

## Chapter 3

# Quality and Interoperability: The Quest for the Optimal Balance

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### ABSTRACT

*This chapter deals with the problem of defining and assessing the quality of a digital library. The chapter will provide a brief excursus on the evolution of digital libraries and their current complexity to make it clear that there is a strong need for systematic and exhaustive models which precisely define what digital libraries are and encompass a model for the quality of digital libraries. In this context, the authors will present an overview of the DELOS Reference Model for digital libraries and they will go into details about how quality has been modelled in it. The authors will also compare this model to another formal model for digital libraries, which is the Stream, Structures, Spaces, Scenarios, Societies (5S) model. The discussion addressed in the chapter will not be limited to quality issues but will show how quality impact on various dimensions of the digital library universe. In particular, they will discuss how quality relates to interoperability. To this end, they will describe the conceptual model for interoperability developed in support to the European Digital Library initiative and will highlight its relationships with the quality domain in the DELOS Reference Model. Finally, the authors will outlook some future directions that may be pursued to improve and automate the assessment and evaluation of quality in digital libraries.*

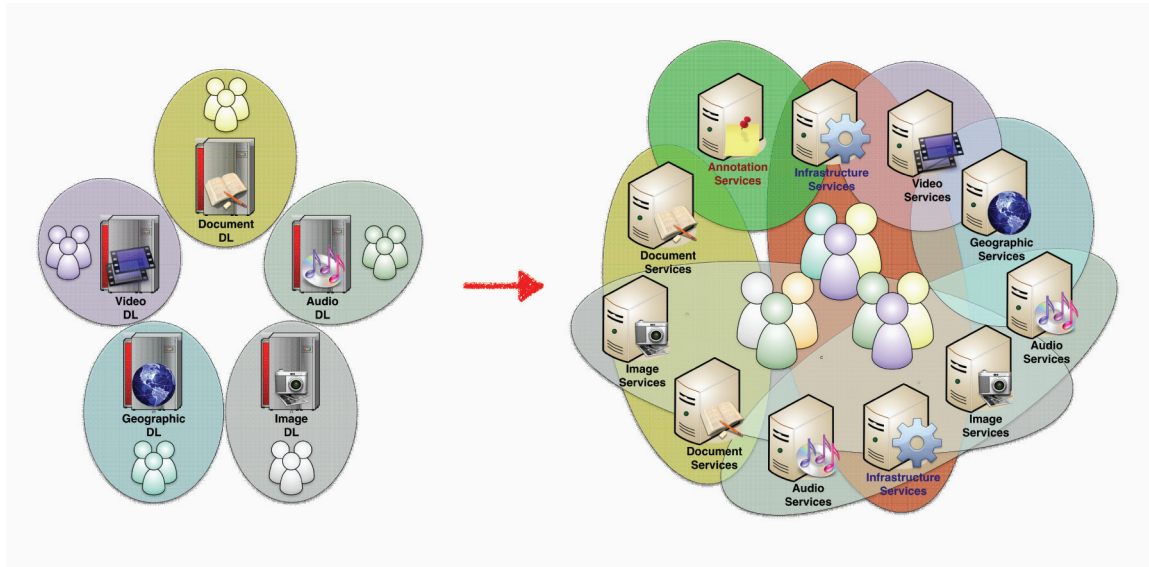
### 1. INTRODUCTION

Since the field of digital libraries has come to light in the early nineties of the past century, a lot of improvements and a dramatic change in the viewpoint has happened. In the beginning,

digital libraries were almost monolithic systems, each one built for a specific kind of information resources – e.g. text, images, or videos – and with very specialised functionalities developed ad-hoc for those contents. This approach caused a flourishing of systems where the very same functionalities, e.g. user management or repositories, were developed and re-developed from

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Figure 1. Evolution of the digital libraries from data-centric systems (shown on the left) towards user-centric systems (shown on the right)



scratch many times, causing them to be different and often incompatible one with the other. Moreover, these systems were confined to be applied to the realm of traditional libraries, being their digital counterpart, and they had a kind of “static” view of their role, since they were places where users can find and retrieve desired information resources with a data-centric vision rather than being systems where users can interact with and augment the managed information resources with a user-centric vision. The main motivation of this approach has been the high complexity of digital libraries which forced researchers and developers to specifically address each case in a kind of bottom-up approach which contributed to make the picture about digital libraries clearer and clearer.

With the passing of time and by exploiting the previous research results and achievements, a more mature way of facing the design and development of digital libraries has taken place. Digital libraries moved from being monolithic systems to being component and service-base systems, where easily configurable and deployable services can be plugged together and re-used in order to

create a digital library. Moreover, digital libraries started to be seen as more and more user-centered systems, where the original content management task is partnered with new communication and cooperation tasks, so that digital libraries become “a common vehicle by which everyone will access, discuss, evaluate, and enhance information of all forms” (Ioannidis, Maier, Abiteboul, 2005). Finally, digital libraries are no more perceived as isolated systems but, on the contrary, as systems that need to cooperate together in order to improve the user experience in accessing information and to seamlessly integrate information resources of different domains.

In this evolving scenario, shown in Figure 1, the design and development of effective services which foster the cooperation among users and the integration of heterogeneous information resources become a key factor which needs to be pursued by researchers and developers. A relevant example of this kind of new services are annotations, i.e. providing users or groups of users with the possibility of adding personal annotations on the managed information resources, even crossing

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