The R. Casey Library

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R. Casey Library Description

  The R. Casey Library is a digital library at Maple University that is a collaboration between the Geography and Spatial Sciences department, the Maple University library and the Maple County Historical Society. The library has a large collection of digitized maps from across America, particularly in relation to transit and transportation, as well as scans of historical documents related to local cartography that were provided by the Maple County Historical Society. The items from the Historical Society are digitally housed in the Henry Pelham Collection. The library also includes a catalog through which faculty, students, and university researchers can access e-books, academic journal articles, and Maple University Library items related to geography and maps. The repository uses various kinds of software and elements of metadata to provide high quality discoverability and access to the collection whether it is being accessed from a desktop or mobile device.

R. Casey Library Resources

  The available resources in the R. Casey Library include a digital repository and library related resources, both virtual and physical. The physical map objects that are in the digital repository are available in person upon special request from the college library, but the repository is available digitally 24/7. The digital repository allows users to easily find information about the digitized map through rich metadata and by browsing and zooming into maps with great detail. The scans of historical documents related to local cartography in the Henry Pelham Collection were digitized by librarians at The R. Casey Library who had procured the documents from the Maple County Historical Society.

  The Maple County Historical Society has reciprocal research agreement with the R. Casey Library that allows members of the historical society are partial access to library related to resources that are available to Maple University faculty and students. The original hard copies of the scanned documents in the Henry Pelham Collection are available to researchers who make an appointment with the historical society. Likewise, the maps owned Maple University are available for researchers to browse within the Maple University library's physical location if they schedule an appointment with the Geography and Spatial Sciences librarian.

  While the map and document digital repositories are available to the public, the library resources that provide e-book and academic journal access are only available to Maple University students, faculty, and staff (with few exceptions through the reciprocal agreement with the Maple County Historical Society). E-book access is provided through ProQuest E-Book Central. Some of the most popular e-books that the library provides access to are *Mapping: A Critical Introduction to Cartography and GIS* (2010)

by Jeremy Crampton, *Mobile Mapping: Space, Cartography and the Digital* (2020) by Clancy Wilmott, and *The Geographic Revolution in Early America: Maps, Literacy, and National Identity* (2006) by Martin Brückner.

The library also provides access to ProQuest: Digital Sanborn Maps, 1867-1970, which "delivers detailed property and land-use records that depict the grid of everyday life in more than 12,000 U.S. towns and cities across a century of change" (ProQuest). These maps are often used by faculty members in the History department. Digital journal access is provided through JSTOR, which allows users to browse articles, download them as PDFs and print them. Popular E-journals that the R. Casey Library subscribes to include The Journal of Map & Geography Libraries, GeoJournal, International Journal of Geographical Information Science, and The Cartographic Journal.

R. Casey Library Software Platforms

The R. Casey Library uses multiple software platforms including Drupal, Islandora, and ExLibris Summon. Drupal was chosen as the Content Management System because it is an open-source CMS that is highly extensible and can be used to create a website specifically tailored to meet the R. Casey Library's needs. "A fully featured Web content management system includes the process from content inception to publication, in a system that allows Web administrators to streamline workflows and to enable all content contributors to easily edit, update, and publish Web content without in-depth knowledge of HTML" (Yu, 2005). By utilizing a CMS, users are able to separate the content from the aesthetic display of the website and many cases do not need a in depth knowledge of coding. The Geography and Spatial Sciences librarian at Maple University has prior knowledge of Drupal, helped to build out the library website, and in teaches workshops on mapping with Drupal.

While Drupal displays the library website content, it can also be used for creating maps themselves by adding modules that provide geographic fields. "With the right combination of modules, you can create maps that allow your users to find geographically relevant information" (Palazzolo & Turnbull, 2012). The R. Casey Library uses the GeoServer module to connect with GeoServer and view geospatial data. "GeoServer is a Java-based software server that allows users to view and edit geospatial data. Using open standards set forth by the Open Geospatial Consortium (OGC), GeoServer allows for great flexibility in map creation and data sharing" (GeoServer). This module is an example of the plentiful ways in which Drupal can be extended to meet the specific topical needs of the library.

In "Building Online Content and Community with Drupal", Gabrielle Wiersma notes that, "Drupal is not just a platform; it is an active community of collaborative users" (Wiersma, 2009). One such group is the Location and Mapping group, the mission of

which is "to discuss and document topics related to web mapping, cartography, geospatial data storage, geocoding, GIS, and any other geospatial topic as pertaining to Drupal" (Drupal Groups). The library staff are able to interact with these communities and through them they can learn new skills and improve the functions of the library's website. Communities of Practice provide support and advice for users of all skill levels which is essential for Digital Libraries which may have staff who may not be well versed in the software that they are using. When troubleshooting a problem, staff can reach out to members of these groups who may have had a similar experience and are willing to share their expertise.

The Islandora repository platform is used to manage the content of the R. Casey Library digital repository including the map collection and the Henry Pelham collection, which includes scanned historical documents as well as maps. Islandora is an open-source software framework that is "designed to help institutions and organizations and their audiences collaboratively manage and discover digital assets using a best practice framework" (Islandora). On Islandora's website it is noted that Islandora is built on a base that includes Drupal and Fedora and that "Islandora's flexibility empowers users to work with a huge variety of data types (such as image, video, and pdf) and knowledge domains and provides integration with additional viewers, editors, and data processing applications" (Islandora). Islandora uses the IIIF compliant image server, Cantaloupe (GitHub).   Islandora's website also highlights that the software has out-of-the-box support for IIIF, Linked Data, OAI-PMH, and Usage Statistics, which are all used by the R. Casey Library to improve and monitor the collection.

The R. Casey library uses Mirador as the image viewer for the digital map and document collections. "Mirador is a configurable, extensible, and easy-to-integrate image viewer, which enables image annotation and comparison of images from repositories dispersed around the world. Mirador has been optimized to display resources from repositories that support the International Image Interoperability Framework (IIIF) APIs" (IIIF Harvard). Mirador displays the images of the digital assets from Islandora in an aesthetically pleasing, yet functional way which allows users to navigate the images and zoom into great detail. The ability to powerfully zoom into the images at high resolution is imperative for researchers who require the highest quality images to work with in order to do their detailed research.

Mirador, Islandora, and Cantaloupe are all IIIF compliant and work together seamlessly. "Based on linked data concepts and semantic web architecture, the IIIF is not just a set of digital image data architecture rules or a digital image metadata standard but also a combination of specifications using familiar web-based designs and structures. IIIF gives users a rich set of baseline functionality for viewing, zooming, and assembling the best mix of resources and tools to view, compare, manipulate and work with images on the Web" (Adamich, 2019). Using IIIF as a standard promotes

uniformity of structure and display, which supports interoperability across digital image repositories.

The R. Casey Library uses ExLibris Summon as a discovery service to connect users to the library catalog and external resources. The R. Casey Library subscribes to JSTOR for e-journal access and ProQuest E-Book Central for e-book access. With ExLibris Summon users are able to refine their search by full text, scholarly & peer review, open access, and library catalog. They can also filter out and specify the content type they are looking for whether it is a journal, e-book, thesis, etc and can narrow down the range of publication years they would like to search. Summon is powered the Central Discovery Index (CDI) from Ex Libris, which indexes all available resources which, in the case of the R. Casey Library, include library subscriptions as well as the contents of the Maple University library's physical collection.

Another feature that the R. Casey Library utilizes through ExLibris Summon is a chat widget which instantaneously connects users with librarians during regular library hours. "The Summon service allows subscribing libraries to embed chat widgets from either LibraryH3lp, Springshare's LibAnswers, OCLC's QuestionPoint, or WhatsApp. When library staff is available and the user requests a chat session, the user is presented with a widget in the Summon interface" (ExLibris Knowledge Center). This remote access to librarians is an important aspect of the R. Casey Library since it is a digital library maintained by librarians who are on the campus at Maple University, but users who access the digital library could potentially be located anywhere in the world. The chat widget allows greater access for users regardless of their physical location.

R. Casey Library Users/Patrons

The R. Casey Map and Geography Library at Maple University is mainly used by the faculty and students of the Geography and Spatial Sciences Department along with various researchers within the university who seek out the library. Members of the public can freely browse the repository records online 24/7, but they do not have access to the e-journals and e-books through Maple University's JSTOR and ProQuest Ebook Central subscriptions. While the general public does not have access to e-journals and books, members of the Maple County Historical Society may acquire a login for ExLibris Summon as part of a reciprocal research usage agreement between Maple University Libraries and the Maple County Historical Society.

R. Casey Library Metadata

The use of metadata is an integral aspect of the R. Casey Library. Metadata provides essential information about items in the collection while increasing

searchability and linking relationships between different objects, databases, and outside repositories. Item discovery is optimized by including as many metadata elements as possible for each record in the collection. Ensuring that metadata records are accurate and follow standards and is openly available is essential to increasing the discoverability and interoperability of the collection. The R. Casey Library uses Dublin Core metadata elements, which are encoded in XML. ExLibris Summon supports Dublin Core and has a page that crosswalks how Dublin Core element fields map to Summon search fields. Dublin Core is one of the most commonly used metadata standards and consists of 15 core elements, which can be refined or extended through additional qualified terms.

While the R. Casey Library includes more widely used standards, such as Dublin Core, it also employs standards that are specific to the geographic community. One such standard that the library employs is GeoSPARQL from the Open Geospatial Consortium. "The OGC GeoSPARQL standard supports representing and querying geospatial data on the Semantic Web. GeoSPARQL defines a vocabulary for representing geospatial data in RDF, and it defines an extension to the SPARQL query language for processing geospatial data" (Open Geospatial Consortium). Using geographic specific standards in tandem with more widely used standards helps the R. Casey Library increase the coverage and searchability of its metadata.

While the R. Casey Library uses vocabulary standards such as The Getty Thesaurus of Geographic Names and Library of Congress Authorities, it also employs subject specific vocabularies as well. The R. Casey Library utilizes ISO 19115, which is the International Organization for Standardization's standard for geospatial metadata. When ISO 19115 is implemented, the standard will "provide data producers with appropriate information to characterize their geographic data properly, facilitate the organization and management of metadata for geographic data, enable users to apply geographic data in the most efficient way by knowing its basic characteristics, facilitate data discovery, retrieval and reuse" (ISO, 2003). The emphasis on data discovery, retrieval and reuse is an integral element of the R. Casey Library, which operates as part of a research institution.

The R. Casey Library is registered as an OAI-PMH data provider. "The Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) is a low-barrier mechanism for repository interoperability. Data Providers are repositories that expose structured metadata via OAI-PMH" (Open Archives Initiative). The decision to register an as OAI-PMH data provider was made with the intention that exposure of R. Casey Library metadata will increase the discoverability and visibility of the repository, which would in turn lead to greater public access to the collection.

In the chapter "The Current State of Linked Data in Libraries, Archives, and Museums", Erik T. Mitchell writes that an, "important discussion in the LD [Linked Data] community centers on the proper fit of vocabularies with different communities of practice. As might be expected, the geographic information system (GIS) community

has branched out to create its own vocabularies and vocabulary-publishing platform in GeoNames" (Mitchell, 2016). The Linked Data module for Drupal was also integrated into the digital library to "provide a basic facility to create Linked Data queries and provides a variety of ways to theme the results of those queries" (Drupal). This module links to DBPedia, GeoNames, and other open data sets. The interlinking of the R. Casey Library with outside data sources is key to improving the discoverability of the collection.

The R. Casey Library User Interface

The R. Casey Library uses the Bootstrap Framework to optimize the website for users who are accessing the site through their mobile device. "Bootstrap is a popular HTML, CSS, and JavaScript framework used to develop responsive websites and apps" (Ding, Lin, & Zarro, 2017). The Bootstrap theme was used to integrate Drupal with the Bootstrap Framework. Librarians at the R. Casey Library also joined Drupal's Bootstrap Open Collective to gain insight and troubleshooting advice from a thriving community of practice.

Figure 1. Screenshot of the R. Casey Library homepage in desktop view.

Figure 1 shows a screenshot of the R. Casey Library homepage from a computer desktop. The top menu includes buttons that take users to important pages that cover the most pressing needs of users. The search bar is prominently displayed below the top menu and allows users to search the catalog. If users are not already signed in with their Maple University ID and password, then will need to log in once the catalog page opens. The digital map repository and the Henry Pelham collection are the core of the

website and are prominently displayed with eye catching graphics to draw in users. On the left side of the page there is a calendar widget which was added through the Event Calendar Drupal module. The widget displays nearest 3 upcoming events and pulls the data from the R. Casey Library events calendar.

Figure 2. Screenshot of R. Casey Library homepage in mobile view.

Figure 2 shows a screenshot of what the R. Casey Library homepage looks like when users are accessing the page from a mobile device. The menu has been collapsed into a button on the upper left-hand corner, which displays the full menu vertically when the button is tapped. The mobile site was designed using responsive breakpoints to move the website sections into a single column and adapt the website to fit the dimensions of the mobile screen. Highlights from the digital map repository appear as a gallery which users can browse by scrolling or click through to access the entire collection.
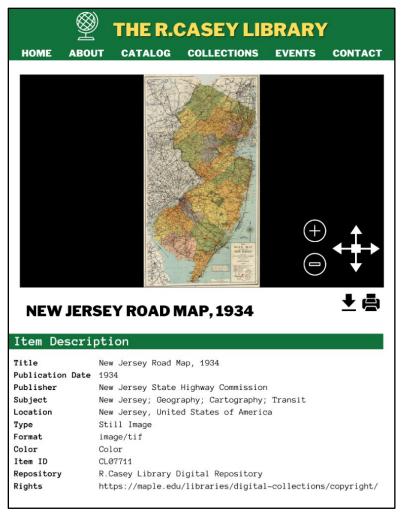
Figure 3. Screenshot of an item record for a map in the digital repository.

Figure 3 shows a sample item record from the R. Casey Library digital map repository. The record displays various DC metadata elements and gives users the option to download or print the item record. When users click the download button, they are given the option to download the metadata record in XML format. Users are also able to download or print a copy of the image in the repository object. Mirador displays the image with the ability to zoom in without losing image quality and to control the direction the image view.

Figure 4 depicts a record for an e-journal article that was accessed through JSTOR. ExLibris Summon indexes various sources and presents search results based on user search queries. Users are able to narrow their search through various filters and specifications. JSTOR provides users with the option to download the PDF of an article and also offers a handy "cite this item" button, which presents the article citation in APA, MLA, and Chicago formats and includes various ways to export the citation.
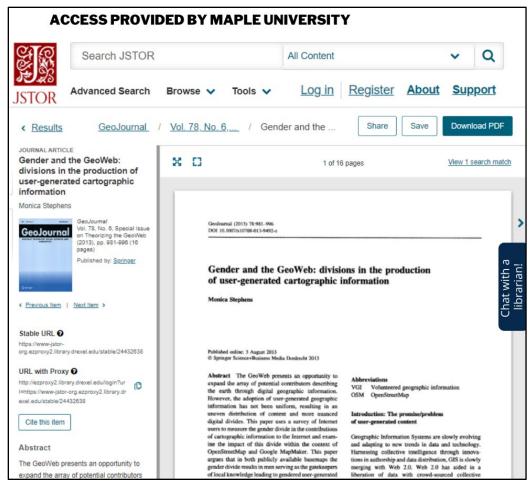
Figure 4. Screenshot of an e-journal that is displayed through JSTOR.

Conclusion

The R. Casey Library provides faculty, students, and researchers 24/7 access virtually to maps, documents, e-journals, e-books, and other resources with the click of a button. Through a combination of software, metadata, and user-friendly interfaces, the R. Casey Library is able to provide geographic information at the fingertips of users whether they are on campus or accessing the library remotely via a computer or mobile device. Discoverability is improved through OAI-PMH harvesting and use of metadata standards. Islandora and Mirador work together seamlessly to provide a high-quality viewing experience with zooming capabilities at high resolutions. The highly extensible nature of the software platforms used by the library allow it to adapt and best meet the changing needs of users. The R. Casey Library emphasizes user experience by ensuring ease of use and accessibility across desktop and mobile views for a smooth browsing experience.

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