# Supporting collaborative decision making

**Martin White**
Managing Director, Intranet Focus Ltd.
martin.white@intranetfocus.com

KnoweScape 19 November 2013

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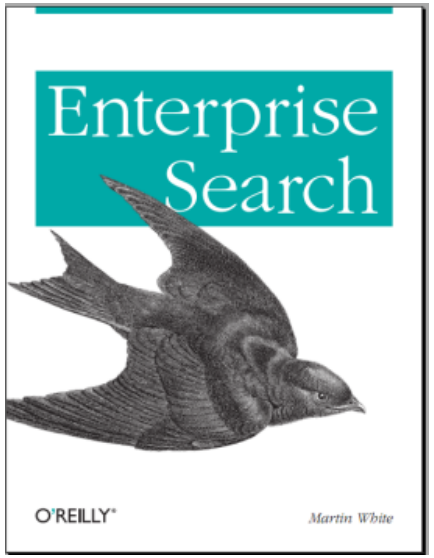


The University Of Sheffield. Information School

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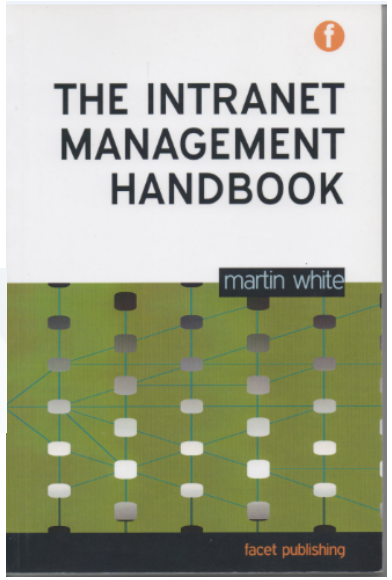


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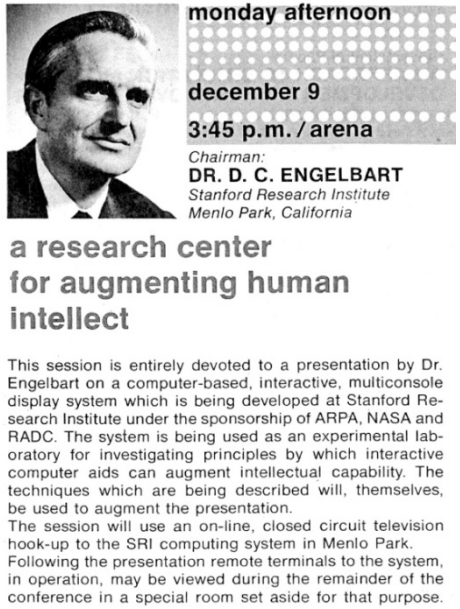
# Agenda

- After 50 years at last a paradigm shift!
- The challenge of networked working practices
- Search as a decision support application
- Supporting collaborative decision making
- Research topics in collaborative information seeking
- Information retrieval and enterprise search

# In the beginning……



monday afternoon

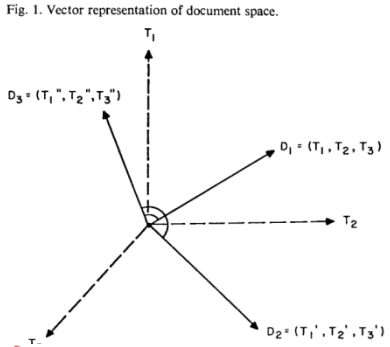
december 9

3:45 p.m. / arena

*Chairman:*
**DR. D. C. ENGELBART**
*Stanford Research Institute*
*Menlo Park, California*

**a research center for augmenting human intellect**

This session is entirely devoted to a presentation by Dr. Engelbart on a computer-based, interactive, multiconsole display system which is being developed at Stanford Research Institute under the sponsorship of ARPA, NASA and RADC. The system is being used as an experimental laboratory for investigating principles by which interactive computer aids can augment intellectual capability. The techniques which are being described will, themselves, be used to augment the presentation.
The session will use an on-line, closed circuit television hook-up to the SRI computing system in Menlo Park.
Following the presentation remote terminals to the system, in operation, may be viewed during the remainder of the conference in a special room set aside for that purpose.




Verity®
Intellectual Capital Management

Michael Pliner 1988

Gerard Salton 1965

Dialog®

1972

sgi

***Big Data ...***
***and the Next Wave of InfraStress***
***John R. Mashey***
***Chief Scientist, SGI***

*Technology Waves:*
*NOT technology for technology's sake*
*IT'S WHAT YOU DO WITH IT*
*But if you don't understand the trends*
*IT'S WHAT IT WILL DO TO YOU*


John Mashey 1997

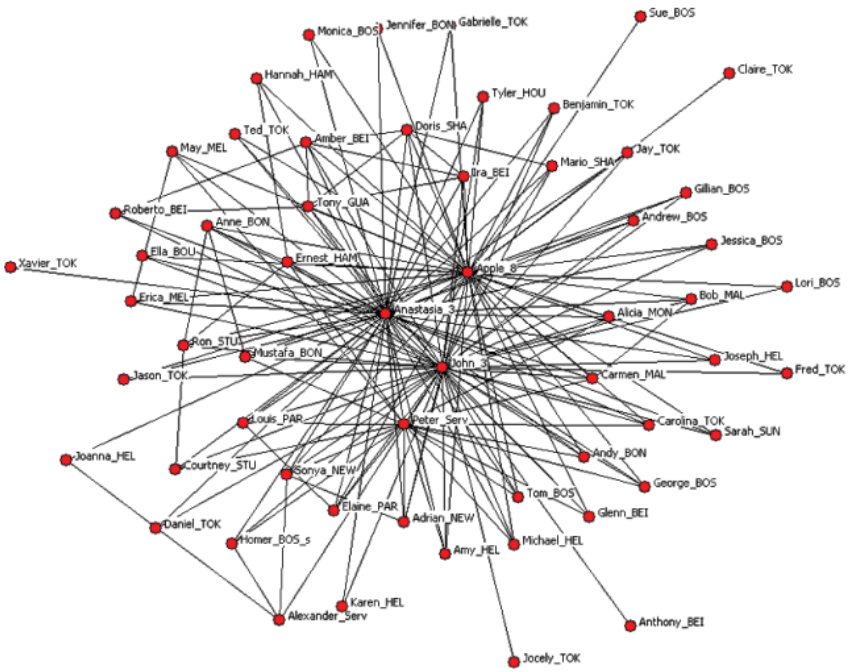
Charles Bourne 1963

# Networked work

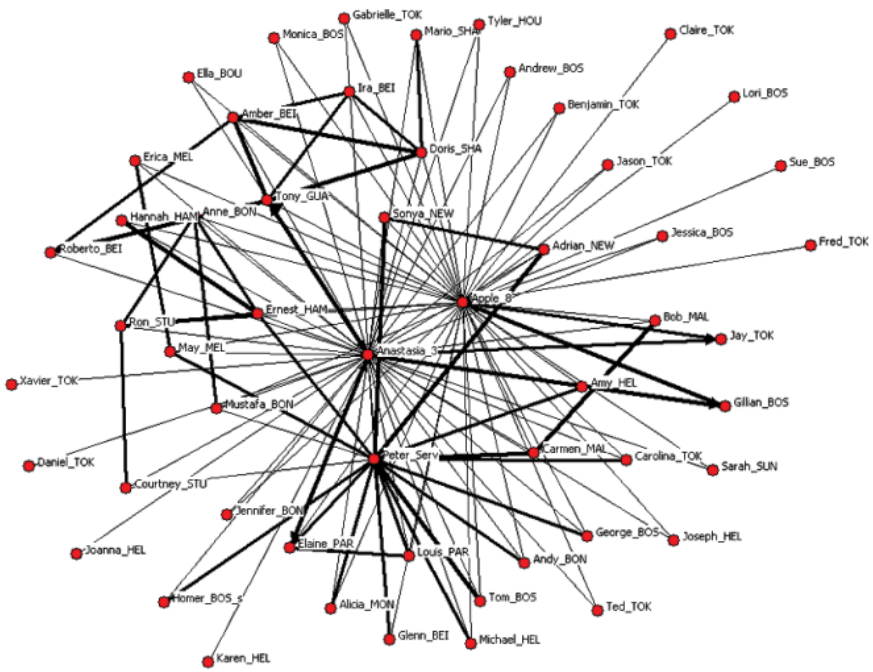
**Knowledge sharing through virtual teams across borders and boundaries**

Olli-Pekka Kauppila, Risto Rajala and Annukka Jyrämä

*Management Learning* 2011 42: 395 originally published online 31 March 2011

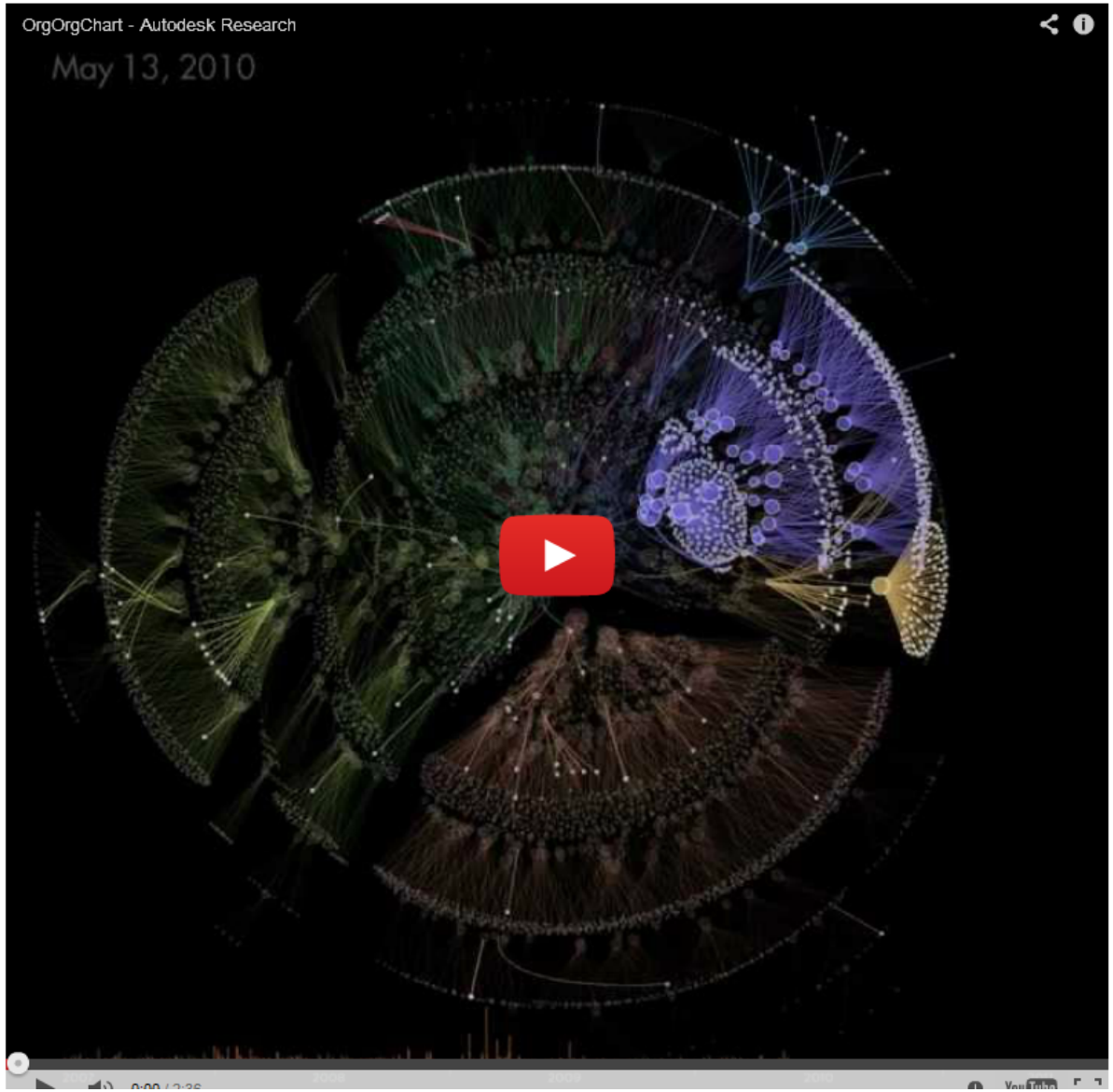



Analysis of the social network: all ties within a new product line worknet




Identification of individual knowledge activists: tie strength within the worknet

If you can, try watching the video fullscreen, at 1080p resolution.

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http://www.autodeskresearch.com/projects/orgorgchart

## Collaboration personas: A framework for understanding & designing collaborative workplace tools

**Tara Matthews, Steve Whittaker, Thomas Moran, Meng Yang**
IBM Research - Almaden
San Jose, California, USA
{tlmatthe, sjwhitta, tpmoran, yangmeng}@us.ibm.com

| | | |
|---|---|---|
| **Lifespan** of the group is (i.e., time to accomplish objective)… | short-lived<br>lightweight to setup<br>limited structure, simple access controls | long-lived<br>customizable organization, advanced features for finding content, ways to share knowledge / history of work |
| For long-lived teams, what stays **constant** is… | team<br>ability to manage multiple projects over time | objective<br>ability to on-board new team members |
| Created because of a **shared**… | interest<br>discussion, info sharing | objective<br>task tracking, scheduling, meeting support, info sharing |
| **Size** of the team is… | small (3)<br>can share more detail about daily work, more likely to collaborate in shared space (e.g., writing docs v. just storing docs) | large (100s)<br>visualize team, create sub-groups, fewer topics of interest to large group may want to partition members' work |
| **Management** of the team is… | self-managed<br>equal access/privileges | designated leader<br>manager may want to track members' status, manager likely to be in charge of maintaining team space |
| Degree of **dependency** among members… | interdependent<br>sharing detailed daily work is likely useful | independent<br>sharing general info, lessons learned, best practices |
| Existence of **sub-groups**… | no sub-groups<br>all info visible to all members | many sub-groups<br>ability to partition sub-groups' work, hide content from other sub-groups report status & outcomes to larger group |

# Making good decisions

Harvard Business Review

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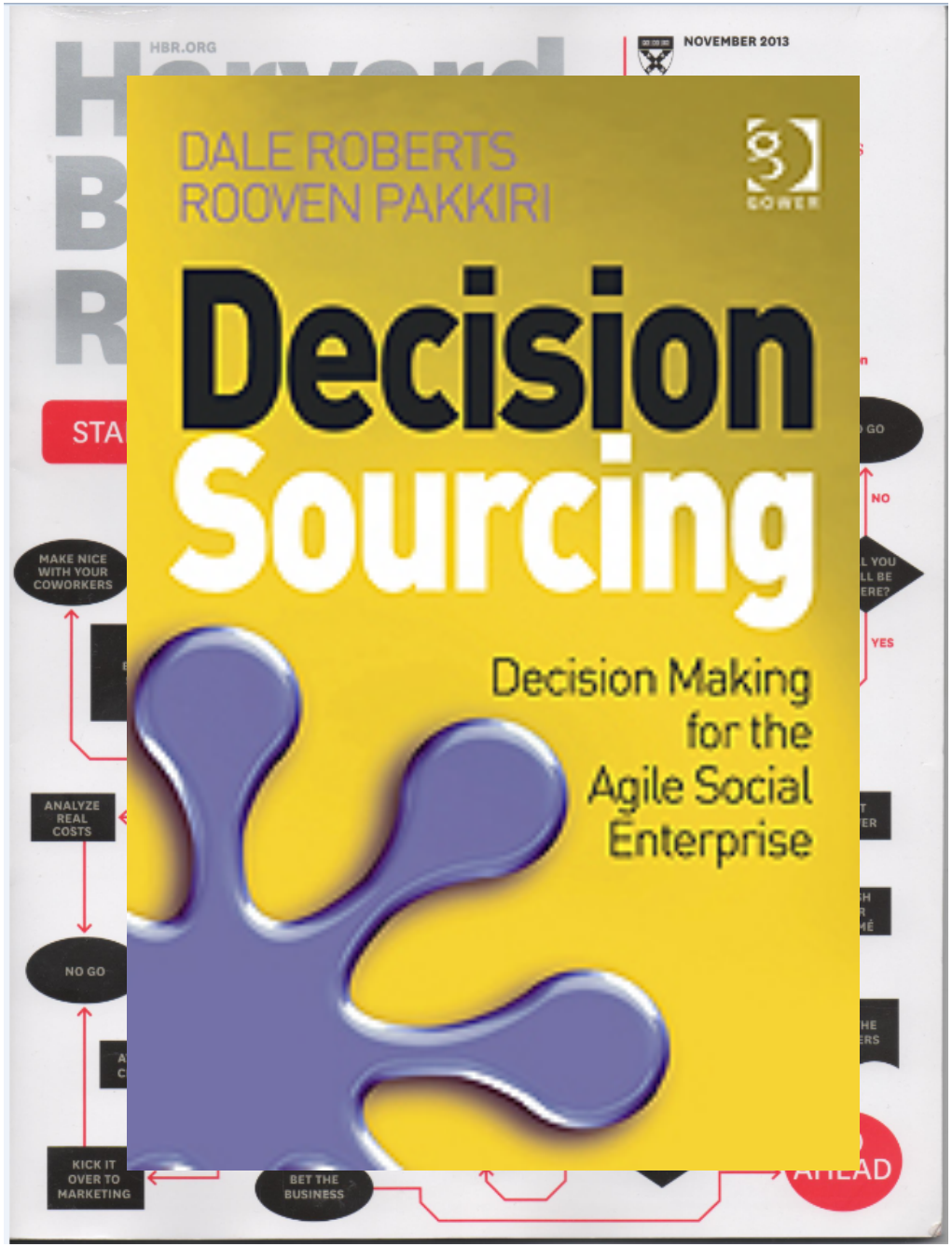
THE MAGAZINE

October 2013

# Rethinking the Decision Factory

by Roger L. Martin

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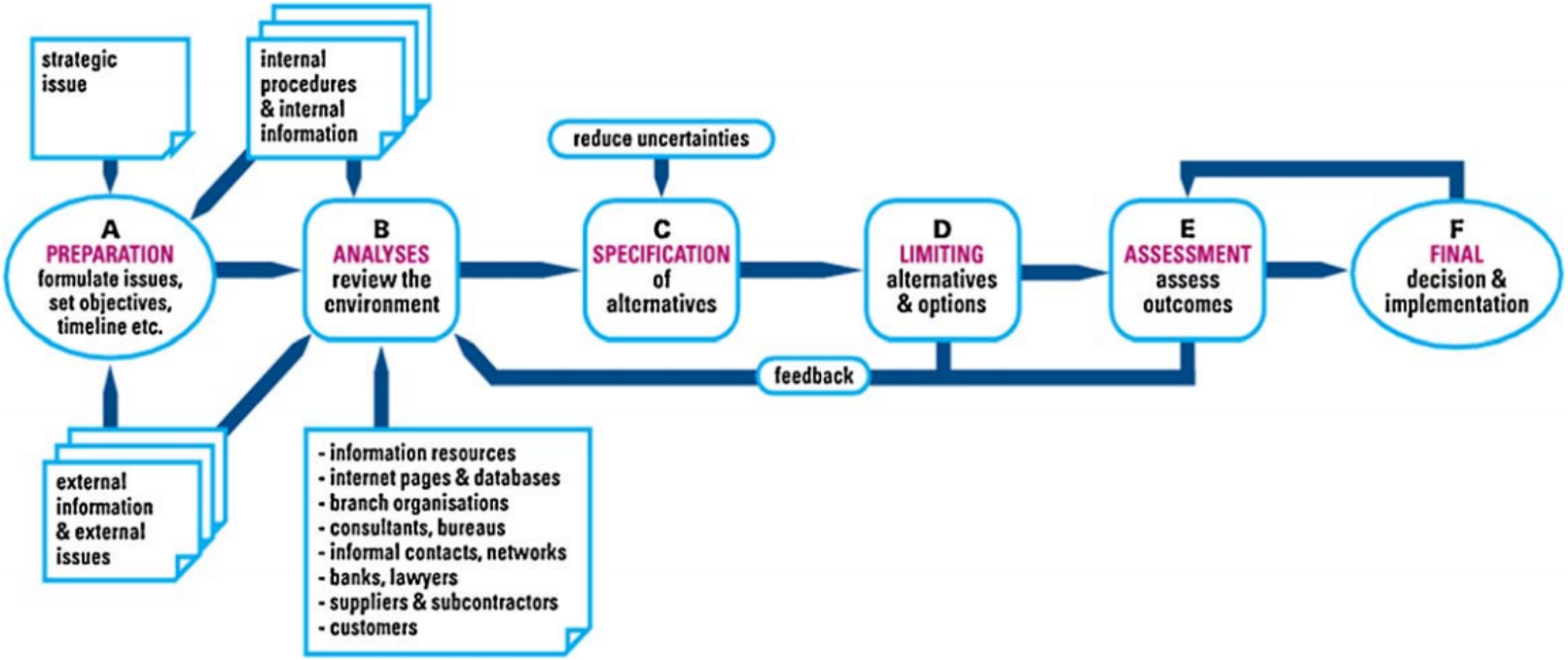

strategic issue
internal procedures & internal information
reduce uncertainties
A
PREPARATION
formulate issues, set objectives, timeline etc.
B
ANALYSES
review the environment
C
SPECIFICATION
of alternatives
D
LIMITING
alternatives & options
E
ASSESSMENT
assess outcomes
F
FINAL
decision & implementation
feedback
external information & external issues
- information resources
- internet pages & databases
- branch organisations
- consultants, bureaus
- informal contacts, networks
- banks, lawyers
- suppliers & subcontractors
- customers

.:VirtualSalt

# Introduction to Decision Making, Part 1

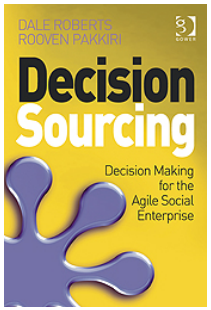
Robert Harris
Version Date: June 9, 2012
Previous versions: December 2, 2009, October 17, 2008; July 2, 1998

http://www.virtualsalt.com/crebook5.htm

## Decision Making is a Recursive Process

A critical factor that decision theorists sometimes neglect to emphasize is that in spite of the way the process is presented on paper, **decision making is a nonlinear, recursive process.** That is, most decisions are made by moving back and forth between the choice of criteria (the characteristics we want our choice to meet) and the identification of alternatives (the possibilities we can choose from among). The alternatives available influence the criteria we apply to them, and similarly the criteria we establish influence the alternatives we will consider. Let's look at an example to clarify this.

Key point, then, is that **the characteristics of the alternatives we discover will often revise the criteria we have previously identified**.




| Role | Description |
|---|---|
| **Originator** | Identifies the problem or the opportunity and starts the framing process |
| **Facilitator** | Co-ordinates the interactions of other actors through the process of making the decision. Often, but not always, the originator |
| **Adjudicator** | Has responsibility for making the call and will be accountable for it, often as the result of budget responsibility. Shared in a consensus, but not necessarily in collaborative decisions. If the group is formed by a committee then the adjudicator will be the chair |
| **Analyst** | Provides explicit information to help frame the decision or inform the alternatives |
| **Contributor** | Trusted contributors provide tacit knowledge, creative input or contrary views with the sole purpose of improving decision quality |
| **Consultee** | Consulted because they are affected by the decision. Implementors will typically be consultees |
| **Approver** | Where formal approval is required. Executives with legal or regulatory compliance responsibility |
| **Implementer** | Implements the decision. Inclusive decision making assumes that the implementers are also consultees, so that decisions are arrived at with due regard to implementation |

# Search for collaboration

www.echoditto.com

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# Barriers to Collaborative Information Seeking in Organizations

**Arvind Karunakaran**
Massachusetts Institute of Technology
100 Main Street, E62-383, Cambridge, MA-02139
arvindk@mit.edu

**Madhu Reddy**
Pennsylvania State University,
321J, IST Building, University Park, PA-16802
mreddy@ist.psu.edu

## CONCLUSION

Most underlying conceptualizations of information seeking are still viewed primarily from an individual user's perspective, despite the evidence that collaborative information seeking plays an important role in organizational work. There has been a great deal of focus on *individual* information seeking. This has lead to the design of processes and technologies that support individual information seeking but not *collaborative* information seeking. This is acutely problematic in settings where teams and team work are important. Our current inability to effectively support CIS is an impediment to team success in critical domains such as healthcare. Therefore, we must not only identify but also begin to address the barriers to CIS to help improve people's ability to collaborate during information seeking activities.

*ASIST 2012,* October 28-31, 2012, Baltimore, MD, USA.

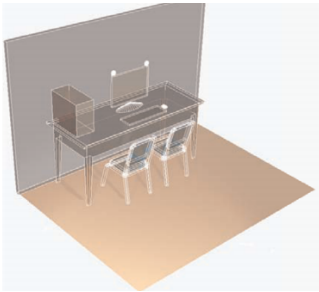
# Spatial context in collaborative information seeking

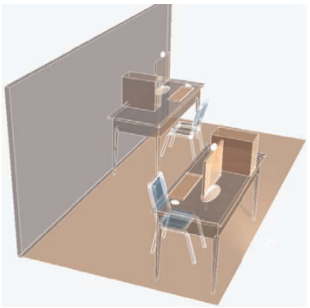
Journal of Information Science
38(4) 333–349

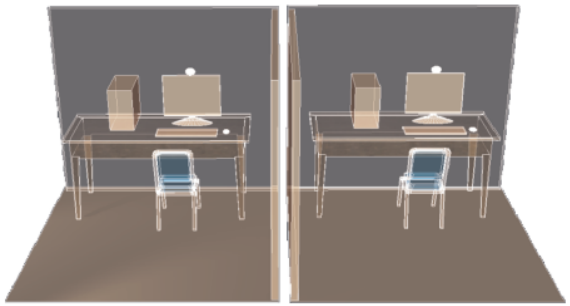
DOI: 10.1177/0165551512438356
jis.sagepub.com
SAGE

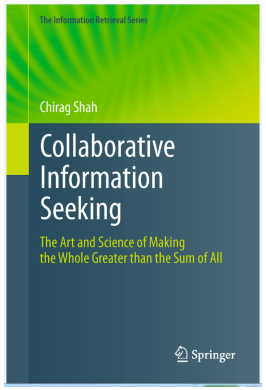
**Chirag Shah**
Rutgers, The State University of New Jersey, USA

**Roberto González-Ibáñez**
Rutgers, The State University of New Jersey, USA










We found that working in the same space encourages more interactions, and in the case of working at the same workstation enforces collective assessment on information being accessed and collected. On the other hand, being remotely located was beneficial in terms of covering more information and attempting more diverse searches. Given that a typical collaboration may involve both face-to-face and remote work, a system should provide appropriate tools for information collection (primarily in remote work), as well as information assessment (primarily in co-located work). This will enable the collaborators to use the same system without having to switch between tools or being distracted with unnecessary features for a given situation.

# “I can’t tell you what I found:” Problems in Multi-level Collaborative Information Retrieval

Mark Handel, Emily Wang
Boeing Research & Technology
M/C 7L-70, POBox 3707
Seattle, WA, 98124 USA
+1 734 516 6907
{mark.j.handel, emily.y.wang} @boeing.com

*CIR’11*, October 28, 2011, Glasgow, Scotland, UK.

Even though this adds a great deal of complexity to the problem of CIR, we think it’s an important area to explore. As discussed earlier, the classified domain is an extreme, but clear-cut case of a scenario that seems to have wider relevance. Collaborative search tools have great potential in the workplace, but many of the issues around information protection and security discussed here need to be implemented to some degree for the business market. As we’ve noted, these problems can even exist on personal searches: one collaborator may not want to reveal all of the relevant information. Solving these issues would provide a much more flexible and versatile tool.

# Characterizing and Supporting Cross-Device Search Tasks

Yu Wang
Emory University
Atlanta, GA 30322 USA
yu.wang@emory.edu

Xiao Huang
Microsoft
Bellevue, WA 98004 USA
xiaohua@microsoft.com

Ryen W. White
Microsoft Research
Redmond, WA 98052 USA
ryenw@microsoft.com

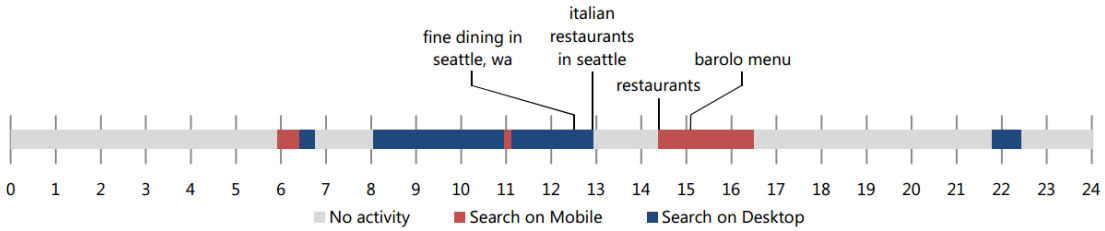



**Figure 1. Search activities on mobile and desktop of a fictitious user over the course of a single day. Numbers denote hours from midnight. Queries of interest (relevant to the body of the paper) are included above the figure for reference.**

Although this is the first study, to our knowledge, to investigate cross-device search tasks specifically, the current trend toward multi-device use [8], suggests a need for further research in this area. For example, the findings that we present in this paper are focused on transitions from desktop to mobile search. However, switches in the opposite direction are also popular and need further exploration. Our early analysis of the Mobile-to-Desktop switches shows that they happen in much less time than Desktop-to-Mobile switches. One explanation for this is that switches in that direction are more related to searcher dissatisfaction with the mobile search results or general search experience on mobile (an assertion supported by non-search studies [17]).

# Supporting Collaborative Information Seeking and Searching in Distributed Environments

**Thilo Böhm**
University of Hagen
58084, Hagen, Germany
thilo.boehm@fernuni-hagen.de

**Claus-Peter Klas**
University of Hagen
58084, Hagen, Germany
claus-peter.klas@fernuni-hagen.de

**Matthias Hemmje**
University of Hagen
58084, Hagen, Germany
matthias.hemmje@fernuni-hagen.de

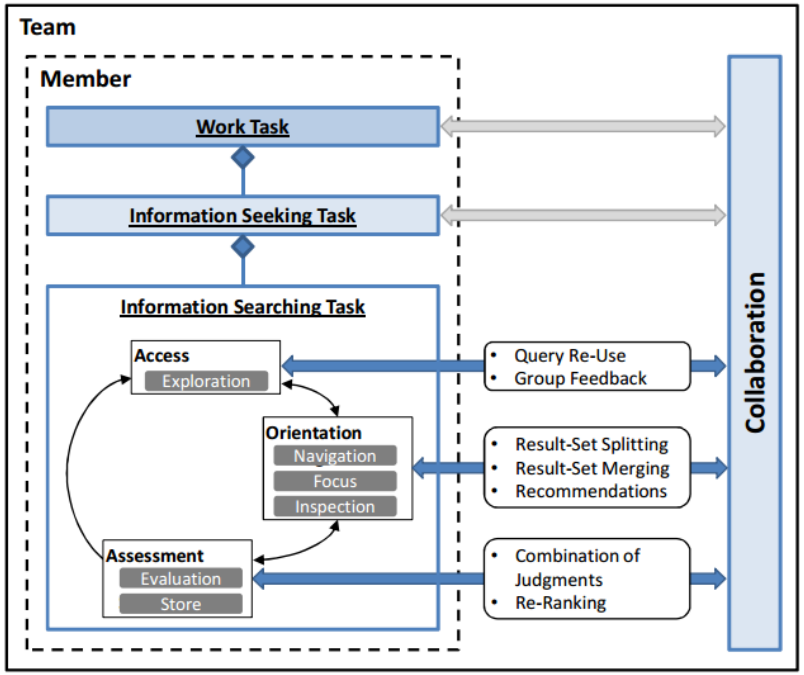



Figure 2: Summary of collaborative activities of a member within a team at information searching level

# Search for decision support

- Search applications have an important role to play in decision support
- Taking a "decision support perspective" should enable organisations to make a business case for enhancing their investment (technology ***and*** staff) in search
- However current search applications do not support collaborative decision making, and only a limited amount of research has been published
- The opportunities seem to have been ignored by commercial search vendors, opening up considerable market potential for open-source developers.

# IR and ES

- Although some ES specialists attend IR conferences (notably SIGIR) very few IT specialists attend ES conferences (e.g.) Enterprise Search Summit and Enterprise Search Europe
- There is very little awareness of IR developments by ES practitioners
- IR research remains behind a subscription and conference firewall
- Significant shortage of IR graduates for employment in ES roles
- Little attention paid to ES even at iSchools

# Questions?

Martin.white@intranetfocus.com

@intranetfocus