



# Digital Library Manifesto

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## DL.org Digital Library Manifesto

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# 1. Introduction

The Digital Library universe is a complex framework bringing together many disciplines and fields, spanning data management, information retrieval, library sciences, document management, information systems, web image processing, artificial intelligence, human-computer interaction and digital curation. The Digital Library universe is also an interplay of professional roles, encompassing cataloguing and curating, defining, customising and maintaining the Digital Library and its services, as well as developing and customising software. Such complexity and diversity in terms of approaches, solutions and systems has driven the need for common foundations that foster best practices and help focus further advancement in the field.

Given the level of maturity and substantial knowledge and experience that have been accumulated while developing Digital Libraries, the members of the DELOS Network of Excellence on Digital Libraries decided to start a long term and ambitious process leading to common foundations characterising the entire Digital Library domain and driving its future evolutions. The outcomes of DELOS have been taken forward by DL.org, a project funded by the Cultural Heritage and Technology Advanced Learning Unit of the Information Society Directorate-General of the European Commission, working in synergy with a team of international experts in the field.

The outcomes of these activities have been collected in a large volume entitled *'The Digital Library Reference Model'*. A fundamental part of this volume and of the whole activity is represented by **The Digital Library Manifesto**, which is the focus of this booklet, a small document identifying the cornerstone elements characterising the whole digital library domain.

## 1.1 Background and Motivations

Digital Libraries are a relatively young, highly multidisciplinary scientific field with its roots lying in the last two decades of research and practice. A significant role has been played by funding opportunities supported by the 'Cultural Heritage and Technology Enhanced Learning' (formerly 'Cultural Heritage Applications') Unit of the Information Society Directorate-General of the European Commission, and by the 'Digital Library Initiatives' in the U.S. sponsored by the National Science Foundation and other agencies around the world.

The term 'Digital Library' is currently used to refer to systems that are very different in scope and yield very diverse functionality. These systems range from digital object and metadata repositories, reference-linking systems, archives, and content administration systems, which have been mainly developed by industry, to complex systems that integrate advanced



digital library services, which have chiefly been developed in research environments. This heterogeneous landscape brings significant impediments, particularly to interoperability and the re-use of both content and technologies that would open up new horizons for the private and public sectors alike and empower a broad spectrum of communities.

The digital library concept can be traced back to the famous papers of the foreseer scientists Vannevar Bush (Bush, 1945) and J.C.R. Licklider (Licklider, 1965) identifying and pursuing the goal of innovative technologies and approaches toward knowledge sharing as fundamental instruments for progress. However, the evolution of “digital libraries” has not been linear, which has created a number of conceptions of what they are, each one influenced by the perspective of the primary discipline of the conceiver(s) or by the real needs the digital library was designed to meet. Consequently, the “history” of Digital Libraries is the story of a variety of different types of information systems that have been called “digital libraries” (Candela, Castelli, & Pagano, 2011). These systems are very heterogeneous in scope and functionality and their evolution does not follow a single path. Changes have brought better quality systems that have superseded earlier systems together with new conceptions of digital libraries driven by the needs they have been designed for. Nevertheless, individual achievements of all the digital library projects and initiatives illustrate substantial commonality between them in that the bottom-up development of the field has provided enough ‘data points’ for patterns to emerge that can encapsulate all these efforts.

The multi-faceted nature of digital libraries has generated a variety of definitions, drawing on different disciplinary perspectives. Fox et al. in (Fox, Akscyn, Furuta, & Leggett, 1995) observe that the expression ‘Digital Library’ evokes a different impression in each person, ranging from the simple computerisation of traditional libraries to a space in which people communicate, share and produce new knowledge and knowledge products. According to Belkin, a Digital Library is an institution responsible for providing at least the functionality of a traditional library in the context of distributed and networked collections of information objects (Belkin, 1999). Lesk analyses and discusses the importance of the terms ‘Digital’ and ‘Library’ in the expression ‘Digital Library’, where the former term mainly implies the existence of software for searching text, while the latter term refers to existing material that has been scanned for online access, and concludes that the research effort in the field is not usually associated with users’ needs (Lesk, 1999). In Borgman’s view, at least two competing visions of the expression ‘Digital Library’ exist: researchers view Digital Libraries as content collected on behalf of user communities, while practising librarians view Digital Libraries as institutions or services (Borgman, 1999). The first DELOS Brainstorming Workshop envisaged a Digital Library as a system that enables any citizen to access all human knowledge, anytime and anywhere, in a friendly, multi-modal, efficiently and effectively by overcoming barriers of distance, language and culture and by using multiple Internet-connected devices (Bertino, et al., 2001). An offspring of that concludes that Digital Libraries can become the universal knowledge repositories and communication channels of the future, a common vehicle by which everyone will access, discuss, evaluate and enhance information of all forms (Ioannidis, 2005). Likewise, in his framework for Digital Library research, Soergel starts from three very diverse perspectives that different people in the community have on Digital Libraries: tools to



serve research, scholarship and education; a means for accessing information, and providing services primarily to individual users. He then enhances each one further and binds them all together to obtain the main guiding principles for his vision of the field (Soergel, 2002). On the other hand, Kuny and Cleveland discuss four myths about Digital Libraries (Kuny & Cleveland, 1996): the Internet is 'The' Digital Library; at some point there will be a single Digital Library or a single-window view of Digital Library collections; Digital Libraries are means to provide more equitable access to content from anywhere at any time and Digital Libraries are cheaper tools than physical libraries. They conclude that Digital Libraries impose reinvention of the role of librarians and library models.

In addition to such a variety of perspectives that may currently exist on what a Digital Library is, the concept has evolved quite substantially since the early idea of a system providing access to digitised books and other text documents. The DELOS Network of Excellence fostered the view of Digital Libraries as tools at the centre of intellectual activity having no logical, conceptual, physical, temporal or personal borders or barriers on information. Thus the Digital Library has moved from a content-centric system that simply organises and provides access to particular collections of data and information to a person-centric system that aims to provide interesting, novel, personalised experiences to users. Its main role has shifted from static storage and retrieval of information to facilitation of communication, collaboration and other forms of interaction among scientists, researchers or the general public on themes of relevance to the information stored in the Digital Library. Finally, it has moved from handling mostly centrally located text to combining distributed multimedia document collections, sensor data, mobile information and pervasive computing services.

This vision of Digital Libraries seems to echo the concept of 'Information Space' that has arisen from the field of Computer Supported Cooperative Work (CSCW). Snowdon, Churchill and Frecon have developed future visions about 'Connected Communities' and 'Inhabited Information Spaces' (Snowdon, Churchill, & Frecon, 2004), with the latter being closely related to the vision of Digital Libraries, in that ubiquitous information is a prerequisite for CSCW. In more detail, inhabited Information Spaces are 'spaces and places where people and digital data can meet in fruitful exchange, that is, they are effective social workspaces where digital information can be created, explored, manipulated and exchanged'. Thus, 'in Inhabited Information Spaces, both information and people who are using that information (viewing it, manipulating it) are represented. This supports collaborative action on objects, provides awareness of ongoing activities of others, and offers a view of information in the context of its use'. Drawing on this and in keeping with the DELOS vision, a Digital Library provides an Information Space that is populated by a user community and becomes an Inhabited Information Space through CSCW technology. In summary, the two fields complement each other, in that one focuses on access and provision of relevant information while the other revolves around visualisation and the sharing of information.

'Digital Library' is a complex, multi-faceted notion that defies a simple definition. A comprehensive representation encapsulating all potential perspectives is therefore needed. The Digital Library Manifesto lays down the ground rules by motivating and declaring an organised characterisation of the Digital Library field and by setting an agenda leading to a



foundational theory for Digital Libraries. Furthermore, the Manifesto is aimed at facilitating the integration of research and proposing better ways of developing appropriate systems.

The Manifesto explains three types of related systems in the Digital Library universe, namely Digital Library (DL), Digital Library System (DLS), and Digital Library Management System (DLMS). It identifies and describes the main concepts characterising these systems and thus the entire Digital Library universe, that is, organisation, content, user, functionality, quality, policy and architecture. Professional roles played within digital libraries are chiefly described in terms of end-users, designers, administrators and software developers. Finally, the Manifesto provides the reference framework needed to clarify the Digital Library universe at different levels of abstraction: the Digital Library Reference Model and Digital Library Reference Architecture.

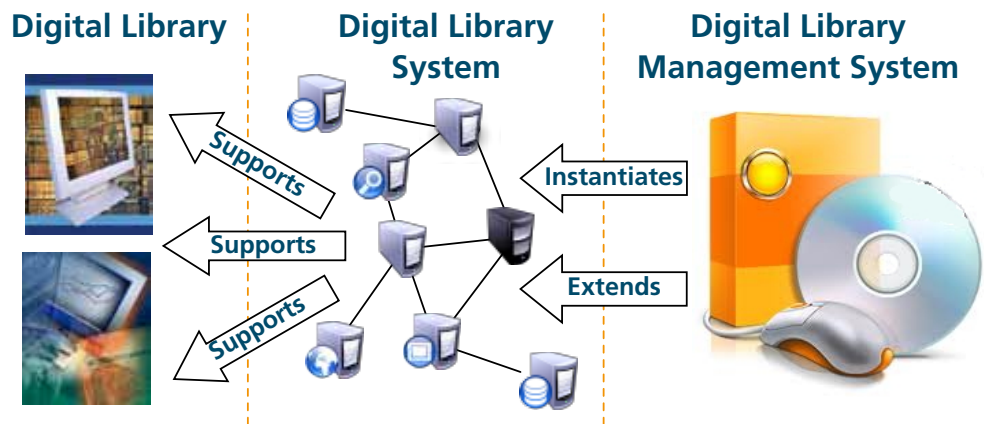
## 2. The Three-tier Framework

A Digital Library is an evolving organisation which comes into existence thanks to a series of development steps bringing together all the necessary constituents. The three notions of 'systems' developed along the way form a three-tier framework: Digital Library, Digital Library System, and Digital Library Management System, each corresponding to three different levels of conceptualisation of the Digital Library universe. All

three systems play a central yet distinct role in the digital library development process. The definitions below are provided to clarify their specific characteristics.

### Digital Library (DL)

A potentially virtual organisation, which comprehensively collects, manages and preserves for the long term rich digital content, offering its targeted user communities specialised functionality on that content, of defined quality and according to comprehensive codified policies.



### **Digital Library System (DLS)**

A deployed software system underpinned by a possibly distributed architecture providing all the facilities required by a specific Digital Library. Users interact with a Digital Library through the corresponding Digital Library System.

### **Digital Library Management System (DLMS)**

A generic software system which provides the appropriate software infrastructure both to produce and administer a Digital Library System incorporating the suite of facilities considered fundamental for Digital Libraries and to integrate additional software offering more refined, specialised or advanced facilities.

Although the concept of Digital Library is intended to capture an abstract system consisting of both physical and virtual components, the Digital Library System and the Digital Library Management System capture real software systems. For every Digital Library, there is a unique Digital Library System in operation, which might comprise any number of interconnected smaller Digital Library Systems, whereas all Digital Library Systems are based on a handful of Digital Library Management Systems. A Digital Library is therefore the abstract entity which 'comes to into being' thanks to the software system constituting the Digital Library System, while the Digital Library Management System is the software system which is conceived to support the lifecycle of one or more Digital Library Systems.

These concepts are not unique to a Digital Library as they underlie every type of information environment and system, from databases, the web and Wikipedia to hospital information and banking systems, and so forth. What sets digital libraries apart from these other systems are the specific characterisations given above. Content should be rich, annotated, preserved for the long term, user should be targeted communities, functionality should be specialised, quality should be measurable and policies should be comprehensive. While these characterisations are abstract and open to interpretation, precluding a precise formal definition, they provide conceptual benchmarks against which every system can be measured and compared, and for which boundaries can be defined based on the specifics of individual digital libraries.





### 3. The Core Concepts

Despite the diversity that exists in the digital library universe, a small number of fundamental concepts underlie every system: *organisation, content, user, functionality, policy, quality, architecture*. These concepts serve as a starting point for researchers to understand the field, for system developers creating and engineering a digital library, and for content providers seeking to render content through digital library technologies. Of the seven core concepts, Organisation is a special case in that it subsumes all the others.

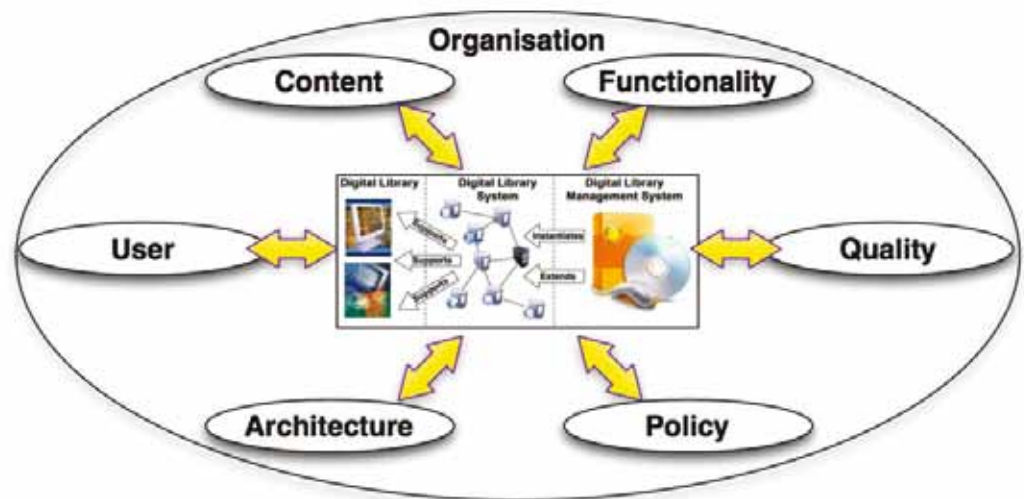
#### Organisation

The Organisation concept concerns the entire Digital Library universe. A Digital Library is a kind of organisation in itself - a social arrangement pursuing a clearly defined goal, that is, a digital library service. This concept subsumes the mission for which the Digital Library has been conceived, the facets defining this mission and operating the resulting service. This concept should not be confused with the organisation or institution which decides to set-up

the digital library and drive its development though there are overlaps and dependencies between the two. The institution establishes the Digital Library Organisation and is chartered with defining the overall service which the organisation is requested to provide. However, as an organisation in its own right, the Digital Library has the power to control its own behaviour and evolution in the framework defined by the institution. This concept is fundamental to characterise the Digital Library universe in that it highlights the commonalities between this universe and others that bring together an organised body of people for a particular purpose.

#### Content

The Content concept encompasses the data and information that the Digital Library handles and makes available to its users. It is composed of a set of information objects organised



in collections. Content is an umbrella concept used to aggregate all forms of information objects that a Digital Library collects, manages and delivers. It encompasses a diverse range of information objects, including primary objects, annotations and metadata. This concept is fundamental to characterise the Digital Library universe because it captures one of the major resource these Organisations are called to manage, that is, the data and information that is made available.

### **User**

The User concept embraces the various actors, whether human or machine, entitled to interact with Digital Libraries. Digital Libraries connect actors with information, supporting their ability to consume and creative use of it to generate new information. User is an umbrella concept including all notions related to the representation and management of actor entities within a Digital Library. It encompasses such elements as the rights that actors have within the system and the profiles of the actors with characteristics that personalise the system's behaviour or represent these actors in collaborations. This concept is fundamental to characterise the Digital Library universe because it captures the actors of the overall Organisation.

### **Functionality**

The Functionality concept encapsulates the services that a Digital Library offers to its different users, whether individual users or user groups. While the general expectation is that Digital Libraries will be rich in functionality, the bare minimum of functions includes new information object registration, search and browse. Beyond that, the system seeks to manage the functions of the Digital Library to ensure that the overall service reflects the particular needs of the Digital Library's community of users and/or the specific requirements related to its Content. This concept is fundamental to characterise the Digital Library universe because it captures the facilities offered by the overall Organisation.

### **Policy**

The Policy concept represents the set or sets of conditions, rules, terms and regulations governing every single aspect of the Digital Library service including acceptable user behaviour, digital rights management, privacy and confidentiality, charges to users, and collection formation. Policies may be defined within the Digital Library, be superimposed by the Institution establishing the Digital Library, or outside of that (e.g., Policy governing our Society). Policies can be extrinsic or intrinsic. Defining new policies and re-defining older policies, is part of the policy-related functionality that must be supported by a Digital Library. This concept is fundamental to characterise the Digital Library universe because it captures the rules and conditions regulating the overall Organisation.

### **Quality**

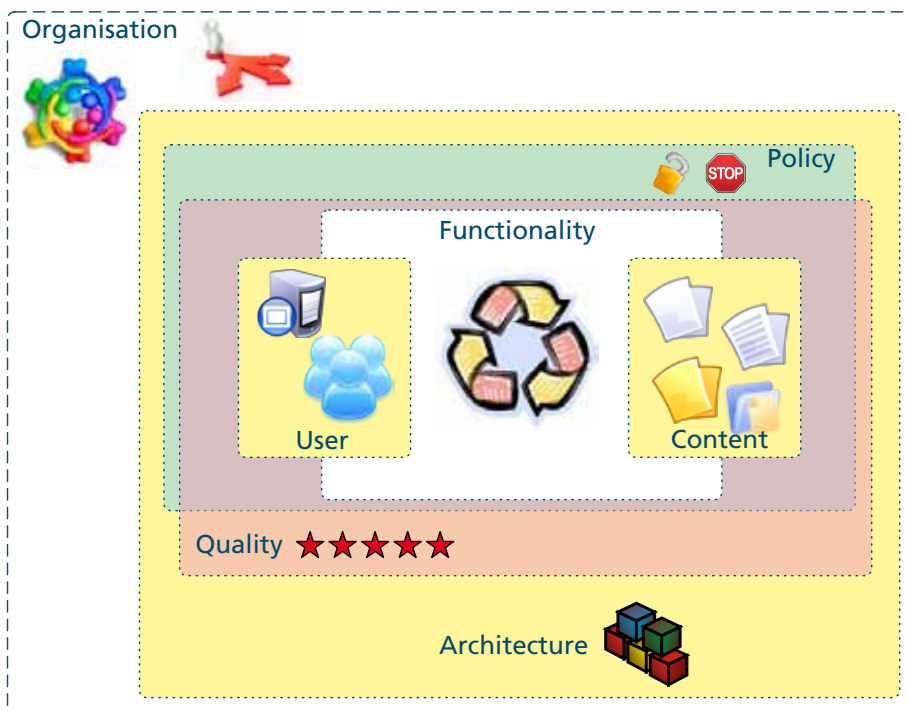
The Quality concept represents the parameters that can be used to characterise and evaluate the overall service of a Digital Library encompassing every aspect of it, i.e. Content, User, Functionality, Policy, Quality, and Architecture. Quality can be associated not only with each class of content or functionality but also with specific information objects or services. Some of these parameters are quantitative and objective in nature and can be measured automatically, whereas others are qualitative and subjective in nature and can only be measured through



user evaluations (e.g., focus groups). This concept is fundamental to characterise the Digital Library universe because it captures qualitative aspects characterising the Organisation.

## Architecture

The Architecture concept refers to a Digital Library System and represents the mapping of the overall service offered by a Digital Library, and characterised by Content, User, Functionality, Policy and Quality, on to hardware and software components. There are two main reasons that make Architecture a core concept: (i) Digital Libraries are often assumed to be among the most complex and advanced forms of information systems (Fox & Marchionini, 1998); and (ii) interoperability across Digital Libraries is recognised as a major challenge. A clear architectural framework for Digital Library Systems offers ammunition in addressing both of these issues effectively. This concept is fundamental to characterise the Digital Library universe because it captures the systemic part of the service offered by the Organisation.



Overall, these concepts share many similar characteristics and they all refer to internal entities of a Digital Library that can be discerned in the outside world. A higher level concept is also introduced, referring to all of them, that is, Resource, which enables us to reason about the common characteristics in a consistent manner.

The main concepts can also be put into perspective as follows. The **Organisation** concept surrounds and subsumes all the other concepts. Among the other six concepts, two are independent of each other, in that they exist independently of a specific Digital Library. These are **User**, which represents external human beings or the hardware interacting with the Digital Library, and **Content**, which represents the material handled by the Digital Library. **Architecture**, which is the technological design underpinning Digital Library System, represents the underlying technology that implements all the rest. On top of these concepts there comes Functionality, primarily representing the means for connecting User to Content, that is, all procedures, transformations, actions and interactions that bring Content to User or vice versa. Finally, operation of the Digital Library and activation of its Functionality are based on Policy and aim to achieve a certain level of Quality.

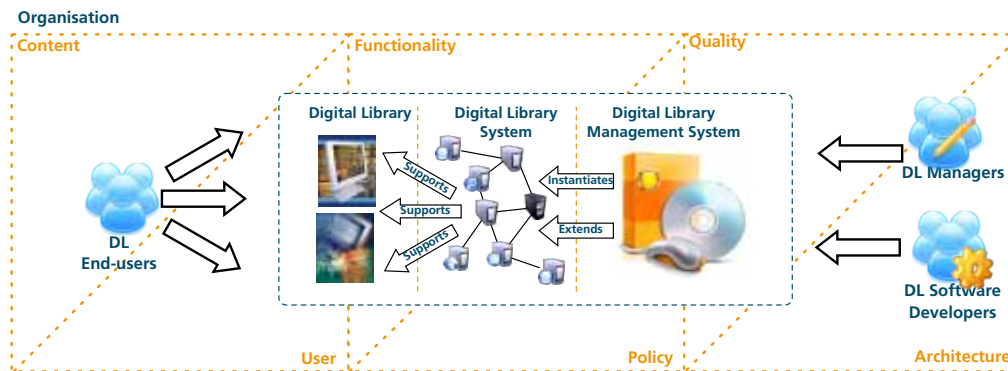


## 4. The Main Roles of Actors

In order to describe how a Digital Library Organisation is expected to work, it is fundamental to identify the main roles actors can play when interacting with digital library systems and how they are bound to the core concepts of Content, User, Functionality, Quality, Policy and Architecture. With regard to the overall operation of the Digital Library Organisation and the way it is expected to deliver the service it is intended for, three different yet complementary roles come into play: *Digital Library End-users, Managers* and *Software Developers*.

Each role is primarily associated with one of the three 'systems' in the three-tier framework: Digital Library, Digital Library System, and Digital Library Management System. The 'system' that a role is associated with represents the entity that is expected to provide the actor playing such a role with the facilities needed to accomplish the mandate assigned to the role. Additionally, every actor, irrespective of the role he/she is playing, is expected to deal with all the foundational concepts characterising the Digital Library universe.

### Digital Library End-users



End-users use the overall Digital Library service in order to provide, consume, and manage the Digital Library. They are the target clients of the service defined by the Digital Library Organisation in terms of the Content to be managed, the User(s) to be served, the Functionality to be supported, the Policy or Policies to be put in place and

the Quality to be rendered. End-users perceive the Digital Library as a stateful entity serving their needs. This state of the Digital Library is a complex condition resulting from and impacting on Content, User, Functionality, Policy and Quality aspects of the Digital Library Organisation and it is expected to evolve during the lifetime of the Digital Library as a consequence of a series of actions and activities performed in the context of the Digital Library Organisation, as well as of external factors influencing the Digital Library Organisation.

DL End-users can be further divided into: *Content Creators, Content Consumers* and *Digital Librarians*.



Content Creators are the “producers” of the Digital Library Content, i.e., they deal with producing new items contributing to the Digital Library Content. Their activity is performed through the Functionality that the Digital Library makes available; in compliance with the Policies defined in the Digital Library, and with the guarantee of Quality that the Digital Library declares.

Content Consumers are the “clients” of the Digital Library Content, in that they access and use the items in the Digital Library Content. Their activity is performed through the Functionality that the Digital Library makes available, in compliance with the Policies defined in the Digital Library, and with the guarantee of Quality that the Digital Library declares.

Digital Librarians are the “curators” of the Digital Library Content, in that they select, organise and look after the items in the Digital Library Content. Their activity is performed through the Functionality that the Digital Library makes available; in compliance with the Policies defined in the Digital Library and with the guarantee of Quality that the Digital Library declares. Additionally, Digital Librarians might influence the behaviour of the overall Digital Library service by acting as mediators between Content Creators and Content Consumers and people defining and operating this service, such as Digital Library Managers, by communicating and expanding feedback on the Digital Library.

### **Digital Library Managers**

Managers are the actors driving the overall Digital Library service. They are expected to rely on the facilities offered by the Digital Library Management System to define and operate the Digital Library and the Digital Library System implementing it. Managers can be further divided into , who develop the overall service, and , who deploy and operate the Digital Library System implementing the service.

Digital Library Designers use their knowledge of the application environment which a Digital Library is called to serve in order to define, customise, and maintain it so that it is aligned with the needs of its target End-users. In doing so, they interact with the Digital Library Management System to define the characteristics the Digital Library should have in terms of: (i) Content, such as the set of repositories, ontologies, classification schemas, information object types, metadata formats, authority files, and gazetteers that form the DL Content; (ii) User, such as eligible actors and roles, the information characterising the actors; (iii) Functionality, such as the functional facilities to be offered and the behaviour these facilities should implement; (iv) Policy, such as the rules and principles governing the evolution of the Digital Library Content, the actions allowed by each actor or group of actors and resource exploitation; (v) Quality, such as the minimal availability of a Digital Library Functionality, the minimal response time of a Functionality, the completeness and authoritativeness of the Digital Library Content and confidentiality of the User actions. These aspects characterise the overall Digital Library service and the way it is perceived by End-users. These parameters need not necessarily be carved in stone for the entire lifetime of the Digital Library as they may be reconfigured to enable the Digital Library to respond to the evolving expectations of target users and changes in any aspects.

Digital Library System Administrators work in tandem with Designers to set up the Digital Library



System that implements the Digital Library service planned. They select, deploy and manage a set of networked computers and software modules needed to meet the expectations of End-users and designers. System Administrators perform their work by interacting with the Digital Library Management System and relying on the facilities these systems offer for Digital Library System constituent identification, linking, allocation, deployment, configuration, tuning, monitoring, alerting, and any other management facility needed to manage potentially distributed software systems as Digital Library Systems are expected to be. Different Digital Library Management Systems are expected to offer diverse management facilities spanning manual installation and configuration of computers and software modules on the target computers, and fully autonomic solutions designed to reduce human intervention to core activities.

### **Digital Library Software Developers**

DL Software Developers develop and/or customise the software components used as constituents of the Digital Library Systems. Software developers are requested to produce the software implementing every aspect of the Digital Library service ranging from Digital Library Content and User to Functionality, Policy and Quality. However, Software Developers do not need to start from scratch as their work is expected to be performed by relying on the Digital Library Management System offering. A Digital Library Management System is a software system that is equipped with diverse off-the-shelf software modules implementing, to some extent, a number of Digital Library facilities, such as content repositories, user management systems, co-operative working environments, information retrieval engines, and policy enforcement modules. Software Developers include Software Engineers and Programmers responsible for customising and complementing the set of software modules provided by the Digital Library Management System used in order to achieve the set of software constituents needed to implement the Digital Library planned.

The roles described above encompass the entire spectrum of actors working in the digital library universe. Their conceptual models of such a universe are linked hierarchically, stemming from the definitions provided here. Digital Library End-users act on the Digital Library, whereas Managers and Application Developers operate on the Digital Library System, through the mediation of a Digital Library Management System, and, consequently, on the Digital Library as well. These relationships ensure that co-operating actors share a common vocabulary and knowledge. For instance, the Digital Library End-user expresses requirements in terms of the Digital Library model and, subsequently, the Digital Library Designer understands these requirements and defines the Digital Library accordingly.

As the responsibilities of librarians are cross-cutting, they are not expected to play just one of the roles envisaged. Activities envisaged for Digital Library End-users include provision, consumption and management of the Digital Library content. Thus, librarians acting as cataloguers and curators in the library world and librarians interfacing with and supporting the users of a library perform these activities in the Digital Library domain. Since the Digital Library Designer uses her/his knowledge of the application semantic domain to define,



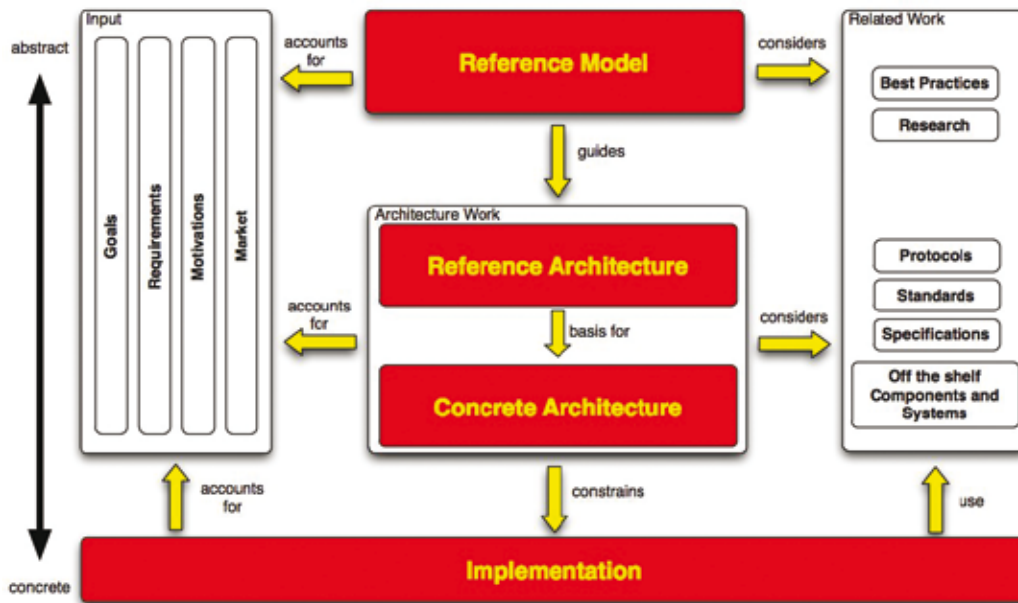
customise and maintain the Digital Library, this role is usually covered by the Chief Librarian, also referred to as Manager or Director, who decides the overall service offered. The Digital Library System Administrator role is played by the Librarian with technical skills entitling her/him to manage the Digital Library System realising the Digital Library service. Some Librarians might also be engaged in the customisation of the software system delivering the service, whereby they act as Digital Library Software Developers. While the Reference Model does not explicitly use the term 'Librarian', it captures the various activities today's librarians are requested to perform in the digital library space.

## 5. The Development Framework

The digital library universe is a complex world, which makes it difficult to identify a single and fully-fledged model capable of capturing all the aspects needed to represent this universe irrespective of the scenario this model is expected to serve. A proper model is thus fundamental for the scenario leading to the development of real systems. This scenario is very broad and requires a comprehensive and detailed model capable of capturing the specifics of every entity in the universe at a level of detail that enables developers to implement it precisely. As a consequence, the resulting model should be broad enough to be re-used in a plethora of other scenarios including teaching and systems assessment. However, such a model may be difficult to use if it is not appropriately designed, so it needs to be tailored to address the specific needs of the audience it is intended for. For this reason, we envisage "the" model needed to capture the digital library universe and promote its implementation as a framework supporting modelling at different levels of abstraction. Such a framework encompasses the Reference Model, the Reference Architecture, and the Concrete Architecture.

The consists of a minimal set of unifying concepts, axioms and relationships within a particular problem domain, and is independent of specific standards, technologies, implementations, or other concrete details. Digital libraries need a corresponding Reference Model to consolidate the diversity of existing approaches into a cohesive and consistent whole, to offer a mechanism for enabling the comparison of different digital library systems, to provide a common basis for communication within the digital library community, and to help focus further advancement.





The **Reference Model** is an architectural design pattern indicating an abstract solution that implements the concepts and relationships identified in the Reference Model. There may be more than one Reference Architecture that addresses how to design digital library systems built on the Reference Model. For example, we might have one Reference Architecture for Digital Library Systems supporting Digital Libraries developed by federating local resources and multiple organisations, and another one for personal Digital Libraries or for specialised

applications.

The **Reference Architecture** is an instance of a Reference Architecture attained by replacing the mechanisms envisaged in the Reference Architecture with actual standards and specifications. For example, a Concrete Architecture may specify that the run-time environment deployed on the hosting nodes will be the Web Services Application Framework, and that a number of specific communicating Web Services will implement the Search functional component.

In terms of the relationship between these three frameworks with the general digital library universe, at the top there is the most abstract Reference Model, which guides the more specific Reference Architecture and Concrete Architecture further down. In turn, these should constrain the development and implementation of any actual system. The three reference frameworks are the outcome of an abstraction process that has taken into account the goals, requirements, motivations and, in general, the digital library market. Related work also includes best practices and pertinent research. When these frameworks are adopted and followed by the community, the resulting systems will be largely compatible with each other. Interoperability thus afforded will open up significant new horizons for the field.





## 6. Concluding Remarks

This manifesto has been based on experience and knowledge gained by many previous efforts that have taken place over the past years around Europe and the rest of the world.

The Digital Library Manifesto sets the foundations and identifies the cornerstone entities within the universe of digital libraries. It has introduced the relationships among three kinds of relevant 'systems' in this area: Digital Library, Digital Library System, and Digital Library Management System. It has presented the main concepts characterising the above, i.e., organisation, content, user, functionality, quality, policy and architecture. Moreover, it has identified the main roles that actors may play within a digital library, i.e., end user, manager and software developer. Finally, it has described the development framework that captures the above systems at different levels of abstraction.

The Manifesto is the first document of a comprehensive volume entitled 'The Digital Library Reference Model' which aims at providing a roadmap enabling the diverse stakeholders involved to share a common understanding and follow the same route when dealing with the multi-faceted Digital Library universe. This volume is the result of a collaborative work undertaken in the framework of the DELOS Network of Excellence on Digital Libraries ([www.delos.info](http://www.delos.info)) and subsequently the DL.org project ([www.dlorg.eu](http://www.dlorg.eu)).

However, the digital library is a dynamic research domain, and the diversity of needs among different digital libraries continues to introduce new concepts that have to be incorporated into the model. Hence, at any point in time these documents should be considered dynamic versions of documents that will continue to evolve.



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# Digital Library Manifesto

DL.org ([www.dlorg.eu](http://www.dlorg.eu)) has mobilised professionals, educationalists and students at various stages in their academic careers mainly from Computer Science and Library and Information Science domains, to promote knowledge in digital library interoperability, best practices and modelling foundations.

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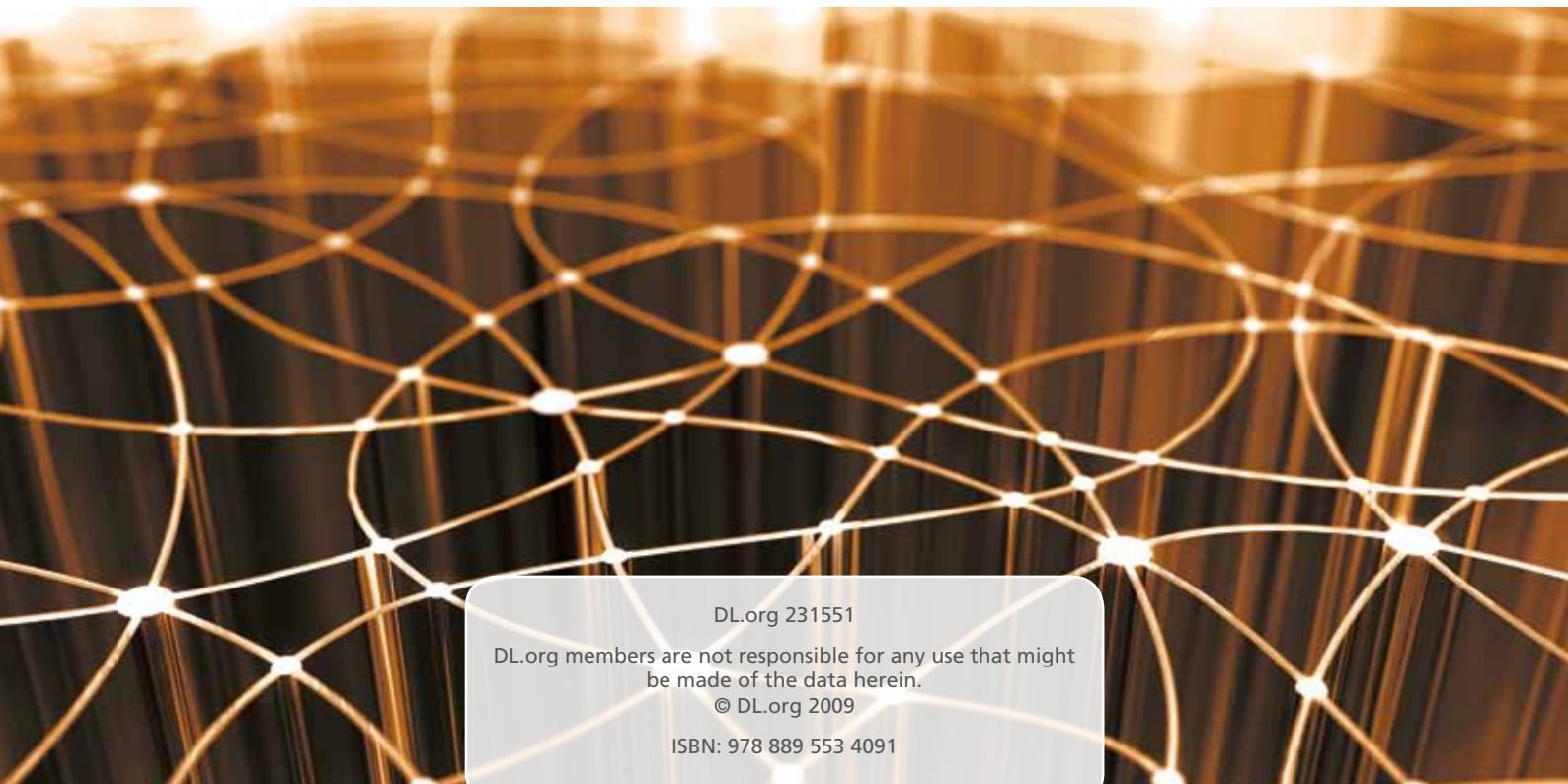
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