Date: January 29, 2019
PI: Suzanne Stapleton, Co-PI Chelsea Dinsmore
Project Title: Discovery and usage of digital items with enhanced metadata: a test case of machine-aided indexing

Funds Requested: $4,925
Cost Share: $7,079
Total Funds expended: $12,004
Funds Remaining: none

Brief Description of Project:

This project was designed to assess the benefits of enhancing metadata of digital items with machine-aided indexing. Metadata for digital records has significant impact on the record’s discoverability. “Academic libraries have invested much time and effort in developing digital collection and institutional repositories, and having insight into how these digital assets are discovered by search engines is necessary” (Yang, 2016). Machine-aided indexing offers the potential for efficiently and comprehensively adding descriptive subject terms to digital record metadata to improve item usage. The assessment design compared rates of use of new digital resources with and without expanded subject descriptions in the METS records. This technique offers a unique opportunity to inform development of best practices for metadata using patron-driven behavior. Results from this project will contribute to the broader professional discussion of best practices for digital initiatives in general and automated indexing in particular.

This research project was developed to accompany the digital initiative, Preserving Florida’s Agricultural History: Digitization of the Florida Cattleman & Livestock Journal. The project was designed as one of the first test cases by an academic library of Access Innovations’ Data Harmony machine-aided indexing. Results of this project contribute to the George A. Smathers Libraries strategic directions for digital and digitized collections to “create efficient systems and workflows to facilitate the creation and management of accurate and appropriate metadata for Library resources” (University of Florida George A. Smathers Libraries Strategic Directions, 2014). Results of this project may also contribute to national conversations on best practices for efficient and sufficient metadata creation for digital collections.

Full proposal is available at: http://ufdc.ufl.edu/IR00010234/00001
Promotional video is available at:
Results:
As a result of this Strategic Opportunities Program Grant, the project team accomplished a number of goals, developed digital skills and learned information useful to future digital initiatives.

Enhanced metadata (selection of additional Dublin Core subject descriptors)

- 283 subject terms vetted by the research project Advisory Team were added to UF’s instance of the Ithaka S+R JSTOR thesaurus
- Library staff skills were expanded in use of Access Innovations’ Data Harmony software to use machine-aided indexing
- 458 names of state importance were contributed to the Name Authority thesaurus under development
- A publicity campaign was conducted to encourage patron use of the new digital collection in UFDC in anticipation of item usage assessment. Publicity included the published article, *Historic Florida Cattleman Moves Online* (Appendix B), Preserving Florida’s agricultural history at the University of Florida: Florida Cattleman & Livestock Journal LibGuide and numerous social media posts (see Appendix C).
- A rubric was developed for manual selection and prioritization of subject terms representing a journal issue. This method was developed in response to delays in access to the Access Innovation machine-aided indexing software. The rubric is used to assign quantitative values representing importance of the terms based upon the terms locations in a specific issue of the serial. The goal of the rubric is to standardize selection of appropriate subject terms and minimize researcher bias. See Appendix D for rubric.
- Machine-aided indexing software licensed from Access Innovations generated frequency reports of subject terms from the modified JSTOR thesaurus for 30 randomly selected issues

Impact of enhanced metadata on digital material usage:

- Unanticipated constraints in the framework of Sobek CM, the platform that hosts the University of Florida Digital Collection (UFDC), prevented the assessment component of this project. As a result, the impact of enhanced metadata on usage of digital items remains unanswered.
- A previously working search element was discovered to be broken, most likely during a recent code update to Sobek CM. The error was reported and discussed with the research team, Library IT and Digital Support Services on various dates and formats. Appendix E provides a detailed description of the system impediments. A request to fix Sobek has been submitted to the software development community and is under review by Library IT.
Lessons Learned: Project Team Recommendations:

(1) The research team for this project recommends that system error in Sobek CM be corrected so that future scholars can readily access and use search results from serials in the University of Florida Digital Collections. Although the results of these limitations are documented for the Florida Cattleman & Livestock Journal, the same limitations will apply to all other digitized serial collections in UFDC, including the Florida Digital Newspaper Library. It will be in the best interests of the UF Libraries to provide additional support to DSS and Library IT to address and remedy feature limitations in Sobek CM, the platform supporting UFDC.

(2) The research team for this project recommends providing greater explanation to patrons of existing search functionality in UFDC. Specifically, the explanation should mention that “Text Search” offers the ability to search a digital items’ full text and will NOT include metadata; “Advanced Search” will only search metadata and NOT include full text.

(3) The research team for this project recommends publicity campaigns that include social media be planned as beneficial accompaniments to digitization projects. Social media campaigns with external partners should include agreement upfront to like, share and retweet posts about the project to increase visibility.

Budget: (add more lines as necessary)

<table>
<thead>
<tr>
<th>Expenses Categories (add lines as necessary)</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Personnel OPS Lauren Cooney, student research assistant</td>
<td>$4,945.15&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Stapleton, Suzanne, PI (5%)</td>
<td>$3,741</td>
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<td>Dinsmore, Chelsea, Co-PI (1%)</td>
<td>$1,064&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>Van Kleeck, David (1%)</td>
<td>$700&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>Spears, Laura (1%)</td>
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<td>Perry, Laurie (1%)</td>
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<td>Phillips, Robert</td>
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<td>Total</td>
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<sup>a</sup> A student research assistant, Lauren Cooney, was hired on OPS funding at $15/hour for this project for Spring and Summer 2018. The student was a senior Veterinary Medicine undergraduate whose knowledge and experience in the cattle industry was an additional benefit to this project.

<sup>b</sup> Cost-share provided by library personnel
Still to be completed:

A final comparison of subject terms from the randomly selected issues using Access Innovation’s Data Harmony machine-aided indexing reports versus priority subject terms identified via the rubric for manual selection is planned. It was not possible to complete this comparison due to access delays to Access Innovations’ Data Harmony software.

Updated Timeline:

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<th>Activity in months</th>
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<td>Hired and trained OPS</td>
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<td>Developed advisory team</td>
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<td>Initial evaluation of project thesaurus</td>
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<td>Identified 283 custom terms and 458 cattle industry names to add to thesaurus and Name Authority</td>
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<td>Developed rubric for manual selection of priority subject terms</td>
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<td>Reported Sobek search functionality concerns</td>
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<td>Custom terms added to UF JSTOR thesaurus using Access Innovation’s Data Harmony</td>
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<td>Access Innovation’s Data Harmony Machine Aided Indexing reports generated on random sample of issues</td>
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**Appendices**

A. Background on digital material and machine-aided indexing
B. Copy of published article, Historic Cattleman Moves Online
C. List of project publicity
D. Rubric for manual selection of enhanced metadata
E. Detailed description of structural limitations of Sobek CM
Appendix A. Background on digital material and machine-aided indexing

**Background on Digital Material**

The *Florida Cattleman & Livestock Journal* provides a unique record documenting the evolution of Florida’s cattle industry, an influential industry on the historic development of the state. The journal documents changes in ranching practices through articles by UF/IFAS faculty, farmers, oral historians and advertisements. Influential families in Florida history are often featured, as many have been involved in cattle ranching. With the newly digitized *Florida Cattleman & Livestock Journal*, we anticipated that patron interest would be greatest in searching for historic production practices and names of family, farms or events. UF/IFAS scholars provide recommendations to farmers on issues of concern that persist today such as grassland management, the role of feed additives to cattle nutrition, beef prices and marketing regulations. Examples of prominent names of interest include the Adams and Lykes families, Silver Springs Rodeo and organizations such as Block & Bridle Clubs, 4H programs and Florida Brangus Association, representing improved cattle breeds of Brahman and Angus heritage among many others. This project was designed to test whether issues of the *Florida Cattleman & Livestock Journal* with additional subject description terms would be used more frequently by patrons using the University of Florida Digital Collections (UFDC).

**Background on Machine-Aided Indexing**

Machine-aided indexing compares the full text of a digital record to a controlled vocabulary (thesaurus) to produce a report on the frequency of terms. From this we can determine which terms to add to the UFDC record in order to enhance discoverability. The first step to prepare for machine-aided indexing was to obtain an appropriate thesaurus. Ithaka S + R’s JSTOR Thesaurus was selected as the most appropriate in breadth of subject coverage since the thesaurus would also be used in the electronic theses & dissertations (ETD) project. George A. Smathers Libraries obtained license permission to install the JSTOR thesaurus. The PI worked with an Advisory Team and a Vet-Med student assistant for greater expertise in Florida’s ranching industry to identify regionally important terms. Upon review of the JSTOR thesaurus, the project team determined that a significant number of regionally important terms to Florida’s cattle industry were missing and should be added. In the process of identifying important production/industry terms, the project team collected important cattle family names to add to the Name Authority thesaurus in development. These names will be a valuable addition to the thesaurus that will be used for other UFDC projects as well. Customizing the controlled vocabulary in the thesaurus enables current and future projects, to identify the frequency of terms of most importance to our patrons.

Access Innovations determined that a maximum of 11 subject terms in metadata is beneficial, based upon work with other clients (Marjorie Hiava, Taxonomy Fundamentals Training 10/13/2017). The *Florida Cattleman & Livestock Journal* catalog record
includes 3 standard Library of Congress Subject Headings (see Fig. 1), leaving a maximum of 8 additional terms. The research team elected to limit additional subject terms to a maximum of 5 per record for production/industry terms and up to 5 terms for a separate thesaurus, the Name Authority.

Fig. 1 Standard subject terms for *Florida Cattleman & Livestock Journal*
Appendix B. Copy of published article

**UF Beef Research...**

(Continued from page 99)

consumers, who are increasingly health conscious.

Some consumers say they want healthier beef, and when UF/IFAS researchers surveyed more than 1,000 people they found consumers would be willing to pay between $1 and $1.50 more per pound for healthier fat in their beef.

Next, researchers will look for genes responsible for these differences in fatty acid content, Mateescu said. Researchers and ranchers will use this data for cattle selection and management.

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**Historic Florida Cattleman Moves Online**

*By Suzanne Stapleton and Lauren Cooney*

*Contact information: suzanne@ufl.edu*

In a joint effort to preserve and share one of Florida's most valuable agricultural resources, the University of Florida George A. Smathers Libraries, in collaboration with the Florida Cattlemen's Foundation, is making historic issues of the Florida Cattlemen & Livestock Journal available online. Now it will be easy to browse, research and share published stories from the past. These digital issues are being added to the University of Florida Digital Collection, a large and growing collection of material freely available to the public.

The Florida Cattleman magazine documents changes in ranching practices through articles by UF/IFAS faculty, farmers, veterinarians, oral historians, and advertisements. Influential families in Florida history are also featured, as many have been involved in the livestock industry. Jim Cusick, Florida History Librarian describes cattle ranching as "one of the state's oldest and most-defining professions". As such, the Florida Cattlemen & Livestock Journal provides not only an inside testimony to the evolution of Florida's cattle industry, but also Florida state history:

"The Florida Cattleman is the principal publication documenting the rise of the ranching industry in Florida during the 20th century. ...Florida Cattlemen remains one of the best historic sources about that era, as well as chronicling health issues related to livestock, introduction of new breeds, changes in the economy and marketplace for cattle, legislative agendas, and environmental concerns." Jim Cusick, Florida History Librarian.

The Florida Cattlemen's Foundation understands the value of the historic Florida Cattleman and its role in the state's history. To access the online issues, visit <http://digital.library.ufl.edu/digitalcollections/flufl.html>.

Recent UF Animal Sciences graduate, Lauren Cooney, has contributed to the success of the project.

Bob Stone, columnist for The Florida Cattleman & Livestock Journal, helped collect issues from the Florida Cattlemen's Association archives in Kissimmee.

(Continued on page 102)
Cattleman & Livestock Journal magazine as part of its mission to support education and research on Florida’s rich and unique ranching history. Realizing the need for long-term, professional preservation of this serial, Robert (Bob) Stone, a columnist for the Florida Cattlemans & Livestock Journal, reached out to longtime family friend and UF Agricultural Librarian Suzanne Stapleton. Stapleton quickly got to work, receiving an award from Project Ceres and permission from the Florida Cattlemens Association to digitize all issues of the magazine from inception through 1988.

Stone and Stapleton pored through the Florida Cattlemens Association archives in Kissimmee to locate magazine issues missing from the library’s collection. They were surprised to discover two original issues of the magazine—four page publication from February 1934 and a 16-page black and white issue published October 1936. FCA generously loaned 11 volumes and donated duplicate volumes to the library. Stapleton transported these items to Marston Science Library to prepare for digitization.

Digitization is the process of scanning print publications to convert them to digital format. Before scanning, data describing each magazine issue is collected and entered into a spreadsheet. Recording accurate “metadata” is a key step in any digitization project because this information helps users find the items online. Lauren Cooney, UF Animal Science graduate, joined the project team in January 2018 to assist with data collection, research and publicity.

Scanning was done at the Digital Production Services unit at the Interim Library Facility in Gainesville. Every page of every issue was scanned at 300 dpi to produce high-resolution images, enabling close-up view of details. Digitization and online organization of the magazine has been a team effort at the University.

Many readers may be unaware that the serial was published under three titles: the Florida Cattlemans (1934-1936), the Florida Cattlemans & Dairy Journal (1937-1944) and the Florida Cattlemans & Livestock Journal (1944-present). The very first issue was published by the Florida State Cattlemans Association with E. L. Walker as editor. To our knowledge, no subsequent issues were published until October 1936 when J. E. Williams, son of FCA’s long-time president, P. E. Williams, became editor. In 1940 the magazine was purchased by the Kissimmee Gazette, where Aldus Cody became editor, and his brother Bob Cody established Cody Publications and published the magazine beginning in 1942. By the 1960s, the Florida Cattlemans & Livestock Journal was touted as the “third largest livestock magazine in the country” and “the largest state cattle magazine in the country.” When the Livestock Publications Council was formed in 1974 to promote cooperation among livestock industry publishers, the Florida Cattlemans & Livestock Journal was one of the original eleven publications represented. In 1978 the Florida Cattlemens Association purchased the magazine and Cody Publications continued printing the magazine until 1991. The magazine has always been the official publication of the Florida Cattlemens Association.

Despite its importance, the regional magazine is featured in less than 25 library collections. Through this project, the historic print issues will be professionally preserved at the UF library and access to 53 years of history will be freely available online. Online issues can be read with virtual page-turning and readers can zoom in for close-up views of any article. Full-text searching makes it easy to locate topics of interest to farmers, teachers, family genealogists and agricultural
Digitization of the Florida Cattlemen & Livestock Journal was made possible with funding provided by Project Ceres, a partnership established in 2012 to preserve and digitize historic agricultural publications. Project Ceres partners are the Center for Research Libraries, United States Agriculture Information Network and Agriculture Network Information Collaborative.

The project team was excited to premiere the collection at the Florida Cattlemen’s Convention and Trade Show in Orlando. The promotional campaign led by Cooney received great feedback from those in attendance. Many were excited to navigate the online issues and search their own surnames and family ranches. Tom Harper, Chairman of Florida Cattlemen’s Foundation said it best, “This project is of extreme importance to our organization as it will help tremendously with our charter to promote and preserve our heritage, educate this and future generations about our industry, develop knowledgeable future leaders, and document and make easily accessible the research that sustains us.”

Explore the online issues or find more information on this project at [http://guides.uflib.ufl.edu/floridacattlemen](http://guides.uflib.ufl.edu/floridacattlemen) with direct links to the three titles and more on this exciting collection.
Appendix C. List of project publicity

Promotional Video

Presentations:
   • UF/IFAS Annual Beef Short Course, 5/9/2018, estimated attendance 200
   • Florida Cattlemen’s Association Board of Directors Annual Meeting, 6/20/2018
   • Florida Cattlemen’s Association Annual Convention [tabling]


Social media presence from University of Florida George A. Smathers Libraries:
   o Twitter
      9 posts from June – October, 2018
   o Facebook
      10 posts from June – October, 2018
Appendix D. Rubric for manual selection of enhanced metadata

Rubric for manual priority selection of enhanced metadata subject description terms. Manually selected terms must be featured in at least one of two locations: Cover and Table of Contents (TOC) unless otherwise suggested by the investigator as an issue-important term or author name. Note that not all issues contain text for cover topics and/or table of contents.

The actual published term or phrase is captured and investigators may identify the preferred term (e.g. stud directory may = horse breeding). If there are multiple variations of a term, the most probable search term is made preferred. Key term phrases with repeated terms within them may be consolidated to allow capture of other issue topics, e.g. ‘Brahman breeders, ‘Brahman directory,’ and ‘Brahman sale’ would be lumped to simply ‘Brahman.’ Terms in the standard metadata for the item (e.g. already in UFDC metadata) as LCSH or FAST will not be considered.

A list of these terms is generated and location-based point values distributed.

<table>
<thead>
<tr>
<th>Category</th>
<th>Notes</th>
<th>Points Value</th>
</tr>
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<tbody>
<tr>
<td>Location-Based</td>
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<tr>
<td>Issue cover topics</td>
<td>Terms featured on front cover. Not applicable to all issues. Include terms from cover photo caption.</td>
<td>+3</td>
</tr>
<tr>
<td>Table of contents</td>
<td>Terms featured in the digitized TOC. Not applicable to all issues. Ignore ‘Schedule of events’ and side panel TOC in UFDC.</td>
<td>+2</td>
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Terms on the previously generated list are awarded point values according to their informative values. Additional points are added based on term properties below. All points are summated and the top 7 valued terms selected.

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<tr>
<th>Term Properties</th>
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<tr>
<td>Florida Important (Events, Names, Organizations, and Production Practices)</td>
<td>Events are of national interest or unique to Florida, e.g Kissimmee Rodeo. Production practice terms are from UF customized JSTOR vocabulary. Include terms from cover photo caption.</td>
<td>+4</td>
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<tr>
<td>Note: Names of Families, Ranches, and Organizations will be added to Naming Authority vocabulary. Names of Geographical Locations will be added to</td>
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the GeoThes, a thesaurus of geographical terms. These terms will not be used as subject description terms but will be graded by the same rubric and point values.

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<tr>
<th>Issue Theme</th>
<th>Some issues are assigned <strong>monthly</strong> or <strong>annual</strong> themes which capture overarching issue topics. Not applicable to all issues, e.g. Better Bulls, Annual stud directory. Investigators may identify an issue theme.</th>
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<td>Repetitive, Non-informative</td>
<td>Terms not adding to the description of the specific issue, e.g. bovine, ranching, fair, rodeo, show, sale, tour. These will generally be omitted with the initial manual selection of key terms.</td>
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After the grading process, the top 5 valued terms will be highlighted in each category according to their classification as either a production term (Green) or name/organization/Geoterm (Blue). Investigators may use the article author names, preferably unique, for issues lacking the minimum 5 terms in the name/organization/Geoterm category. Investigators will conduct a Quality Control of these top 5 valued production terms and top 5 names/organizations/Geoterms to confirm appropriateness. In event of tie, investigators will select the most appropriate subject description terms. General guidelines are to choose the more unique term, specific to the particular issue to include in enhanced metadata. During this process, investigators will capture and add new terms with high point values into the customized JSTOR vocabulary. If a ranch or family name is partial on the cover or in the TOC, find the full name within the article in add to the Naming Authority vocabulary. Names should be in the preferred format: “Last name, Suffix; First Name.” Capture names of articles about that person (e.g. Kowbelles, CowBelles).
Appendix E. Detailed description of structural limitations of Sobek CM

Sobek CM provides the means to search metadata (Advanced Search) or full text (Text Search tab). Although Boolean search strings are not well-supported, phrases can be searched in quotes. Results are generated rapidly and displayed with facets for further refinement. Unfortunately, results from searches within serials currently displays results at the parent record level and not at the individual item level, which make it functionally impossible to locate desired terms in the individual issues of *Florida Cattleman & Livestock Journal* in UFDC. This same limitation in functionality applies to all serials in UFDC, including for example the Florida Newspaper Project and is under review by the Library IT department.

Alternative searching of UFDC via Google was discussed by the research team. The algorithm for prioritizing results in Google is not known so it is unclear whether Google searches include metadata and the frequency of updating data harvests by Google is unknown. In order to evaluate usage of UFDC records with and without enhanced metadata, researchers would need to know whether Google searches include metadata terms and when the records are harvested to be able to start an assessment period for issues with and without additional Dublin Core subject terms (the “enhanced metadata” sample).

Assessment of usage by Google Analytics is also problematic due to the current error in Sobek. Since search results default to the parent level record, usage of individual issues are not accurately recorded.

Library patrons are better served when directed to the serial issue and/or page where search terms appear. In June three subject terms (Palooka, Swollen joints and Florida – Arcadia) were added to the metadata of the October 1944 issue of the *Florida Cattleman & Livestock Journal* to test search & discoverability of enhanced metadata. Metadata searches in UFDC, using Advanced Search, result in facets showing the frequency of the search term, so it appears that Sobek conducts the search for metadata terms correctly. However, the display of the results needs to be adjusted to show the instances of the term by the issues where it appears instead of by the journal title. Full text search (Text search) displays the actual issues with the search terms highlighted, but when the item is selected, the serial parent record, with all volumes is displayed (Fig 1). Advanced Search of metadata shows results in facets (Figs 2, 3) but again when a term is selected, the user is directed to the serial parent record with no indication of the issue(s) where the search term appears (Fig 4).

Example: Search “palooka” and “florida cattleman”
Fig. 1 Full text search (Text Search) for “palooka” and “florida cattleman” yields eight instances of Palooka but clicking on any of the issues brings user to the all volumes list for this serial.

Fig. 2 Search using Advanced Search feature for “palooka” and “florida cattleman” to search only for metadata.
Fig 3. Sobek successfully searched metadata and found 1 instance of Palooka in the subject field.

Fig 4. Clicking on “Palooka” in the facets brings users back to the journal title (parent record).