Chapter 11
The Storage and Access of E-Learning Visuals

ABSTRACT

Rich image repositories and digital libraries exist for the collection, labeling, archival and delivery of digital graphics. Understanding the ingestion of such images into digital repositories will be helpful not only for those searching for resources but also for those creating digital imagery for such storage and distribution. This chapter addresses some of the latest research going on currently for the labeling of digital graphics, their storage, their protection, and their distribution to users.

CHAPTER OBJECTIVES

- Introduce image repositories and digital libraries as storehouses for digital imagery
- Introduce use cases for image repositories and digital libraries
- Explore the digital preservation, born-digital, and other origination paths for digital imagery, and their ingestion into digital repositories
- Show what elements are necessary for the metadata labeling of digital imagery for e-learning
- Promote more efficient access to and searching of digital image repositories
- Explore the efficient download and delivery of imagery from secure repositories
- Discuss security issues related to image repositories and digital libraries
- Probe the socio-technical and collaborative aspects of image repositories and digital libraries

INTRODUCTION

Digital imagery used in e-learning are archived and distributed via websites and learning / course management systems (L/CMSes), but they are also stored and delivered via digital repositories for reusability

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in other learning contexts. The storage of digital visuals, their protection, and their distribution, all have implications on how digital images are captured, rendered, and labeled. Digital repositories and libraries have been around for several decades but have recently come into more popular use (Rowe, Razdan, & Simon, 2003).

The memory capacities of digital repositories will affect how large the digital images may be. [Some geographic information systems contents contain so much information that each artifact may well be in the terabytes (Reuning & Jones, 2005)]. Yet, it may be in the best interests of those curating such collections to store objects in the least-lossy formats, so the raw contents may be versioned for the most possible practical uses.

For digital imagery to retain their value over time (and have value in the current near-term), the annotations must be high-value (Tangelder & Veltkamp, 2004, n.p.). In addition, most two-dimensional (2D) methods of identification and retrieval for shape-matching do not generalize to the three-dimensional (3D) model matching. This will explore some of the issues raised in relation to the archival of digital imagery for uses in e-learning, in the present and for the future.

Various learning / course management systems (L/CMSes) link into digital libraries and repositories. Others access course cartridges with visual contents. Interoperability gaps are being addressed.

Lastly, this chapter will explore the uses of online repository and library spaces for the co-development of images and the collaboration around work. Informatics communities have sprung up around topics of shared interests in digital repositories. With the integration of computer-mediated communications tools into digital storage spaces, plenty of powerful collaborations may be actualized.

IMAGE REPOSITORIES AND DIGITAL LIBRARIES

A digital image repository is a storehouse for various types of contents, without curatorial oversight. A digital image library consists of collections of materials based around topic areas and usually curated by an expert in the respective field. All variety of digital imagery may be archived: maps, photos, geospatial resources, 3D objects, aerial images, satellite images, and remotely sensed image captures. The imagery may be photo-realistic or wholly synthetic.

Repositories and digital libraries may be high-prestige and formal, controlled by designated subject matter experts in a field. They may be wholly public and open to any user. In between are those repositories that may capture less formal imagistic information but which still has value through projects or dissertations (Tschimer & Zipf, 2005) or community contributions (Kennedy & Naaman, 2008).

Because of the influences of interdisciplinary academic traditions—library and information science, information retrieval, and human-computer interaction communities, different definitions of terms have emerged regarding digital libraries (Goncalves, Fox, Watson & Kipp, 2004). "Information retrieval, human-computer interaction, computer supported collaborative work, machine learning, user modeling, hypermedia and information science" all inform the design of these digital repositories (Callan, Smeaton, Beaulieu, Borlund, Brusilovsky, Chalmers, Lynch, Riedl, Smyth, Straccia, & Toms, 2003, p. 2). Subject matter experts (SMEs) and data archivists vet contents and add form to the visual information.

Such collections may be publicly accessible or privately held (as by companies, organizations, or families. Some contents may be for-profit; free and open-source (with copyright releases for academic use), or free and public-domain. Some are closed-access systems that are available from certain loca-