# Model for Digital Library: Issues and Prospective

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*This article deals with key aspect of digital library and prepares a model for the digital library, here discuss components, categories and environment of digital library.*

## Introduction

Members of the library and information profession have become acutely aware in recent years words from them are like "we are working and living in tomorrow's 'virtual world', and we must begin to look to the future and prepare ourselves for what networked technology is making possible". As a consequence, much of the recent literature in the field has been devoted to discussing and exploring the shape of future library and information services. One area receiving significant attention is the development of access to information through digital libraries.

Much of the existing research in the digital library field is concerned with the practical application or implementation of digital libraries, some on a very large scale. There are many thousands of digital library projects currently underway, in all sectors of the library community. These projects have taken widely varying approaches, dependent on the needs of the different libraries, the sector in which they are based, and, in part, the definition of digital library that has been applied. This has led to a variety of digital libraries being developed, with no common model being available.

### The Digital Library Concept

The basic concept underlying the digital library is not new. In 1945, Dr Vannevar Bush of the U.S. Office of Scientific Research and Development discussed a device called a "memex". He envisioned this device being used by individuals as "a sort of mechanized private file and library". It would be able to store large amounts of books, pictures, periodicals, newspapers, correspondence, and so on, with material being indexed for easy retrieval.

The Bush vision is one of the most influential and frequently cited precursors of the modern digital library concept. The digital library seems a revolutionary development, the concepts and

technologies involved are more accurately described as evolutionary.

**Terminology and Definitions**

Although not a recent concept, in terms of actual development, digital libraries are still relatively new. Because of this, there is as yet no universally agreed terminology in place. In the literature, the *digital library* may also be called the *library without walls*, *virtual library*, *electronic library*, *e-library*, *desktop library*, *online library*, *future library*, *library of the future*, *logical library*, *networked library*, *hybrid library*, *gateway library*, *extended library* or *information superhighway*. Of these many terms, *digital library*, *virtual library*, *hybrid library* and *electronic* (or *e-*) *library* are most common. Just as there is no universally agreed upon terminology for digital libraries, neither is there a common definition for this concept. In the 1990s, terms such as *digital library*, *virtual library* and *electronic library* became widely used, but considerable uncertainty remains about what they actually mean. Few authors distinguish between the various terms, defining each one differently. However, such distinctions are relatively rare, with the various terms usually being used to refer to essentially the same thing: that is, shared access to networked information.

The term *digital library* has been defined both broadly and narrowly. In the narrower form, a digital library is construed as a mainly, if not wholly, digital entity, although this fully digital scenario is dependent on the necessary materials being available in an appropriate format. In the broader construction, the digital library is defined as a hybrid of traditional library services and new electronic sources and methods. One of the more comprehensive (and more quoted) definitions, which defined digital libraries as follows:

…the concept of remote access to the contents and services of libraries and other information resources, combining an on-site collection of current and heavily used materials in both print and electronic form, with an electronic network which provides access to, and delivery from, external worldwide library and commercial information and knowledge sources. In essence, the user is provided the effect of a library, which is a synergy, created by bringing together technologically the resources of many, many libraries and information services.

## Components of the Digital Library

Regardless of the wide variety of terms used to describe the digital library concept, it is clear from the literature that there are certain common elements, regardless of the terminology applied. There must be, in some sense, a *collection*, to which clients must be linked in an efficient and satisfying manner. There is also a set of *services*, either human or electronic, which link clients to the collections. The *technologies* involved in providing digital library services should support document creation, retrieval, transfer, dissemination, manipulation and management. Finally, there must be an *institution* in which the digital library collections and services are embedded. A major study, identified series of different activities considered essential to the formation of digital libraries. These included:

- Use of, or development of electronic document delivery services;
- Policies, services, or reallocations that emphasize access [to information] over ownership;
- Participation in cooperative development or purchase of electronic files;
- Participation in the development of a campus-wide information system;
- A written plan that states its goal as access to information from a single workstation;
- Enhancement of the online public access catalogue (OPAC) to include the holdings of other libraries besides those held locally;
- Providing a gateway from the OPAC to other databases or networks, such as the Internet;
- End-user access to online files from on or off campus;
- Connection with the Internet;
- Training faculty and students: .....in the use of Internet sources; and, .....in end-user searching;
- Subscribing to electronic journals;
- Digitization of text for electronic storage, retrieval and/or dissemination;
- Access to electronic full-text;
- An e-mail front-end that allows users to initiate interlibrary loan and document delivery requests, suggest purchases, or ask reference questions from within the OPAC;

When grouped together logically, these activities fall into eight basic categories:

**1. The Internet and Intranets**

Development of library Internet and/or Intranet sites; Internet connection

2. **Integrated access to resources**
   - Single workstation access to resources;
   - Use of OPAC as a gateway;
   - Inclusion of external holdings on local OPAC;
3. **Digitization of materials**
   - Digitization projects;
4. **Electronic publications**
   - Electronic journals;
   - Electronic full-text;
5. **Electronic document delivery**
   - Commercial and library-to-library electronic document delivery;
6. **Resource sharing**
   - Access to resources over ownership;
7. **Cooperative activities**
   - Cooperative purchasing or development of resources;
8. **End-user services**
   - End-user access to online resources;
   - Internet training for clients;
   - Searching training for clients;
   - End-user electronic requesting;

These elements, then, may be considered the basic building blocks of the digital library, although the nature and extent of the application of each component will depend upon the circumstances and needs of the library and/or organization to which the digital library is attached.

**The Digital Library Environment**

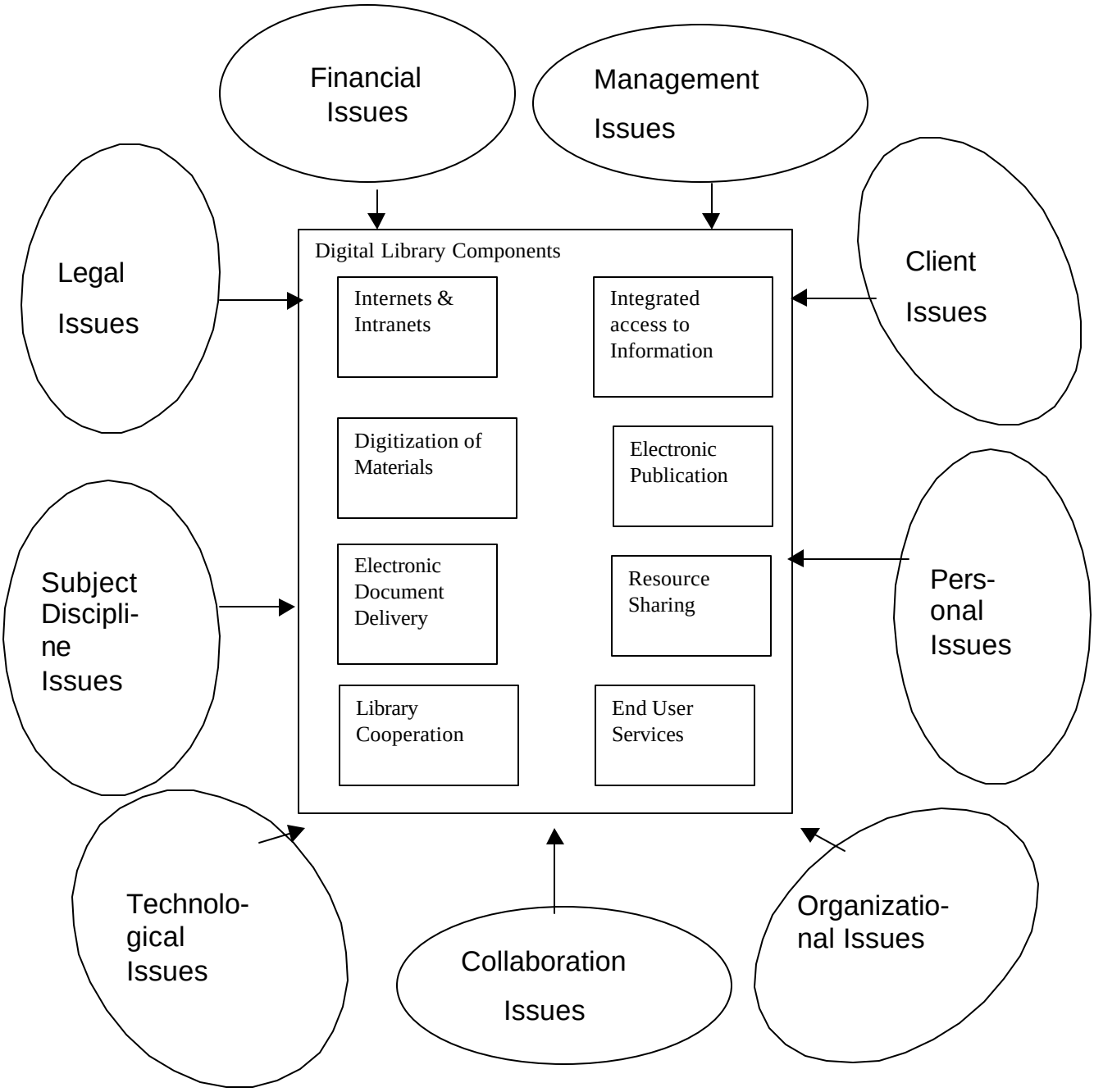
Just as the literature identifies a number of activities that together make up digital libraries, so too does it show that the development of digital libraries is heavily dependent on a number of inter-related enabling (or hindering) factors. These include such issues as copyright, client attitudes, changes to funding and financial structures, the need for new organizational structures, technological issues, staff training, and so on. When grouped together, these factors all fall within nine inter-linked subject categories:

1. **Legal issues**
   - Copyright;
   - Contracts;
   - Privacy;
2. **Financial issues**
   - Financial resources;
   - Changes to funding allocation;
3. **Client issues**
   - Client needs;

Client attitudes;
Resistance to introduction of new technologies;

4. **Personnel issues**
   Staff commitment to new systems and services;
   Changed staff training and competencies;
   Effect of automation on staff skilling and
   Professionalisation;
5. **Organizational issues**
   Need for new organizational structures;
   Reorganization of hierarchies and work divisions;
   Organizational size;
   Balance between professional and para-professional staff;
   Appropriate position levels;
6. **Management issues**
   Strategic planning;
   Need for new or different performance measures
   Organizational support and leadership;
   Need for champions within the organization;
   Appropriate statistical measurement;
7. **Technological issues**
   Security;
   Infrastructure development;
   Use of appropriate technologies;
   Standards;
8. **Collaboration issues**
   Resource sharing;
   Cooperative purchasing of information resources;
   Cooperative purchase or development of
   Hardware and infrastructure
9. **Subject discipline issues**
   Availability of content for different disciplines;
   Appropriateness of delivery method;

Although writers in the field differ on the relative importance of these individual issues, it is widely agreed that the continued progress and ultimate success of digital libraries is dependent on their resolution. If this is the case, then these issues can be said to make up an environment that surrounds the digital library itself. The digital library and its environment may then be modeled as shown in *Figure*.




**Conclusion**

Based on the literature in the field, a model for digital libraries was formulated as shown in *Figure*, with the model comprising the components that made up the digital library and factors that impacted on its environment. Originally, it was considered that all components were equally

applicable to all libraries, as the literature on the topic did not provide any guidance as to the relative importance or utility of each activity.

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