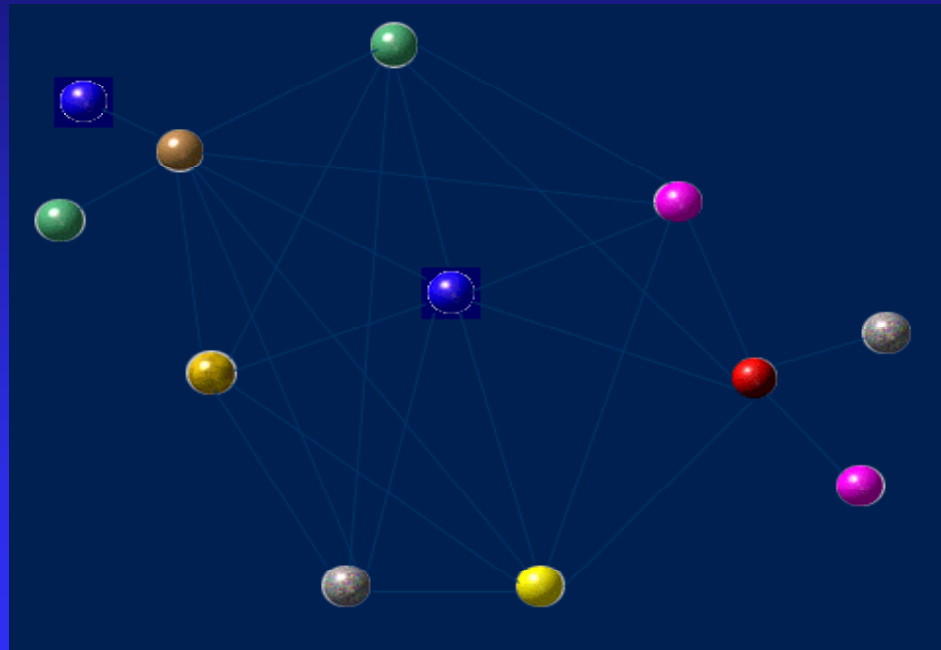


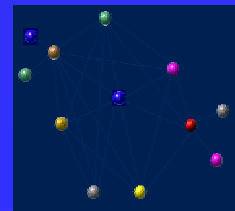
Social Mechanisms that Facilitate the Creation and Maintenance of Virtual Networks among Government Agencies



Noshir Contractor
University of Illinois at Urbana-Champaign
May 21, 2002

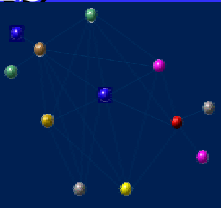
Acknowledgements

- U.S. National Science Foundation (IIS-9980109) for the project “*Co-Evolution of Knowledge Networks and 21st Century Organizational Forms: Computational Modeling and Empirical Validation*”
 - ◆ *UIUC - CMU, Stanford, USC*
 - ◆ *Communication, Computer Science, Engineering, Management, Psychology, Sociology, Urban Planning, Statistics*



OUTLINE

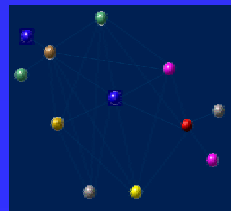
- “Network is the Organization”
- Communication and Knowledge Networks
- Motivation to Share Information/Knowledge
- Preliminary Empirical Results
- Using IKNOW as “Community-ware” to enhance knowledge networks
- Using *Blanche* as an “exploratorium” to simulate the evolution of virtual networks



Lovegety

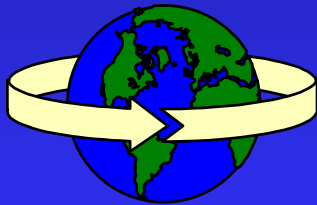
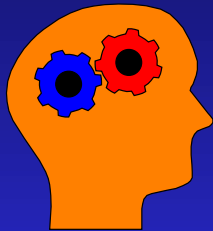


- 1. Turn on the power and set the MODE button you want with MODE button. You can confirm the MODE you chose as the red indicator blinks.
- 2. Lamp blinks when (someone with) a Lovegety for the opposite sex to yours set under the same MODE as yours comes near.
- 3. FIND lamp blinks when (someone with) a Lovegety for the opposite sex to yours set under some different mode from yours come near. In that case, you may try the other MODES to “GET” tuned with (him/her) if you like.



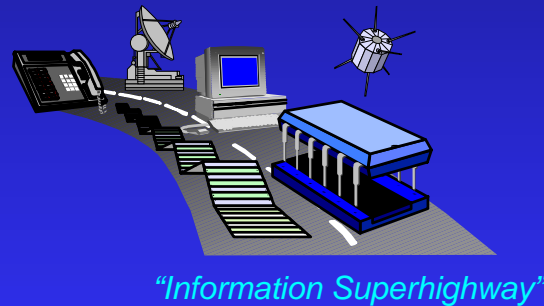
21st Century Organizational Forms

Knowledge Economy



Globalization

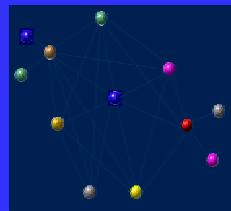
CONVERGENCE



Strategic Alliances

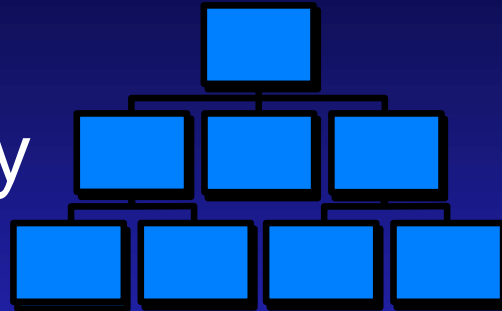


Virtual Organizations

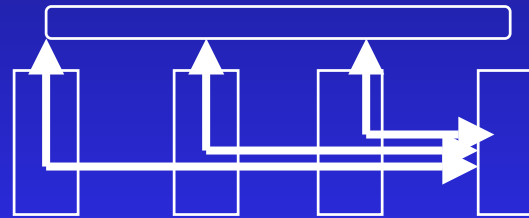


Organizational Forms

Hierarchy

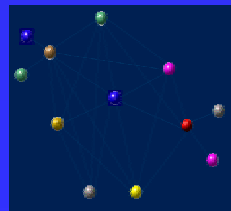
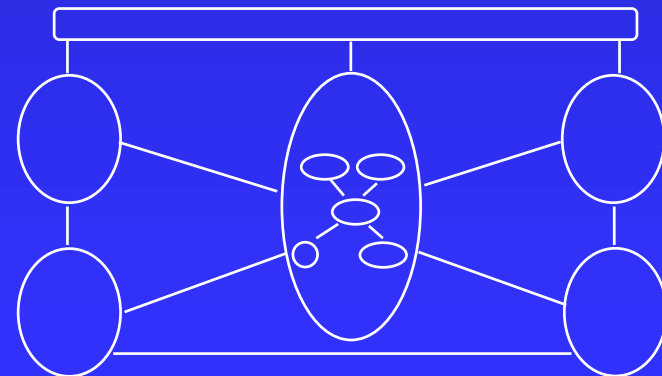


Matrix



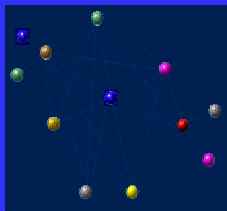
It's the network stupid!
(Hartman & Sifonis, 1999,
NetReady)

Network



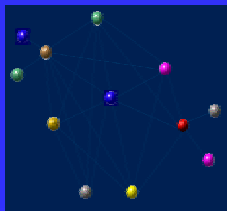
Surge of Network Organizations

- More than 20,000 alliances formed worldwide in 1996-98, accounting for 21% of the revenue of America's 1000 largest firms in 1997, up from 2% in 1980 (Harbison & Pekar, 1999)
- A company's stock price jumped roughly 1% with each announcement of a new alliance (Dyer, Kale, & Singh, 2001)



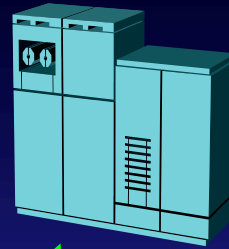
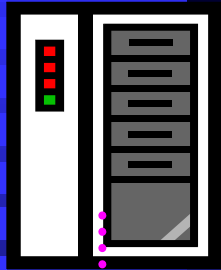
From Networks in Organizations To Network is the Organization

- Markets versus Hierarchies versus Networks
- Transactional versus Relational view of organizations
- Authority versus Contracts versus Trust
- Organizational Metaphors: from machines, to living systems, to cultures, to computers,to Networks
- Corning defines itself as a network of organizations



INTERACTION NETWORKS

Non Human Agent to
Non Human Agent
Communication



Non Human Agent
(webbots, avatars, databases,
“push” technologies)
To Human Agent



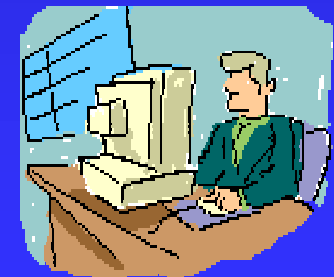
Publishing to
knowledge repository



Retrieving from
knowledge repository

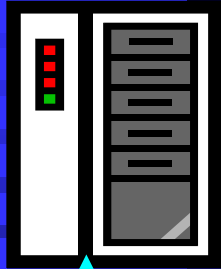


Human Agent to Human Agent
Communication

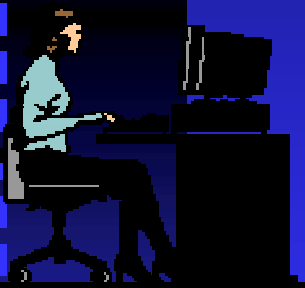


COGNITIVE KNOWLEDGE NETWORKS

Non Human Agent's
Perception of Resources
in a Non Human Agent



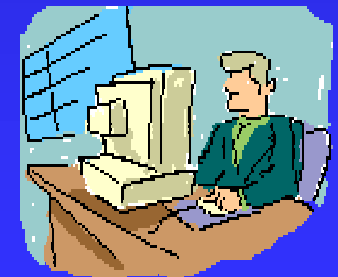
Human Agent's Perception of
Provision of Resources in a
Non Human Agent



Non Human Agent's
Perception of what a Human
Agent knows

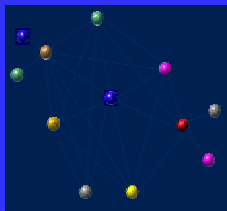


Human Agent's Perception of
What Another Human Agent
Knows



SO WHAT?

- Why do we create, maintain, dissolve, and reconstitute (CMDR) our communication and knowledge network links?
- When do we ask a person for referral to another person or database?
- When do we go to a database for referral to a person or another database?
- Why in some – but not all -- cases, “If we build databases they will come”?



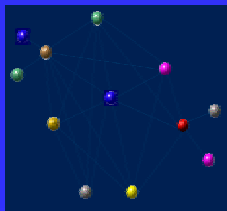
Why do we create, maintain, dissolve, and reconstitute innovation network links?

- Theories of self-interest
- Theories of social and resource exchange
- Theories of mutual interest
- Theories of contagion
- Theories of balance
- Theories of homophily
- Theories of proximity
- Theories of uncertainty reduction
- Theories of co-evolution

Source: Monge, P. R. & Contractor, N. S. (2003). Theories of Communication Networks. New York: Oxford University Press.

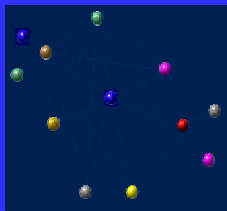
Empirical Studies

- Evolution of distributed knowledge and communication networks of human and non human agents (databases, Intranets, etc.)
 - NASA, Boeing, 3M, U.S. Army, EU Research Project, American Bar Association, Convention & Visitor's Bureau, Winery



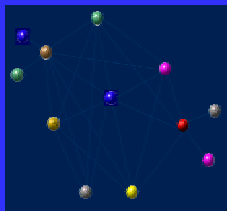
Social Motivations for Retrieval from and Allocating to People

1. Cognitive: “who knows what”
2. Social exchange
3. Proximity
4. Publishing on Databases as a “signal”



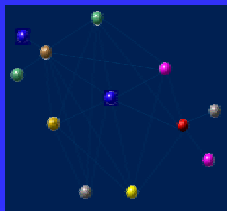
Social Motivations for Publishing to & Retrieval from Databases

1. High provision of collective knowledge contributed by the group
2. Interest in the Information
3. Costs to access the database
4. Knowledgeable others in the network were contributing to the database
5. Social exchange mechanisms



Networks

- Its what you know
- Its not what you know, its who you know
- Its not who you know, it is who they think you know



Cognitive Knowledge Networks

**It's not
who you know.**

**It's what
who you know
knows.**

There's research. And then there's research written by the world's top analysts and strategists. The leading industry authorities on everything from E2B and healthcare to investing in the Pacific Rim. Bottom line? The only people who should be guiding your investment decisions are the people who are truly "in the know." Who measure success one investor at a time. Move your money. Get well connected.

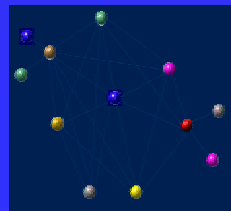
Well Connected | **MORGAN STANLEY
DEAN WITTER**

msd.com

*Source: msd.com/news, December 1999.

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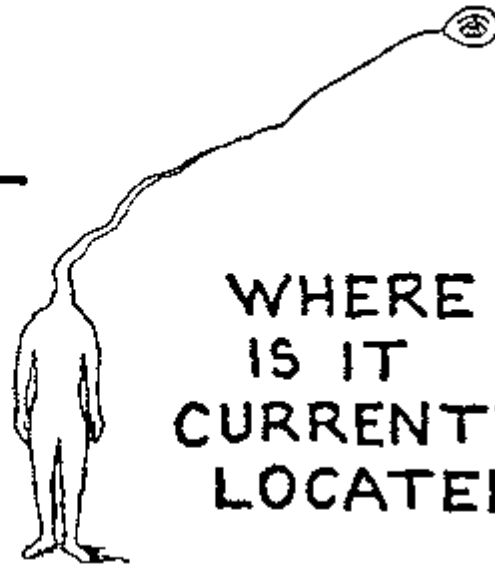
Source: Newsweek,
December 2000



Goal of IKNOW

POT-SHOTS NO. 527

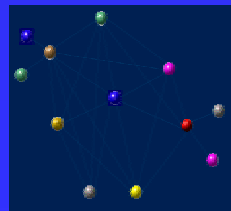
I WANT
TO REACH
YOUR MIND —



WHERE
IS IT
CURRENTLY
LOCATED?

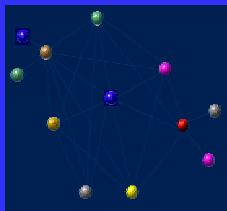
*Challenging
Brilliant*

© ELLIANT ENTERPRISES 1976

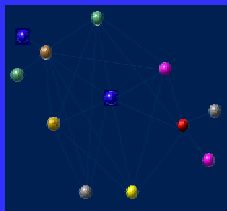


So why would one want to use IKNOW?

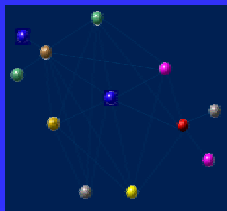
- Makes the virtual visible.
- Adds social capital to knowledge capital by adding contacts to content.
- While collaboration tools help improve the process of collaboration in knowledge networks ... IKNOW helps one effectively identify collaboration partners and grow the knowledge network.



IKNOW Demo:
Knowledge Asset Mapping Exercise
&
Community-ware tool

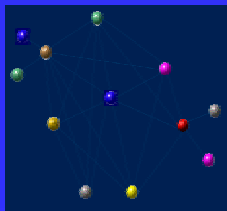


Blanche Demo:
Simulating Evolution of Networks
&
Assessing Robustness of Networks



Summary

- Digital Government “Lovegety”
- Multiple social mechanisms that motivate sharing, retrieving, and allocation knowledge among and between human and non-human agents
 - ◆ What mechanisms are more or less critical in DG?
- Knowledge Asset Mapping Exercise - IKNOW
- Computational Network Modeling – Blanche
 - ◆ Designing “on-the-fly virtual networks of DG agencies
 - ◆ Robustness of networks that are damaged



Additional Information

- nosh@uiuc.edu

