main text. The profile segments will have different data for each kind of action, identifying the specific action being planned so that it can be mapped against the "profiles" of vendors offering the service.

AGENT records consist of an address segment, a descriptive segment, an action history segment and a profile. The address segment drives mailing lists and automatic facsimile transmission, phone calls etc. The descriptive segment contains different information depending upon the type of agent but always including any descriptors from the authority files. The action history segment may consist of nothing more than pointers to action id's or it may contain summary data on actions performed by an agent. The profile describes the kinds of actions the agent can, or usually does, perform.

AUTHORITY records consist of a control segment, a descriptive segment and a source segment. The control segment includes data about how and when the term was introduced and about prior terms, broader and narrower terms, and various related terms. The descriptive segment defines the heading term and provides additional information of a reference nature as well as scope notes. The descriptive segment is used by the public. The source segment includes information about attributions and their applicability.

EVENT records include availability segments, descriptive segments, action and object history segments and reservation segments. The descriptive segment provides all information about the event per se. The availbility segment and reservation segment mirror one another - availability is set up with the event to reflect the kinds of tickets, seats or admissions which are available at the individual performance level and reservation segments fill each with identifying data for the holder of the place. Action and object histories may be pointers or summary records.

FUND records include descriptive segments, payables and receivables. The descriptive segment for describe a fund (at one level) or a particular obligation.

OBJECT records are the most complex records in a collections management system, as one would expect. The object record has segments devoted to attribution, curatorial history, action history, location, physical description, reproduction, restriction, source, subjective description, and value. The attribution, action history, location, reproduction, restriction, and value segments contain the same data elements regardless of object type or level.

level. The curatorial history, source, subjective description and objective description segments vary with the object type and level.

PROPERTY records contain a description segment, an order segment and a responsibility segment. The order segment is a specification for an action profile until the order is placed and serves as a confirmation when the order is received. Responsibility locates the property both physically and administratively.

SPACE records contain only a descriptive segment, which defines kinds of spaces.

SYSTEM USER records exist for the convenience of security and bookeeping and are likely to be system defined.

It is difficult to envision these records and their segments without some examples of data elements contained in different segments. As will be seen from the examples, some segments will contain identical data elements for all records of that type, while other segments may, in turn, have a variety of specific manifestations. For example, Exhibit 2 illustrated the data elements that would be present in any action control segment; the following two lists illustrate the differences between the profile segments for a loan, an insurance action and a packing action.

ACTION PROFILE - LOAN
Object-Descriptor
Loan-Request-Date
Loan-Request-Period
Loan-Request-Purpose
Loan-Request-Event
Loan-Type
Loan-Request-Agent-Name
Loan-Request-Agent-Facility
Loan-Request-Agent-Country
Loan-Decision

ACTION PROFILE - INSURANCE
Object-Descriptor
Event-Descriptor
Insurance-Request-Period
Insurance-Coverage-Type
Insurance-Coverage-Amount
Insurance-Effective-Period
Incident-Number
Object-Damage
Insurance-Value

ACTION PROFILE - PACKING
Object-Descriptor
Carrier-Vehicle-Size
Carrier-Vehicle-Environmental Requirement
Packing-Contents-Weight
Packing-Contents-Markings
Customs-Label-Text
Packing Instructions
Packing-Crates
Packing Fee
Packing-Fee-Payee

An example that may serve both to illustrate the differences between segments, and the underlying commonality of the way particular kinds of segments operates with respect to a collections management system, is provided by the object source segment for a discovered object and that for a collected object.

OBJECT SOURCE- DISCOVERED
Biostratigraphic Layer
Cultural Layer
Stratigrapgic Layer
Discovery-Site-Name
Discovery-Site-Location
Location-Within Site
Context

OBJECT SOURCE - COLLECTED
Collecting-Gear
Collecting-Vessel/Vehicle
Collecting-Bait
Collecting-Elevation
Collecting-Location
Collecting-Speed
Collecting-Time
Collecting-Location-Weather-Precipitation
Collecting-Location-Weather-Temperature
Collecting-Location-Weather-Wind speed
Collecting-Location-Weather-Current speed

It is evident from all these examples, that although the elements of information in a particular type of segment might vary, the function performed by the segment is unchanged. It is also surprising how many segments do not vary with the type or level of object - an object value segment might consist of the data elements below, or other have:elements as dictated by policy, but will have the same structure for all objects in the collections of a particular institution (e.g. .Appraisal-Basis, Appraisal-Date, Appraisal- Publication-Citation, Value-Appraised, Value-Acquired, Value-Insured, Value-Fair Market, Sale-Date-Most recent, Sale-Price-Most recent', Sale-Reference-Most Recent).

Descriptive segments vary the most. Usually each family of agents, objects, or events has its own descriptive data, but these differences have little impact on the functioning of the collections management system which ius typically only providing the user with a view of descriptive data, based on actions being taken or scheduled on the basis of invariant segments. To illustrate the point, let us examine the "family" of agents:

Broker	Carrier	Collector
Contractor	Courier	Dealer
Donor	Insurer	Member
Packer	Shipper	Vendor

Obviously each type of agent will have discrete descriptive data, but the system will essentially ignore this and match the agent profile against an

action profile which has a parallel structure, help the staff make a decision about taking the action with the eligible agents, and notify the agents using the agent address segment. Differences between the descriptive segments support a functional commonality; they do not undermine it.

The choice of data elements to be employed in any given system ought always be a product of local needs and national standards. National standards should provide a universe from which data elements may be selected, or a framework of data structures at the least. Local needs should define a minimum set of data required. Unfortunately, there are not yet any true national standards for museums to follow and archival data standards are still evolving and remain somewhat untested. Nevertheless, cultural repositories should monitor several on-going efforts to develop and maintain common data definitions for archives and museums.

* The Society of American Archivists, Committee on Archival Information Exchange, maintains a data dictionary developed by the SAA National Information Systems Task Force which forms the basis for the MARC AMC (Archives & Manuscript Control) format.

* ISIS data standards for zoos have been referred to earlier, and may be considered quite stable.

* The Canadian Heritage Information Network maintains a data dictionary for its system.

* A more complete data dictionary which includes reports, requirements and other entities besides data elements, but which is not a standard except perhaps within the Institution, is under development at the Smithsonian Institution.where it is maintained by the staff of the Office of Information Resource Management.

* The J.Paul Getty Trust Art History Information Program has been constructing a data dictionary for the visual arts and hopes to use it to influence the development of standards in this field.

* The American Association for State and Local History has recently received funding to develop its "common agenda for history museums" initiative, which includes an effort to define common data requirements of history museums.

APPENDIX B. FUNCTIONAL REQUIREMENTS - EXAMPLES

While no set of functional specifications will accurately reflect the needs of any organization other than the one for which it was specifically developed, some examples of the way that functional requirements are stated in requests-for-proposal and other procurement documents, can be useful to a repository which lacks prior experience in formulating such statements. In addition to the samples provided here, staff may wish to refer to requirements developed as evaluation guidelines for specific subsystems, which are discussed in articles and reports cited in the bibliography.

The examples in this section are not intended to comprehensively reflect the possible range of requirements for collections management systems, but rather to illustrate how a small sections of such a functional requirements document might read. A few guidelines are suggested:

* Functional requirements should be formulated consistently throughout one document, either taking the form of statements or questions. In either case the potential vendors should be required to respond explicitly. The instructions should define what is meant by "yes", "no", "partially", or any other answer acceptable to the purchasers (which might include special responses for "under development", "can be accomplished in another way" etc.).

* Functional requirements should be consistent in their use of the terms "must" (indicating a mandatory requirement) and "should" (indicating a desirable feature). As a courtesy to vendors reading an RFP containing such requirements, mandatory requiremernts should either appear first within each section of the overall statement or in a separate section. In this way vendors can readily determine if they can respond.

* Functional requirements for each process should completely describe the expectations of the staff for each input, internal processing function, and output. Data required by each process should be referenced as a requirement, either in each appropriate section or in a separate data dictionary that is explicitly incorporated into requirements.

* Worksheets for developing functional requirements, for documenting their importance and weight, and for recording the evaluation of different systems, should be retained by the repository as background documentation for future systems planning efforts. A two page sample worksheet is displayed in exhibit 4; the first page defines the requirement to vendors, while the second page serves to document staff assessments of vendors offerings.

FUNCTIONAL REQUIREMENTS FOR REFERENCE ACTIVITY MODULE

Process: Patron Registration

Definition: Patron (client, user, visitor) registration is the process whereby users are uniquely identified. Minimally, it has the purpose of improving security over holdings. In some types of cultural repositories it serves the further purpose of providing information for promotion of collections and analysis of the use of collections. It could also provide data required to alert patrons as new items are added to the collections or events in which they might be interested are scheduled.

Requirements:

The system must permit staff to enter patron data for new patrons (see data dictionary for fields required) and to update any existing information other than patron id..

The system should automatically assign each patron a unique I.D. number and print both registration data and the number of a user card.

The system should allow staff to retrieve the record of a registered patron by last name (with or without first name); date of registration; or patron id.. number.

The system should allow staff to select patrons by primary research category; patron agency; home or business zip code; or expiration date, and to print either a list or on mailing labels, for any of these categories separately, or any union or overlap of any of these categories.

The system should permit staff to place a hold on an I.D. when the patron has violated any repository policy. Such a hold will prevent the use of the card for specific purposes. A note may accompany the hold. Staff may clear the hold and no permanent records will be kept of such holds.

Process: Reference activity

Definition: Reference activity records requests for information or use of collections by patrons, whether in person, by phone requests, by mail, or by loan request. The information is used in planning and budgetting.

The system must allow staff to record reference inquiries by method of access (walk-in, telephone, mail, loan requests etc.) and type of research (genealogy, history, legal, scientific, exhibit planning etc.).

The system should provide for registering a patron and logging reference activity in one uninterrupted step.

The system should time stamp reference activity from the system clock and this time should be available as an accessible field for query and reporting.

The system should generate a matrix report showing percentages of reference activity by categories.

The system should generate graphical reports comparing variables in any one time period with the same variables in another period.

Process: Holdings use

Definition: Holdings use documents retrievals of materials by patrons and staff and correlates the types of materials used with categories of users. It also permits the identification of specific users with materials for security and follow-up purposes.[16]

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[16] In libraries, this second purpose is usually stated as a negative (e.g., it does not permit) and therefore all requirements relating to this purpose are also usually explicitly negated in library systems requirement.

COLLECTIONS MANAGEMENT

The system must provide for items to be charged out to registered patrons.

The system should provide for registering a patron and logging use in one uninterrupted step.

The system should permit items to be charged out to internal repository units (conservation laboratory, exhibits, etc.) and staff and to locations.

The system should permit staff to scan patron I.D. cards and object labels to link patron number with object number, or permit staff to key patron I.D. (and patron initials as a check code) and item I.D. (providing a view of the item short record as a check). In either case, the system should require the patron I.D. to be entered only once when a series of transactions for the same patron are desired, and this facility should not be a default (e.g., it should require staff activity) so as to avoid inaccurate charging of items to a prior patron.

The system should print call slips for stack retrievals based on the item I.D. at the printer location closest to the item location in the stack area, or at the retrieval desk printer.

The system should not permit the transaction or print call slips if any of the following conditions apply:
- the patron I.D. is invalid, has a hold on it, or has expired;
- the item requested is closed to access; or
- the item entered does not exist in the system.

The system should permit scanning of pull slips returned with materials to cancel charge outs, but retain data on use.

System should print a list of users of any collection during any time period. Such a list may be directed to mail labels or mail merge to notify patrons of the accession.

For records management purposes, the system should report the uses and/or users of record groups over a period of time. Such a report may be automatically set to print monthly, by agency of origin.

FUNCTIONAL REQUIREMENTS

The system should report numbers of retrievals by stack area for any period of time.

Exhibit 4

FUNCTIONAL REQUIREMENTS FORM

Process: _____

Definition:

Functional Requirement:

_____

_____

_____

_____

_____

Data: _____

Users: _____

Frequency of use: _____

Look and Feel:

_____

_____

_____

Requirement Category: Mandatory / Desirable

If Desirable, % weight within functional requirements category ____%

If Desirable, value as percentage of system costs if more than 1%.

$_____

Constraints

Timing availability: _____

Level of skill: _____

Functional Requirements Evaluation:

[for each requirement and each vendors]

Method of achieving requirement/ conformance to look-feel:

Discussion: _____

_____

_____

_____

Number of steps/ commands involved:

Flexibility:

Extensibility:

Modifiability:

Conformance with standards:

Costs:

Other Constraints: Availability/ level of skill

Maintenance status:

Training/Documentation Status:

Summary:
Number of points assigned to requirement:
Number of points awarded to vendor:
Evaluators name(s):
Evaluation Date:

APPENDIX C. SELECTIVE BIBLIOGRAPHY

Because the literature on information system, systems analysis and specific software and hardware choices is so vast, this bibliography is limited to articles and books which reflect on functional requiurements of collections management systems. The bibliography is also limited to publications in the past decade and includes references to only a handful of classic studies which are more than five years old. The inclusion of a number of detailed studies of functional requirements of library sub-systems reflects a vigorous literature in library technical services and the applicability of many of these requirements to archives and museums.

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NEXT ISSUE, DECEMBER 1987

AUTOMATION FOR ARCHIVES AND MUSEUMS: TECHNICAL REQUIREMENTS, ACQUISITION METHODS AND EVALUATION TECHNIQUES

ARCHIVAL INFORMATICS TECHNICAL REPORT
Vol.1, #4, Winter 1987

Executive Summary:

Selecting and implementing an automated system is a complex and expensive process which few archives and museum directors have experienced. While the professional staff of the archive or museum alone has the expertise to define the functional requirements for their information systems, few members of the staff are likely to have had experience in defining technical and performance requirements or selecting hardware and software systems.

This report examines the technical requirements of each of the major types of automated systems installed in archives and museums. Specific technical features of membership and development, exhibits management, collections management, accounting and personnel (including volunteer) systems are reviewed. The emphasis in all cases is on analysis of options.

The report is intended to be used as a workbook. It presents a step by step guide to writing a request-for-proposal and developing evaluation criteria with which to select the system that comes closest to meeting institutional needs. It includes checklists of features, forms which can be used in evaluating systems and vendors, and project planning guidelines for the entire system life-cycle. And it discusses the issues which a cultural repository will face in implementing automated systems.