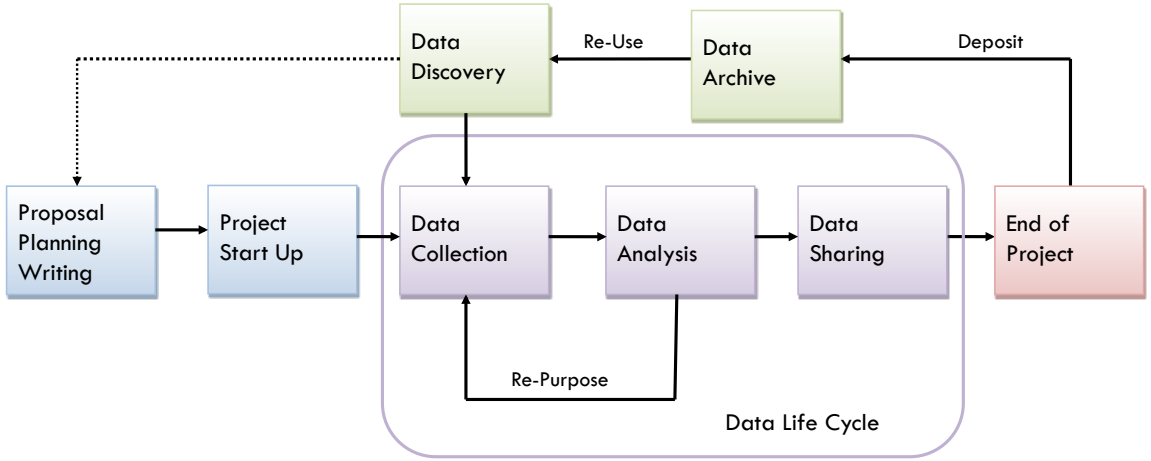
Data Wrangling and Interoperability



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Goals for the workshop

- Learn about challenges of interoperability
- Understand differences between software that appears to be the same (Excel, Google Spreadsheets, etc.)
- Learn about Open Refine as a tool to fix messy data
- Gain peer and expert feedback

Challenges of interoperability

- Data sets can be isolated, fragmented
- Challenge of combining disparate data sets
  - Formats (proprietary and open)
  - Data definitions (units, time steps, etc.)
  - Missing or poorly formed data

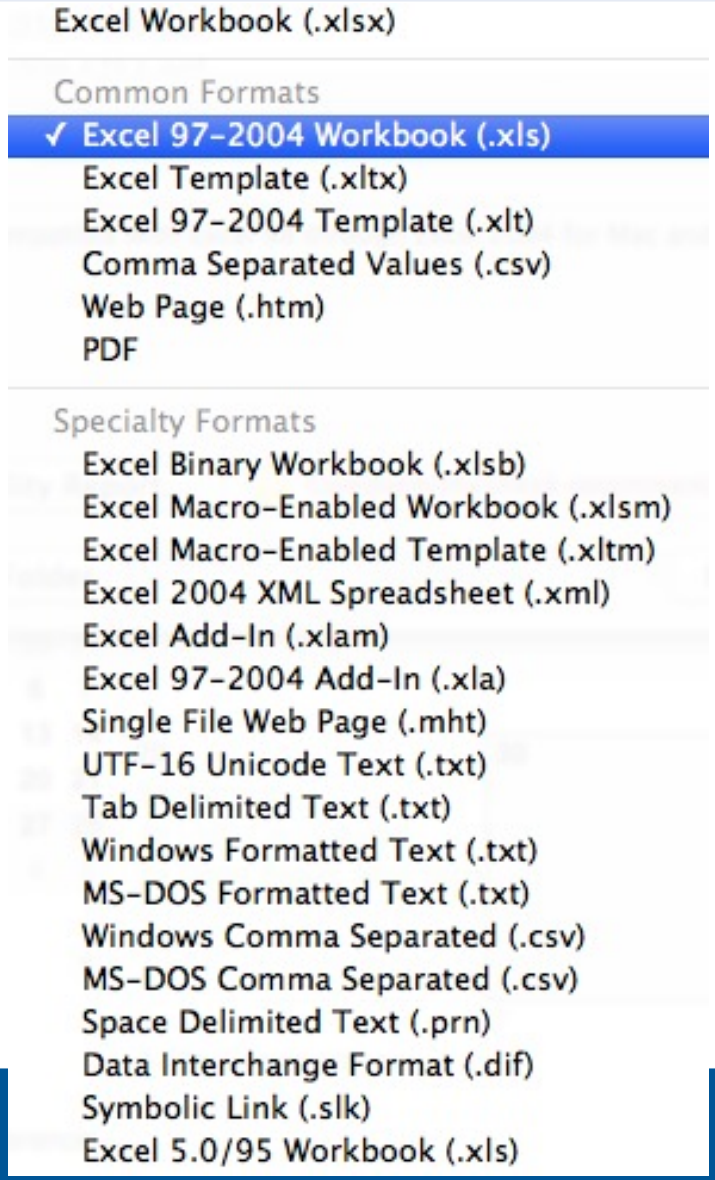
Interoperability with spreadsheets

- Show sample Excel files
- Show sample Google Spreadsheet files
- Demonstrate format save issues
- Show import/export examples and process

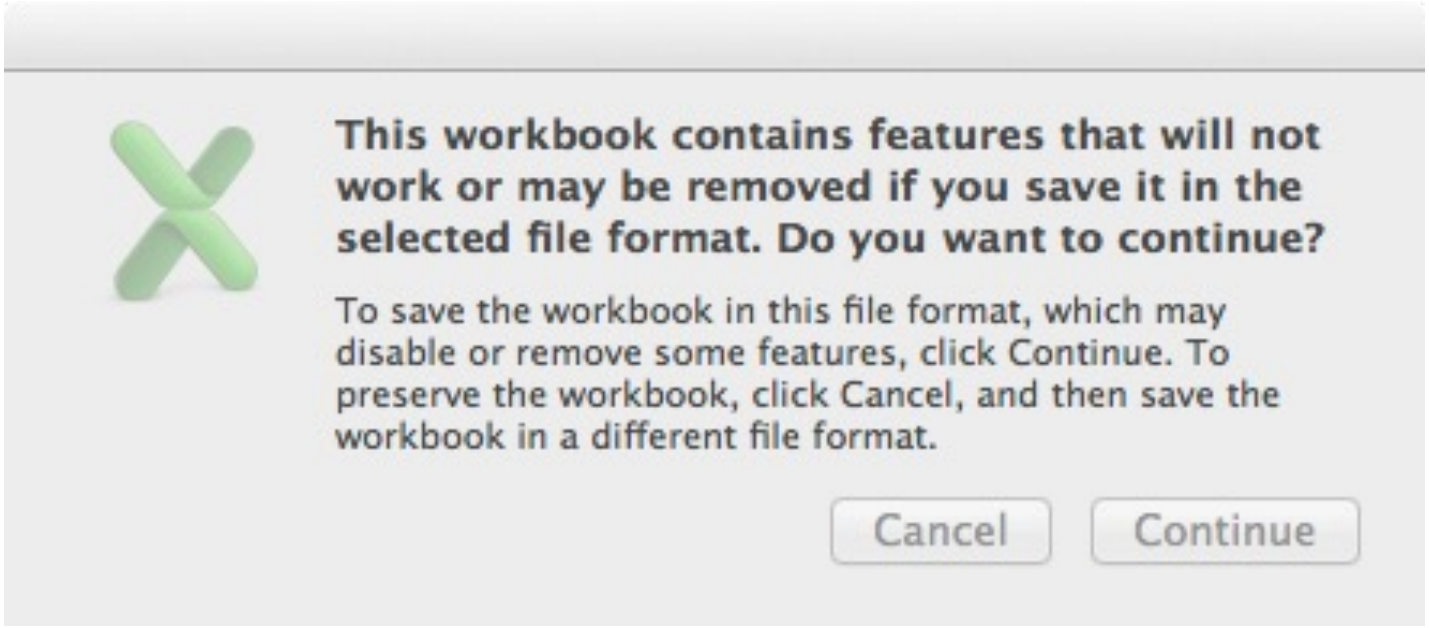
Interoperability with spreadsheets

- Excel
  - Excel 2003 (.xls format)
  - Excel 2007 (.xlsx format begins)
  - **Excel 2010 (Windows)**
  - **Excel 2011 (Macintosh)**
- “Save As” Options

Interoperability with spreadsheets



Interoperability with spreadsheets



Activity 1: Excel import/export problems

- Give some files that have problems
- Ask them to take our csv file, upload it
- Plant some specific traps for them with misaligned fields, nulls, stuff like that
- Take old versions and have them try to upload those
- Have students evaluate export choices and evaluate interoperability

Lessons from Activity 1

- Highlight different points and lessons

Activity 2: Google Spreadsheets import/export problems

- Give some files that have problems
- Ask them to take our csv file, upload it
- Plant some specific traps for them with misaligned fields, nulls, stuff like that
- Take old versions and have them try to upload those
- Have students evaluate export choices and evaluate interoperability

Wrangling messy data

- Cleaning a single data set can be tough, but merging two disparate data sets can be much harder
- Thinking about basic organizational best practices makes all of it easier

Messy issues

- Identification of relationship in data
- Different units across data sets
- Missing data
- Inequivalent time steps, resolution, grid size, dimensions, scale.
- Transformation
- Assumptions, judgment, accuracy from data collection

Open Refine

Google refine

- Formerly Google Refine
- Java applet, web application, but it runs completely locally. Nothing is in the cloud – safe for sensitive data
- No longer Google project,

now just called Open Refine

Open Refine

- Open Refine is used to clean up files, such as spreadsheets, not to create them
  - Take existing excel files, and refine them
- Uses JSON for scripting
  - Clean up one spreadsheet
  - Apply same actions to a different spreadsheet
    - Can select a subset of these actions

Open Refine

- Two exercises:
  - www.freeyourmetadata.org/cleanup
  - http://enipedia.tudelft.nl/wiki/OpenRefine_Tutorial

Activity 3: use Open Refine

- Load 2 or more messy files (suggest specific locations to find messy files)
- Clean the files
- Merge the files [FIGURE OUT WHERE]
- Export a clean version at the end

Discuss lessons learned

- Open discussion time to talk about issues
- Ask questions
- Talk about other experiences of messy data
- Stress why best practice principles matter

Best Practices Creating Data

1. Use Consistent Data Organization
2. Use Standardized Formats
3. Assign Descriptive File Names
4. Perform Basic Quality Assurance / Quality Control
5. Preserve Information - Use Scripted Languages
6. Define Contents of Data Files; Create Metadata
7. Use Consistent, Stable and Open File Formats

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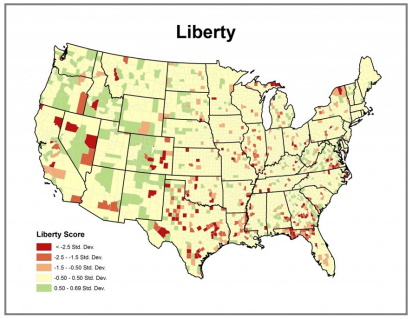

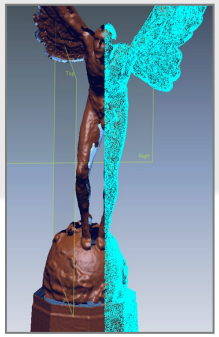

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QUESTIONS?

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