Crisis, Tragedy, and Recovery:
Digital Library Proposal

Edward A. Fox

Virginia Tech, Digital Library Research Laboratory

fox@vt.edu   http://fox.cs.vt.edu   www.dlib.vt.edu
www.dl-vt-416.org
http://fox.cs.vt.edu/talks/2008/20081209CNI08CTR.pdf

The 4/16 Digital Library

⊞ VirginiaTech

A digital library for recovery, research, resources, analysis and community relating to 4/16/2007, and after, at Virginia Tech

Share
Share your stories, photos and videos with us.

Resources
Browse our multimedia and external link collections.

Analysis
Query the resources, generate visualizations, data mine for patterns, and share results.

Thanks to: NSF IIS-0736055

Intro: Broader Interest

▸ Kauhajoki Finland shooting
▸ Spring 2008 Honors class
▸ Northern Illinois U. shooting

▸ Texas A&M Bonfire disaster
▸ Beslan school massacre
▸ Requests for help with documentaries
▸ **Interest**: counseling, psychology, sociology, history, oral history, technology use, …

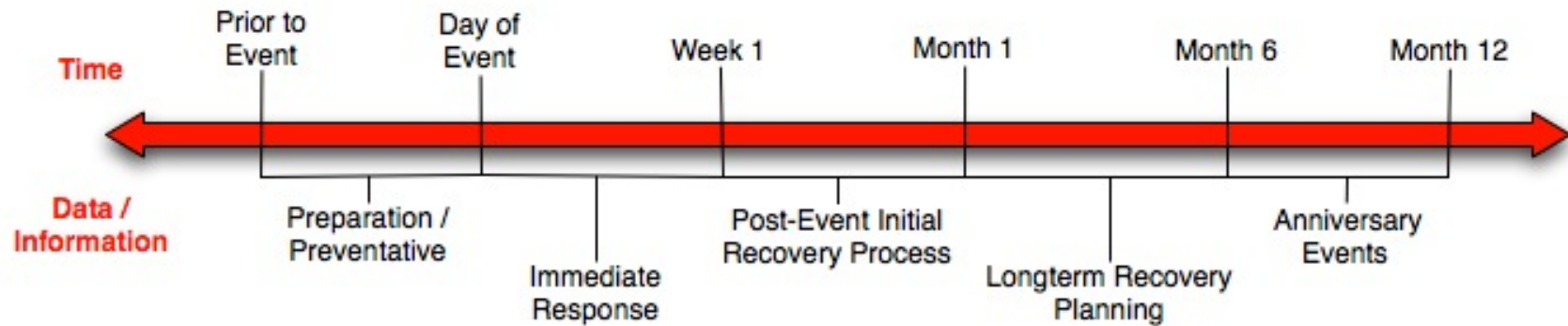▸ **Idea: distributed digital library network, with world-wide collaborating community**

Intro: Crisis, Tragedy, and Recovery (CTR) Interest

Year	Event	IA Collection	Wikipedia suffix, other URLs
2004	Asian Tsunami	2004	Indian_Ocean_earthquake , tsunami.archive.org
2007	Burmese Uprising	937	2007_Burmese_anti-government_protests
2007	California Wildfires	877	California_wildfires_of_October_2007
2008	Georgia and Russia Conflict	1120	2008_Georgia–Russia_crisis
2005	Hurricane Katrina	174	Hurricane_katrina, www.hurricanearchive.org, hellicane.blogspot.com, everythingandnothing.typepad.com katrinapoetry
2008	Iowa Flood	1092	Iowa_flood_of_2008
1998	Matthew Shepard murder	1075	Matthew_Shepard
2008	N. Illinois U. Shooting	970	Northern_Illinois_University_shooting
2008	Tibet protests	1044	Tibet_protests
2007	VT April 16 Shooting	694	Virginia_Tech_massacre, www.april16archive.org
2008	Zimbabwean crisis	1048	Zimbabwe, www.crisiszimbabwe.org

Intro: CTR

- **Difficulties faced**: information not collected or else scattered; survey contamination; long-term issues/preservation; content/genre variety

- **Scope**: Human tragedies (loss of life) that results from natural or manmade events, where communities are effected (preference of larger communities)

- **Purpose**: Support domain specific community needs through intelligent information integration and rich services

Intro: CTR Timeline

Goals

- Integrating heterogeneous information in a specific domain, making it accessible, and preserving it for long-term reuse
- Extend the scope of digital libraries
- Support information exploration

Research Questions

- How can a portion of the CTR Network be built semi-automatically, drawing upon related digital libraries, web pages, query logs, Web 2.0 applications, and other readily available Internet resources?
- How can this CTR Network be utilized, efficiently and effectively, for a wide variety of tasks?
- What kind of (usable) user interfaces can facilitate building and utilizing the CTR Network?
- How do we integrate information from other Digital Libraries such as the Internet Archive and the Library of Congress with the current web to make it more accessible?
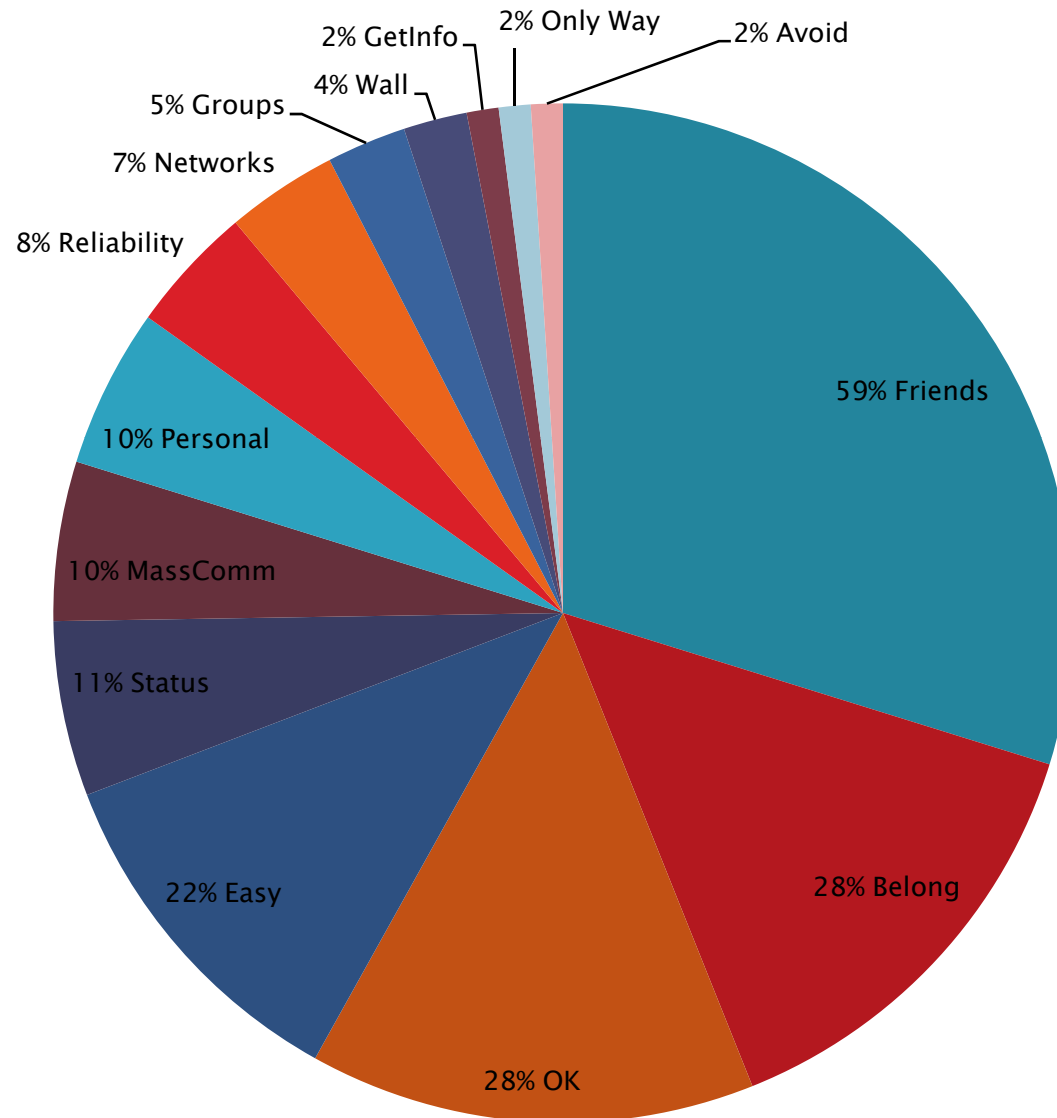- How can our solution be evaluated and validated, leading to a widely used methodology?

Related Work: Analysis in Response to Crisis Situations

- Facebook Study
- If you used a social networking website to communicate to others that you were safe or OK, which website did you use first?
  - 426 responses
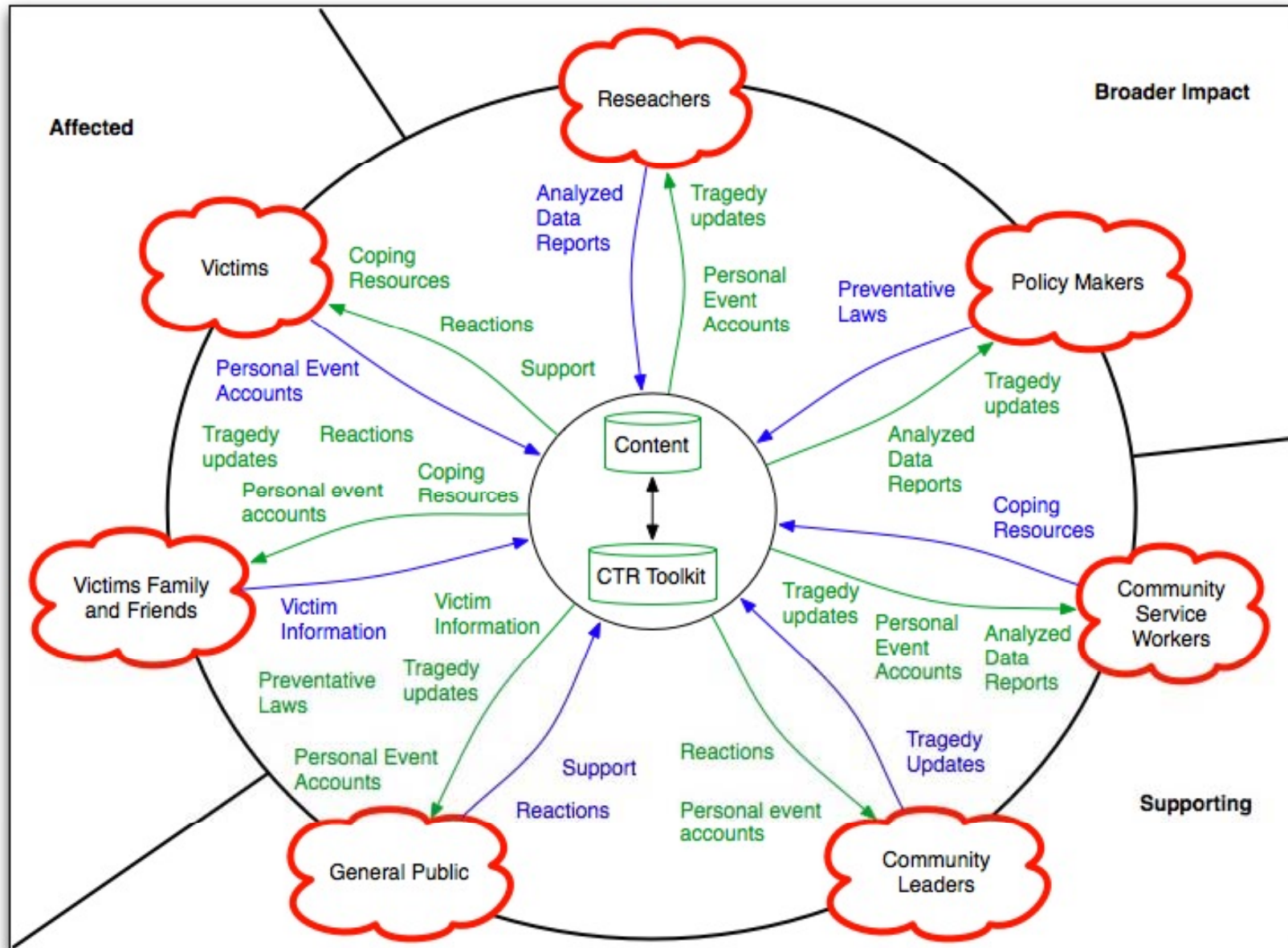 - Content Analysis
  - Results

Related Work: Keywords for coding

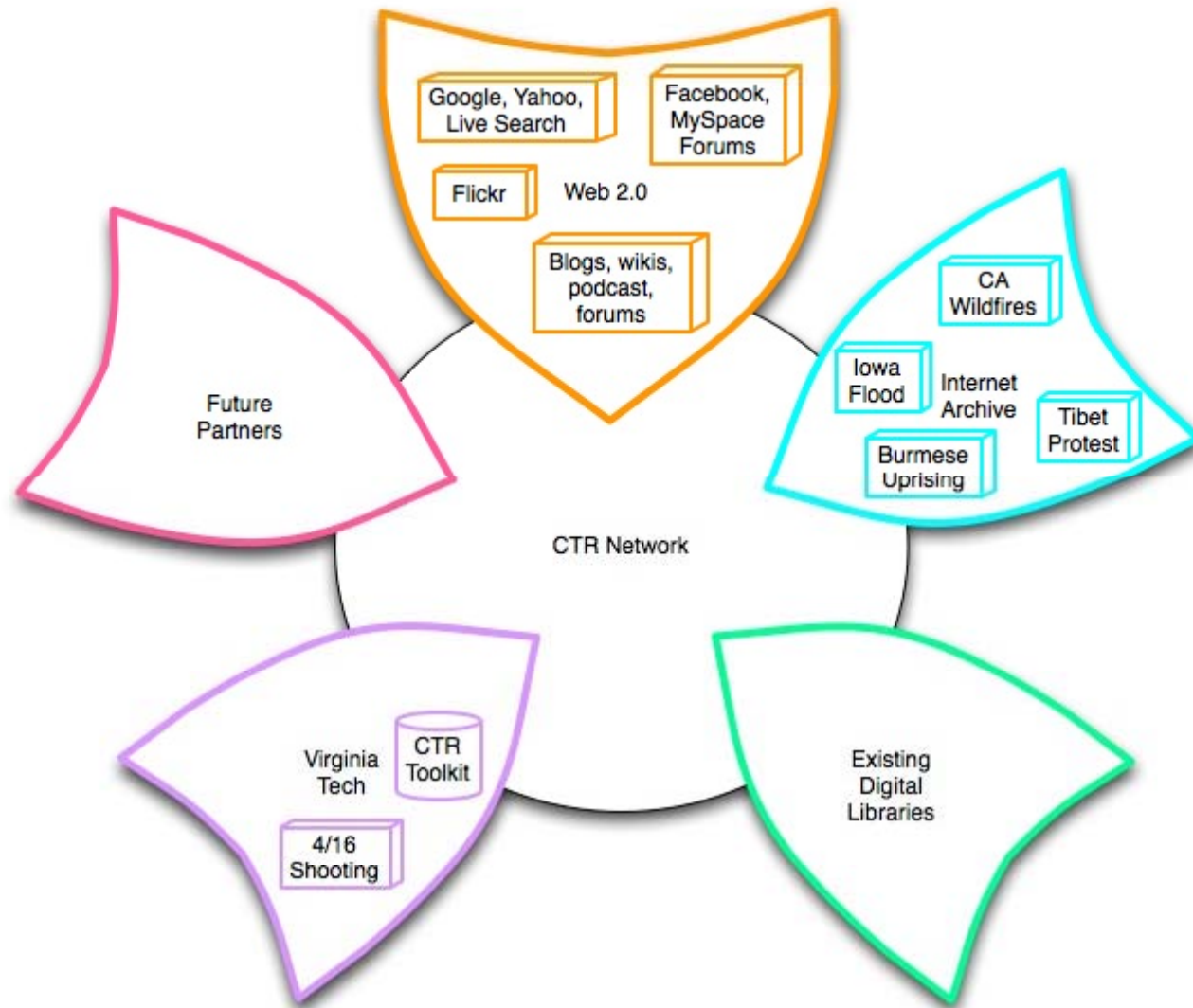| Avoid	Don't have to deal with AIM or phone calls.
Belong	Only social networking website respondent belongs to or they say that they had an account at the time.
Easy	Easy (and quickly) way to contact people or saying I know how to use Facebook.
Friends	Friends and other peers use this particular social networking website, must have thought that friends are on this site, everyone means their friends.
GetInfo	Went to the site to get information or best information.
Groups	Joined groups to connect with others.
Mass Comm	Wanted to reach many people at once, must have the intent to contact many people. Not make a direct connection with individual.
Networks	Means that the site is the most popular or has the most people.
OK	Idea that they went to the site for the purpose of letting others know they were OK or checking if others were OK.
Only Way	For some lost touch friends, this was the only method of communication available
Personal	Personal messages to or from individuals were utilized.
Reliability	Cell phone or other services were unreliable, however, social networking, websites were online the entire time allowing for faster response time
Status	Indicates that they used the public status feature to provide or receive updates about who was OK faster
Wall	A general post could be left on one's own "wall" indicating they were OK. Ability to post single message for all friends to see. Anytime posting is mentioned.

Related Work: Coding Results

- 2% GetInfo
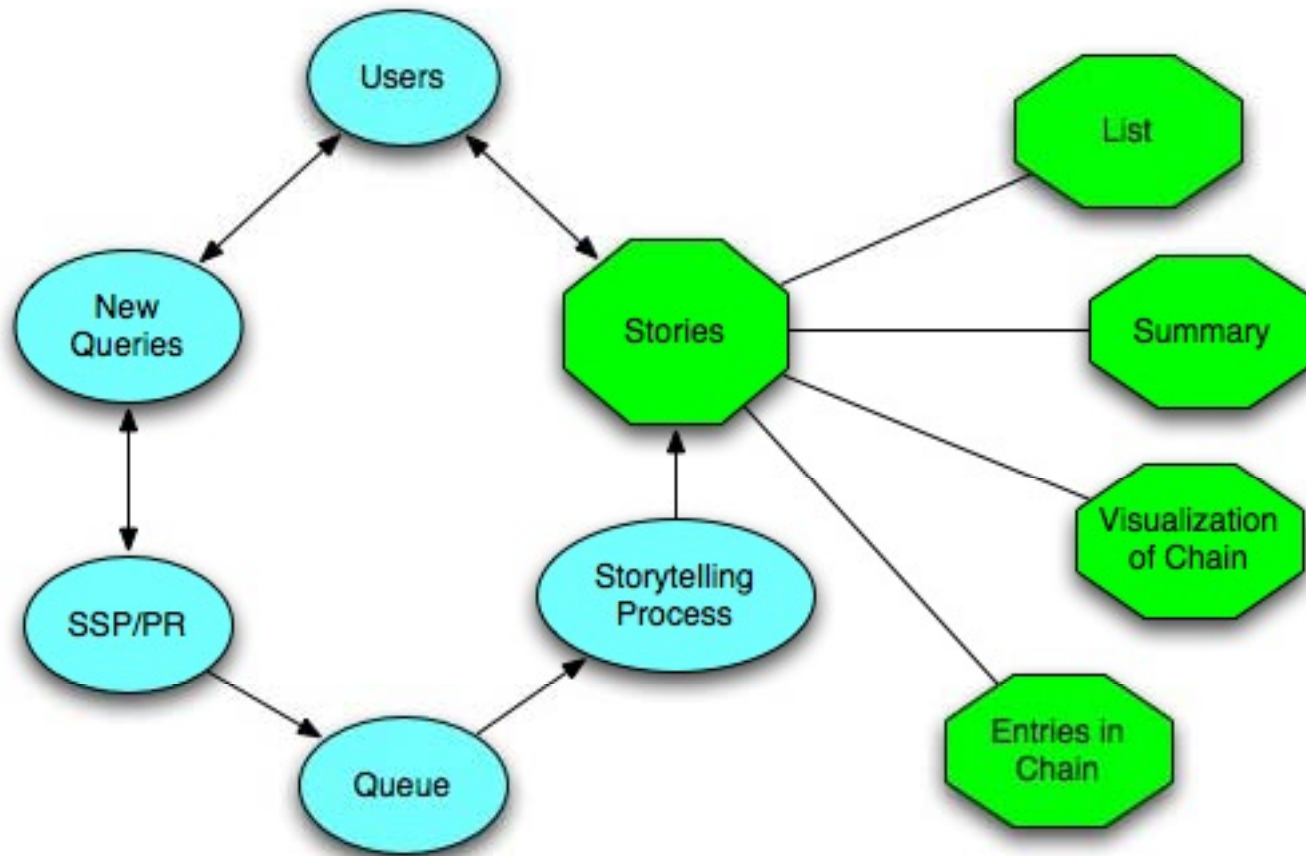- 2% Only Way
- 2% Avoid
- 4% Wall
- 5% Groups
- 7% Networks
- 8% Reliability
- 10% Personal
- 10% MassComm
- 11% Status
- 22% Easy
- 28% OK
- 28% Belong
- 59% Friends

System Stakeholders

Approach: CTR Network

Approach: Services

Infrastructure Services		Information Satisfaction Services
Repository-Building	**Add Value**	
Acquiring	Classifying	Browsing
Cataloging and Annotating	Clustering	Collaborating
Crawling	Entity Extraction, and Integration through URM	Customizing
Digitizing	Evaluating	Filtering
Federating	Auto Tagging	Providing access
Harvesting	Publicizing	Recommending
Submitting	Rating	Searching
Indexing	Ontology building	Visualizing

Approach: SSP and Storytelling

Selected References

▸ Fox, E. A., et al. (2008). A Digital Library for Recovery, Research, and Learning from April 16, 2007 at Virginia Tech. <u>Traumatology</u>, 14(1): 64-84

▸ Fox, E. A., F. Das Neves, et al. (2006). Exploring the computing literature with visualization and stepping stones & pathways. <u>Communications of the ACM</u> **49**(4): 52-58.

▸ Goncalves, M.A., E. A. Fox, and L. T. Watson. Towards a Digital Library Theory: A Formal Digital Library Ontology. <u>Int. J. Digital Libraries</u> 8(2): 91-114

▸ Kumar, D., N. Ramakrishnan, et al. (2008). Algorithms for Storytelling. <u>IEEE Trans. Knowledge and Data Engineering</u>, 20(6): 736-751.

▸ Shen, R., N. S. Vemuri, W. Fan, and E. A. Fox. (2008). Integration of Complex Archaeology Digital Libraries: An ETANA-DL Experience. <u>Information Systems</u> 33(7-8): 699-723

▸ Shen, R., N. S. Vemuri, et al. (2006). Exploring digital libraries: Integrating browsing, searching, and visualization. <u>Proc. 6th ACM/IEEE Joint Conference on Digital Libraries (JCDL)</u>, Jun 11-15, 2006, Chapel Hill, NC: 1-10.

Edward A. Fox

Virginia Tech, Digital Library Research Laboratory

fox@vt.edu   http://fox.cs.vt.edu   www.dlib.vt.edu
www.dl-vt-416.org