INF 384M TOPICS IN DESCRIPTION AND METADATA:
THEORIES & APPLICATIONS OF METADATA

University of Texas at Austin
Instructor: Dr. Amelia Acker
Spring 2017

Course Information
Class day and time: Tuesdays, 9:00 am – 12 pm
Class location UTA 1.502

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Course Description
Introduction to the theoretical foundations, history, principles, and research surrounding the representation of information, digital collections, and data with metadata, with emphasis on concepts of standardization, infrastructure, formats, and exchange. Major topics will include metadata types, value and content standards, formats, data interchange standards and protocols. The course introduces participants to the examination and analysis surrounding issues of effectiveness, economics, values and audience surrounding different types of metadata applications. Provides background for further studies in information organization, preservation, and database management.

Course Rationale
This course examines the nexus between people, information, and technologies in systems that use metadata to provide access to information, data, and collections. Representing information in systems and providing access to it with infrastructure are core functions of the information professions. Many information professionals carry out their work with metadata standards, systems, applications, and techniques that incorporate descriptive and content standards, data structures, controlled vocabularies, and database systems, amongst other kinds of networked database technologies. As contexts for data collection and analytics increase, information professionals such as digital archivists, data librarians, and digital asset managers are increasingly involved in standards development and implementation. The ways in which metadata is created to describe, present, and use information influence the ways that users access evidence and create traces in information infrastructures—ranging from finding books and historical manuscripts in libraries, to writing tweets and emoji on social media platforms, to sending and receiving text messages with mobile devices, to purchasing things from Amazon with 1-click ordering. In fundamental ways, metadata schemas shape how publics create and access the cultural record, form cultural memory, build identities and relationships to the past.

The course is designed to teach fundamental concepts and theories of metadata applications in ways that will be relevant to professional practice in information, library, archival, and cultural heritage institutions. The course will focus upon metadata concepts of enduring value that can be used in the analysis, use, and administration of information services that provide access to information in structured collections. Given the broadness of the topic, the course will be structured around a handful of themes connected to contemporary debates and information artifacts (such as W3C payment standards, telephony metadata and surveillance, preserving tweets, Google Maps and GTFS, Unicode Standard v6.0 , amongst others). While neither historically nor thematically exhaustive, these themes capture significant horizons in the future of metadata applications, both in terms of technical innovation and social change in society as we move from an information age to a data society. We will be especially concerned with how information professionals and information institutions figure into these themes, and how our roles may change as the metadata applications and structures expand. While it is usual to cast a distinction between technical and social dimensions when discussing technology, in this course we consider technological innovation as a complex process involving not only technical objects, but also people, ideas, organization, social coordination, markets, politics, and culture.

By the end of the course, participants will be familiar with contemporary descriptive standards, format registries, data interchange, and access tools as related to what data scholars identify as the "data lifecycle" or the "metadata continuum". Students will also be introduced to a variety of web based, social and interactive metadata applications that are currently employed by archives, libraries, and museums to provide access to analog and digital collections, including bibliographic networked systems and social media APIs. The course will combine foundational themes from archival theory, concepts from the philosophy and history of information, debates from critical data studies and infrastructure studies, with practical applications of metadata standards, including interactive practicums and group work. There will be emphasis on emerging practices of data management, standardization, network infrastructures, and new contexts of metadata collection for re-use. Students will gain an overview of a wide range of metadata topics related to information services, and will be introduced to concepts that will be developed in more depth in other courses throughout the curriculum. The course provides participants background for further studies in reference, metadata transformation, open linked data, information organization and retrieval, database management, issues in digitization and digital preservation.

Course objectives and learning outcomes

The approach of this course is to expose participants to a range of metadata applications that currently shape and have a history of shaping our everyday lives as part of retrieving and accessing information. Students will expand their knowledge base about critical data studies, the history of representation, cataloging and classification, standards and formats. Course participants will learn historical facts about infrastructure and standards development in a variety of metadata applications that allow participants to understand how technological innovation is a complex process involving people, ideas, social coordination, markets, and culture. Upon completion of this course, students will have demonstrated their understanding of, and familiarity with the theories and applications of metadata throughout the data lifecycle, including the processes of creation, description, classification, standardization, processing, annotation, duration, storage—and the opportunities and challenges for information professionals at each stage.

- Describe principles, types, and applications of metadata

- Apply selected metadata standards to the creation of metadata descriptions according to local needs
- Learn how to plan and execute a metadata project, including how to select appropriate metadata standards to support a defined purpose and audience
- Develop guidelines, documentation, and policy for metadata workflows and processes
- Familiarity with quality control, crosswalks and transformation
- Introduction to a wide array of current structural, content, encoding standards, and an understanding for how standards evolve within communities
- Tools and techniques for metadata creation and manipulation

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Method of instruction

Each week the instructor will give a lecture and lead classroom discussion, supported by PowerPoint slides, handouts, and online demonstrations. We shall discuss a selected set of readings, all of which are required. It is important that everyone comes to class well prepared and having read the material ready to discuss the week's readings. After discussing the readings, we will have in-class labs, tool tutorials, or small workshops. Following these practicums, we will have a group discussion after the presentations to discuss the use, need, and future possibilities of these tools, systems, and practices. Course participants are expected to be actively involved in these group discussions, labs and practicums. A portion of your grade will be based on your preparation for and participation in the class discussions and practicums. We will adopt a studio approach to the labs and projects and incorporate a variety of peer learning techniques throughout the course.

COURSE POLICIES

Instructor Communication: E-mail is the official mode of communication for the university and the most reliable means of contact for me. It is always helpful if your e-mail includes a targeted subject line that begins with "INF 385M." Do not use the messaging facilities in Canvas; these messages do not arrive in my e-mail in-box. Please allow a 24-hour window for email responses and plan accordingly. Please limit emails to 5 sentences or less. If your query about a reading or an assignment for the class takes more than 5 sentences to express, please come see me face to face in office hours. If you do not receive a sufficient answer to a question in more than one follow-up email (that is, a total of 2 personal emails from me) about the same question, please come meet with me. If you cannot make office hours, please email me to arrange an appointment. These policies are based on my belief in the sanctity and value of high-bandwidth communication (that is, face to face conversations).

Classroom Etiquette: Please come on time to class prepared, bringing soft or hard copies of readings for reference; bring appropriate tools for writing and note taking. Bring personal machines powered up, or plug them in before class begins, silence phones. Small snacks and drinks are welcome but meals are not.

Habits of mind: Respect for others; imagination; wonder; willingness to try and fail in front of others; empathy for others—in the past, present and future. I will discuss what I mean by habits of mind on the first day and throughout the course.

Copyright Notice: These materials may be protected by copyright. United States copyright law, 17 USC section 101, et seq., in addition to University policy and procedures, prohibit unauthorized duplication or retransmission of course materials.

Statement on Classroom Recording: To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

On original work: cheating and plagiarism will not be tolerated. If an assignment turned in for credit is found to have been plagiarized, you will receive a grade of 0 points and a formal reprimand in your student file. You will be subject to the University's disciplinary penalties, including the possibility of failure in the course.
Late assignments: I do not accept late assignments. Students who anticipate difficulties with completing assignments on time should consult with the instructor as soon as possible so that alternate solutions can be discussed. When negotiated in advance, arrangements can often be made.

Attendance: Attendance is not taken. You do not need to inform me of absences, nor do you need to "make up" anything if you are absent. While participation is an important part of your grade, and attendance is important, there are no specific requirements for mandatory attendance.

UNIVERSITY POLICIES

Religious holy days: A student who misses classes or other required activities, including examinations, for the observance of a religious holy day should inform the instructor as far in advance of the absence as possible, so that arrangements can be made to complete an assignment within a reasonable time after the absence.

Use of E-mail for Official Correspondence: All students should become familiar with the University's official e-mail student notification policy. It is the student's responsibility to keep the University informed as to changes in his or her e-mail address. Students are expected to check e-mail on a frequent and regular basis in order to stay current with University-related communications, recognizing that certain communications may be time-critical. It is recommended that e-mail be checked daily, but at a minimum, twice per week. The complete text of this policy and instructions for updating your e-mail address are available at http://www.utexas.edu/its/help/utmail/1564

Documented Disability Statement: You will need to provide documentation to the Dean of Student's Office so the most appropriate accommodations can be determined. Specialized services are available on campus through Services for Students with Disabilities (SSB 4.104, 471-6259). Any student who requires special accommodations must obtain a letter that documents the disability from the Services for Students with Disabilities area of the Division of Diversity and Community Engagement (471-6259 voice or 471- 4641 TTY for users who are deaf or hard of hearing). Present the letter to the professor at the beginning of the semester so that needed accommodations can be discussed. The student should remind the professor of any testing accommodations no later than five business days before an exam. If you plan to make use of specialized services through SSD please inform me before the second class meeting. For more information, visit http://www.utexas.edu/diversity/ddce/ssd/

Behavior Concerns Advice Line (BCAL): If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual's behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit http://www.utexas.edu/safety/bcal.

Emergency Evacuation Policy: Occupants of buildings on the UT Austin campus are required to evacuate and assemble outside when a fire alarm is activated or an announcement is made. Please be aware of the following policies regarding evacuation:

- Familiarize yourself with all exit doors of the classroom and the building. Remember that the nearest exit door may not be the one you used when you entered the building.
- If you require assistance to evacuate, inform me in writing during the first week of class.
- In the event of an evacuation, follow my instructions or those of class instructors. Do not re-enter a building unless you are given instructions by the Austin Fire Department, the UT Austin Police Department, or the Fire Prevention Services office.

Policy on Scholastic Dishonesty: Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. For further information, please visit the Student Judicial Services web site at http://deanofstudents.utexas.edu/sjs/

University of Texas Core Values and Honor Code: The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community. As a student of the University of Texas at Austin, I shall abide by πthe core values of the University and uphold academic integrity.

Grading Scale

This class employs a plus/minus grading system. For more information on this system, please consult the University's *General Information Catalog*. Below is the grade scale the University employs and which will be used in this class:

Meets major requirement		**Does not meet requirement**	
Grade	**Points**	**Grade**	**Points**
A	≥93.00	C-	70.00-72.99
A-	90.00-92.99	D+	67.00-69.99
B+	87.00-89.99	D	63.00-66.99
B	83.00-86.99	D-	60.00-62.99
B-	80.00-82.99	F	<60.00
C+	77.00-79.99		
C	73.00-76.99		

Early Access to the First Social Media Presidency Data Archive

A note on assignments and data used in the course: In October of 2016 the White House announced the digital transition for the Obama administration, with plans to preserve and open President Obama's social media data archive. In November, I proposed to use this data archive in this new course, where students would make use of the data sets through the term and in their final projects. I believe that this cutting-edge, contemporary, and historic data archive represents an opportunity for soon-to-be information professionals to engage with problems, techniques, policy and social constraints that social media presents to our current digital culture and to stewards of the cultural record. On January 5, 2017, the White House announced a number of peer new lens projects that would be using the data archive in creative and innovative ways that use the archive, including our class. We have early access to the data in a number of forms (CSV, JSON, XML) and it will be made available to you on a shared drive.

As a result, I am currently re-designing the assignments of the course so we can make the most of the 44th administration's social media data. Given that I am not familiar with the participants' technical skills, I want to do some polling to get a sense of what your desires are as a group, and what is possible to plan and evaluate given the course's objectives and stated learning outcomes. I expect that it will take ~3 weeks to come up with the assignment rubrics that your final grade will be based on. I aim to make the projects, assignments and labs in the course accessible and inclusive to a range of technical backgrounds. I encourage students to take the data and consider creating a personal project that you could sustain beyond the class; that would contribute to your personal portfolio, and become a cornerstone of your professional dossier as you go on the job market.

As of now, I created this assignment forecast:
- Metadata critique: 5-7 page critical essay that describes a current interoperability problem with a metadata standard, structure, or competing systems.
- Standards presentation: in class 5-7 minute class presentation that engages with a contemporary metadata standard (perhaps data trace or platform specific).
- Project proposal: 10-12 page proposal report that describes the implementation of a metadata project using the Obama administration's social media data archive
- Final visualization and presentation.
- In-class participation, including studio lab assignments.

We will discuss and negotiate this plan in the first 3 weeks of the course. These assignments represent current plans. However, as we move through the term these plans may change to enhance the learning objectives and leverage the social media data archive. These changes will be communicated through course communication channels and should be expected.

COURSE AT A GLANCE

Week, Date	Topic	Note or Deadline
Week 1, January 17	Introduction	
Week 2, January 24	Definitions	
Week 3, January 31	Problems	
Week 4, February 7	Infrastructures	
Week 5, February 14	Descriptive metadata	
Week 6, February 21	Administrative metadata	
Week 7, February 28	Preservation metadata	
Week 8, March 7	Technical metadata	
Week 9, March 14	Spring break	Class cancelled
Week 10, March 21	Use Metadata	
Week 11, March 28	Scales	
Week 12, April 4	Semantic Web	
Week 13, April 11	Open and Linked Data	
Week 14, April 18	Cultures	
Week 15, April 25	Futures	
Week 16, May 2	Final week/wrap up	

READING SCHEDULE

Week 1: 17 January 2017: Introduction
Introduction to the syllabus, data, readings, resources, and course policies.

Week 2: January 24, 2017: Definitions

- Kitchin, Rob. "Chapter 1. Conceptualising Data," The data revolution: Big data, open data, data infrastructures and their consequences. Sage, 2014.
- Duval, Erik, et al. "Metadata principles and practicalities." D-lib Magazine 8.4 (2002): 16.
- Gilliland, Anne J. "Setting the stage." Introduction to metadata 3.0 (2008): 1-19.

Week 3: January 31, 2017: Problems

- Doctorow, Cory. "Metacrap: Putting the torch to seven straw-men of the meta-utopia." Retrieved June 10 (2001): 2003. http://www.well.com/~doctorow/metacrap.htm
- Eriksson, M. (2016). Close reading big data: The Echo Nest and the production of (rotten) music metadata. First Monday, 21(7). http://firstmonday.org/ojs/index.php/fm/article/view/6303/5530#1
- Tunguz, Tomasz, and Frank Bien. "Chapter 2. Four Problems with Data Today: Breadlines, Obscurity, Fragmentation, and Brawls," Winning with Data: Transform Your Culture, Empower Your People, and Shape the Future. (2016).

- Bruns, Axel, and Katrin Weller. "Twitter as a first draft of the present: and the challenges of preserving it for the future." Proceedings of the 8th ACM Conference on Web Science. ACM, 2016.

Week 4, February 7: Infrastructures

- Kitchin, Rob. "Chapter 2. Small Data, Data Infrastructures and Data Brokers," The data revolution: Big data, open data, data infrastructures and their consequences. Sage, 2014.
- Zimmer, Michael. "The Twitter Archive at the Library of Congress: Challenges for information practice and information policy." First Monday 20.7 (2015). http://firstmonday.org/article/view/5619/4653
- Nunberg, Geoffrey. "Google Books: A metadata train wreck." Language Log 29 (2009). http://languagelog.ldc.upenn.edu/nll/?p=1701

Week 5: February 14, 2017: Descriptive Metadata

- Elings, Mary W., and Günter Waibel. "Metadata for all: Descriptive standards and metadata sharing across libraries, archives and museums." First Monday 12.3 (2007).
- Gill, T. (2008). Metadata and the Web. En: Baca, Murtha (ed.). Introduction to metadata.
- Burnett, K., Ng, K. B., & Park, S. (1999). A comparison of the two traditions of metadata development. Journal of the Association for Information Science and Technology, 50(13), 1209.

Week 6, February 21, 2017: Administrative metadata

- Greenberg, J. (2005). Understanding metadata and metadata schemes. Cataloging & classification quarterly, 40(3-4), 17-36.
- Van Hooland, S., & Verborgh, R. (2014). "Chapter 2. Modelling," Linked Data for Libraries, Archives and Museums: How to clean, link and publish your metadata. Facet.
- Harper, C. (2010). Dublin Core metadata initiative: Beyond the element set. Information Standards Quarterly, 22(1), 20. http://www.niso.org/publications/isq/2010/v22no1/harper/
- DCMI Abstract model http://dublincore.org/documents/abstract-model/
- Dublin Core Metadata Element Set, Version 1.1 http://dublincore.org/documents/dces/

Week 7, February 28, 2017: Preservation metadata

- Furie, B. (2009). "What is a MARC record and why is it important?," Understanding MARC Bibliographic: Machine-readable cataloging. Library of Congress. https://www.loc.gov/marc/umb/
- Woodley, M. S. (2008). Crosswalks, metadata harvesting, federated searching, metasearching: Using metadata to connect users and information. Introduction to metadata 3.0.
- MARC standards http://www.loc.gov/marc/
- Brothman, B. (2001). The past that archives keep: memory, history, and the preservation of archival records. Archivaria, 1(51).

Week 8, March 7, 2017: Technical metadata

- Ford, P. (2013). "The Hidden Technology That Makes Twitter Huge," Bloomberg. https://www.bloomberg.com/news/articles/2013-11-07/the-hidden-technology-that-makes-twitter-huge
- Van Hooland, S., & Verborgh, R. (2014). "Chapter 3. Cleaning," Linked Data for Libraries, Archives and Museums: How to clean, link and publish your metadata. Facet.

- Summers, E. (2013). "Preserving Linked Data," Inkdroid. https://inkdroid.org/2013/09/30/preserving-linked-data/

Week 9, March 14, 2017: Spring break
Class cancelled

Week 10, March 21, 2017: Use Metadata
- Van Hooland, S., & Verborgh, R. (2014). "Chapter 4. Reconciling," Linked Data for Libraries, Archives and Museums: How to clean, link and publish your metadata. Facet.
- Driscoll, K., & Walker, S. (2014). Working within a black box: Transparency in the collection and production of big twitter data. International Journal of Communication, 8, 1745–1764. Retrieved from http://ijoc.org/index.php/ijoc/article/view/2171
- Check out API change log https://www.apichangelog.com/
- Summers, E. (2014). "On Archiving Tweets," Inkdroid. https://inkdroid.org/2014/08/31/on-archiving-tweets/

Week 11, March 28, 2017: Scales
- Van Hooland, S., & Verborgh, R. (2014). "Chapter 6. Publishing," Linked Data for Libraries, Archives and Museums: How to clean, link and publish your metadata. Facet.
- Kitchin, Rob. "Chapter 4. Big Data," The data revolution: Big data, open data, data infrastructures and their consequences. Sage, 2014.
- Kitchin, Rob. "Chapter 5. Enablers and Sources of Big Data," The data revolution: Big data, open data, data infrastructures and their consequences. Sage, 2014.

Week 12, April 4, 2017: Semantic Web
- The social Life of Metadata. Ambient Findability, O'Reilly 2005
- Millerand, F., & Bowker, G. C. (2009). Metadata Standards. Standards and their stories: How quantifying, classifying, and formalizing practices shape everyday life, 149-165.
- XML resources https://www.w3.org/XML/1999/XML-in-10-points-19990327 http://www.w3schools.com/xml/xml_whatis.asp
- Willson, M. (2017). Algorithms (and the) everyday. Information, Communication & Society, 20(1), 137-150.PDF

Week 13, April 11, 2017: Open and Linked Data
- Bauer, F., & Kaltenböck, M. (2011). Linked open data: The essentials. Edition mono/monochrom, Vienna.
- Kitchin, Rob. "Chapter 3. Open and Linked Data," The data revolution: Big data, open data, data infrastructures and their consequences. Sage, 2014.
- Tim Berners-Lee, TED Talk, Linked Open Data, http://www.ted.com/talks/tim_berners_lee_on_the_next_web
- Linked Data for Libraries, Museums, and Archives: Survey and Workshop Report http://www.clir.org/pubs/abstract/reports/pub152

Week 14, April 18, 2017: Cultures

- Kitchin, Rob. "Chapter 9. Technical and Organisational Issues," The data revolution: Big data, open data, data infrastructures and their consequences. Sage, 2014.
- Hider, P. (2016). The functional requirements for community information. Journal of Documentation, 72(1), 81-102. PDF
- Tunguz, T., & Bien, F. "Chapter 7. Data Literacy and Empowerment: The Core Responsibilities of the Data Team," Winning with Data: Transform Your Culture, Empower Your People, and Shape the Future. (2016).

Week 15, April 25, 2017: Futures

- Kitchin, Rob. "Chapter 10. Ethical, Political, Social and Legal Concerns," The data revolution: Big data, open data, data infrastructures and their consequences. Sage, 2014.
- Ford, P. (2013). "Balancing Security and Liberty in the Age of Big Data," Bloomberg. https://www.bloomberg.com/news/articles/2013-06-13/balancing-security-and-liberty-in-the-age-of-big-data
- Day, R. E. (2014). "Representing Documents and Persons in Information Systems." Indexing it all: The subject in the age of documentation, information, and data. MIT Press. PDF

Week 16, May 2, 2017: Final week

Presentations