



Advanced Technologies for Knowledge Management

Dr. Geoffrey P Malafsky

SAIC

Arlington, VA

703-276-3120

geoffrey.p.malafsky@saic.com



SAIC KM Activities

-
- CKO - Kent Greenes: Malafsky acting as moderator for Community of Practice & expert on advanced technologies
 - Academic collaborations: new Institute of KM
 - George Mason U: L. Kerschberg (IT&E), S. Ruth (Public Policy)
 - George Washington U: M. Stankosky (Eng Mgmt), B. Halal (Bus Mgmt)
 - Geoffrey P Malafsky (SAIC) adjunct
 - Industry associations
 - Knowledge Mgmt Consortium Intl, Northern Virginia KM roundtable
 - Support: CINC21ACTD, SPAWAR CCOF, FNC IPT, DARPA CPOF, DCD
 - Technology Assessments (Op ROI, innovation), Roadmapping
 - Advanced IT:
 - Knowledge Control Center, HPKB, Odyssey distributed collaboration, CDS, VERA, Multi-lingual automated text analysis & summarization

SAIC KM

Knowledge MANAGEMENT

Community of Practice

Home

News

Resources

Frequently Asked Questions -

KM Technologies -

Knowledge Assets -

Presentations -

Recommended Reading -

Simple Learning Processes -

Forum

Contacts

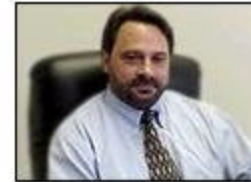
Submit Content/Feedback

Complete List of SIGs



Welcome to your Knowledge Management (KM) Community of Practice (CoP) web site.

Please look around and explore the insights, better practices, and information people practicing KM in SAIC and our Subsidiaries have contributed. I invite you to use this web site to share your views, learnings and re-usable artifacts, and to join in the Discussion Forum to help leverage our understanding and application of KM. The Forum is a great place, not only to request help from those in the community, but also to share your expertise and experiences.

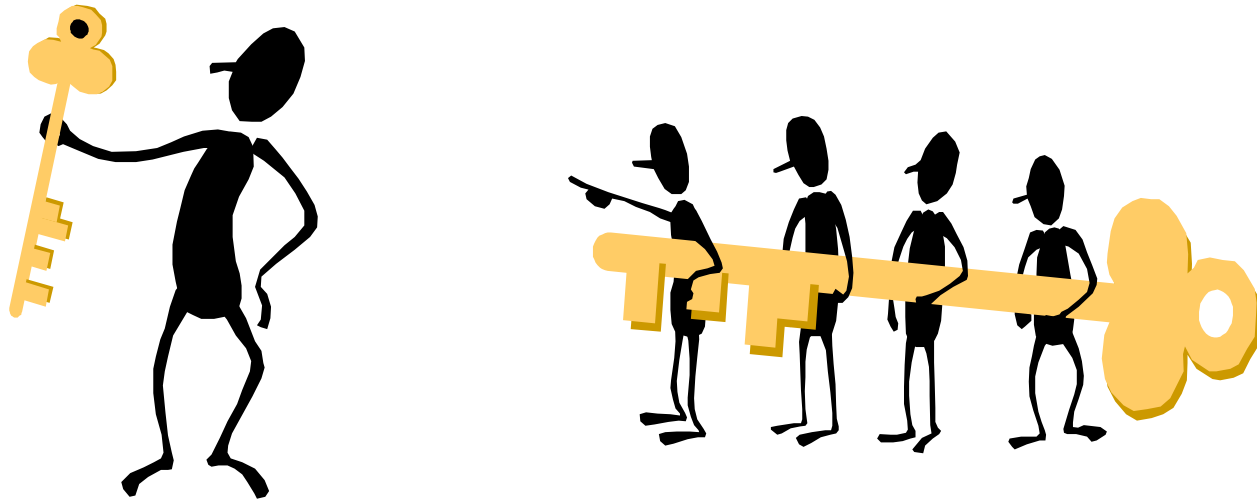


Why do we exist? The following statement of purpose for the KM Community of Practice (CoP) was developed by about 60 members of the CoP at the kick-off session during Meetings Week in October '99. I hope you will join me in striving to live up to this:

"Evolve the sharing of knowledge in order to promote understanding and re-use of the knowledge we have for the benefit of ourselves, our associates, SAIC, and our customers."

[Kent Greenes](#),

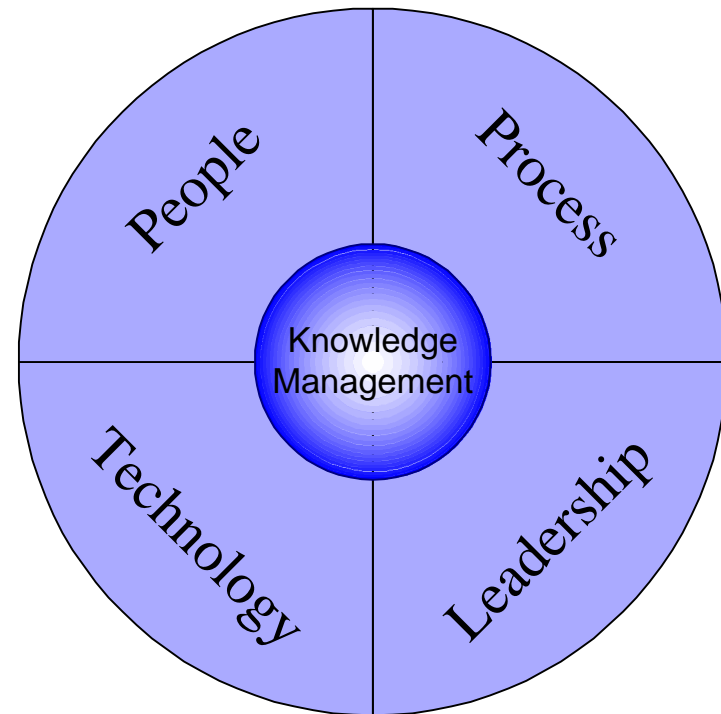
“Knowledge is power”



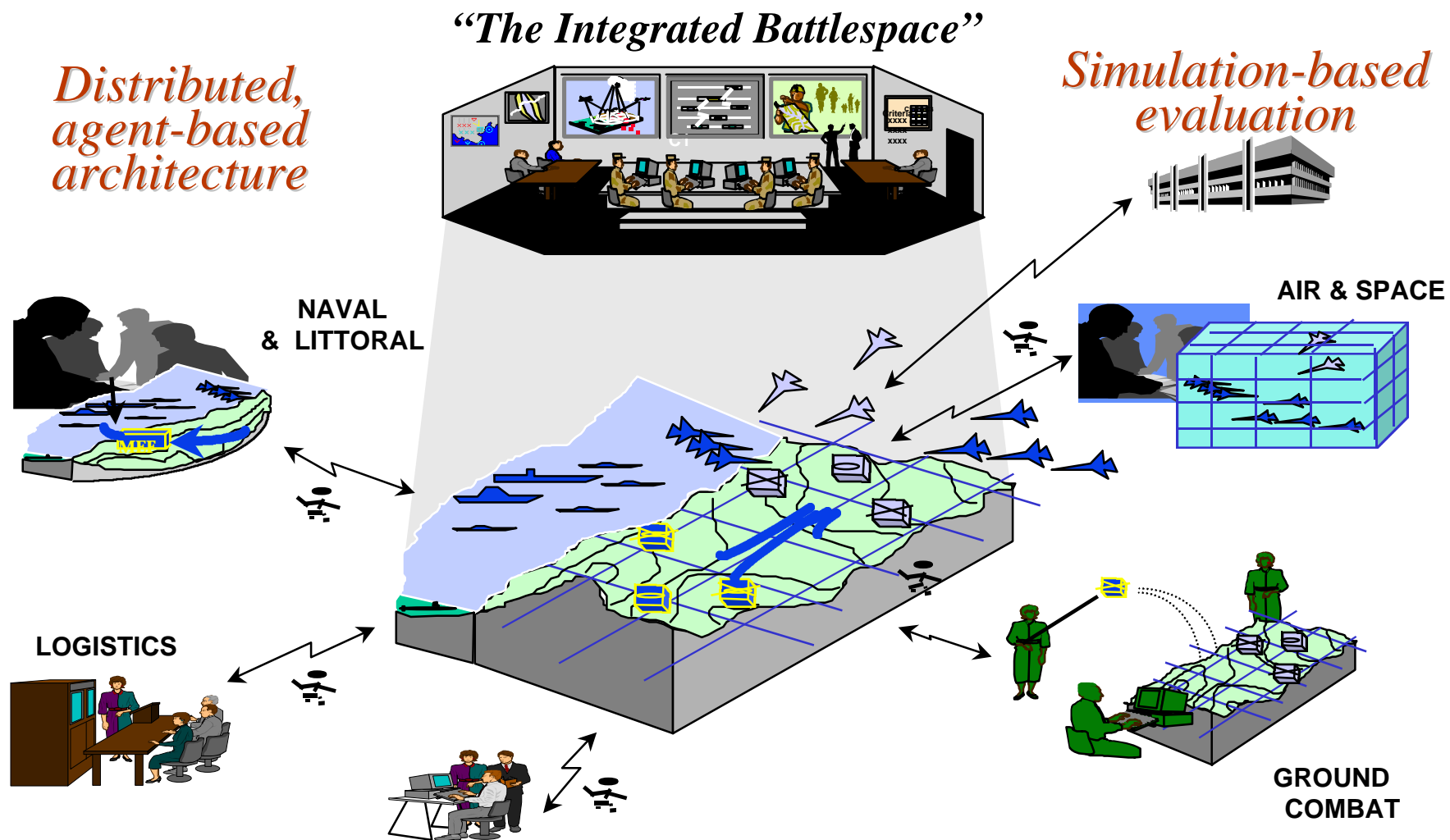
“We are entering an age of globalization in which building and leveraging knowledge will be key to success”

Managing Knowledge: *It's all about people ...*

- IT \neq KM
- KM is mostly about people and processes, not technology
- KM is about learning, sharing, and helping people get pertinent and focused information in a timely manner



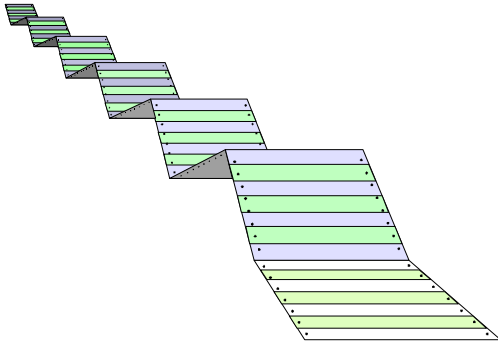
Information Superiority



16 May 00

Malafsky - SAIC

Data, Information, Knowledge



Data

“0930QF0052”



Information

“Qantas flight 0052
leaves
Singapore at 9:30”



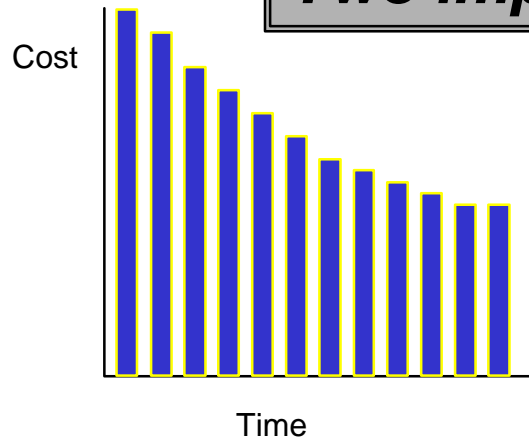
Knowledge

“That flight is always
delayed and often
cancelled”

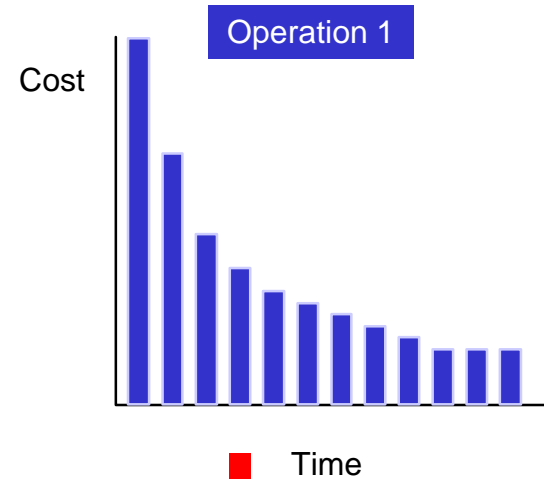
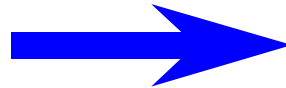
Relationships and trust are required for knowledge transfer and re-use: Validation and Relevance

The Business Case

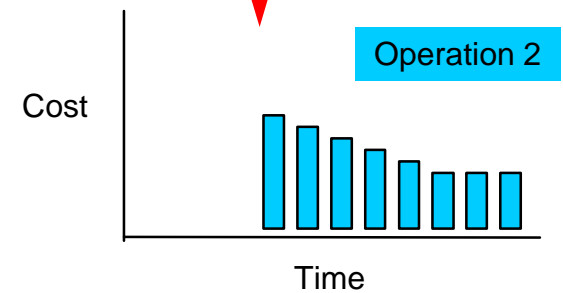
Two important dimensions



Accelerating learning



Transfer & apply learning





Measuring the Benefits

An example from BP (Kent Greenes)

- “We finished 9 days shorter than the previous one”
- = \$2.4M
- “with 20 percent less cost,” = \$3M
- “and extended turnaround interval from 4 to 4.5 yrs”
- = \$4.2M

Total impact = \$9.6M

Processes: After Action Review

4 Simple Questions:

- What was supposed to happen?
- What actually happened?
- Why is there a difference?
- What can we learn from this?





KM vs Electronic Performance Support

- Gloria Gery describes an electronic performance support system as any computer software program or component that improves employee performance by
 - reducing the complexity or number of steps required to perform a task,
 - providing the performance information an employee needs to perform a task
 - providing a decision support system that enables an employee to identify the action that is appropriate for a particular set of conditions.
- KM and Electronic Performance Support are disciplines separated by outlook but united by objective. Each desires to provide useful knowledge to employees in order to effect business improvement.



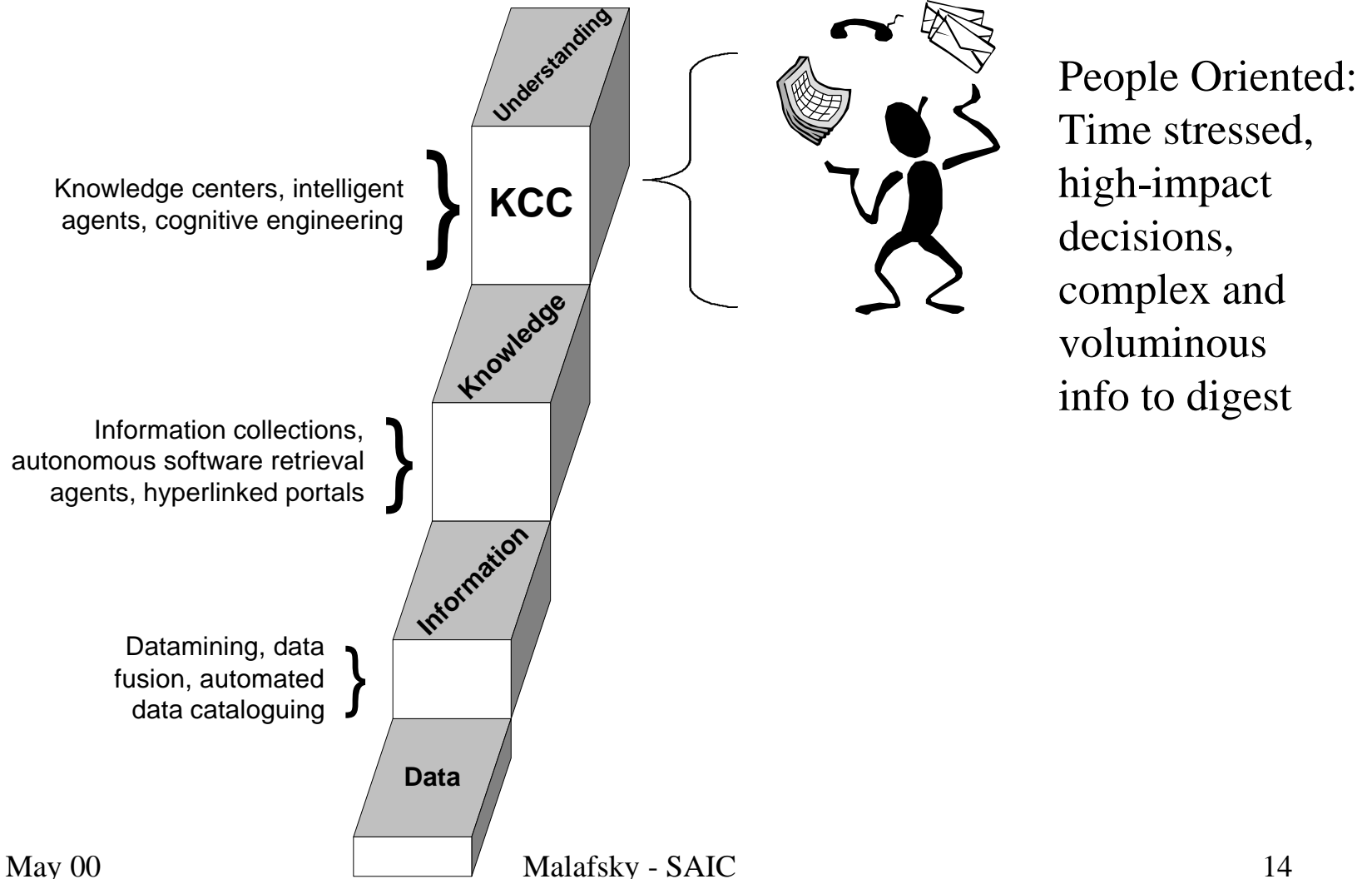
Using Advanced Technologies for KM

- Custom integration of information technologies to solve a business need
 - not force fitting new toys
- How can the tool best fit into the workflow and culture of the organization?

KM Solutions

- Knowledge Management doesn't focus on the technology, but how to employ the technology available
- Search engines, categorizers, etc. can be effectively used IF designed within their limitations for the KM system strategy

Cognitive Hierarchy



Technology Tools: Sharing Through a Community of Practice

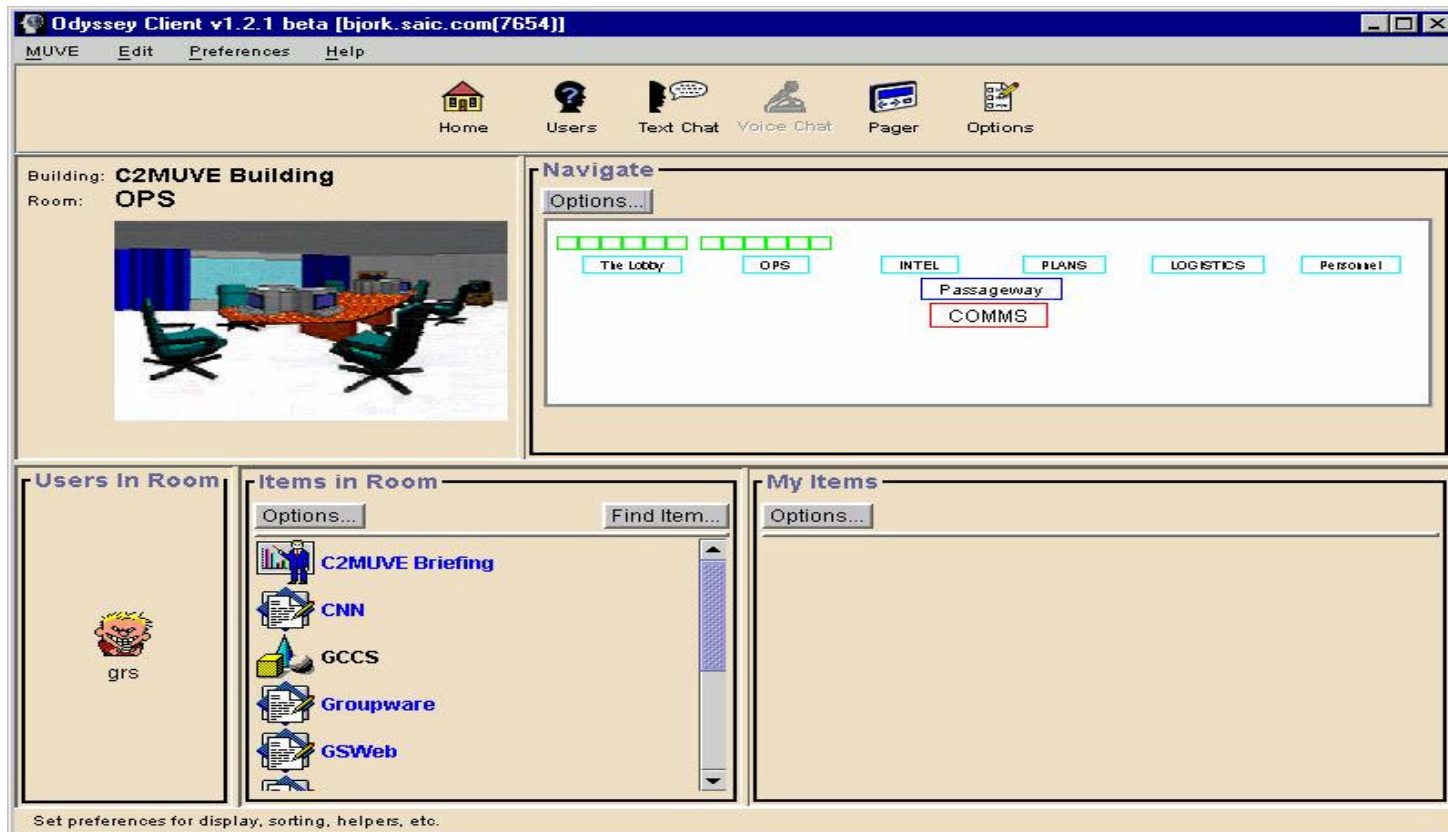
- Informal network dedicated to sharing knowledge among practitioners
- Common sense of purpose, desire to share work-related knowledge and experience
- They operate through trust, loyalty, friendship, as well as mutual advantage
- Owners of knowledge assets





Friendly Graphical Virtual Team Environments

- Odyssey collaboration system (CINCPAC, CINC21ACTD)





Knowledge Portal

- Gateway to customer centric information
- Knowledge NOT Information
 - cannot just point to massive information repositories
 - individualized information profiles
 - context sensitive and process dependent push/pull
- Categorization and correlation are critical

Commercial Portals: Hummingbird

EIP Main page - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Browse Search Results

My Front Page Value: [Icons]

Universal Inbox

Subject	From	Sent
Application Integration Requirements	Doug Gunn	Fri 12/03
Welcome to humnews	Majordomo@hcl.com	Fri 12/03
Reception to celebrate the launch of EIP	Michael O'Connor Clarke	Fri 12/03
Hummingbird EIP Specification Sheet	Kate Atherley	Fri 12/03
Greetings from the portal development team	Steve Gutz	Thu 12/02
Cybercast on December 6th!	Tim Bouma	Thu 12/02

Hummingbird

Hummingbird Communicatio

Daily 12.3.1999

1998 1999 Dec Jan Feb Mar Apr May June July Aug Sep Oct Nov

VOL (in 1000s)

©1999 Stockpoint.com

DHTML TN

Business

Provided by

[Syndicate](#)

[Exclusively AOL](#)

Upside: Executive Briefing

Fri, December 03, 1999 12:11 AM

[Apple Booms, PCs Fizzle](#)

Upside: Executive Briefing

Wed, December 01, 1999 12:34 AM

[Rumors Fly, Stock Soars](#)

Upside: Executive Briefing

Mon, November 15, 1999 11:22 AM

Version: 0.0.6.2

Commercial Portals: Plumtree

Plumtree Corporate Portal: My Page - Microsoft Internet Explorer

File Edit View Favorites Tools Help

PLUMTREE SOFTWARE

Plumtree Corporate Portal 3.5

[My Page](#) [News](#) [Directory](#) [Help](#) | [Personalize](#) | [Logout](#)

Welcome AmyT! Monday, February 7, 2000 9:59:23 a.m.

Personalize this Page

[Choose Gadgets](#)
[Change Layout](#)
[Change Colors](#)

Plumtree Directory Search

[Advanced Search](#)

Saved Searches

Plumtree Leads Volume

Sales Leads

Date	Leads Volume
1/24/00	20
1/27/00	30
1/30/00	40
2/2/00	80
2/5/00	100

Plumtree Portal : My Page

My Publications

Business Intelligence Vendor News

- February 2, 2000 Press Release: Sybase Announces e-Portal Alliance, New Program To Align Application Partners
- February 2, 2000 Manpower Update: How Epicentric Compares to Plumtree
- February 1, 2000 Press Release: Overview of Hummingbird and Portal Market

Corporate Portal Market Overview

- January 31, 2000 InformationWeek: Raven to Feature Document Cataloging, Expertise Profiling, Collaboration
- January 31, 2000 Press Release: Delphi Group Estimates B2B Market at \$5 Billion, Projects To Double In Each of Next Three Years
- January 3, 2000 Press Release: Delphi Group Says B2B Vortals Will Account for \$5 Trillion in Purchases by 2002

What's Happening This Week

Monday, January 31	Thursday, February 3
<p>The Delphi Group/ Plumtree/ Pricewater... (Houston, Tex...) 10:00 A - 10:30 A Free Plumtree On-Line Seminar (http://www.p...)</p>	<p>The Delphi Group/ Plumtree/ Pricewater... (Atlanta, Geo...) Plumtree Seminar (Cincinnati, ...)</p>
Tuesday, February 1	Friday, February 4
<p>The Delphi Group/ Plumtree/ Pricewater... (Dallas, Texa...) IBM/ Plumtree Seminar (London, England)</p>	<p>Plumtree Seminar (Detroit, Mic...)</p>
Wednesday, February 2	Saturday, February 5
	Sunday, February 6

Onyx Contact Search

Portals: Personalized

You are here: [Home](#) > My Netscape - gmalafsky

My Netscape - gmalafsky

Thank you for trying the EasyScreen Trial Software - This message will not appear with the purchased version.

Welcome, gmalafsky

[Browser Certificate Update](#)
[0% intro APR MasterCard](#)
[Customize Your Colors](#)
[Movie Showtimes](#)
[Monthly Calendar](#)
[Local News](#)
 Need help? Try the [FAQ](#).
[Make This Your Home Page](#)

Stocks

SYMBOL	PRICE	CHANGE
My Portfolio		
DJIA	11,112.70	-7.10
Nasdaq	4,963.03	+22.42
S&P 500	1,527.46	+0.11
AOL	71.50	+1.00
IBM	120.62	+5.38
INTC	139.06	-3.56
I	58.75	+1.50
C	60.56	-1.12
Portfolio Total: 0		

Quote
☐ Symbol ☐ Name
 Quotes delayed 20 mins.
 * Indicates Hi or Lo movement.

Search the Web

[Find a Business](#) [What's New](#) [Search Tips](#)
[Find a Member](#) [What's Cool](#) [Learn more](#)
[Find a Person](#) [Net Search Page](#)

SEARCH CATEGORIES

[Arts](#) [Health](#) [Reference](#) [Society](#)
[Business](#) [Home](#) [Regional](#) [Sports](#)
[Computers](#) [News](#) [Science](#) [World](#)
[Games](#) [Recreation](#) [Shopping](#)

Market News by CBS MarketWatch

TODAY'S MARKET NEWS (March 25, 11:00 AM)
 • [Microsoft seeks settlement deal](#)
 • [Nasdaq ekes out advance; Dow slips](#)
 • [Crude prices rise; OPEC split is seen](#)
 • [Screaming rally by e-brokerage stocks](#)

Headline News by Reuters

TOP STORIES (March 25, 10:24 AM)
 • [Trimble Narrowly Wins N.Irish Leadership Vote](#)
 • [Reuters Top News Summary](#)
 • [No Military Kashmir Solution - Clinton to Pakistan](#)

Netcenter Apps

[Check WebMail](#)
Free Personal Email

[Instant Messenger](#)
Chat with your friends.

Weather

[weather.com](#)

[Chicago Northwest Suburbs, Illinois](#)
 55° F / 13° C
 Fair

[Los Angeles, California](#)
 54° F / 12° C
 Hazy

[New York, New York](#)
 52° F / 11° C
 Mostly Cloudy

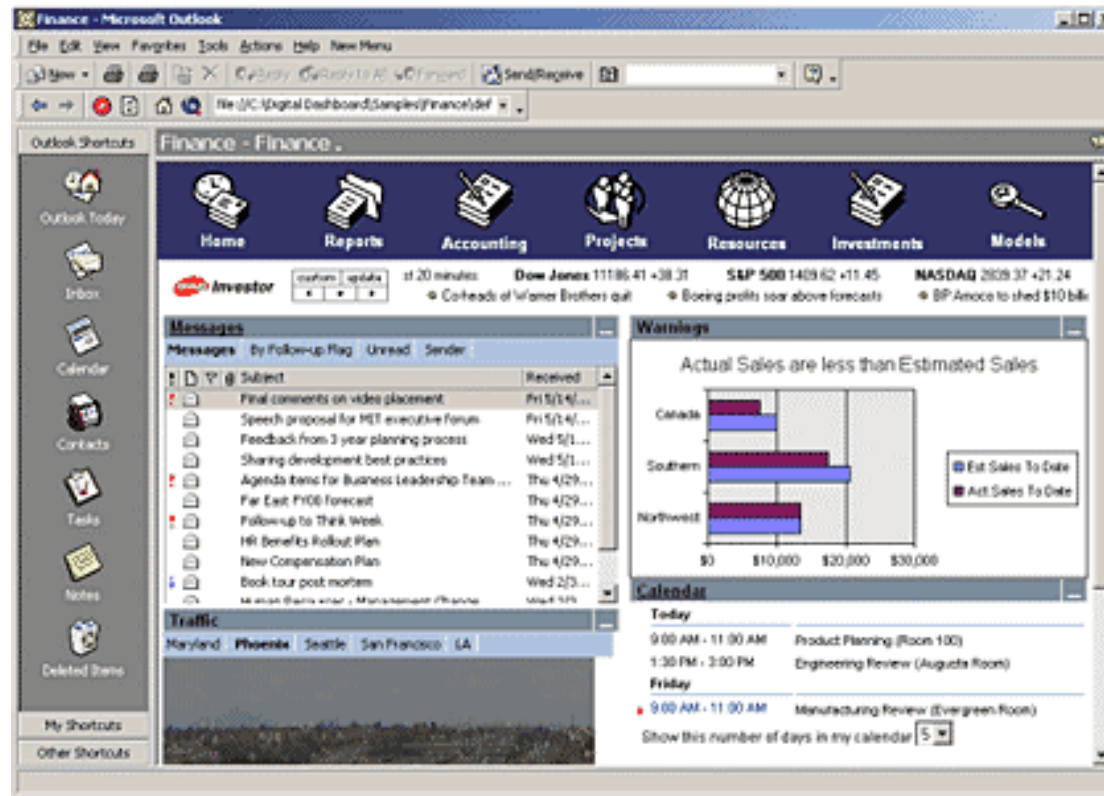
[London, United Kingdom](#)
 52° F / 11° C
 P Cloudy

Enter City Name or Zip Code

Document: Done

Start Lotus Organizer - ... Norton System D... Exploring - F:\Cur... Fuel My Netscape - g... WordPerfect 9 - ... 11:00

Commercial Portals: Microsoft



Search Engines

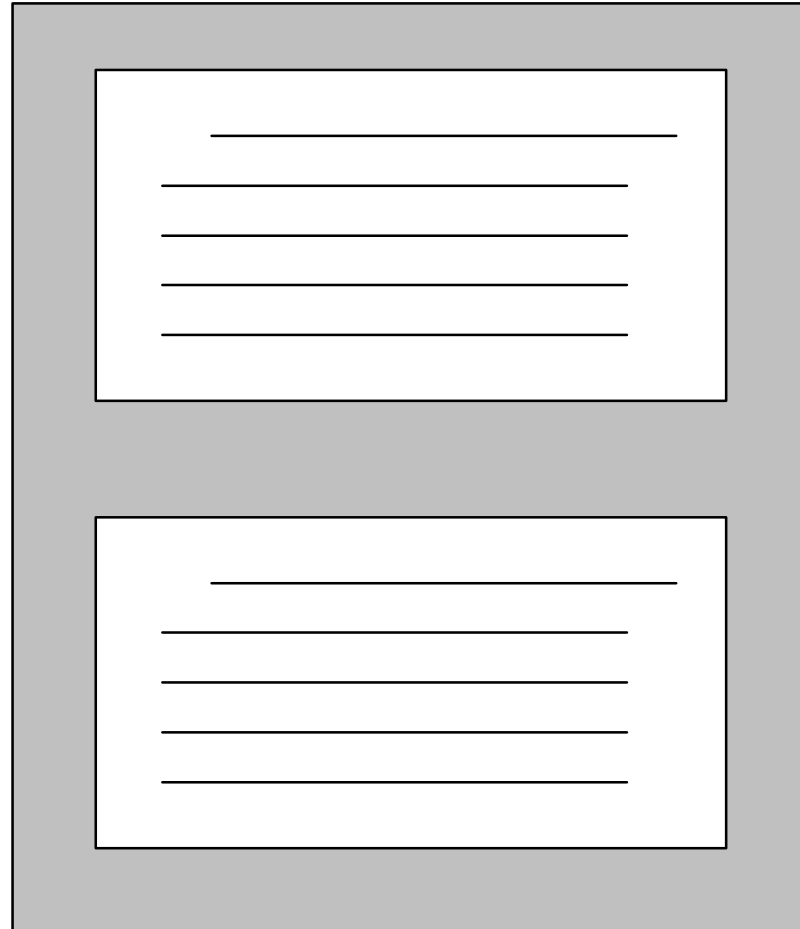
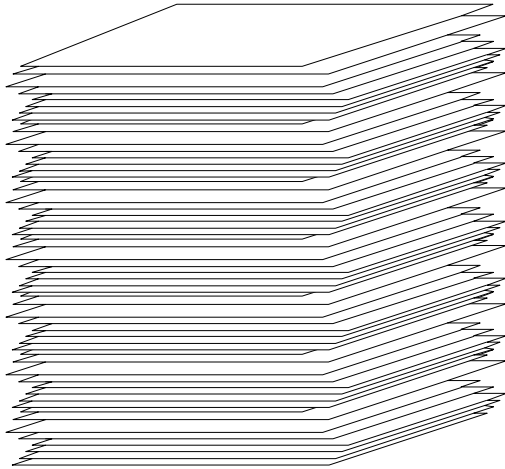
- Current search engines lack the precision required to find the few from many
- Packaged as search engines, categorizers, knowledge portals
 - Semantic expansion, Bayesian analysis, neural networks
 - different approaches but similar performance
 - Example: 10,000 documents in an application area (small number for a command center, digital library, or intelligence service)
 - Need >99% to deliver the few desired items
 - current tools operate near 70-80%

Next Generation Engines

- Large R&D investments by DoD, intelligence
 - DARPA: TIDES, Gary Strong
 - InQTel (CIA)
- New algorithms
 - Natural Language Parsers
 - Ontology mapping
 - Multi-lingual
- Significant improvement - not ready yet or sufficient



The Challenge: Automated Information Understanding



Categorization

- Sorting, filtering, and organizing information and *pieces* of information
- ontologies are conceptual organizing schema
- taxonomies are categorization descriptors
 - develop for each organization's business processes
 - become consensus built standard
- people mentally organize in multiple ways based on task and interest

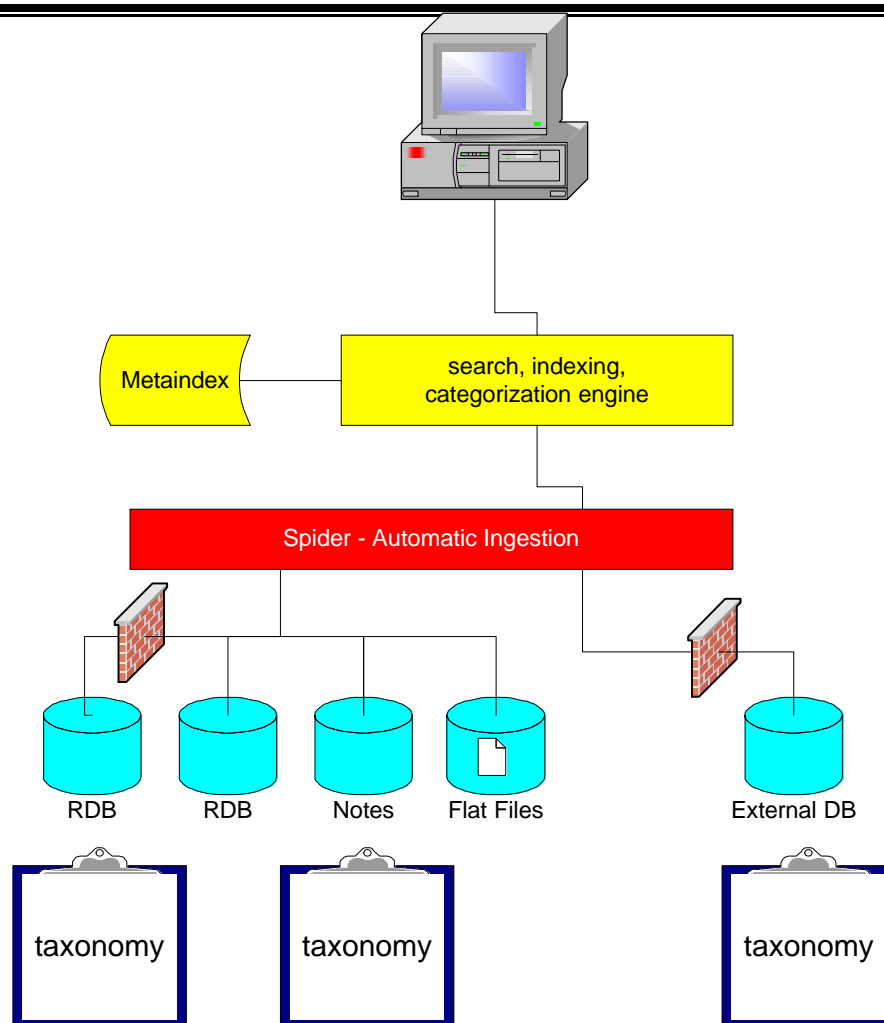
Taxonomy Complexity

80. INTERDISCIPLINARY PHYSICS AND RELATED AREAS OF SCIENCE AND TECHNOLOGY

81. Materials science

- 81.05.-t Specific materials: fabrication, treatment, testing and analysis
 - *Superconducting materials, see 74.70 and 74.72*
 - *Magnetic materials, see 75.50*
 - *Optical materials, see 42.70*
 - *Dielectric, piezoelectric, and ferroelectric materials, see 77.80*
 - *Colloids, gels, and emulsions, see 82.70.D, G, K respectively*
 - *Biological materials, see 87.14*
- 81.05.Bx Metals, semimetals, and alloys
- 81.05.Cy Elemental semiconductors
- 81.05.Dz II-VI semiconductors
- 81.05.Ea III-V semiconductors
- 81.05.Gc Amorphous semiconductors
- 81.05.Hd Other semiconductors
- 81.05.Je Ceramics and refractories (including borides, carbides, hydrides, nitrides, oxides, and silicides)
- 81.05.Kf Glasses (including metallic glasses)
- 81.05.Lg Polymers and plastics; rubber; synthetic and natural fibers; organometallic and organic materials
- 81.05.Mh Cermets, ceramic and refractory composites
- 81.05.Ni Dispersion-, fiber-, and platelet-reinforced metal-based composites
- 81.05.Pj Glass-based composites, vitroceramics
- 81.05.Qk Reinforced polymers and polymer-based composites
- 81.05.Rm Porous materials; granular materials

Taxonomy Mapping





Portal Navigation: Natrifificial

The Brain (Natrificial)

The screenshot displays the 'World Economic Forum' portal, specifically the 'The Brain' section. The interface is divided into several components:

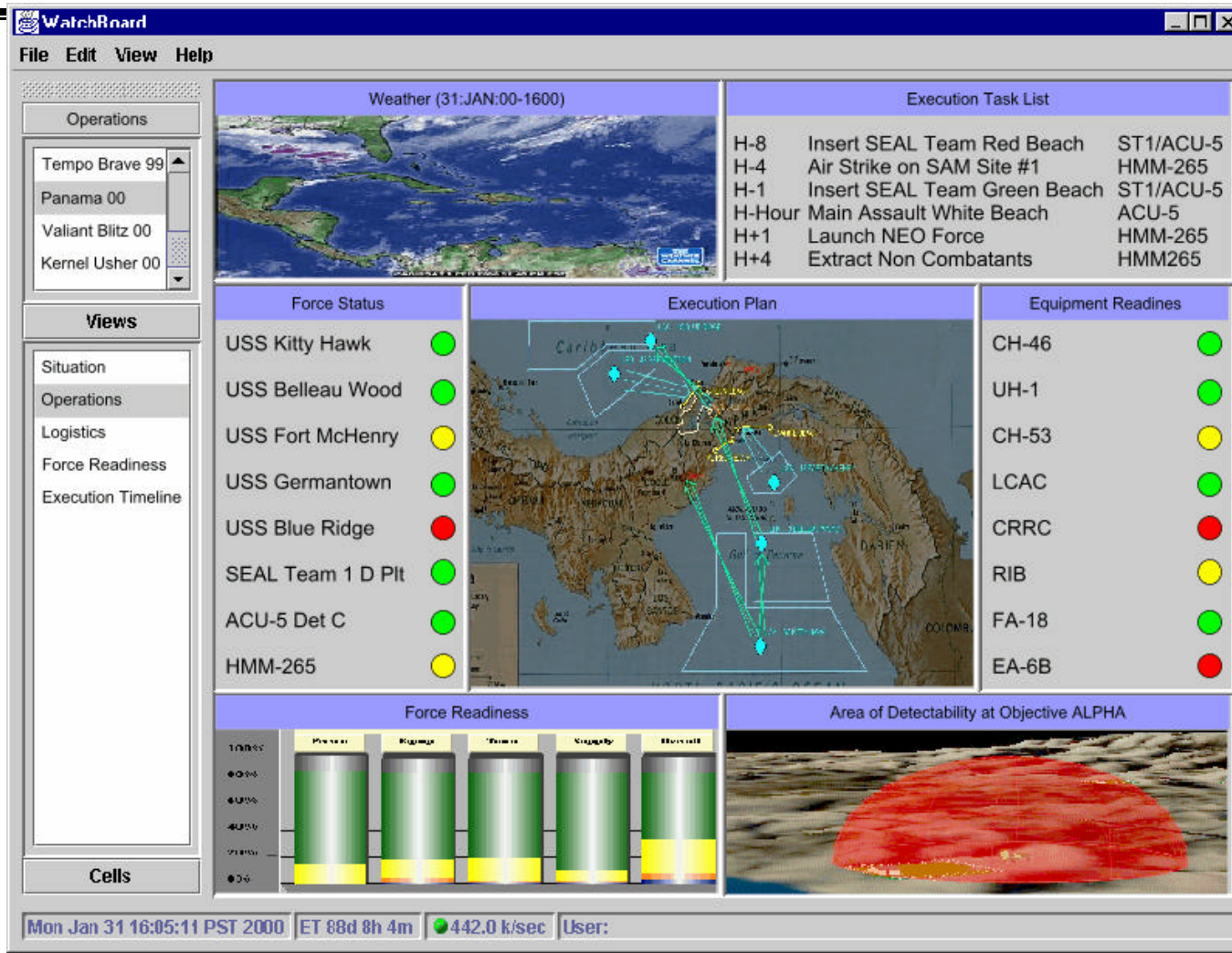
- Left Sidebar:** Contains navigation buttons for 'Topics', 'Regions', 'Industries', 'Back', and 'Forward'. It also includes a search section with a 'Search:' label, a dropdown menu set to 'Content', a 'Search Text:' input field, and a 'Go' button. At the bottom of the sidebar are buttons for 'View', 'Help', and 'Feedback'.
- Central Content Area:** Features a concept map with a central node labeled 'Cultural Identity and Sponsorship' (highlighted with a red border). Lines radiate from this central node to various related terms:
 - Top: Carlos Fernandez..., Eduardo S. Elsztain, Jaime Ravinet, Jaime Sodupe, Paulo Coelho
 - Left: 1999 Mercosur Eco..., Not Industry Specific, Latin America
 - Bottom-Left: Cinema, Dance, Globalization
 - Bottom-Right: Literature, Music, Visual Arts
- Bottom Navigation Bar:** Labeled 'THE BRAIN' on the right, it includes a series of colored links: 'Left: Events', 'Industries', 'Regions', 'Top: People', 'Center: Contents', and 'Bottom: Topics'.
- Article Preview:** Below the navigation bar, there is a section for the current article:
 - Headline:** Cultural Identity and Sponsorship
 - Date:** 5/7/99
 - Abstract:** Moderator Jaime Ravinet, Mayor of Santiago, Chile, began the debate by putting forth three main questions for discussion: · What is the relation between globalization and cultural identity? · What is



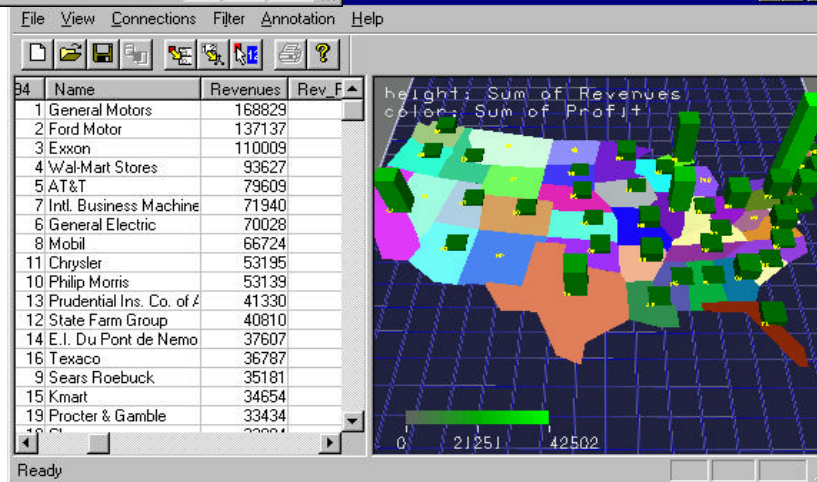
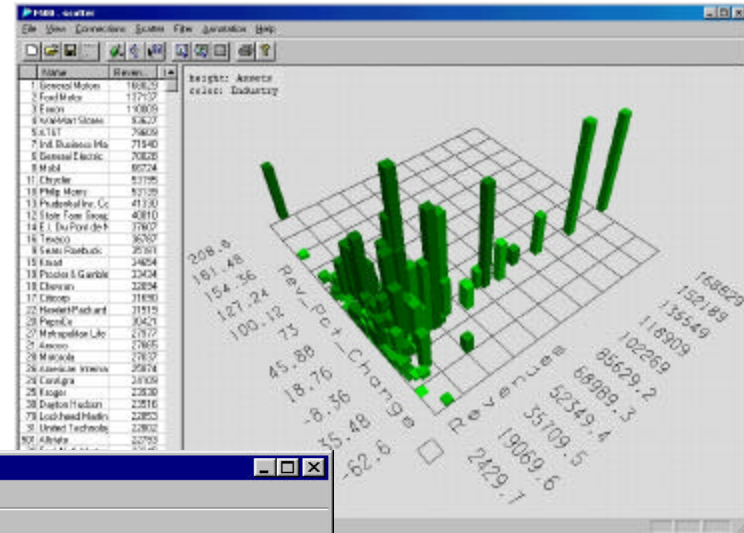
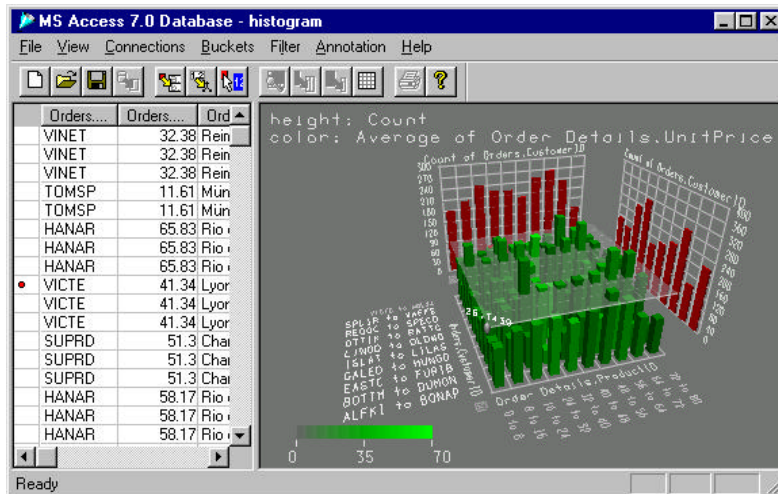
Visualization: Cartia's ThemeScape



SAIC Knowledge Board - Flexible Visual Portal



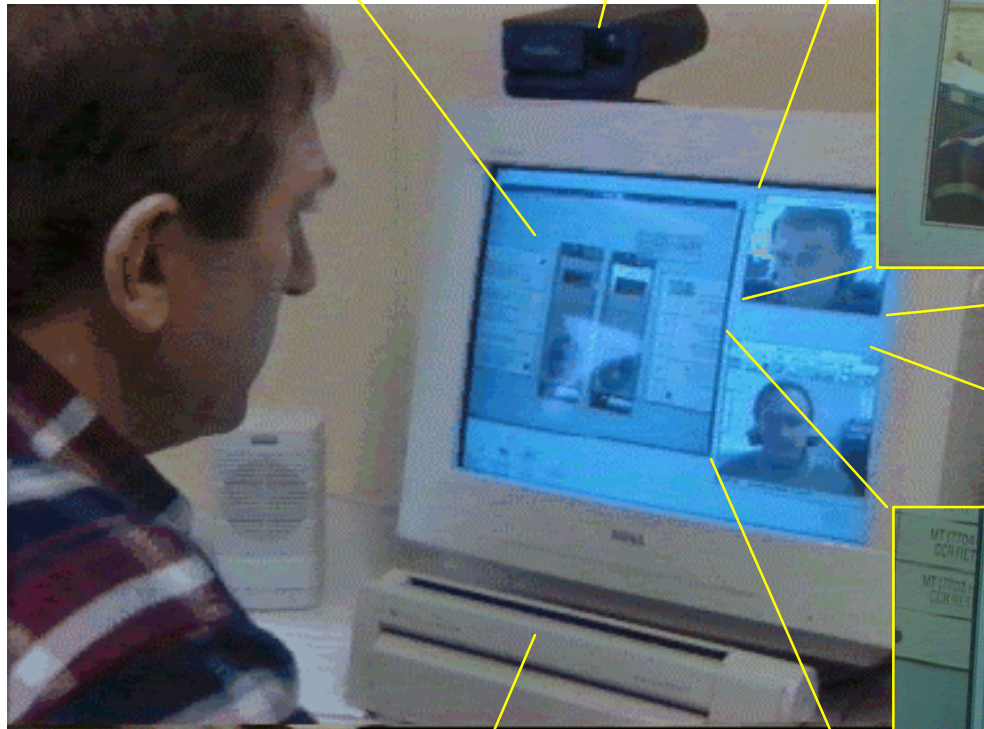
Visualization: DARPA Command Post of the Future



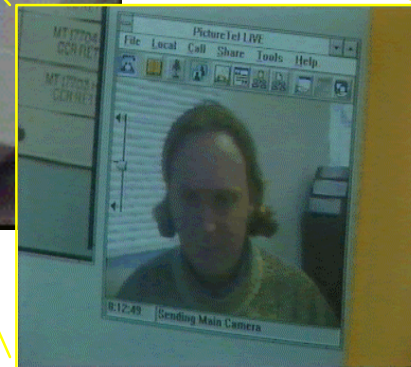
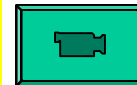
Virtual Teamwork

The application being shared - both callers see the same window

Video Camera

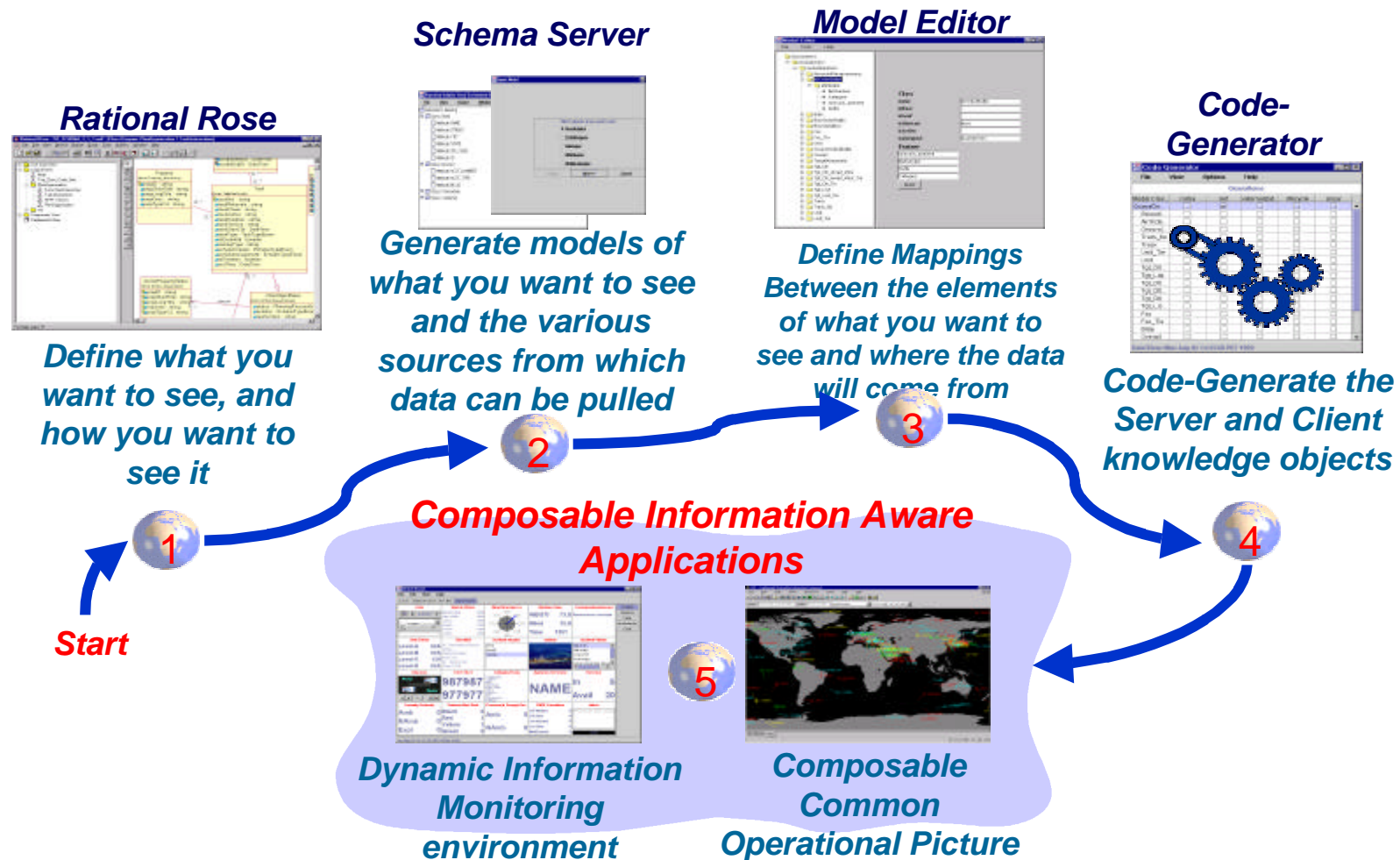


Scanner - this enables you to scan A4 documents, share and store them digitally.



The person you are working with

QUAVA: Auto Code Generation



Putting it All Together: A Knowledge Architecture



Visualizations

Enhanced Human Understanding



Office Applications

Workflow



Analytical Engine / Control System

Knowledge Enabled Reasoning, analytical analysis, relevance associations



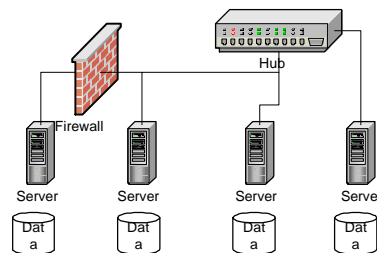
Search / Indexing Engines

Autonomy, Verity, Excalibur, Infoseek, ...



Composable Data Services

Automated Data Object Creation



Multi-level security, data structures



The JDLS Is An Enterprise Level Data Warehouse Following A Standards Based Approach For:

- *Knowledge Discovery (Classified and Unclassified Sites On-line)*
- *Agent Architecture for Data Mining/Catalogue/Index*
- *Internet Based Training (IBT) - Distance Learning*
- *Multimedia Production and Distribution Capability*
- *Multiple Semi-Structured Data Users - Joint Distance Learning Center, Y2K, Exercise Management, PSP/WWW Scheduling, J9, JWFC.*
- *Relational Structured Data Users JEMP III, JIDPS, JCLLS, JEL (heterogeneous databases)*
- *Security (Protection From Email Viruses...Melissa, etc.)*

An Engineered System Based on COTS Integration



- **Web Accessible - Browser**
- **Thin Client Design**
- **Web Engine Driven**
- **Collaborative Knowledge**
- **Scaleable - 1000s of Users**
- **Rapid Access to Terabytes Of Data**

Content Driven:
Meta Indexes
Data Mining

Internet/Intranet

Existing JDLS Internet Architecture

