JHU Data Management Service (DMS) represents the culmination of two years of research, design, development and implementation of Data Conservancy.

- Service launched in July 2011
- DC instance launched in October 2011
- Important, essential foundations in place
- There remains work to be done
Data Conservancy Objectives

- Data Conservancy is a community that develops solutions for data preservation and sharing to promote cross-disciplinary re-use.
- Preserve – collect and take care of research data
- Share – reveal data’s potential and possibilities
- Discover – promote re-use and new combinations
Definition of Data Preservation

- “Data preservation involves providing enough representation information, context, metadata, fixity, etc. such that someone other than the original data producer can use and interpret the data.”
  - Ruth Duerr, National Snow and Ice Data Center
• Multiple Data Models
• Content models for describing the contents of a Manifestation
• General Model used to correlate model entities across heterogeneous datasets
  - geo-reference, time of observation, etc...
Feature Extraction Framework: Design

- Must accommodate a variety of data formats
- No assumption made regarding the form of data input or output
- Not coupled to a specific execution model
Feature Extraction Framework: Application

- Subsetting
  - Returning a portion of a dataset
- Indexing
  - Output suitable for indexing by the Query Framework
- Workflows
  - Process Orchestration, Meandre, Taverna, Kepler
- Execution environment for analysis
  - Stateless Mappings basis for MapReduce
## Data Management Layers

<table>
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<th>Layers</th>
<th>Examples</th>
<th>Implication for PI</th>
<th>Implication relative to NSF</th>
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</table>
| Curation   | Future JHU Data Archive and other DCS instances | • Feature Extraction  
• New query capabilities  
• Cross-disciplinary | • Competitive advantage  
• New opportunities |
| Preservation| JHU Data Archive  
Portico  
ICPSR | • Ability to use own data in the future (e.g. 5 yrs)  
• Data sharing | • Satisfies NSF needs across directorates |
| Archiving  | CUAHSI  
NEES  
Dataverse | • Provides identifiers for sharing, references, etc. | • Could satisfy most NSF requirements |
| Storage    | Server in Lab  
Website  
Amazon S3 | • Responsible for:  
• Restore  
• Sharing  
• Staffing | • Could be enough for now but not near-term future |
Defining Sustainability

- “Ensuring that valuable digital assets will be available for future use is not simply a matter of finding sufficient funds. It is about mobilizing resources—human, technical, and financial—across a spectrum of stakeholders diffuse over both space and time.”
Establishing the JHU DMS

- May 2010 NSF announces DMP expectations
- Services incubated and scoped summer/fall 2010
  - Build on Data Conservancy expertise
- Proposed in January and launched in July 2011
  - Consultative data management planning services to support NSF proposals
  - Post award data management services
- Assessment of service in March 2012
Background work to scope services

- Review of data management plan best practices and development of questionnaire
- Piloted data management consultations as cases
- Short data survey with over 70 JHU researchers
- Analysis of JHU NSF proposal and award activity
- Business school capstone project on storage options and costs
- Review of past data archiving projects and work
Proposing data management services

- Services scoped to support anticipated NSF requirements and to reflect system capabilities
  - Defined time limits, volume of data deposited per project, unencumbered data only for now
- Prepared budget for services
  - Five year timeframe for costs
  - All costs included: staffing, hardware, overhead, etc.
  - Cost assumptions included: total data archived, complexity of data prep for ingest
Support secured and financial model established

- Data management planning for NSF proposals
  - Service directly funded by schools
  - Each school pays percentage according to 3 year average of total NSF proposals submitted

- Post award data management
  - Fee based service billed through a service center
  - First year fee a percent of total direct costs on grant
JHU Data Management Services team

Dedicated group (that collaborates with DC and Digital Research and Curation Center)

• Two data management consultants
• Senior technical consultant (*Part-time*)
• Software developer
• System administrator (*to be hired*)
• Interim manager (*Part-time*)
Service marketing

- Reach out through all stakeholders
  - Announcements through Deans
  - Work with research projects administration
  - Outreach to department administrators
  - Briefings with library colleagues/departments
  - Presentations to researchers, graduate students

- More to do....and then repeat!
Experiences and lessons so far...

- Initial NSF DMP guidelines are less clear than anticipated
- Researchers don’t distinguish between storage, archiving and preservation they just want to meet requirement
- There is no such thing as a boiler plate plan
- DMP requirement creates opportunity to discuss overall data management
Opportunities

- Grow researcher/graduate student understanding of data management
- Establish an archive specifically designed for data, enabling future discovery and use
- Expand services to support:
  - Other granting agency DMP requirements
  - Research community data management needs
- Build collective expertise across communities
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- [http://dataconservancy.org](http://dataconservancy.org)
- [http://dmp.data.jhu.edu](http://dmp.data.jhu.edu)