

National Agricultural Research, Extension, Education and Economics Advisory Board

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REPORT AND RECOMMENDATIONS OF THE DATA MANAGEMENT WORKING GROUP (NDMWG) OF THE NATIONAL AGRICULTURAL RESEARCH, EDUCATION, EXTENSION AND ECONOMICS (NAREEE) ADVISORY BOARD

Recommendations on Open Data, Big Data and Data Management within USDA and Between USDA and Its Partners

October 2014

Introduction

The United States Department of Agriculture (USDA) and the Research, Education, and Economics (REE) mission area, and all other federal agencies, are facing challenges and pursuing opportunities in the collection, curation, sharing and application of data in this data-intensive era. Technology has facilitated the collection of massive volumes of various types of data, increased the velocity of data movement between collectors, analysts and users, and enhanced computational power for data analysis and inference. Researchers have realized new and more powerful ways of doing science in this data rich environment. Practitioners in all fields of agriculture, food and environment have realized the power of applying rich data to complex problems on the ground. Governments have recognized the need to make data reliable and available to be leveraged in various ways by industry, organizations and households.

The U.S. Government (White House Office of Science and Technology Policy (OSTP)) has mandated that all federal agencies adequately curate and serve “big” data collected in federally-funded research and education programs, and that all federal agencies make data “open” and facilitate the application of data to the solution of problems, the development of informed public policy and the profitability of human enterprise.

NAREEE Board members from private industry, state government, non-profits, tribes and universities are experiencing the effects of the data-intensive era in their respective organizations. State and local organizations are being approached by producers and consumers who are also dealing with data challenges and opportunities. Some universities have been building human, software and hardware infrastructures over the past four years to support researchers in new forms of science and, more recently, to support Principal Investigators (PI) in meeting federal mandates around Big Data and Open Data. NAREEE members share USDA’s interest in the challenges and opportunities, bring informed perspectives and experiences from

USDA stakeholders, and see the need to ramp up cooperation and collaboration between the federal government and other entities who will create, share and utilize data and knowledge.

Given the broad and deep interest of NAREEE members in the data management topic, NAREEE invited to its spring 2013 and 2014 meetings presentations from the National Agriculture Library (NAL) Director on how USDA is responding to federal mandates for Open Data and Big Data. Following the May 2014 presentation, NAREEE established a Data Management Working Group (NDMWG). The Working Group convened meetings in May and July 2014 and generated the following initial list of topics and questions for discussion with USDA REE leadership:

1. Sustainable business plans for data management in government and universities.
2. A more unified vision and strategic goals for data management across government agencies and between federal agencies, state government and universities.
3. Joint data management planning and activity across federal agencies on complex, priority issues on national and global scales.
4. Coordination and collaboration between USDA REE agencies and with universities on the build out of data management infrastructure and sharing of data management experience and expertise.
5. Stakeholder interaction and consultation to understand local perspectives, issues and potential solutions to data-related challenges.
6. Cultural and intellectual property rights issues related to data curation and access.

NAREEE NDMWG also requested a briefing with leadership from USDA and REE officers on Open Data, Big Data and Data Management planning and initiatives underway. This day-long briefing took place on September 29, 2014 at USDA headquarters. The NDMWG benefited greatly from conversations and presentations with USDA's Office of Chief Information Officer (OCIO) and the Office of the Chief Scientist (OCS), the REE Undersecretary, and REE's NAL, the Agricultural Research Service (ARS), the National Institute of Food and Agriculture (NIFA), the National Agricultural Statistics Service (NASS), and the Economic Research Service (ERS).

Based on information about the agency's efforts, information gleaned from stakeholders, and experience from planning and initiatives at NAREEE member institutions and organizations, the NDMWG developed the following recommendations. These recommendations are meant to support and enhance USDA efforts and to generate cooperation and collaboration between USDA, other federal agencies and a variety of partners and stakeholders (especially universities, producers, consultants and state government), resulting in effectiveness and efficiency on data-related efforts and initiatives.

Share Planning Information:

1. Provide the NDMWG with USDA's data management planning documents when they are available for distribution.

2. Provide the NDMWG with semi-annual updates or briefings on agency, inter-agency and intra-agency activities in data management.

Engage Stakeholders:

3. Sponsor additional stakeholder engagement (listening sessions and roundtables) on the topics of Open Data, Big Data, data privacy, data ownership and property rights, especially for regulatory agencies, agricultural producers, agricultural support industries, and agricultural consultants.
4. Launch a USDA REE Data Management website to: a) communicate with universities, state agencies and agricultural industries about USDA data management initiatives, b) inform stakeholders on data management terminology, mandates, challenges and opportunities, and c) encourage cooperation and collaboration between government, universities and industry on the build-out of data management infrastructure.

Expand Inter-Departmental and Inter-Agency Collaboration:

5. Encourage interaction and collaboration among REE agencies on the implementation of data initiatives and the build out of infrastructure. Especially, draw upon the experience and expertise of ERS in the field of data management, including their skills in development, collection, curation, and access to open and sensitive data, with an emphasis on stakeholder engagement and service.
6. Actively seek interagency, inter-departmental and university-agency collaboration on data management where data-intensive science and education can have an immediate, and scalable effect on analysis and decision-making on major, complex issues of the day (e.g., climate change, food security, human nutrition, animal and plant disease, and genomics). Include information about these collaborations in semi-annual NAREEE briefings and on the REE data management website.

Plan and Implement Data Management Initiatives in Collaboration with Universities:

7. Encourage REE agencies to collaborate with universities on symposia/conferences for joint discovery of data management needs, promulgation of data management policies, build-out of data management infrastructure, design of data sharing partnerships, realization of sustainable business plans, and design of curricula for the education and training of a next generation, data-ready workforce.
8. Encourage ARS leadership, at local, regional, national and global scales, to engage universities in collaborative planning and implementation of data management infrastructure, initiatives and policies. Data management infrastructure will be needed to

support the next generation of collaborative university-agency research facilities and activities.

9. Encourage NIFA leadership to foster in their Request for Proposals (RFP) joint planning and efficient build out of data management infrastructure between USDA agencies, eXtension and universities. Consider the varying ability of different sized universities to provide data management infrastructure.
10. Encourage NIFA to formalize and further define data management requirements in RFAs/RFPs, including: a) data management plans, b) methods and metrics for evaluation of data management activity; c) guidance for the inclusion of data management expenditures in direct costs; and d) rules for data management in projects with multiple sources of funding.
11. Work with universities to eventually include capacity funded programs (Hatch, Smith-Lever, McIntire-Stennis, Evans-Allen, Animal Health, Renewable Resources (RREA), 1890, and Tribal) under the umbrella of Open Data. Include Experiment Station and Cooperative Extension directors in planning conversations.

Consider Needs for New Authorization Language and/or Policy:

12. Convene a conversation among USDA, OSTP, Office of Management and Budget, and University leaders who have experience costing out the design and build-out of data management infrastructure, in government and university venues. Consider the need for new grant administration policy, authorization language or budgeting authority to enable the financing of infrastructure development.
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**REPORT DEVELOPED BY THE NAREEE ADVISORY BOARD,
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