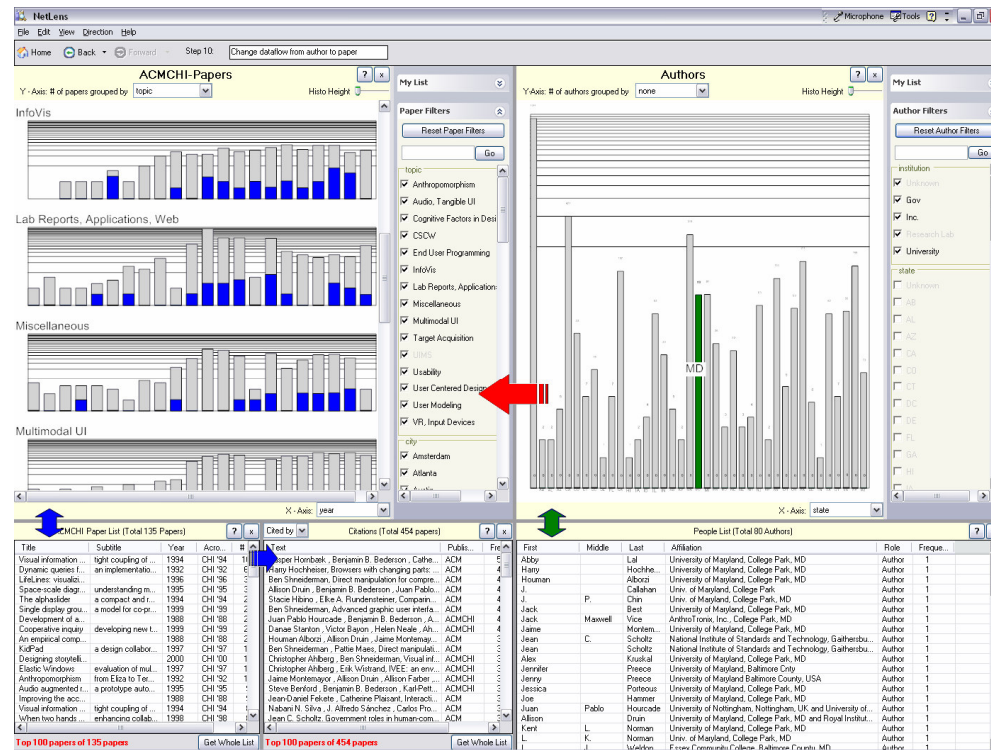


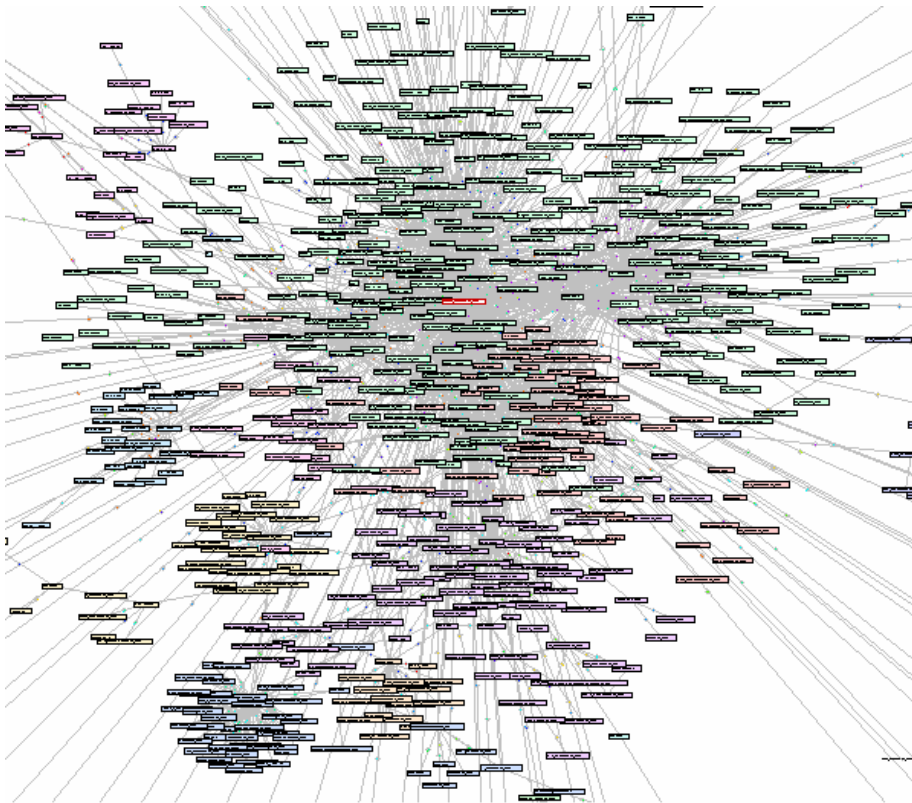
NetLens: Iterative Exploration of Content-Actor Network Data



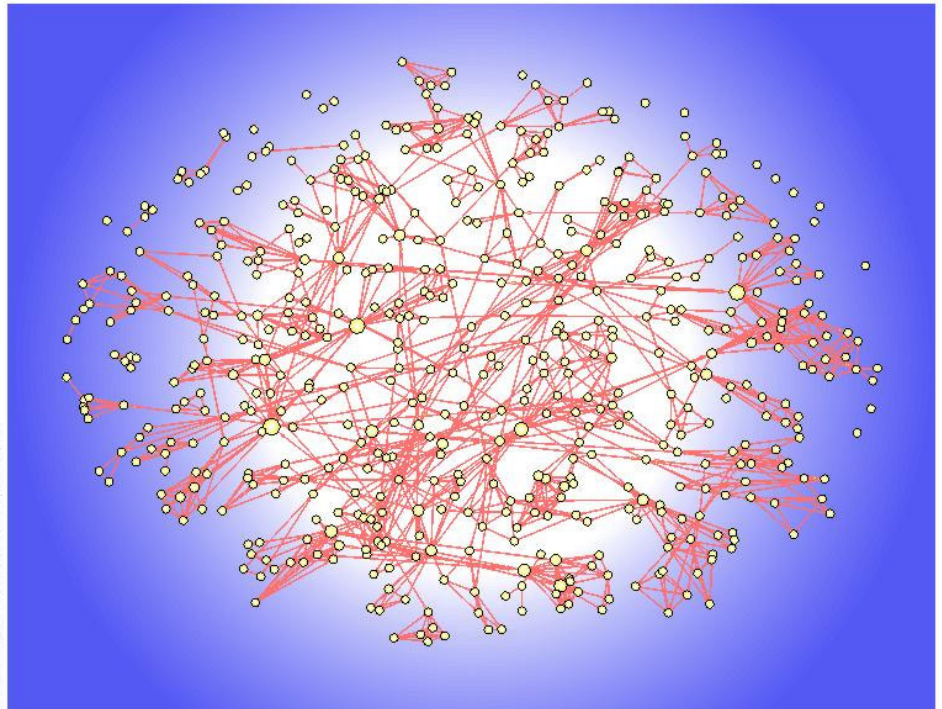
Hyunmo Kang, Catherine Plaisant,
Bongshin Lee, and Benjamin B. Bederson



Challenges of Network Data Visualization



Enron Email Network by Jeffrey Heer



471x361 14 11 00> 80 555R.DPB Darstellung Koauthorship 555 Netz 9 gvw mit Repet. Ausdrucks 0.0,0.0,1.0,1.0

Co-authorship Network by Lothar Krempel

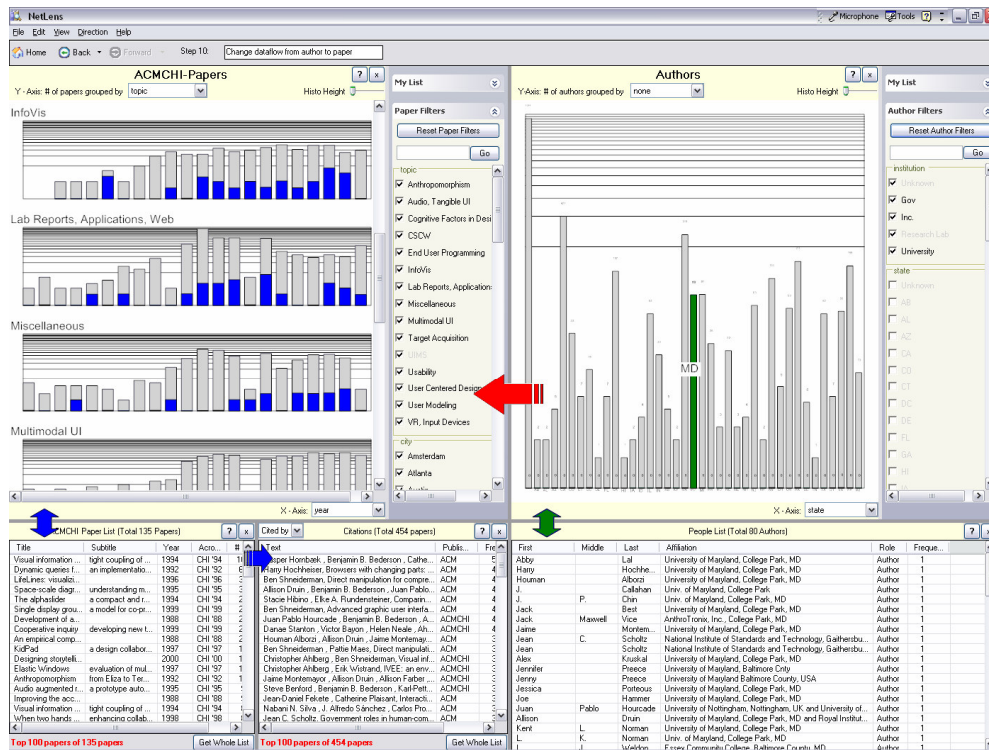


Design Goals

- Complex Analytic Tasks
 - Incremental data exploration
 - Iterative query refinement
- Scalability
 - Common simple UI components
e.g. histogram and lists
- Generality
 - Apply to any dataset matching Content-Actor model
e.g. digital library, photo collections, email collections,
case law, etc.



DEMO



NetLens

HCIL, University of Maryland

Hyunmo Kang, Catherine Plaisant

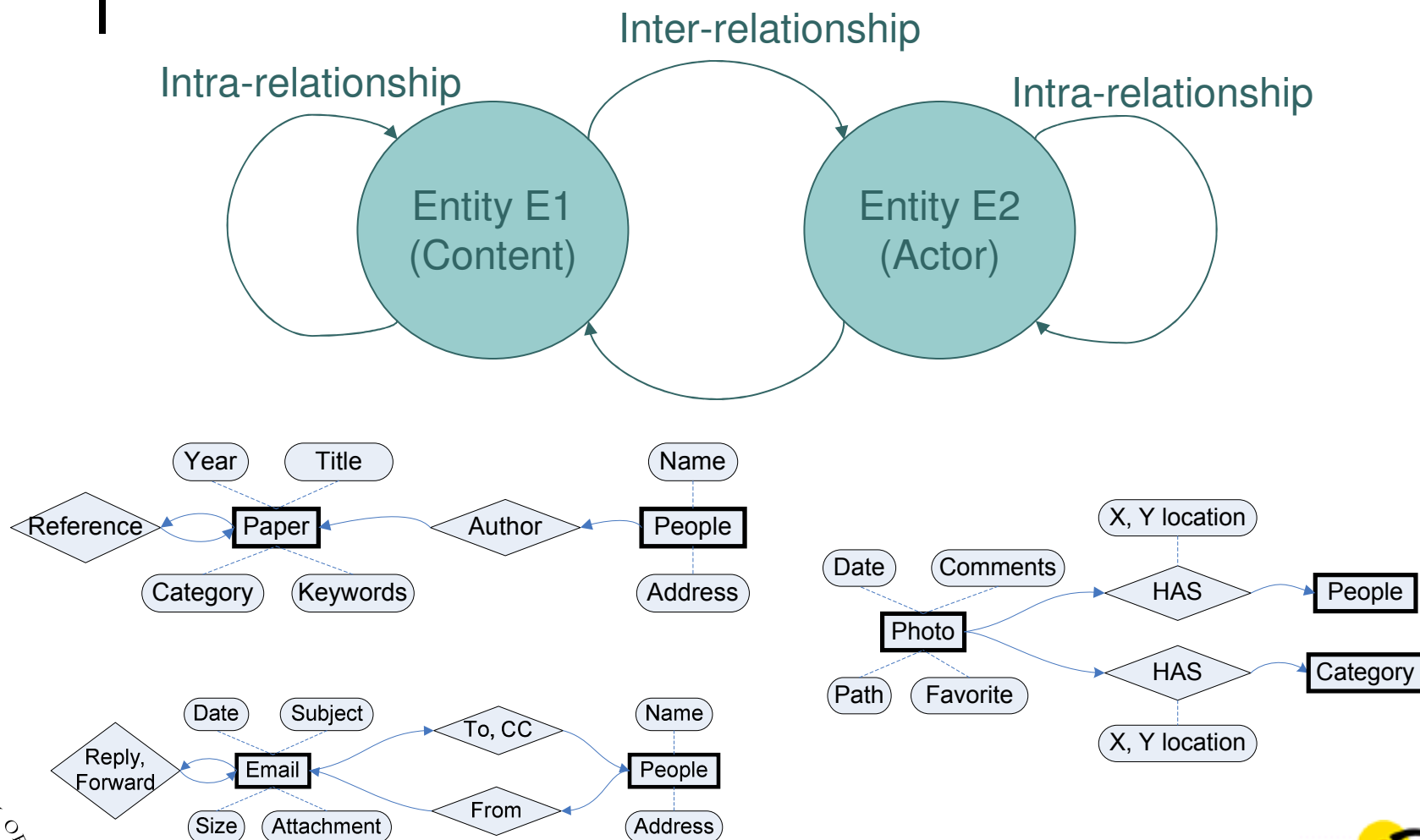
Bongshin Lee, Benjamin B. Bederson

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Content-Actor Data Model





Content-Actor Data Model Task

(ACM Digital Library Example)

Search By	Entity1 (Paper)		Entity2 (People)	
	Entity1's Attributes	Entity1(Paper)	Entity2's Attributes	Entity2 (People)
Entity1 (Paper)	Search for papers by paper attributes such as year, keywords, title, conference, topics, etc.	Search for papers that "cite" or "are cited by" the selected papers along with frequency	Search for papers by people attributes such as author's affiliation, institution, nationality, etc.	Search for papers written by the selected authors (either conjunctive or disjunctive)
Entity2 (People)	Search for authors by paper attributes such as year, keywords, title, conference, topics, etc.	Search for authors of the selected papers with frequency (the number of papers per each author)	Search for authors by people attributes such as author's affiliation, institution, nationality, etc.	Search for academic advisors of the selected authors (either conjunctive or disjunctive)



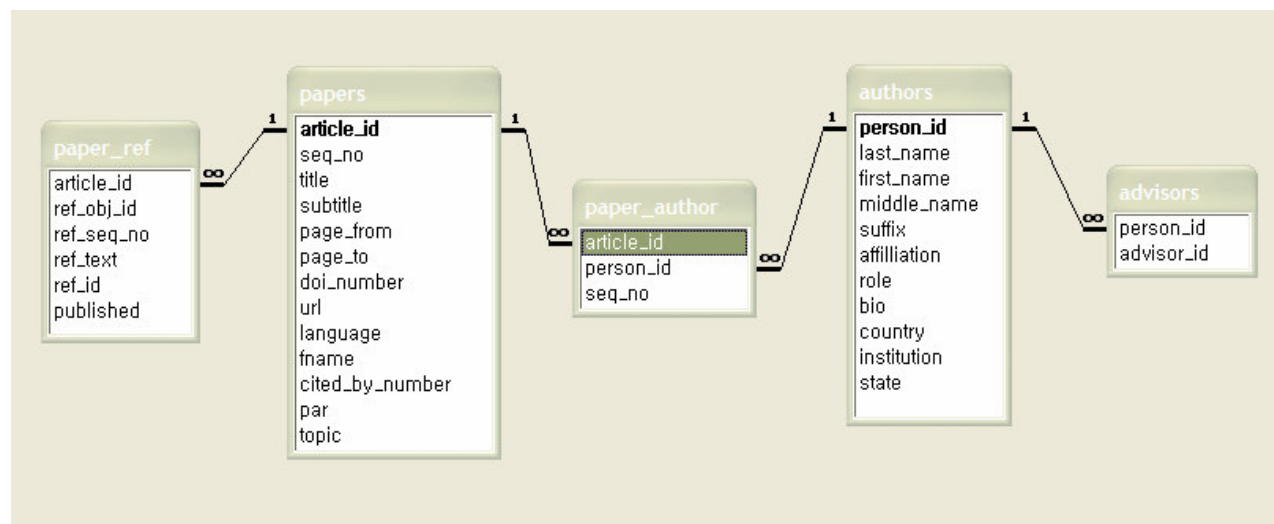
NetLens System Architecture

- NetLens Implementation

- Written in C#
- Piccolo toolkit

- NetLens Data

- MS Access
- Data schema





Evaluation

- Heuristic Evaluation by NIST
 - Navigation is easy and required a little training
 - UI widgets are understood by most people
 - The metaphor for the visualization is understandable
- Possible Directions:
 - Usability
 - Measure usability and learnability
 - Power
 - Compare complexity of possible queries
 - Utility
 - Conduct longitudinal studies with users



Conclusion

- Alternative Approach for Network Data Manipulation and Visualization
- Exploratory Search
- Iterative Query Refinement
- Scalability
- Generality





Acknowledgement

- NetLens Information
 - Web site: www.cs.umd.edu/hcil/netlens
 - Video: HCIL DVD
 - Actual demo available in demo session
- Participants and Contact Info
 - Hyunmo Kang - kang@cs.umd.edu
 - Catherine Plaisant – plaisant@cs.umd.edu
 - Benjamin B. Bederson – bederson@cs.umd.edu
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