Needs-Driven Workflow Design

Stakeholders

Types and levels of analysis determine data, algorithms & parameters, and deployment

Data

READ

ANALYZE

DEPLOY

Validation
Interpretation

VISUALIZE

Overlay data

Select visualiz. type

Visually encode data

Information Visualization MOOC

Unit 5 – “With Whom”: Tree Data

Workflow Design

http://ivmooc.cns.iu.edu
Needs-Driven Workflow Design

Stakeholders → Validation Interpretation → DEPLOY

Types and levels of analysis determine data, algorithms & parameters, and deployment

Data → READ → ANALYZE → VISUALIZE

Visually encode data → Overlay data → Select visualization type

Graphic Variable Types
Modify reference system, add records & links
Visualization Types (reference systems)
Read Data

Sample Data:
• Stanford Large Network Dataset Collection, [http://snap.stanford.edu/data/](http://snap.stanford.edu/data/)
• Tore Opsahl’s Datasets, [http://toreopsahl.com/datasets/](http://toreopsahl.com/datasets/)
• Sci2 Datasets, [http://sci2.wiki.cns.iu.edu/display/SCI2TUTORIAL/2.5+Sample+Datasets](http://sci2.wiki.cns.iu.edu/display/SCI2TUTORIAL/2.5+Sample+Datasets) and general data sources, [http://sci2.wiki.cns.iu.edu/display/SCI2TUTORIAL/8.1+Datasets](http://sci2.wiki.cns.iu.edu/display/SCI2TUTORIAL/8.1+Datasets)

Data Formats

Network Formats
• GraphML (*.xml or *.graphml)
• XGMML (*.xml)
• Pajek .NET (*.net)
• NWB (*.nwb)

Other Formats
• Pajek Matrix (*.mat)
• TreeML (*.xml)
• Edgelist (*.edge)
• CSV (*.csv)
Tree Analysis

Extract relevant subtrees
Calculate node and edge properties—e.g., in- and out-degrees
Calculate tree properties
Sort tree
Compare trees

Visualization Goals

Representing hierarchical data
• Structural information
• Content information

Objectives
• Efficient space utilization
• Comprehension
• Interactivity
• Esthetics
Visualization Types

Tree view

Radial tree

Tree map

GUESS in Sci2

Circular

Kamada-Kawai

Fruchterman-Reingold

GEM
NWB:
Balloon Graph
Circular

Sci2 Tool Directory Hierarchy
Apply layout algorithm to define the space
Add nodes and edges

Size and color code by out-degree
Relevant Tools

- GUESS
- Gephi
- Cytoscape

30+ more are at [http://sci2.wiki.cns.iu.edu/8.2+Network+Analysis+and+Other+Tools](http://sci2.wiki.cns.iu.edu/8.2+Network+Analysis+and+Other+Tools)

Please post your favorite tool to Twitter, Flickr using tags “ivmooc” and “#nwtools.”