UNDERSTANDING PERSPECTIVES ON REUSING NEUTRON DATA AT OAK RIDGE NATIONAL LABORATORY

DEVAN RAY DONALDSON, PH.D., AND SHAWN MARTIN

Email: drdonald@indiana.edu

@*hoosierdevan*

WHO AM I?

Devan Ray Donaldson

Assistant Professor of Information Science
Department of Information and Library Science
School of Informatics and Computing
Indiana University, Bloomington

Ph.D. in Information Science, University of Michigan
RDA US Data Share Fellow

WHY AM I HERE?

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Because of Thomas Proffen

Because Frank asked me to come speak :0)

MOTIVATION FOR STUDY

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To understand perspectives on data sharing in a field that has traditionally focused more on sustaining use of data by those who created them as opposed to enabling reuse of data by others.

STUDY DETAILS

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Focus groups with:

- **Data consumers (n=3)**
- **Data managers (n=5)**
- **Data producers (n=5)**

FINDINGS: WORKFLOW

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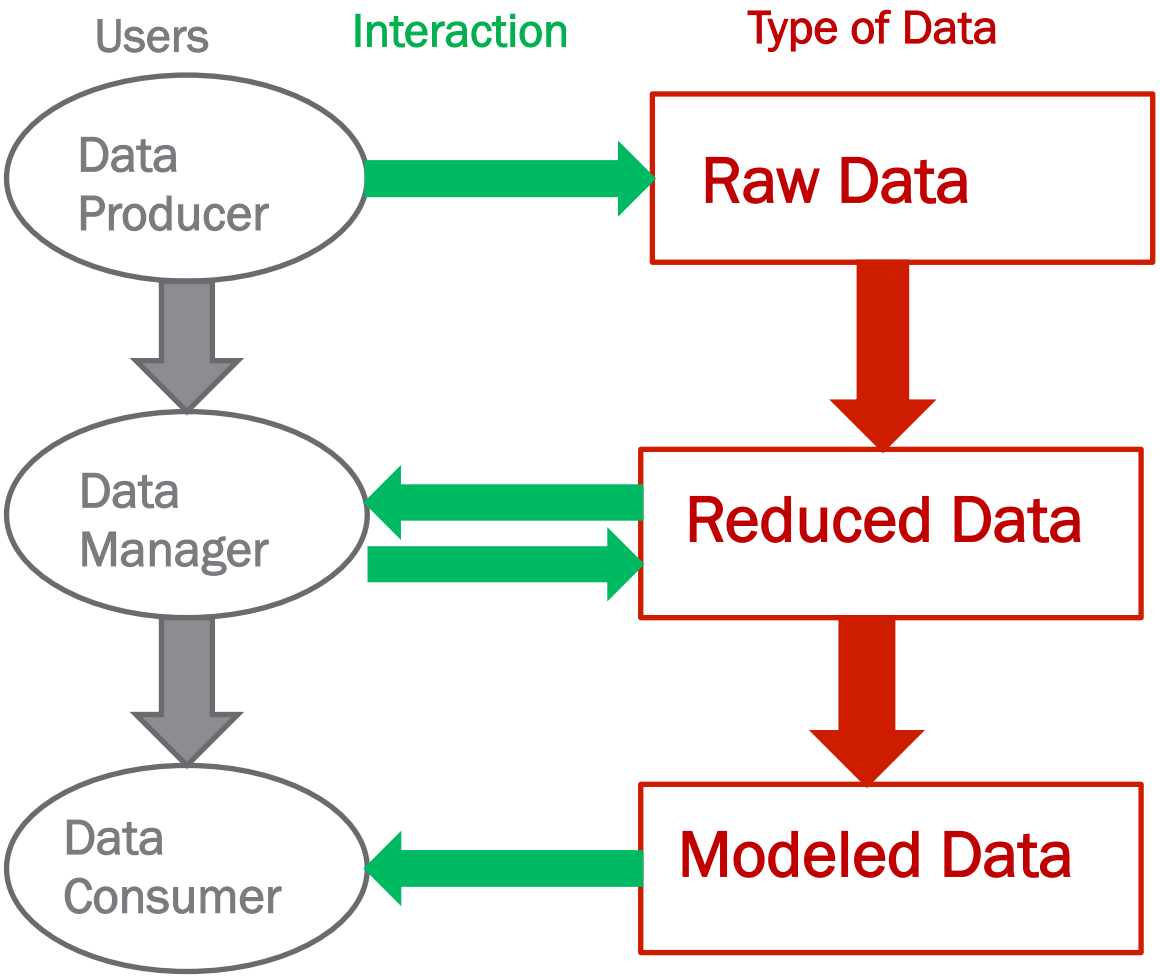

Data producers generate raw data (unprocessed numbers and descriptions) from which they can construct reduced data (a set with extraneous data removed and more complete descriptions).

Data managers then produce reduced data that harmonizes the unprocessed data with theoretical models which can be used to create modeled data, or data that demonstrates how results do/do not conform to theoretical models.

Data consumers utilize modeled data to create research and scholarship demonstrating how materials function on an atomic level.

FINDINGS: DATA CONSUMERS

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1. Identified reasons for reusing data
2. Discussed information they needed to know about data
3. Articulated the importance of journal articles
4. Described barriers to reuse
5. Expressed a desire for discoverability

PARTICIPANT CHARACTERISTICS

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-Expressed interest in data reuse

-2 research scientists; 1 professor

-Interests: theory of magnetism, condensed/ soft matter physics

-Multiple years of experience with neutron data and Oak Ridge facilities

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REASONS FOR REUSING

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-To compare/verify a result against their own measurements

-To test a new theory using existing data

WHAT REUSERS NEED TO KNOW

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1) How the data were produced
2) How the sample was prepared
3) What the units of measurement are
4) How the temperature was determined

IMPORTANCE OF PUBLICATIONS

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1) Journal articles provide context for data
2) Participants articulated interest in reproducing charts and graphs

BARRIERS TO REUSE

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Technical barriers:

e.g., Lack of expertise in software

DISCOVERABILITY

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Consumers of neutron data want to know:

1. **What other measurements have been created for particular problems**
2. **Particular characteristics across data sets (e.g., temperature readings)**

RECOMMENDATIONS

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Policy recommendations

Technical recommendations

POLICY RECOMMENDATIONS

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Provide Principal Investigators with the option to make their data accessible and openly available if they choose.

SYSTEM RECOMMENDATIONS

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1) Include metadata about how the data were produced, how the sample was prepared, what the units of measurement are, and how the temperature was determined for every data set.

SYSTEM RECOMMENDATIONS

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2) Link data to any publications based on or otherwise related to those data.

SYSTEM RECOMMENDATIONS

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3) Make data more discoverable by allowing characteristics of data to be searchable across data sets.

FUTURE RESEARCH

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1) *Conduct similar studies with other neutron scientists to confirm results*
2) *Conduct studies of reuse "in real time"*

ACKNOWLEDGMENTS

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Thomas Proffen, Oak Ridge National Laboratory

Shawn Martin, Doctoral Student, Indiana University

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