Network Workbench

A Workbench for Network Scientists

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Cyberinfrastructure for Network Science Center

School of Library and Information Science

Indiana University, Bloomington, IN

NetworkWorkbench
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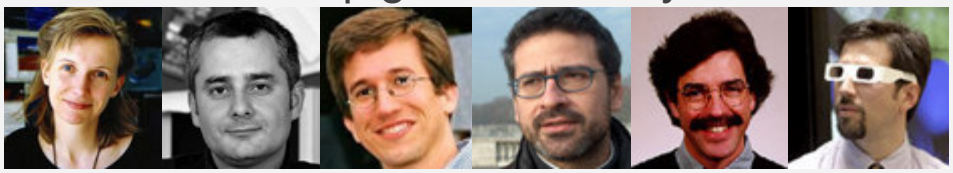
Project Details

Investigators: Katy Börner, Albert-Laszlo Barabasi, Santiago Schnell, Alessandro Vespignani, Stanley Wasserman, Eric Wernert



Software Team: Lead: Weixia (Bonnie) Huang

Developers: Bruce Herr, Russell Duhon, Santo Fortunato, Ben Markines, Cesar Hidalgo, M Felix Terkhorn, Tim Kelley, Ann McCranie, Soma Sanyal, Ramya Sabbineni, Vivek S. Thakre,

Goal: Develop a large-scale network analysis, modeling and visualization toolkit for physics, biomedical, and social science research.

Amount: $1,120,926, NSF IIS-0513650 award

Duration: Sept. 2005 - Aug. 2008

Website: http://nwb.slis.indiana.edu
https://nwb.slis.indiana.edu/community
http://cishell.org

Project Details cont.

NWB Advisory Board:

James Hendler (Semantic Web) http://www.cs.umd.edu/~hendler/

Jason Leigh (CI) http://www.evl.uic.edu/spiff/

Neo Martinez (Biology) http://online.sfsu.edu/~webhead/

Michael Macy, Cornell University (Sociology)
http://www.soc.cornell.edu/faculty/macy.shtml

Ulrik Brandes (Graph Theory) http://www.inf.uni-konstanz.de/~brandes/

Mark Gerstein, Yale University (Bioinformatics) http://bioinfo.mbb.yale.edu/

Stephen North (AT&T) http://public.research.att.com/viewPage.cfm?PageID=81

Tom Snijders, University of Groningen http://stat.gamma.rug.nl/snijders/

Major Deliverables

Network Workbench (NWB) Tool

- A network analysis, modeling, and visualization toolkit for physics, biomedical, and social science research.
- Can install and run on multiple Operating Systems.
- Uses Cyberinfrastructure Shell Framework underneath.

Cyberinfrastructure Shell (CIShell)

- An open source, software framework for the integration and utilization of datasets, algorithms, services, and tools.
- Uses OSGi and Equinox

NWB Community Wiki

- A place for users of the NWB Tool, the Cyberinfrastructure Shell (CIShell), or any other CIShell-based program to request, obtain, contribute, and share algorithms and datasets.
- All algorithms and datasets that are available via the NWB Tool have been well documented in the Community Wiki.

NetworkWorkbench
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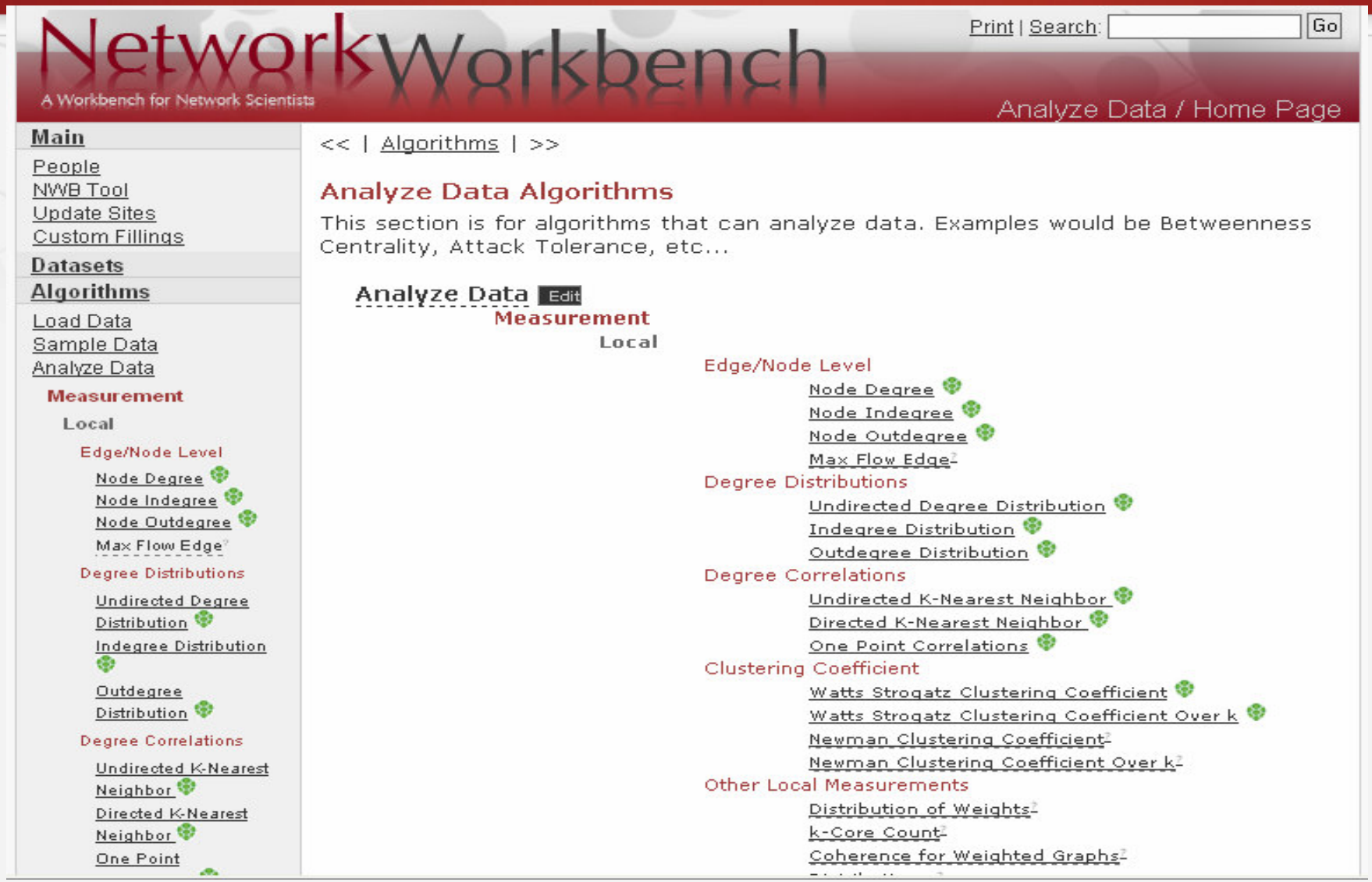
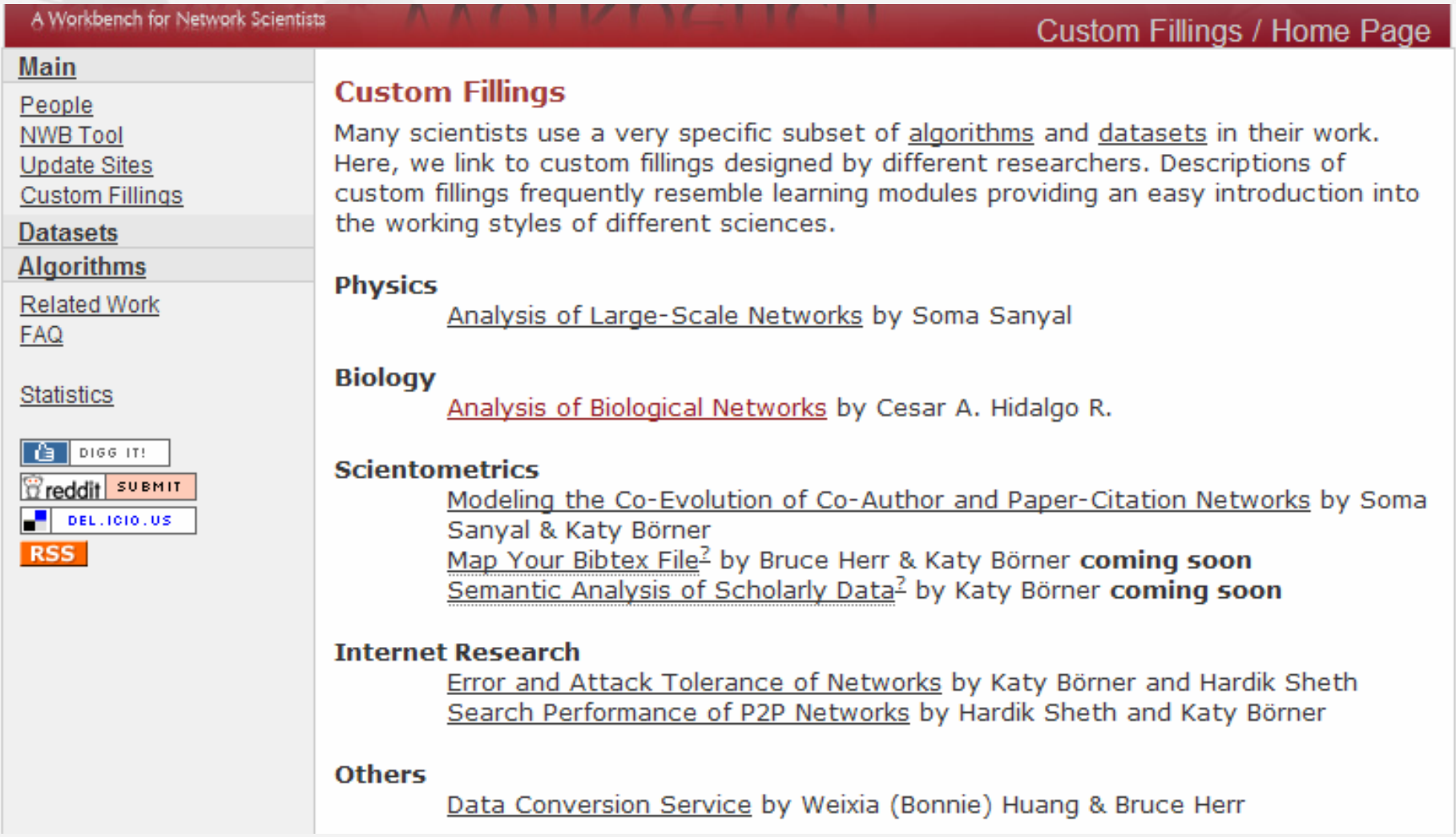
Community Wiki

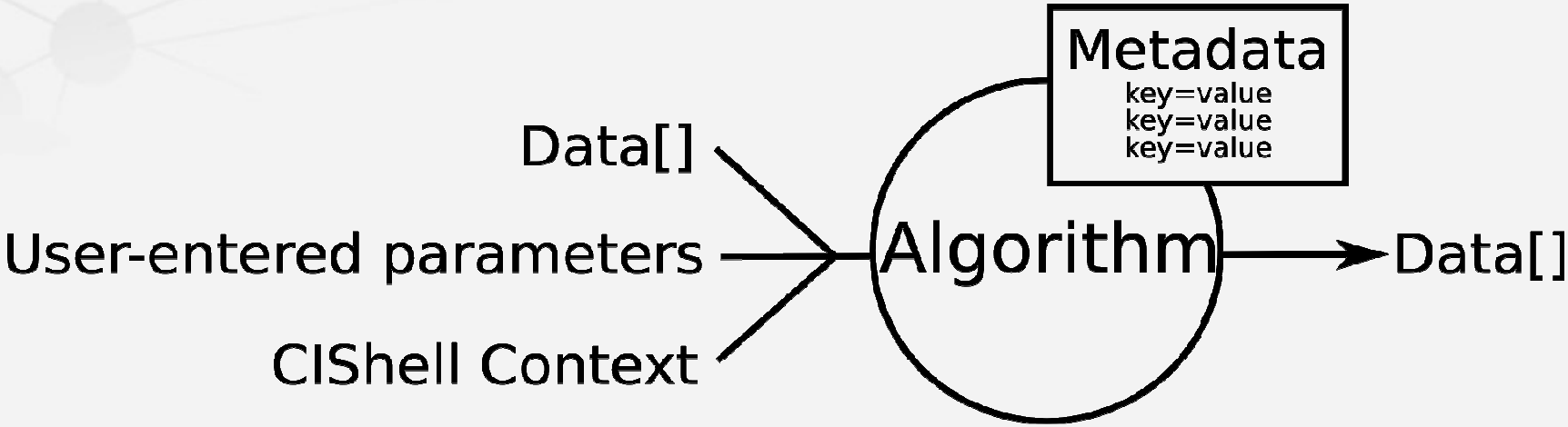


Community Wiki cont.



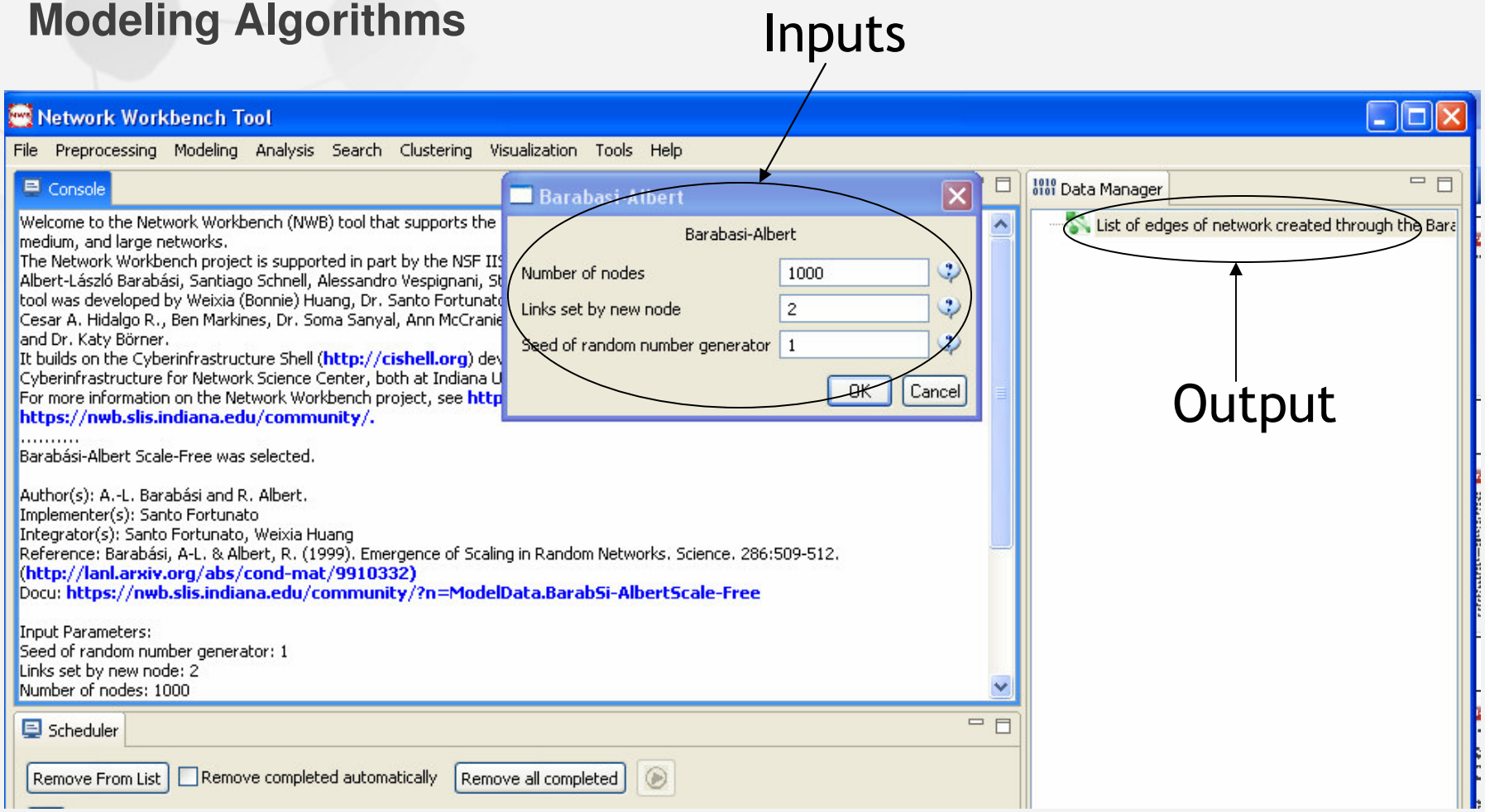
Abstract Algorithm Definition

An Abstract Definition of Algorithms, Datasets and Converters



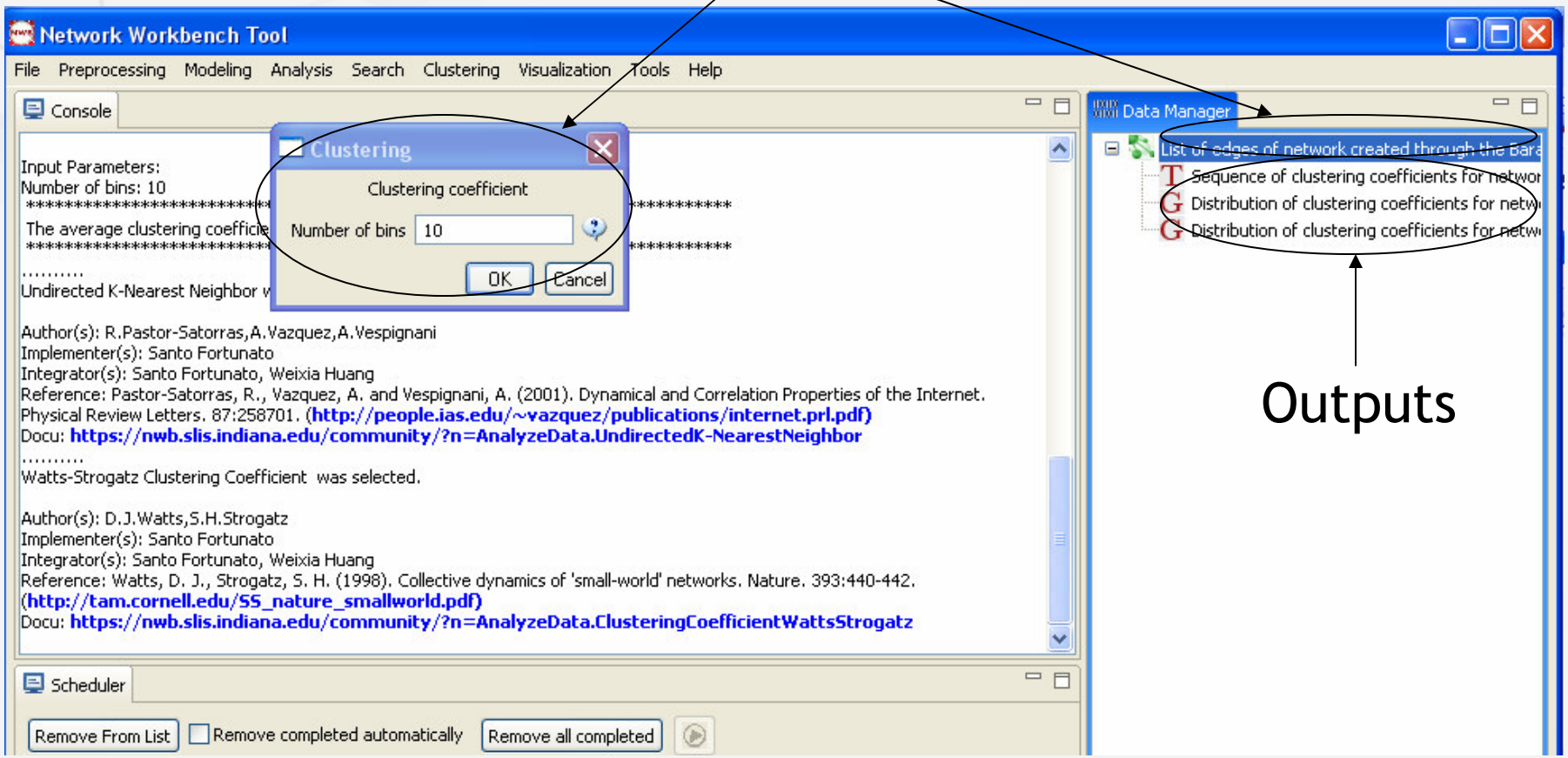
Abstract Algorithm Definition

Modeling Algorithms



Abstract Algorithm Definition

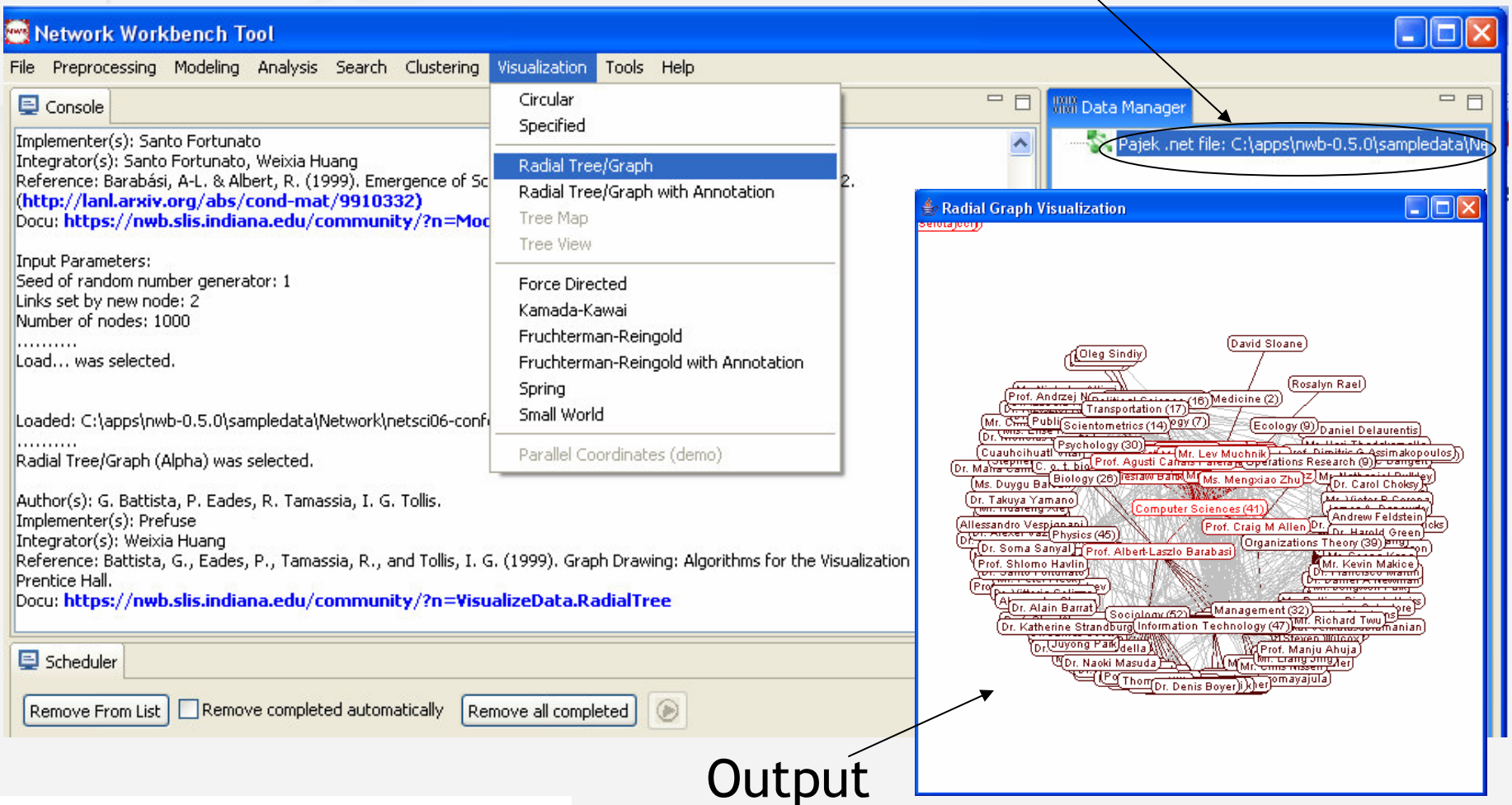
Analysis Algorithms



Abstract Algorithm Definition

Visualization Algorithms

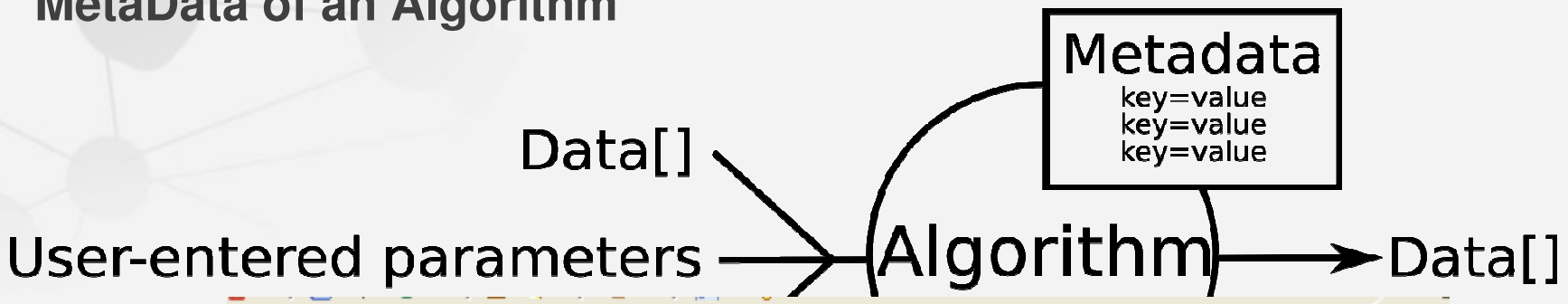
Input



Output

For Algorithm Integrators

MetaData of an Algorithm



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description=Barabasi-Albert algorithm implementation
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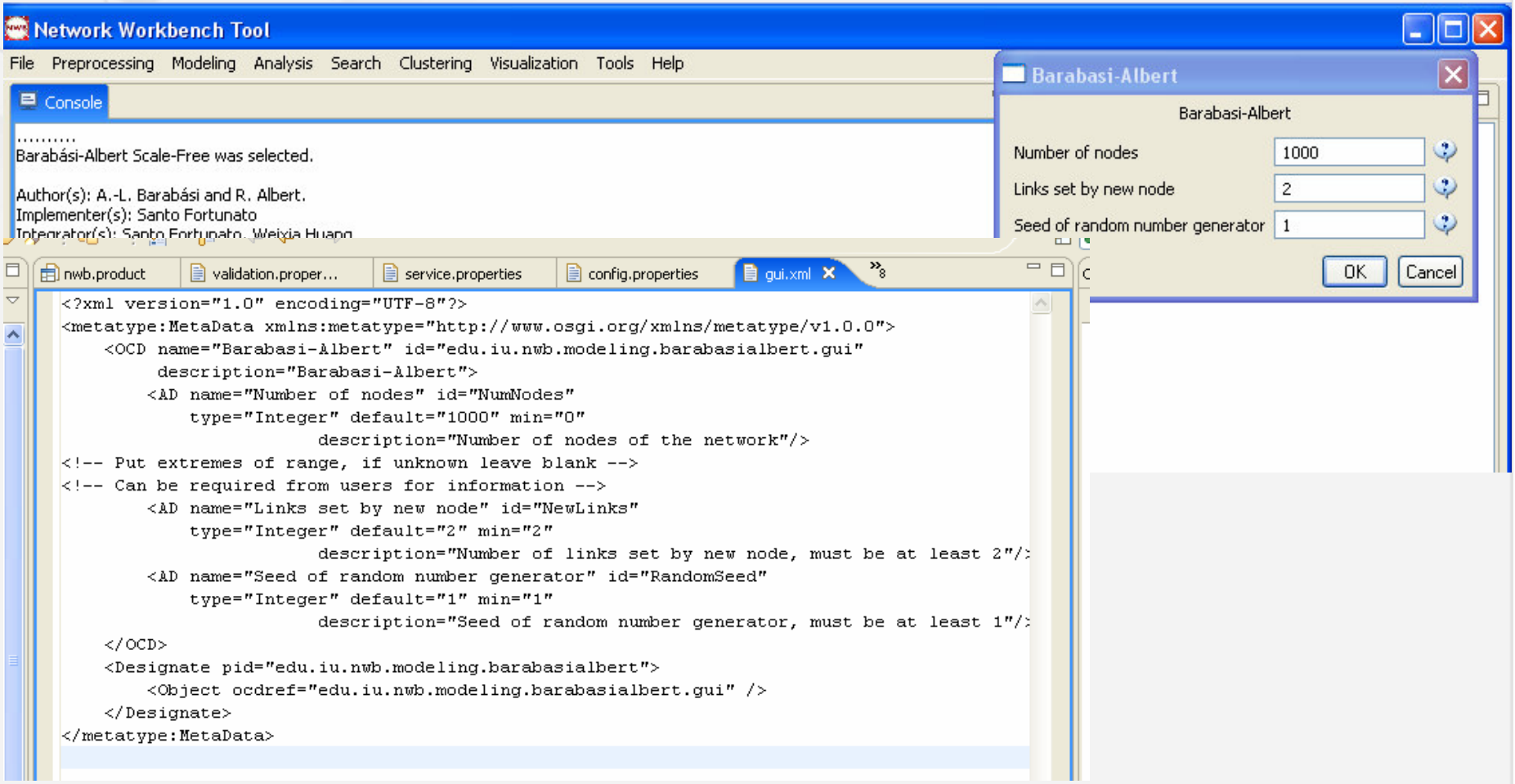
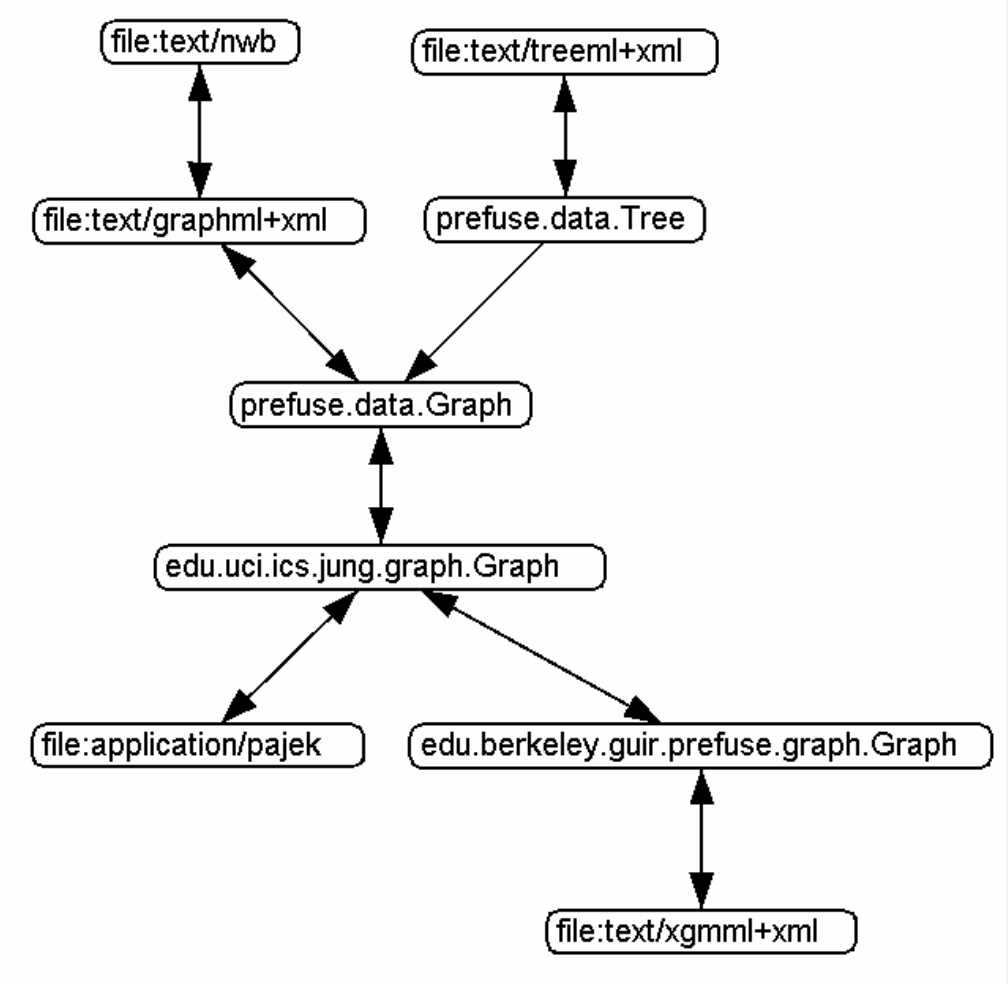
# for all input files, 'null' if no input data needed
out_data=file:text/nwb
# for all output files
# each output file will correspond to outFile[x] (zero based)
service.pid=edu.iu.nwb.modeling.barabasialbert
remoteable=true
authors=A.-L. Barabási and R. Albert.
implementers=Santo Fortunato
integrators=Santo Fortunato, Weixia Huang
reference=Barabási, A-L. & Albert, R. (1999). Emergence of Scaling in Random
reference_url=http://lanl.arxiv.org/abs/cond-mat/9910332
docu=https://nwb.slis.indiana.edu/community/?n=ModelData.BarabSi-AlbertScale
```

For Algorithm Integrators

GUI Builder and MetaType Service



Data Converters and Conversion Service



Summary

NWB tool and CIShell provide

- A testing bed for diverse algorithm implementations
- A mechanism to quickly integrate an algorithm and disseminate through the NWB tool and community wiki.
- A bridge between what algorithm developers can provide and what application users need.

Comments & Questions

Thank you