



# Facebook for scientists: Optimizing how scientific collaborations are established

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# Social networking is hot

- Membership in social networking sites is booming:
  - Friendster: 50,000,000
  - Facebook: 58,000,000
  - MySpace: 217,000,000
- How about scientists?
- Adults invade Facebook! (WSJ 11/3/07)

Weaver AC, Morrison BB. Social Networking. Computer 2008;41(2):97-100

# How do scientists look for collaborators?

- ask colleague(s) and get a referral
- search the literature and cold-call
- ~~• use electronic systems, e.g. Community of Science~~

Kraut RE, Galegher J, Egidio C. Relationships and tasks in scientific research collaboration. Hum-Comput Interact 1987-1988;3(1):31-58.

# Why don't scientists use expertise locating systems?

1. low awareness
2. incomplete domain coverage
3. outdated/sparse profiles
4. lack of critical mass
5. traditional approaches very ingrained

# Scientists are not looking for a blind date.

## Collaboration ...

- ... is often a long-term relationship.
- ... requires predicting future performance.
- ... benefits from deep knowledge about the collaborator.
- ... can have significant professional impact.
- ... is sometimes hard to end.

⇒ contrast to “expertise location” in traditional CSCW research

# With regard to collaboration, scientists face “an embarrassment of riches.”

- science increasingly multi- and inter-disciplinary
- more collaborators through growing research enterprise
- collaborators easier to find through Google, MEDLINE, etc.
- remote collaborations increasingly practical

Braun T, Schubert A. A quantitative view on the coming of age of interdisciplinarity in the sciences 1980-1999. *Scientometrics* 2003 Sep;58(1):183-9.

# Plenty of expertise locating systems

- Community of Science ([www.cos.com](http://www.cos.com))
- LinkedIn ([www.linkedin.com](http://www.linkedin.com))
- Innocentive ([www.innocentive.com](http://www.innocentive.com))
- Index Copernicus Scientists  
(<http://scientists.indexcopernicus.com/>)
- Research Crossroads  
(<http://www.researchcrossroads.com/>)
- BiomedExperts  
(<http://www.biomedexperts.com/>)

# Are current systems responsive to the requirements of scientists seeking collaborators?



# Project goals

- develop preliminary requirements for researcher discovery system
- design a set of services and implement in a prototype system
- deploy system in practice
- evaluate

# Methods

## Project team

- 2 dental informatics faculty
- 1 School of Business faculty
- 1 library and information science faculty
- 5 MS students in human-computer interaction:
  - psychology
  - computer science
  - Design
- implementation team (2.5 programmers, .5 project manager)

# Methods (cont.)

## Background research

- literature review
- affinity diagramming
- contextual inquiries (10 scientists)
- semistructured interviews (30 scientists)

# Methods (cont.)

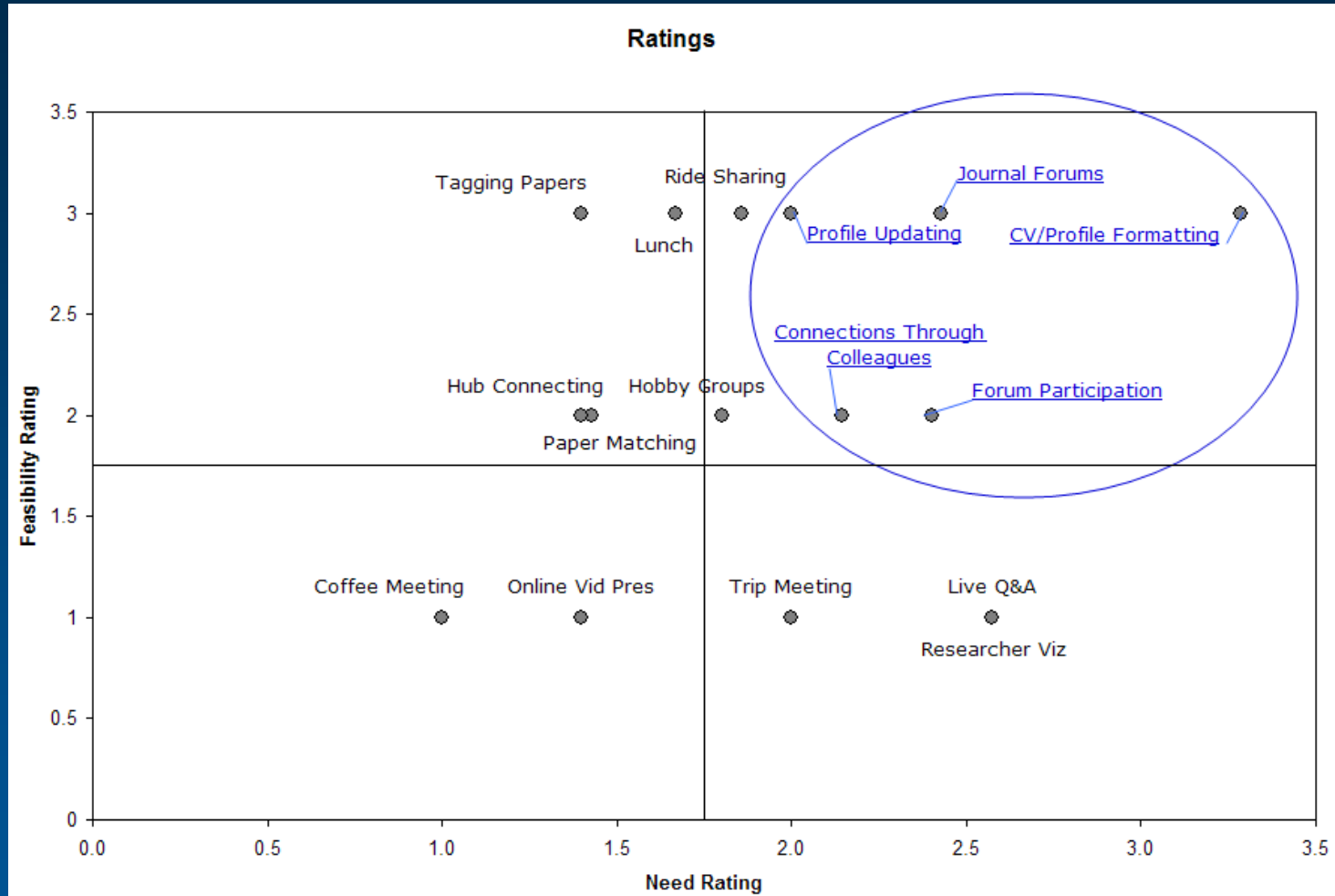
## Development

- ideation
- concept validation
- prototyping
- formative evaluation



# Results

# Ideation and concept validation



# Requirements

- *effort balanced with perceived benefit*
- *profiles comprehensive and up-to-date*
- *exploit social network*
- *model proximity*
- *assessment of compatibility, work style and other "soft" traits*

## Requirements (cont.)

- *social networks based solely on co-authorship incomplete*
- *accommodate preferences for privacy and public availability of information*
- *search effectively across disciplines*
- *facilitate non-intuitive connections*

# Digital Vita live

Research Gateway **digital vita** welcome, Titus Schleyer [Sign Out](#) | [Help](#) | [My Settings](#)

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Personal Statements (2)

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Education & Training (4)

Academic Appointments (10)

Other Professional Positions (6)

Grants & Contracts (27)

Awards & Honors (5)

**Publications (141)**

Certifications & Licenses (4)

Professional Societies (9)

Presentations (79)

Service Activities (118)

Mentoring and Advising (29)

**Publications** Add Entry

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- 1 Song M, Spallek H, Polk DE, Schleyer TK, Wali T. How information systems should support the information needs of general dentists in clinical settings: suggestions from a qualitative study. *BMC Medical Informatics and Decision Making*. 2010; 10(7).
- 2 Irwin JY, Torres-Urquidy MH, Schleyer T, Monaco V. [A preliminary model of work during initial examination and treatment planning appointments](#). *British Dental Journal*. 2009 Jan 10; 206(1):E1; discussion 24-5.
- 3 Torres-Urquidy MH, Wallstrom G, Schleyer TK. [Detection of disease outbreaks by the use of oral manifestations](#). *Journal of dental research*. 2009 Jan; 88(1):89-94.
- 4 Torres-Urquidy MH, Acharya A, Hernandez-Cott P, Misner J, Schleyer T. [Evaluating the effectiveness of modeling principles for data models](#). *Studies in health technology and informatics*. 2009; 143:525-33.
- 5 Thyvalikakath TP, Monaco V, Thambuganipalle H, Schleyer T. [Comparative study of heuristic evaluation and usability testing methods](#). *Studies in health technology and informatics*. 2009; 143:322-7.
- 6 Christensen L, Harkema H, Irwin J, Schleyer TK, Haug P, Chapman WW. *Medical Understanding and Semantic Analysis*. 2009. (accepted)
- 7 Acharya A, Schleyer TK. Electronic dental record information model. *Int J Medical Engineering and Informatics*. 2009; 1(4):418-434.
- 8 Thyvalikakath TP, Monaco V, Thambuganipalle HB, Schleyer T. [A usability evaluation of four commercial dental computer-based patient record systems](#). *Journal of the American Dental Association* (1939). 2008 Dec; 139(12):1632-42.

# Implementation

- “soft” rollout beginning 10/2009
- currently:
  - 158 users
  - 101 logins in 1/10
  - 3,931 publications
  - 626 grants
  - 608 presentations
  - 297 mentoring records

# Evaluation

- adoption and use of the system
- user attitudes, satisfaction and acceptance
- outcomes
  - short-term: biosketch generation and routing, new research teams, efficiency gain
  - long-term: high-impact collaborations formed, collaborative publications, external system utilization

# Discussion

- collaboration-seeking a complex activity
- does not depend on solely factual information about potential collaborators
- current approaches to finding collaborators time- and effort-intensive
- CV a good source of factual information

# Why did the Community of Science fail?

- not integrated in workflow
- no ability to produce localized output
- no value-added functions
- no social network (?)

# Barriers to the implementation of Digital Vita

- Well-connected researchers will outperform system – most of the time.
- Collaboration-seeking methods and needs evolve with scientist's career.
- DV economizes on many tasks but adds others.
- The desire for “publicness” differs among scientists.
- ... and many other problems associated with social networks (e.g. free ridership, differential incentives, etc.).

# Project Website

<http://di.dental.pitt.edu/orc/>



Thank you for  
your attention.  
Questions?