



New and Improved: Refining the CURATE(D) model and developing online modules

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Agenda

- Context
 - What is the Data Curation Network
- CURATE(D) Steps
- Online modules
- Feedback / Q&A

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We have a very short time together today, so we will move at a brisk pace through these topics. Our contact information will be on the last slide, but we also whole-heartedly invite you to chat with us after the presentation!

DATA CURATION NETWORK

Mission

Trusted, community-led
network of curators
advancing open research
by making data

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I'm excited to share a little bit about the Data Curation Network with you. Before I get started, I want to say that the work I'll be discussing today, though I'll say words like "we" and "our" is the result of years worth of labor from countless individuals.

The Data Curation Network, or DCN, is a community-led network of curators advancing open research by making data more ethical, reusable, and understandable. We are an active community of data stewards and curation practitioners who share knowledge and time to collaboratively curate research outputs and advance the data curation profession. The DCN has been active since 2016, and officially launched as a member-funded organization in July 2021

The DCN collaborates to curate datasets, shares expertise and resources, offers education and professional development opportunities to the wider research community, and advocates for the role of data curators and information professionals. In this way, we help ensure that data shared by researchers at our institutions is more findable, accessible, and reusable.

The CURATE(D) Steps

- C** **Check** files and read documentation.
- U** **Understand** the data (or try to), if not...
- R** **Request** missing information or changes.
- A** **Augment** metadata for findability.
- T** **Transform** file formats for reuse.
- E** **Evaluate** for FAIRness.
- (D)** **Document** your curation activities



<https://datacurationnetwork.org/resources/workflows/>

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One of the things the DCN is known for is our CURATE(D) steps

This workflow is primarily a teaching tool, to help data curators, researchers, or students understand the various steps that go into the curation process

Originally developed at the first All Hands Meeting in 2018, these have served as an onboarding tool for new curators

Under each step, there was a description of the action, the key steps, and then a checklist of the actions that was not meant to be exhaustive but more explanatory.

These steps became the foundation for a two day workshop the DCN hosts in which attendees are invited to a deep dive into the checklist and apply the steps to real data.

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Report to the Data Curation Network

Written By: Fay Cobb Payton, PhD

April 2021



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1. **FATE** – Fairness, Accountability, Transparency & Ethics in AI
2. **FAIR** – Findable, Accessible, Interoperable & Reusable
3. **CARE** – Collective Benefit, Authority of Control, Responsibility & Ethics

During Winter 2021, specifically March, a small group of curators dug into the DCN CURATE(D) steps and discuss how our model might better incorporate the actions that data curators often take to ensure data are shared in ethical, equitable ways. They applied real data sets when discussing the FATE, FAIR, CARE Principles

One key element we've identified as part of our IDEA action plan is to refine our CURATE(D) model to better reflect how curators consider, respect, and value the people within the data. So, a special interest group was launched to tackle this, to incorporate ethical considerations into every step. This group started back in 2020, but carried through most of 2021



 z.umn.edu/curate

So now let's look at the newly revised steps, which you can find at [z dot umn dot edu slash curate](https://z.umn.edu/curate)

The CURATE(D) Steps

C
U
R
A
T
E
(D)

Augment the dataset

In this step we ensure metadata conforms to repository and/or appropriate discipline standards; adjust metadata to improve findability and accessibility; and improve documentation to make data more understandable, interoperable and reusable. Common AUGMENT steps include:

- Enhance metadata to best facilitate discoverability, such as by ensuring datasets have a persistent identifier.
- Create and apply metadata for the data record, including descriptive keywords
- When appropriate, structure and present metadata in domain-specific schemas to facilitate interoperability with other systems
- Implement any other agreed-on enhancements to metadata or documentation following discussion with researcher

Key Ethical Considerations

- Make sure bibliographic information reflects correct author attribution.
- Ensure any augmentation by the depositor to resolve ethical questions from previous steps is completed.

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And they look something like this! Each step has a definition of the action, key ethical considerations, and essential tasks. In all sections, we've not only tightened up the language for consistency, but we've also integrated how curators consider, respect, and value the people within the data. We also collectively drafted a preamble to the CURATED steps, which describes how the steps are to be used and who the target audience is.

CURATED Online Learning Modules



datacurationnetwork.github.io/CURATED/

IMLS ##RE-85-18-004018

To further support the work the DCN is doing to both expand the network of data curators as well as enhance the capacity for librarians to robustly curate heterogeneous datasets created on their campuses as part of the IMLS Building the Digital Curation Workforce: Advancing Specialized Data Curation, we built the CURATED Online Learning Modules to offer an online, hands-on experience to learn how to apply the CURATED steps

What is CURATED Training?

Data curation is the encompassing work and actions taken by researchers and curators of a research data repository or data archive in order to provide meaningful and enduring access to research data. Within the Data Curation Network we've identified over 50 data curation activities that may be performed by researchers or curators to make data more Findable, Accessible, Interoperable, and Reusable (FAIR).

The goal of the CURATED Training is to offer an introduction to applied data curation. This training is designed for those completely new to data curation, those hoping to refresh their data curation skills, or those looking to apply data curation knowledge to the management of their own research data. This training and associated CURATED model are teaching and research tools that are presented and best understood sequentially.

These modules were developed as part of the Specialized Data Curation Training program funded by IMLS #HRE-16-00408.

CURATED Training Modules Overview

Through completion of the CURATED Training, you will learn how to:

- C Check Your Data** Take an inventory of the contents that have been submitted by the depositor.
- U Understand Your Data** Dive deeper into the items submitted for curation to determine whether they form a cohesive package that would allow future reuse and understandability.
- R Request Missing Information** Communicate with the depositor to address the gaps you have identified through checking and understanding the data.
- A Augment the Data Deposit** Enhance the data deposit through changes to machine-readable metadata, README files, or other documentation based on information gathered through understanding the data as well as received through communication with the depositor.
- T Transform File Formats** Convert data formats to increase accessibility, interoperability, or the likelihood of long-term preservation.
- E Evaluate the Overall Data Package** Evaluate the results of the curation process, assessing the impact of data curation on the findability, accessibility, interoperability, and reusability of the deposit.
- D Document for Curation** Develop documentation for the curator actions taken to the deposit.

[START CURATED TRAINING](#)

Goal: To offer an introduction to applied data curation.

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Audience:

- (1) individuals completely new to data curation
- (2) individuals hoping to refresh their data curation skills
- (3) individuals looking to apply data curation knowledge to the management of their own research data.

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Learning Outcomes:

- Learners will increase understanding of data curation practices and tools.
- Learners will apply the CURATE(D) model to a data deposit.

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And through taking this online module, learners can expect to increase their understanding of data curation practices and tools as well as have an opportunity to apply the CURATE(D) model to a real-world data deposit.

CURATED Training Modules Overview

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The online modules are structured following the CURATE(D) model with lessons for each step of the model: C: Check Your Data, U: Understand Your Data, R: Request Missing Information, A: Augment the Data Deposit, T: Transform File Formats, E: Evaluate the Overall Data Package, and D: Document for Curation. As the lessons follow the CURATED model they are presented and best understood sequentially, but we have formatted the site so that individuals who are looking to learn about a particular step can jump to that lesson.

Data Deposit

Throughout the following lessons, a single dataset will be used for all activities. This dataset was deposited by an entomologist to their local data repository; it has been slightly simplified for the purposes of these lessons. The dataset contains experimental measurements documenting how honey bee colonies exposed to high temperatures maintain and meet the water needs of the colony to survive. We would like to thank the dataset authors for allowing us to use their work.

From the link below you can access the initial deposit which consists of a metadata form and a tabular file.

[ACCESS THE DATA DEPOSIT HERE](#)

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As I mentioned, the CURATED modules give learners the opportunity to work with a real-world data deposit, taking it through each step of the CURATED model. We opted to use a single dataset for all module activities so that learners could see how each step is necessary and can be applied when curating a data deposit. However, throughout the modules we have also included opportunities for learners to find additional datasets to work with based on their expertise or interests.

C Step: Check the Data Deposit

Learning Outcomes

Curators will be able to:

1. Perform curation actions such as conducting a file inventory and opening the files.
2. Check the submission for completeness based on a predefined criteria.
3. Develop preliminary recommendations to be used for the "Understand" step.

Terms to know

Submission information package (SIP) +

Archival Information Package (AIP) +

Dissemination Information Package (DIP) +

File inventory +

File organization +

README file +

Metadata +

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Within each lesson, a general template was followed so that learners can anticipate and easily navigate through the content. Each lesson includes learning outcomes, terms to know,

Summary of the Check Step

The check step is the first step of the CURATED process. In this step, we take an inventory of the contents that have been submitted by the depositor, known in the Open Archival Information System (OAIS) model as the **submission information package (SIP)**. The SIP will become an **archival information package (AIP)** through the process of curation and a **dissemination information package (DIP)** through its retrieval by a user. Examples of the contents for SIPs may include: data files, code files, supporting documents, and metadata. At this step we are inventorying what has been submitted and noting our initial thoughts. We'll examine the content more closely in the "Understand" step. However, to prepare for the next step, we can start opening or downloading software that will allow us to examine submission components and obtaining any resources we'll need to help with the next step.

Common things to look for during this step are the record level **metadata**, **file inventory**, **file organization**, the **README file**, and whether the file(s) can open or not.

| Check for: | Questions to ask: |
|------------------------------|--|
| Completeness | <ul style="list-style-type: none">Is the submission complete based on any predefined criteria for your repository? An example of predefined criteria is the Dryad repository guidelines. |
| Record Level Metadata | <ul style="list-style-type: none">Does the description have sufficient detail?Are all required fields filled out? (e.g., title, author/creator, licensing) |
| File inventory | <ul style="list-style-type: none">What files are included?Are files missing? |
| File organization | <ul style="list-style-type: none">Are there unwanted spaces or special characters?Is there a file naming convention?Order and description (if many files)File hierarchy in terms you can clearly see the relationships in the naming of the files on the top level and the files below them in terms of how they are named (ex. School_data as a top level folder and school_data.ny as a folder in the school_data folder referring to school data from New York). |
| README | <ul style="list-style-type: none">Is there a documentation file, like a README?Example: Cornell ReadMe Template |
| Brief file diagnostic | <ul style="list-style-type: none">(software) Does this open?(code) Does this run?What version? |

C Step Actions

1. Check data files.
2. Verify all metadata provided by the author and review the available documentation.

C Step Checklist

ACCESS CURATE(D) CHECKLIST

Key Ethical Considerations

- Review participant agreement and data use agreements; examine potential impacts of sharing this data. Consider:
 - Individuals and communities represented
 - Representativeness of diverse human populations
 - Protection or endangerment status of species
 - Geographic locations (e.g., contested boundaries, historical and current political situations)
 - Animal research ethics and approval
- Is it possible that the data deposit may impact a specific group?
- Does this data deposit follow compliance and institutional policy?

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A step summary, step actions, a link to the checklist Mikala showed, the key ethical considerations,

Activity

Materials Needed

1. Data deposit.

Directions

In this activity, using the checklist below, you will perform the Check on the data deposit. Once you have completed this activity, feel free to run the C step on another dataset of your choosing.

| C Step Number | C Step | Yes/No/NA |
|---------------|---|--|
| C1 | Files open as expected? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| C2 | Code runs as expected? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| C3 | Metadata has all required fields filled out such as the title, author, and licensing information. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| C4 | Is there any documentation? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| C5 | Are there human participant data present? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| C6 | Do the file names have unwanted spaces or characters? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

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And an activity to solidify the knowledge gained.

CURATED Online Learning Modules Feedback Form



<https://forms.office.com/r/CPZeB7t2BR>

IMLS ##RE-85-18-004018

As these modules are a new output for us, we are hoping to collect feedback from initial users. We are collecting feedback via an open-ended form which is linked here as well as at the end of the modules.

CURATED Online Modules Development Team

Content Creators

| | | |
|------------------|----------------------|-----------------------|
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Questions?





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