Map, GIS and Cataloging / Metadata Librarian Core Competencies

Prepared by the MAGERT Education Committee, Kathy Weimer, Chair, and subcommittees on:

Process

Subcommittees were created to address: 1) Map Librarianship, 2) GIS Librarianship, and 3) Map Cataloging and Metadata Creation. Each subcommittee describes their area of specialization, with the assumption that some overlap of duties between the three groups is expected as the tasks and responsibilities of each are at times interdependent. After preliminary drafts of core competencies were produced by each subcommittee, the chair and editors compiled and edited them into this document for review by a larger MAGERT audience.

Many core competency statements were reviewed to assist in the creation of this document, including the ALA Statement. These typically consisted of a general statement of concept or discipline, followed by the application of that concept. This core competencies document follows four key areas based loosely on those written by the Special Libraries Association: Organizational Management, Resource Management, Information Services, and Technological Applications. Each specialization contains statements on those four conceptual areas.

Core Competencies Summary

General Cartographic Competencies

Librarianship has changed over the years due to the advent of new information technologies. The world of map librarianship is no different. With the introduction of geographic information systems and associated datasets in libraries in the early 1990's, the skills required of the map librarian expanded to include digital cartographic resources. The core functions of traditional print map librarianship (i.e., identify, collect, organize, preserve and make available) can also be applied to digital geospatial resources (McEathron, 2001). It is assumed that certain map reading skills and cartographic knowledge will be obtained prior to or early in an individual's job assignment. That knowledge will include scale, projection, grids, and geographic coordinates. It is also helpful to know the basics of the history of cartography; as well as local, state, federal and international mapping agencies and private map publishers, map series and similar publication patterns, and gazetteers (print and online). These cartographic skills may be obtained by a degree in fields of study such as geography, anthropology, environmental sciences, urban planning and others. Job announcements often note a preference for job seekers who hold those, or similar degrees.

General Managerial Competencies

Most librarians find themselves serving as supervisor or manager, either officially or unofficially, or in a related leadership role as trainer or mentor. This assumes a basic understanding of typical human resources processes, such as hiring, evaluating, delegating, team building and motivating others. The librarian also needs an understanding of their role in the larger context of the organization, how to establish partnerships and develop services to meet needs. This document does not address those skills, but assumes that all librarians will possess and/or build their competencies in those areas also.

Levels of Competency

As individuals begin their career in map librarianship and continue along their career journey that they will gain new experiences and skills. In addition, they may also be required to, or volunteer to, take on new responsibilities due to an evolving organizational or technological infrastructure. Therefore, with change come new levels of competency in one or more areas of his/her position. With this in mind we have identified three Librarianship areas of competency in this document in order to further guide expectations along the continuum of experiences and skills needed to be successful in our profession. A specific individual or position may require competencies in one or more of the three areas.

Level 1 - everyone needs to know, and at the entry level needs to master in their first 1-2 years
Level 2 - most will need to know, but may depend on local circumstances
Level 3 - advanced level of specialization: very dependent on local user needs, departmental staff and organizational structure

Please note that the specific necessary skills listed in the following three Librarianship sections below are weighted according to the Levels above based on the definition provided for each. A Level designation is provided at the end of each bulleted skill/experience item.

Section I. Core Competencies for Map Librarianship

"*Evidently, map librarians, and those with a controlling influence on map libraries, need to rethink their role in the changing context of new technology, new media, and of new political and economic perspectives*."

--Parry and Perkins, 2001, "Introduction"

The role of the map librarian is changing and that new role requires adaptability, knowledge, and initiative to keep map collections dynamic and useful. Map librarians must navigate the world of both print and digital cartographic resources as well as oversee all aspects of the map library, its collections, and services. Beyond that, they must have an awareness of the scope and projects of other map collections, particularly as they inform areas of overlap with the librarian's own collection as this may affect collection development decisions, reference referrals, and digitization decisions. The skills needed by the map librarian are extremely varied and overlap in many areas with both the GIS librarian and the map cataloger but this is inescapable given the requirement of the map librarian to be involved in all aspects of the collection, which includes the GIS/digital resources and services, as well as the organization and classification of the materials.

I.A. <u>Organizational Management</u>

I.A.1. Management

Strategic Planning

Development of short term and long term goals **[Level 2]**
Ability to evaluate the outcomes of programs and projects to better plan for the future **[Level 3]**

Project Management

Ability to prioritize and decide what needs to be done, when, and by whom **[Level 1]**
Ability to see a large project through from start to finish (such as large scale digitization projects of map library materials and overseeing the cataloging of a large uncataloged backlog according to a certain set of priorities) **[Level 2]**

Fiscal Management

Ability to manage multiple budgets such as those for collections, staffing, and supplies. **[Level 2]**

Fundraising

Participation in fundraising activities **[Level 2]**
Ability to apply for appropriate grants that would fund projects relevant to the discipline's ongoing work **[Level 3]**

I.A.2. Marketing and Outreach

Intra-institutional marketing and inter-institutional marketing: ('Intra'- is marketing within your institution, while 'inter' is marketing outside of your institution or between libraries and other organizations.)

Ability to act as an advocate for the map library collections and programs **[Level 1]**
Knowledge of marketing strategies, in particular to different user groups **[Level 2]**
Development of innovative ideas to market map library collections and services **[Level 2]**
Development of exhibits and programs **[Level 2]**
Development of relationships with other organizations to work to increase visibility of the map library outside of the institution (ability to form partnerships or work collaboratively with colleagues within one's institution and nationally or locally at other institutions) **[Level 3]**

Webpage Development

Knowledge of current web trends in spatial data **[Level 1]**
Oversees the development of a webpage for the collection **[Level 2]**

I.B. <u>Resource Management</u>

I.B.1. Collection Development

Acquisitions

Knowledge of the strategies used to obtain different types of maps, imagery, and spatial data; including an understanding of the kinds of resources available from commercial and nonprofit publishers, their avenues of distribution, and new trends in the production and delivery of spatial data **[Level 1]**
Understanding of federal, state, and other governmental information, its sources, and they way it is distributed, particularly if the institution in question is part of the Federal Depository Library Program **[Level 2]**
Understanding copyright considerations and the ability to negotiate licensing agreements for databases and collections of spatial information with regard to use of the collection **[Level 2]**

Management (Selection and De-selection of Materials and Resources)

Ability to formulate and write a collection development and de-selection policy **[Level 1]**

- Understands the needs of patrons so the policy directly correlates their needs to the development of the collection
- Understands the strengths and specialties in the collection to be able to build on those strengths

Knowledge of the rules governing the selection/de-selection of federal and state government documents **[Level 1]**

Knowledge of avenues to utilize when withdrawing cartographic materials (i.e., offering government documents to other depository libraries, sending lists of discarded materials out to other map librarians on list-serves, offering maps to local schools to serve as teaching aids, etc) **[Level 2]**

Understanding where gaps exist in the collection, through analysis, so that a strategic selection plan can be developed. **[Level 2]**

Manage ongoing changes to collection development and de-selection policy(ies) **[Level 2]**

I.B.2. Collection Maintenance and Organization

Facilities and Equipment

Basic knowledge of map library equipment such as map storage cabinets and drawers **[Level 1]**

Knowledge of ADA and local fire codes and laws to keep traffic areas free in support of physical safety and collection accessibility, including a written disaster plan **[Level 1]**

Preservation of resources (print and digital)

Knowledge of proper materials handling, especially for rare and fragile materials **[Level 1]**

Knowledge of preservation methods, such as encapsulation **[Level 1]**

Knowledge of digitization and scanning standards and copyright limitations related to them **[Level 2]**

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Ability to create a variety of finding aids for cartographic materials, including indexes **[Level 1]**

Familiarity with the application of a variety of metadata schema for spatial data **[Level 2]**

Participation in the selection and testing of a new ILS **[Level 2]**

Security of the Collection

Knowledge of map security issues **[Level 1]**

Ability to protect library materials from theft using available methods and resources **[Level 1]**

I.C. Information Services

I.C.1. Reference and Instruction

Reference

Understanding of how to conduct an effective reference interview within the specialized environment of the map library **[Level 1]**

Ability to effectively communicate in person, on the phone, through email, and in a virtual environment **[Level 1]**

Knowledge of how to use catalogs, indexes, finding aids and electronic reference tools **[Level 1]**

Knowledge of geographic and cartographic principles, including important details such as projections, coordinate systems and history **[Level 1]**

Knowledge of the creation and distribution systems for cartographic resources

- Understand map production and reproduction processes and types **[Level 1]**
- Understand the roles of map publishers, distributors, cartographers and other contributors, both as individuals and corporate bodies **[Level 1]**

I.D. Technological Applications

I.D.1. Map Library Computer Resources

Computer Lab Maintenance

Ability to provide basic maintenance and upkeep for computer workstation hardware and software **[Level 1]**
Knowledge of digital mapping (GIS) and scanning software and standards **[Level 2]**

Spatial Data Collections

Development of infrastructure to store, preserve, and access spatial data **[Level 3]**

Section II. Core Competencies for GIS Librarianship

> "*… staff need to understand, and be proficient in, several areas. Training implies learning to use GIS software, but it is important to have a conceptual understanding and knowledge of real GIS applications in order to make training useful. Staff must know more than how to operate the GIS software; they need instruction in the issues of GIS theory, GIS databases, and GIS applications in a discipline. This instruction is necessary because the ability to add, manipulate, and analyze data in a GIS intelligently requires understanding; the inputs and processes needed to yield a meaningful result are a function of employing a GIS in an intellectually appropriate way.*"
>
> --Longstreth,1995

Geographic information systems (GIS) offer a compelling and powerful approach to exploring our world. Applicable across a vast range of disciplines and in a variety of institutional settings, GIS simultaneously serves as an information management system, analysis tool, and visualization technique. It does so by utilizing the spatial aspects of information - "the where" component of information – and by doing so allows a user to ask and answer questions in an entirely new way.

Given that GIS as a tool is applicable in such a breadth of topics and scenarios, it follows that the core competencies of the GIS Librarian are equally broad and span the theoretical, technical and social. Explanation and instruction of GIS calls for a solid theoretical understanding of spatial information and databases, as well as the vision and imagination to apply GIS to a variety of disciplines. A minimum level of proficiency in the use of specialized GIS software and the ability to locate and manipulate GIS data is necessary to respond to patron inquiries. Since GIS is inherently technology based, the GIS Librarian is required to have the technical skills to work with information technology (IT) systems directly, or possess the communication skills required to be respected by and work effectively with IT staff. Despite the fact that GIS has existed since the 1960s, it is perceived as relatively new and thus the GIS Librarian should be comfortable and capable with planning and implementing outreach and advocacy of the tool. Outreach and advocacy for the GIS Librarian may well extend beyond the boundaries of any given institution; GIS Librarians have a collaborative role (not currently being fully realized) to ensure that the principles and expertise of library science be present in the fast-evolving geoinformatics and spatial literacy movements.

II.A. <u>Organizational Management</u>

II.A.1. Management

Strategic Planning

Ability to develop short term and long term goals for GIS services using outcome evaluation as a development tool **[Level 2]**

Sufficient GIS knowledge to evaluate emerging GIS technologies and integrate same into current and future services **[Level 3]**

Project Management

Serve as project manager (for example, building a spatial data repository, or leading a map scanning project) **[Level 2]**
Ability to prioritize and decide what needs to be done, when, and by whom **[Level 2]**
Ability to evaluate other GIS projects/services provided in the organization to prevent duplication of services **[Level 2]**

Fiscal Management

Ability to manage multiple GIS related budgets, such as those for hardware, software, data, staffing and supplies **[Level 2]**

Fundraising

Participation in fundraising activities **[Level 2]**
Ability to apply for appropriate grants that would fund projects relevant to the discipline's ongoing work **[Level 3]**

II.A.2. Marketing and Outreach

Communications and Event Planning

Ability to plan and organize events such as GIS days, open house, etc. **[Level 1]**
Presentation skills for demonstrations of GIS **[Level 1]**
Web development skills for promotion of GIS services, GIS newsletters, etc. **[Level 1]**
Assessment skills to identify current and potential GIS users and partners **[Level 2]**
Collaboration skills for identifying potential internal and external partners **[Level 2]**

II.B. <u>Resource Management</u>

II.B.1. Data Acquisition

Broad knowledge of spatial data resources

Government resources, including local, state/provincial, national and international **[Level 1]**
Commercial resources **[Level 1]**

- Vendors: local, regional, global

Research and other user-generated resources **[Level 1]**

- Consortia such as ICPSR
- Research projects that generate data appropriate to the organization

Knowledge of licensing issues and acquisition details peculiar to data **[Level 2]**
Broad knowledge of data quality, data types, data storage requirements **[Level 2]**
Knowledge of map scanning and digitization processes for use in GIS **[Level 2]**
Knowledge of collection assessment techniques for data collections **[Level 2]**

- Knowledge of collection development/selection principles
- Knowledge of use statistics collection

II.B.2. Data Discovery

Knowledge of spatial metadata standards and issues

Ability to promote metadata standards and educate users regarding metadata **[Level 1]**
In-depth knowledge of data discovery tools and data repositories, including The Web, academic/ research community, and offline data resources **[Level 1]**
Ability to implement metadata standards in typical discovery tools such as the OPAC **[Level 2]**

- GIS metadata and data portals

Competence in data reformatting, manipulation, etc. **[Level 1]**

Competence in building spatial data discovery tools (clearinghouse, etc.) appropriate to the organization **[Level 3]**

II.B.3. Information Technology

Current knowledge of system requirements for GIS

Solid communication techniques and an understanding of the computing environment **[Level 1]**
Knowledge of facility requirements for software and hardware **[Level 1]**
Competence in continually upgrading software and hardware/technology **[Level 1]**
Knowledge of desktop and web technologies (client/server and networks) **[Level 1]**

II.B.4. Technological Infrastructure/Facilities

Management

Competence in fiscal management and planning for needed space, hardware and related technological equipment, etc. **[Level 2]**
Ability to manage GIS laboratory facilities **[Level 3]**

Hardware

Ability to perform basic hardware maintenance **[Level 1]**
Evaluate/provide access to GIS-related tools such as GPS units **[Level 2]**
Replacement and upgrades of hardware **[Level 2]**
Plan server replacement and upgrades **[Level 3]**

Software

Ability to perform initial troubleshooting for software issues **[Level 1]**
Ability to recommend upgrades to GIS software **[Level 1]**
Evaluate/install supporting software tools for GIS use, i.e., FME, Google Earth, unzipping utilities **[Level 1]**
Manage GIS-related campus wide licenses such as ESRI or ERDAS **[Level 3]**

Policy

Implement/oversee policy changes as appropriate **[Level 1]**

II.C.2. Instruction

Ability to develop and deliver formal introductory GIS instruction sessions and/or workshops **[Level 1]**
Ability to conduct one-on-one consultations **[Level 1]**
Knowledge of instruction options and ability to manage/facilitate access to commercial options for instruction (e.g., ESRI Virtual Campus course access codes) **[Level 1]**

II.C.3. Research Consultation

Working knowledge of GIS software - preferably more than one GIS **[Level 1]**
Broad knowledge of data resources and discovery tools **[Level 1]**
Working knowledge regarding data organization and data manipulation **[Level 1]**
Working knowledge of presentation techniques **[Level 1]**
Working knowledge of reference techniques **[Level 1]**
Working knowledge of GIS project planning and implementation **[Level 1]**

Section III. Core Competencies for Map Cataloging and Metadata Creation

"The purpose of cataloging spatial data, like that of book cataloging, is to make items available for use in an efficient, effective way. It is done by creating a surrogate for the actual item, describing that item, distinguishing it from all others, and making a single, complete record of it, in the form of a unit record, nowadays with very few exceptions in a digital catalog database. In ensuring that the resources of the collection are cataloged, several tasks are accomplished. First and most importantly, cataloging enables the user (who is, after all, the reason for our contor

III.B. Resource Management

Cataloging standards

Stay abreast of national/international standards and apply them consistently **[Level 1]**

Develop local practices and be able to adjust to locally-needed changes or situations **[Level 2]**

Cataloging Resources

Learn, understand, and appropriately apply cataloging rules, rule interpretations and subject analysis techniques **[Level 1]**

Identify and use appropriate hardcopy resources for cartographic materials cataloging in all formats **[Level 1]**

Identify and use appropriate online resources for cartographic materials cataloging in all formats **[Level 1]**

Apply classification schedules/schemes and create call numbers **[Level 1]**

Apply accurate subject headings using LCSH and/or other thesauri

Create, where needed, appropriate local cartographic materials cataloging guides, project-level documents, etc. to document local practices **[Level 2]**

Knowledge of the creation and distribution systems for cartographic resources

Understand map production and reproduction processes and types **[Level 1]**

Understand the roles of map publishers, distributors, cartographers and other contributors, both as individuals and corporate bodies **[Level 1]**

Cataloging with existing records ("copy cataloging")

Search for and identify matching existing bibliographic record(s) from external databases, download/import record(s), edit record(s) for local use **[Level 1]**

Search for and identify matching existing bibliographic records from internal databases and edit/update for completeness and accuracy **[Level 1]**

Bibliographic record creation ("original cataloging")

Understand theory and practice of descriptive cataloging as it applies to cartographic materials **[Level 1]**

- Correctly identify the title proper when more than one title exists or when a single title can be read in multiple ways **[Level 1]**
- Correctly provide for second or alternative titles in the record **[Level 1]**
- Understand scale and how it functions, know the different methods of communicating scale and calculating scale when necessary, and supply scale statements in the correct format(s) **[Level 1]**

- Understand map projections and correctly apply projection information when needed **[Level 1]**

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