

Security in Knowledge Management

[Insiders as Security Risks]

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rajatm@verity.com

Verity, The Market Leader

"Verity #1 Vendor in Portal Infrastructure by Market Share"

– Delphi Group 5/01

"Verity is the Established Market Leader in Enterprise Search"

– OVUM 7/01

Verity is #17 on Fortune 100 Fastest Growing Companies

– Fortune Magazine 8/01

"Verity is the Market Share Leader in Text Search and Retrieval"

– IDC 9/01 Report

Verity Leader in the Gartner 2002 Enterprise Search Magic Quadrant

– Gartner Group 2/02

Verity Corporate Overview

- 1500+ Corporations
- 175 E-Commerce Sites
- 220 OEM Applications
- 430+ Staff Worldwide
- NASDAQ (VRTY)
- \$245 Million in Cash and investments
- 4th Consecutive Profitable Year



Return On Investment

Knowledge Workers (KW) spend 15% of their time searching for information. – AIIM (Assn for information and Image Mgmt.)

Knowledge Workers spend 25% of their time searching for information. – Ford Motor Company

Companies without a portal “waste \$4.8 million per year. As the volume and velocity of document-based information increases, the problem becomes even more severe.”

– Gartner Group



WORLDWIDE SITES



Travel Planner

WorldPerks®

Deals & Promotions

Northwest Services

About Northwest

Northwest provides better customer service with Verity

NWA Fall Sale!

Northwest announces outstanding savings on travel to destinations around North America this fall. [Full Story.](#)

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Increased Revenue

With Verity K2: \$6,455,000 (Northwest's annual domestic passenger revenue) x 5% (assumption of increase in passengers based on Delta Airline's estimates) = \$322,750 annually or \$1.6 million in five years or \$3.2 million in 10 years.

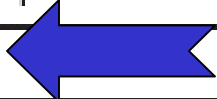
Reduced Call Time

Before Verity (Assuming each call is completed in an average of 60 seconds): 40,000,000 (annual in-bound calls to Northwest reservation call centers) x \$2.17 per minute* = \$86,800,000

With Verity K2: (Northwest reduces its talk time by 10 seconds, completing each call in an average of 50 seconds): 40,000,000 x \$2.17 per minute* x 0.166 (10-second reduction in call time is equal to 16.6% decline) = \$14,408,800

Annual Cost-savings: \$14,408,800

*Meta Group's estimate of average cost per call.



Asia

Check Flight Status

Northwest Flight Number

Selecting: Destination

GET STATUS

IDENTIFICATION

WorldPerks Direct™

Access My Account

WorldPerks Number

PIN

REMEMBER PIN

LOGIN

PIN HELP

Enroll in WorldPerks ▶

E-BIZ PERKS CORPORATIONS TRAVEL AGENTS CARGO

ONLINE PRODUCT TO FIT YOUR TRAVEL NEEDS

PROMOTIONAL EMAIL: SUBSCRIBE UNSUBSCRIBE MODIFY

Search

GO



The Opportunity

Online Data in the World

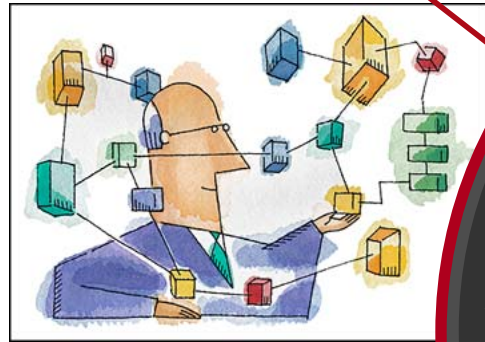
4,000,000+ TB

World Wide Web

~50+ TB

Databases

~8,000+ TB



A large magnifying glass with a black handle and frame, focusing on the text 'SQL' in white. Above it, a smaller magnifying glass focuses on 'HTML'. To the left of the main magnifying glass is a white padlock icon. The background of the magnifying glass area is a dark grey circle containing a repeating pattern of various file formats and technologies in a lighter grey font, including: Word, Power, Intranets, Lotus Note, Exchange, XML, Word, Power Point, PDF, Intranets, Lotus Notes, File System, Exchange, Intranets, XML, Word, Power, Intranets, Lotus Note, Exchange, Intranets, XML, Word, Power, PDF, Intranets, Lotus Note, Exchange, Websites, PDF, File Systems, XML, Word, XML, Word.

Verity Organizes All This And More ...With Security

Document Level Security

Strategic Planning (Upcoming Gartner Report):

- **Through 2005, enterprises that incorporate security as an element of search installations will realize 50 percent greater return on investment than those who do not.**
- **Through 2006, 40 percent of enterprises that choose initially not to include security as an element of a search installation will revise the initiative to do so within 24 months of installation.**

Document Level Security

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August 12-14, San Jose, CA

Featuring renowned search engine

ASP

October 30, 2001
Verity Gives U.S. Air Force New Wings
By [Michael Singer](#)

When the [United States Air Force](#) consolidates intranets from 110 global bases early next year, more than a million Air Force personnel, families and contractors will depend on its new portal, My.AirForce, to keep connected.

The Air Force Tuesday says the portal will be partly powered by Verity ([NASDAQ:VRTY](#)) and its K2-based infrastructure software to help search and organize millions of pages of content, including confidential information.

At the My.AirForce portal, an USAF-operated site, aircraft maintenance personnel, for example, will be able to search for parts and update the repair status of jet fighters. Personnel moving to new bases can get information about local schools, shopping and entertainment. Contractors will be able to retrieve specifications that help them design new military facilities and equipment.

The Air Force will use Sunnyvale-based Verity's K2

@BUSINESS INFRASTRUCTURE



HACKERS ARE KNOCKING.
Click to set the locks and protect your vital systems.

<< Click for IBM's latest security white paper.

Related Articles

- [Partnering Portal Solution Providers](#)
- [CACI Gains \\$30M Defense Pact](#)

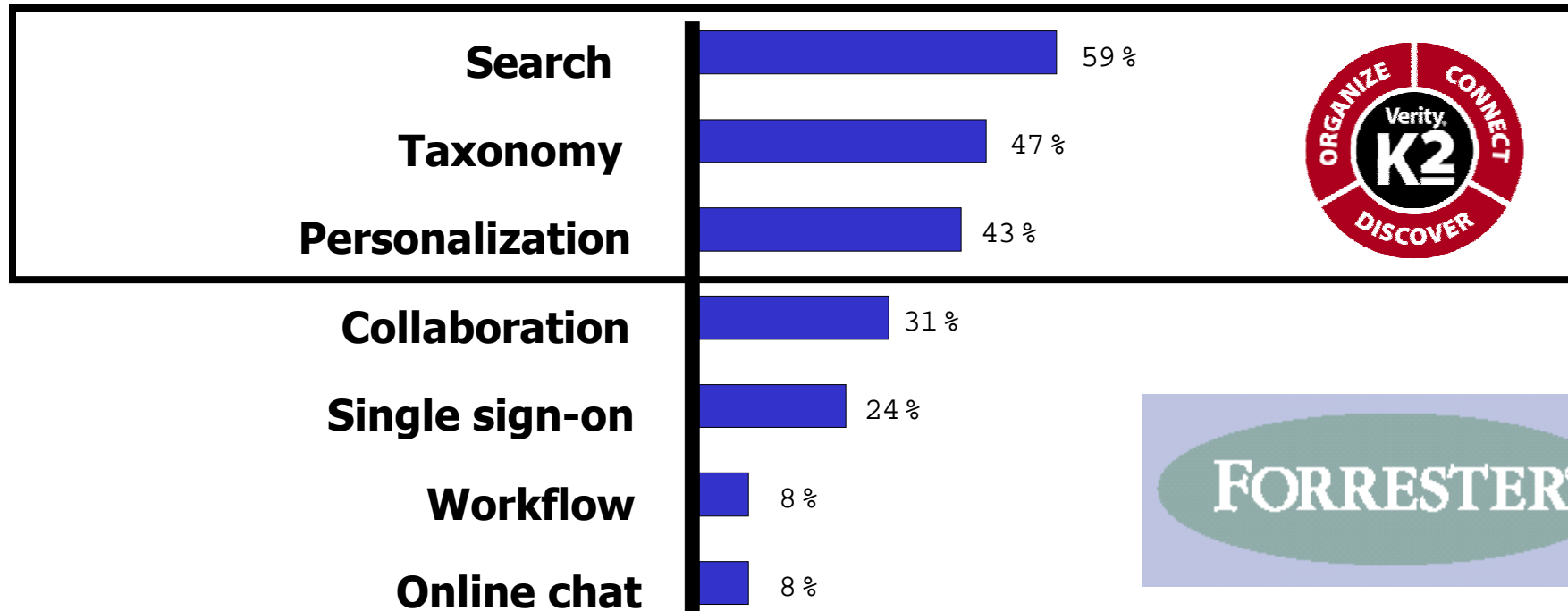
For more stories on:

Intel Verity Go!

AUGUST 2001

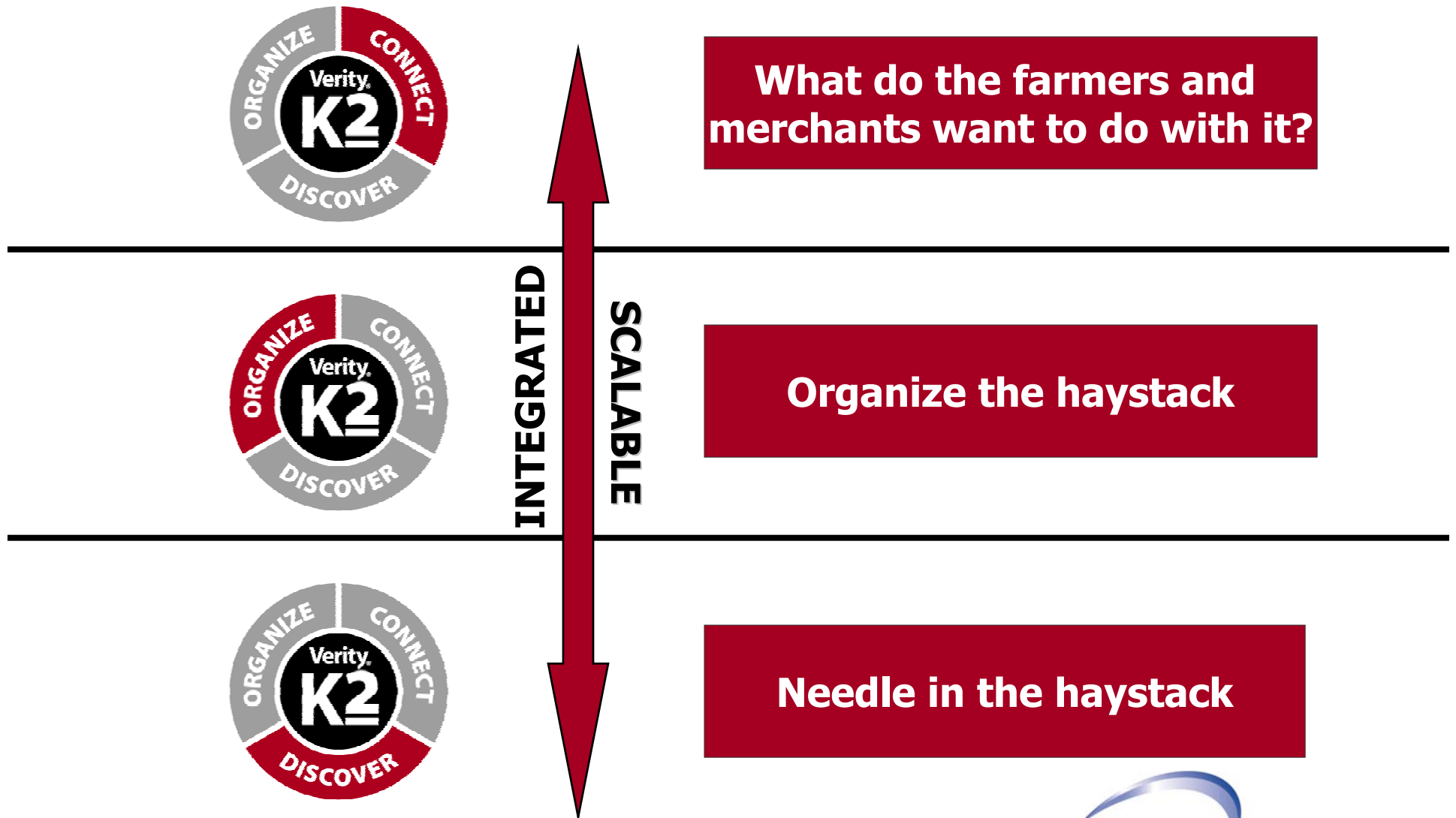
Making Enterprise Portals Pay

“What are the Key Enabling Features of The Enterprise Portal?”



Survey of Global 3500 (49 Interviewed)

3 Tiers of Knowledge Management



3 Tiers of Knowledge Management



Popular Ranking

Expert Location

Recommendation

Community

Profiling

Peer to Peer



Automatic Rules

Business Rules

Concept Maps

Relational Taxonomy



Advanced Search

Universal Index

Parametric Search

Secure Gateways

Structured Search

Federated Search

Keyword Search

Multiple Languages

Tier 1 Discovery



Discovery Paradigm

- I don't know what I want...
- I **sort of** know what I want...

Stock Parametric Table

Stock Finder

Choose your search criteria from the drop down menus: Number of results to display: 250

Market Cap: LargeCap Recent Price: ANY Daily Volume: ANY Description: [] by Verity Clear Form

Reset Filters Reset Sorts Reset Column Order

Ticker	Company Name	Sector	Industry	Recent Price	Daily Volume	Market Capitalization	Float	Total Cash
ACAI	Atlantic Coast Air Hldgs	Transportation	Airline	22.75	330800	964800000	21200000	0
ACLS	Axcelis Technologies	Technology	Semiconductors	9.875	1780000	959100000	96200000	168200000
ADIC	Advanced Digital Inform.	Technology	Computer Peripherals	14.0	965000	727800000	45700000	207400000
ADPT	Adaptec, Inc.	Technology	Semiconductors	7.469	1660000	736200000	70000000	631200000
ADTN	ADTRAN, Inc.	Technology	Communications Equipment	21.313	375100	824900000	29500000	88300000
AEIS	Advanced Energy Inds.	Technology	Electronic Instruments & Controls	23.313	510200	7357000		



Federated Search

Verity [Federated Search]

Search Query: portal

Submit

Google Web Search

Hoovers Company Information

AltaVista Web Search

Moreover News

Verity K2 Search (Collection unknown)

Federated Search

Directory: Financial Information

Search

clear

Display Category Results Only

Financial Information

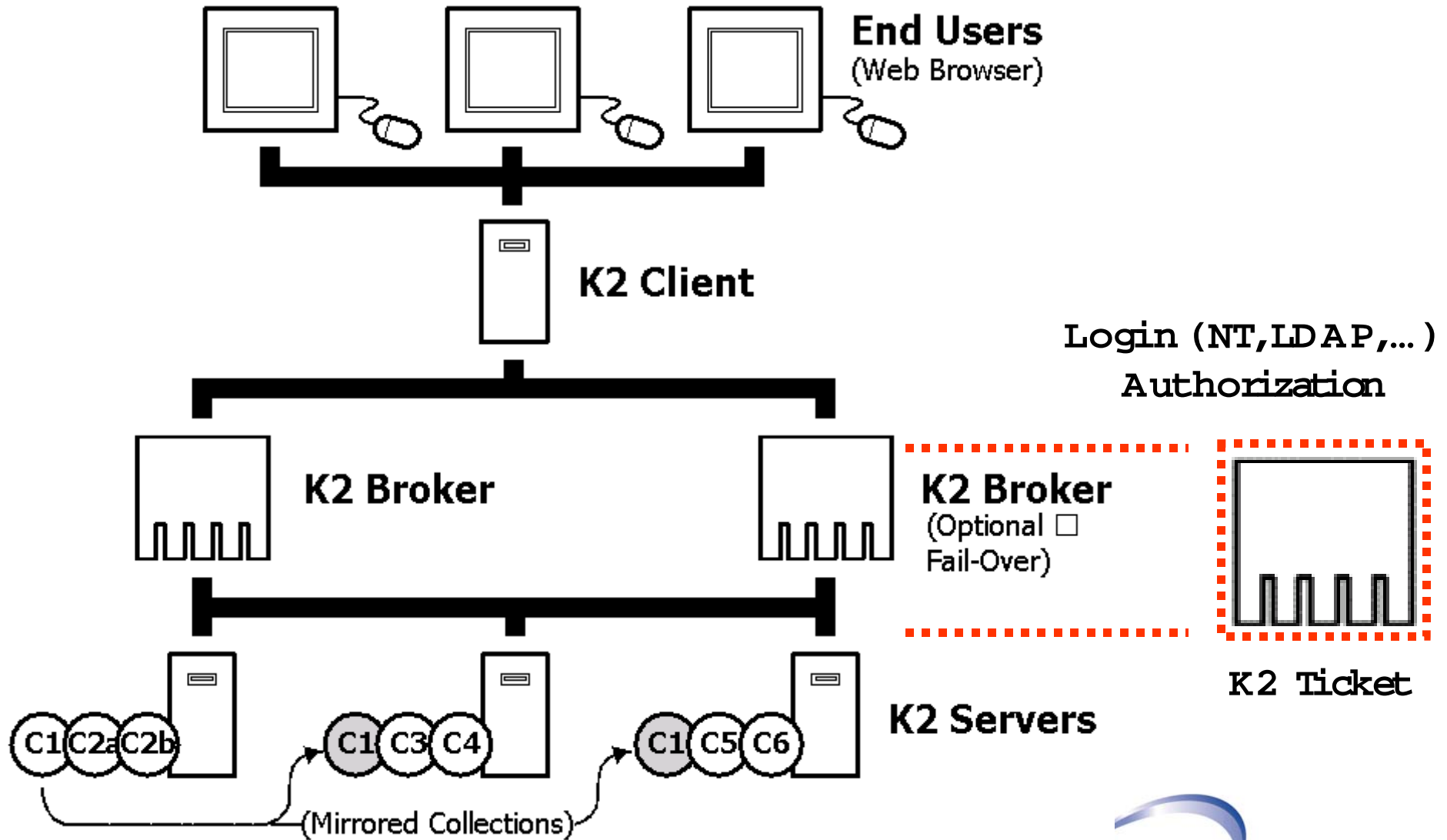
- 500+ Financial Information
 - 410 Banks
 - 255+ Brokerages
 - 82 Finance Companies
 - 1 Advanta
 - 30 AmericanExpress
 - AmeriCreditCorp
 - 2 Amresco
 - 1 ArcadiaFinl
 - 11 AssociateFstCap
 - CIT Group
 - CreditAcceptance
 - DoralFinlCorp
 - 29 FinovaGp
 - 5 HellerFinancial
 - 5 HouseholdIntl
 - ImperialCredlInd



Gateways & Filters

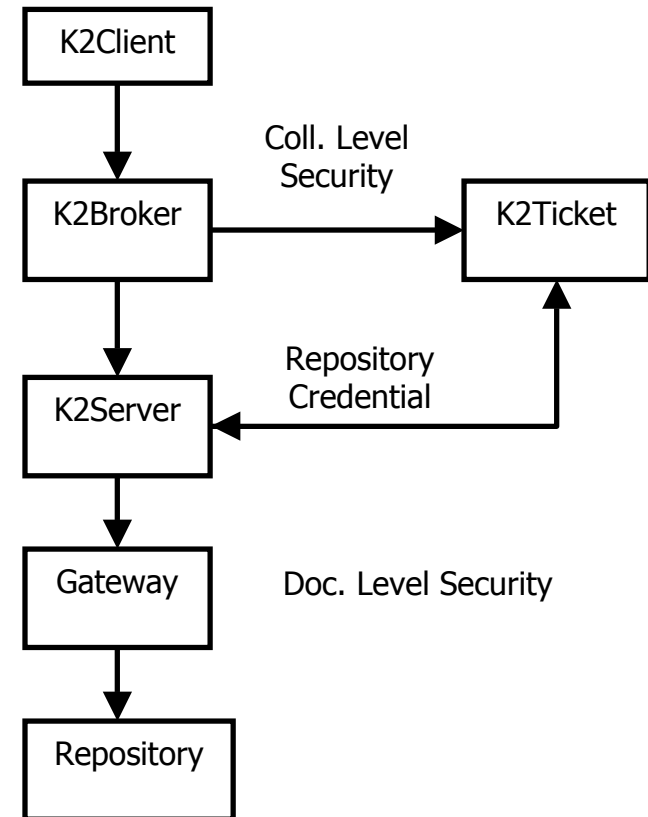
- **SECURE** Gateways for Indexing
 - File system
 - HTTP
 - MS Exchange
 - ODBC
 - Documentum
 - Lotus Notes
 - Others...
- Filters for dealing with different formats

Scalability, Availability, Security

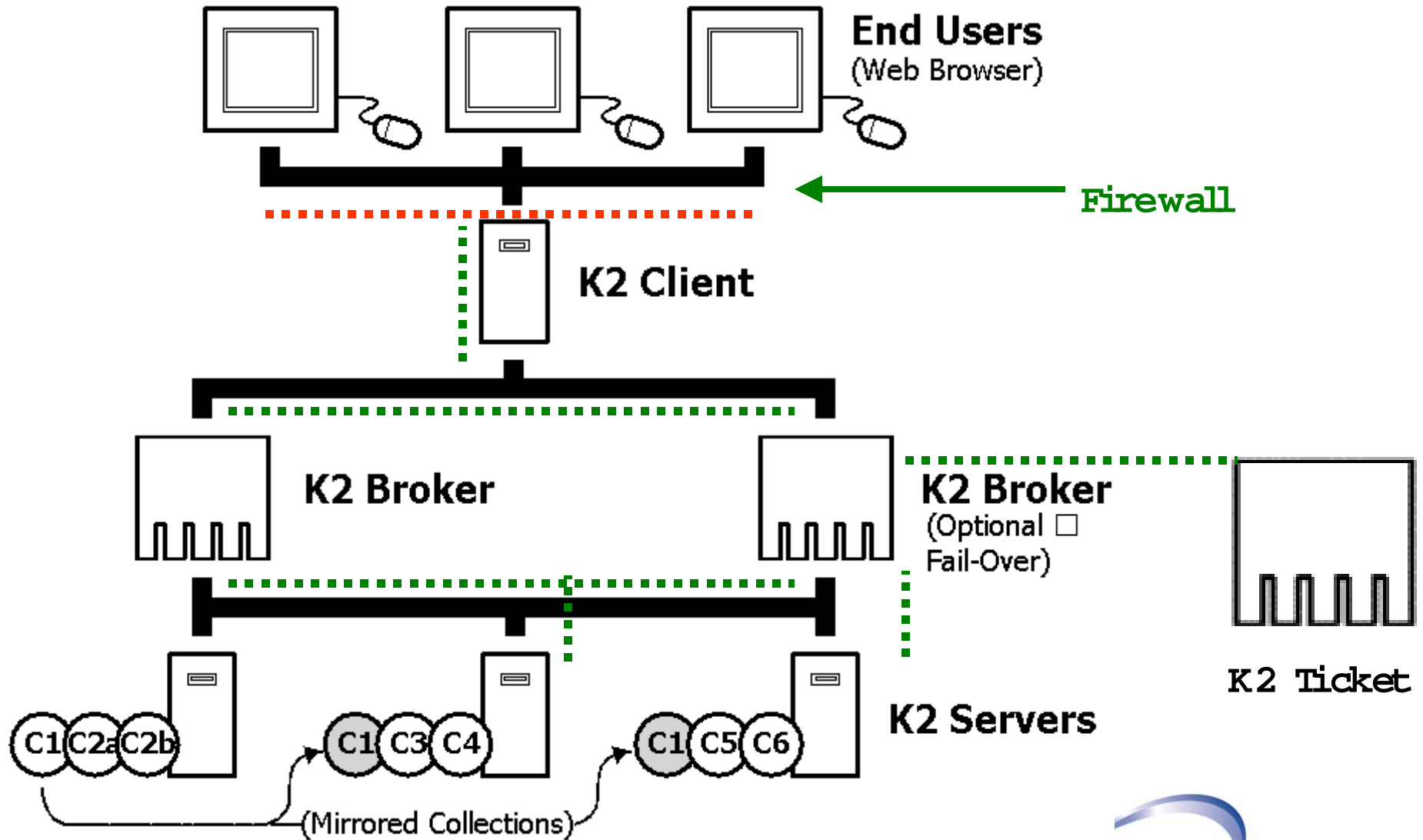


Node, Document Level Security

- **Ticket**
 - A Ticket represents a user in the k2 search system.
 - Used For caching Gateway certificates in K2Server
 - Obtained via K2UserLogin
- **Node level security**
 - The node level security is enforced by K2Ticket based on a Ticket
- **Document level security**
 - Doc. Security is enforced through the gateway






Full Wire Encryption

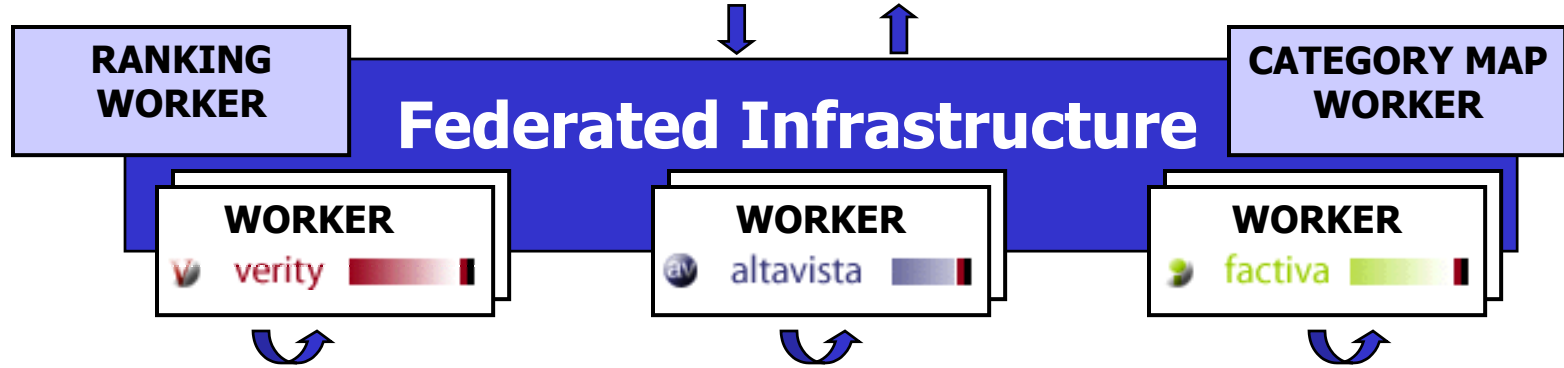



Federated Infrastructure

- **Single point of “discovery”**
- **Integrate multiple sources of information**
- **Allows user login credentials via parameters for each source**
- **Filtering, Merging, Re-ranking of results**
- **Infrastructure for enterprise application integration (EAI)**
- **Infrastructure basis for P2P Technology (Personal to Portal)**


Merged Uncategorized Results

- 
[World Wide Arts Resources - Your First Stop for Arts Online! - Artists, Museu](#)
Summary: Access to the visual arts, artists, art galleries, art museums, Arti images, painting, sculpture, ...
- 
[National Endowment for the Arts, a federal agency](#)
Summary: Homepage for the National Endowment for the Arts, a federal age
- 
[Americans for the Arts: Home Page](#)
Summary: Americans for the Arts is the national organization that supports public resource development, leadership ...




verity

[CALENDAR\(The Fort Worth Star-Telegram\)](#)
Summary: JANUARY Southwestern Exposition and Symphony orchestra wa
[arts Canberra alive with the](#)
Summary: Margaret Reid: shares concern for the c
[The arts have a key role in making our society a b](#)
Summary: The arts have a positive role to play in Minister Tessa Blackstone said today. They can als


altavista


[About - Arts & Humanities](#)
Summary: About arts and literature. Get hot ne human Guides.
[arts.indiaabroad.com: arts & entertainmer](#)
Summary: arts.indiaabroad.com: arts & er
[Meta-Arts.com](#)
Summary: Welcome to meta-arts.com. Enter He YourNameFree.com - Register your domain...



factiva


Uncategorized Results
[National Endowment for the Arts, a federal agency](#)
Summary: ... 2001; Ten National Design Competitior Bush Sends Greetings to Arts Supporters; New Summ
[The New York Times: Arts](#)
Summary: ... took to Carnegie Hall on Tuesday, is lil Then Crashing Its Best-Seller List By ALAN RIDING ...
[World Wide Arts Resources / absolutearts.com - Your](#)
Summary: ... Your First Stop for Arts Online! This is


Federated Infrastructure


Available sources:


 Verity


 Verity K2 Knowledge Tree

 AltaVista Web Search

 Factiva Publications

 Google Web Search

 Hoovers Company Information

 Moreover Newsfeeds

Tier 2 Content Organization



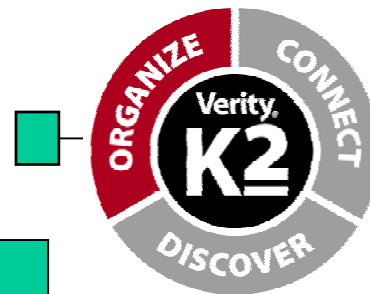
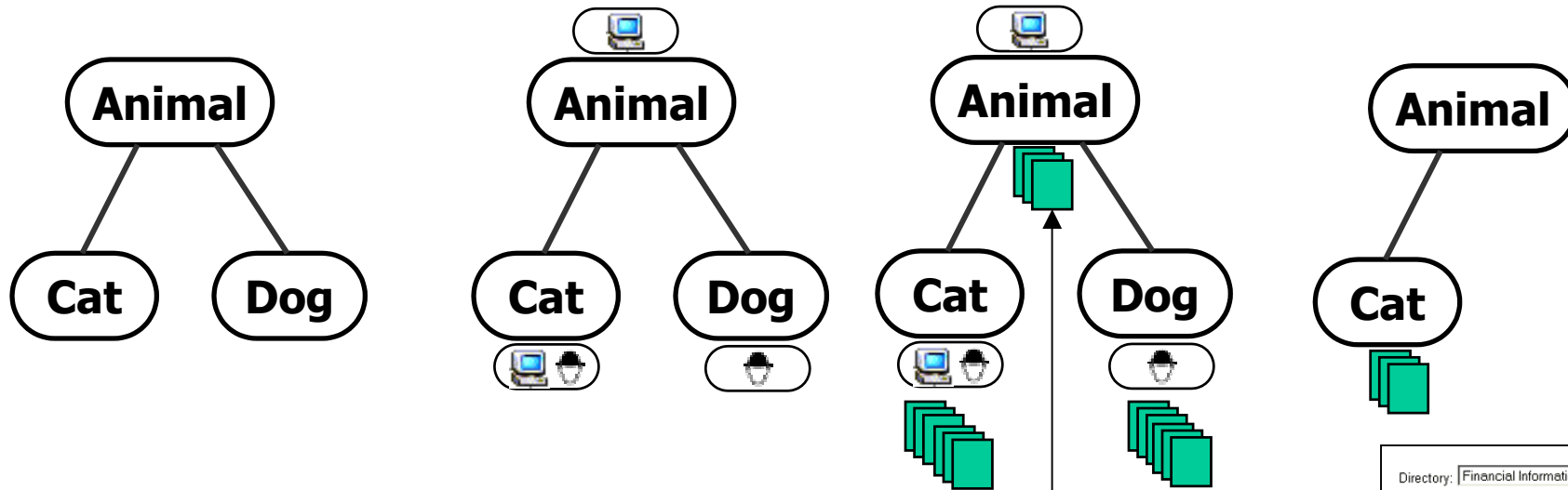
Taxonomies




Build Taxonomy

Build Model

Populate Taxonomy

Use It



 **Automatic**
 **Domain Expert**
 **Combination**

Directory: Financial Information

Search

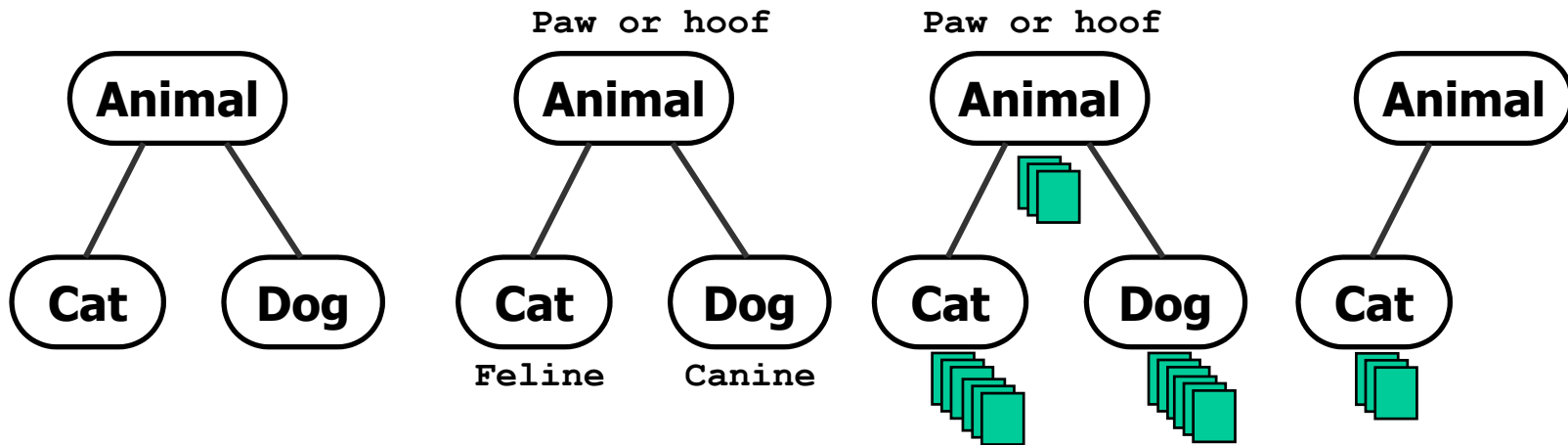
clear

Display Category Results Only

Financial Information

- 500+ Financial Information
 - 410 Banks
 - 255+ Brokerages
 - 82 Finance Companies
 - 1 Advanta
 - 30 AmericanExpress
 - AmeriCreditCorp
 - 2 Amresco
 - 1 ArcadiaFinl
 - 11 AssociateFstCap
 - CIT Group
 - CreditAcceptance
 - DoralFinlCorp
 - 29 FinovaGp
 - 5 HellerFinancial
 - 5 HouseholdFinl
 - ImperialCreditInd


Taxonomies



Build the Taxonomy	Build a Model for Each Node	Populate the Taxonomy	Use the Taxonomy
Automatic Naming ✓	Automatic Classification (training) ✓	Automatic ✓	Browse ✓
Import ✓	Import ✓	Manual ✓	Search & Browse ✓
Industry Taxonomy ✓	Industry Taxonomy ✓		Relational Taxonomies ✓
Concept Extraction ✓	Business Rules ✓		
Manual ✓			

Relational Taxonomies

veritydemo
home | [logout](#)



carFinder

Thousands of quality used vehicles!

Search for: [by Verity](#)

Browse

Dealership/

[Australia/ \(9\)](#) [Canada/ \(1\)](#) [U.S.A./ \(16\)](#)
[Brisbane \(2\),Gold Coast \(2\),...](#) [Montreal \(1\),](#) [California/ \(6\),Florida/ \(3\),...](#)

Car Brand/Asian

[Acura/ \(9\)](#) [Mazda/ \(3\)](#) [Nissan/ \(11\)](#) [Toyota/ \(3\)](#)
[Integra \(9\),](#) [MX-3 Precidia \(1\),...](#) [240SX \(6\),300ZX \(5\),](#) [Celica \(3\),](#)

Parametric Selection

[Show All!](#)

Category: ▾

Price: ▾

Mileage: ▾

Year: ▾

Color: [All Colors](#)

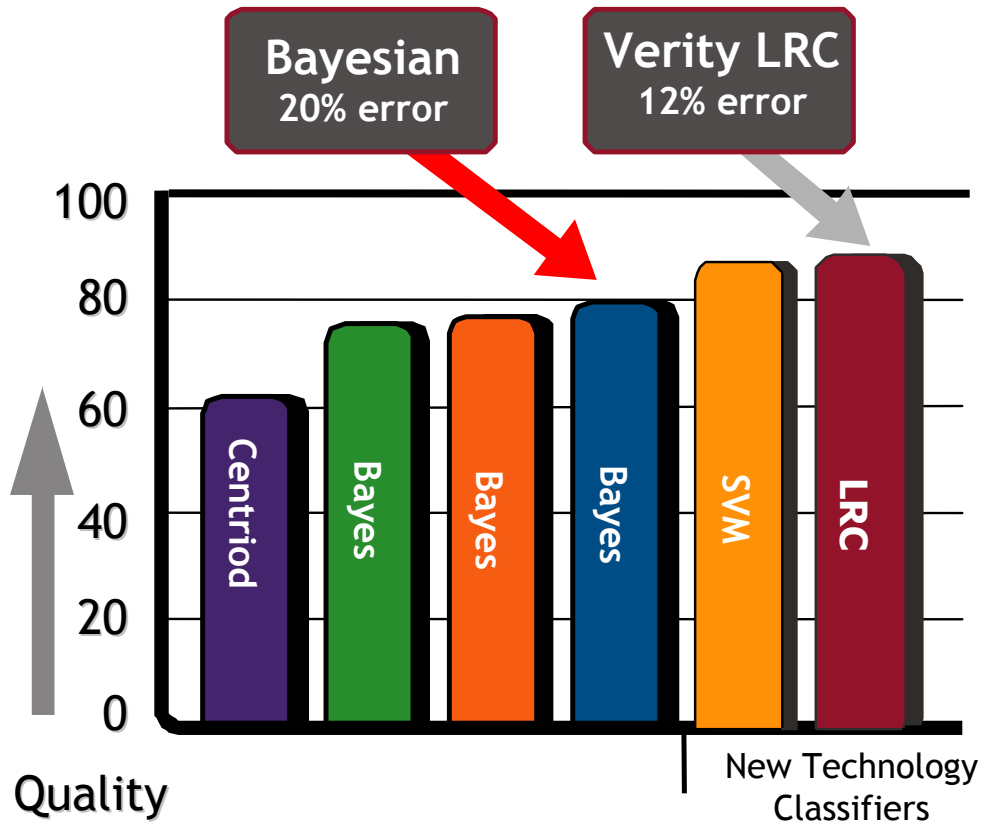
[Red\(26\)](#)

26 Matches Found 1 2 3 4

Sort results by:	Category	Color	Year	Price	Mileage	Details
1	Sports Car	Red	2002	9000	16300	details
2	Sports Car	Red	2001	7000	10600	details
3	Sports Car	Red	2001	7700	17100	details
4	Sports Car	Red	2000	10700	14500	details
5	Sports Car	Red	2000	8000	18000	details
6	Sports Car	Red	2000	7800	17800	details
7	Sports Car	Red	2000	8700	16100	details

©2002 Verity, Inc.
CarFinder is a demonstration tool for Verity parametric search. Any similarity to actual companies or products is purely coincidental. The products advertised on







Automatic Classification



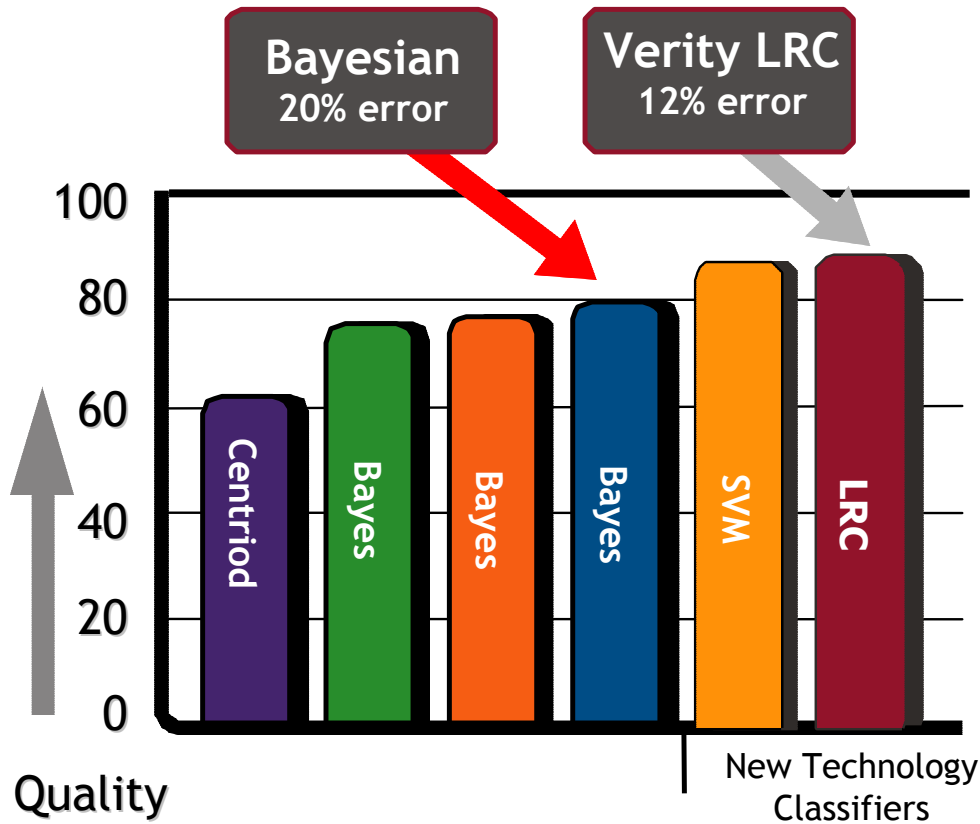
Reuters Benchmark:
9603 training docs,
3299 test docs

Micro-Averaged
Precision, Recall







Ref: Susan Dumais (MS research)
published in IEEE Intelligent Systems

 Findsim	61.7
 Naïve Bayes	75.2
 Taper2 (IBM)	77
 BayesNet (MS)	80
 SVM (MS)	87
 LRC (Verity)	88.2

Automatic Classification



- 1 level taxonomy: 20% error
- 2 levels: 36% error
- 3 levels: 49% error
- With LRC (1 level) : 12% error
- With LRC (3 levels): 32% error
- With business rules: 1-5% error

	Findsim	61.7
	Nàive Bayes	75.2
	Taper2 (IBM)	77
	BayesNet (MS)	80
	SVM (MS)	87
	LRC (Verity)	88.2

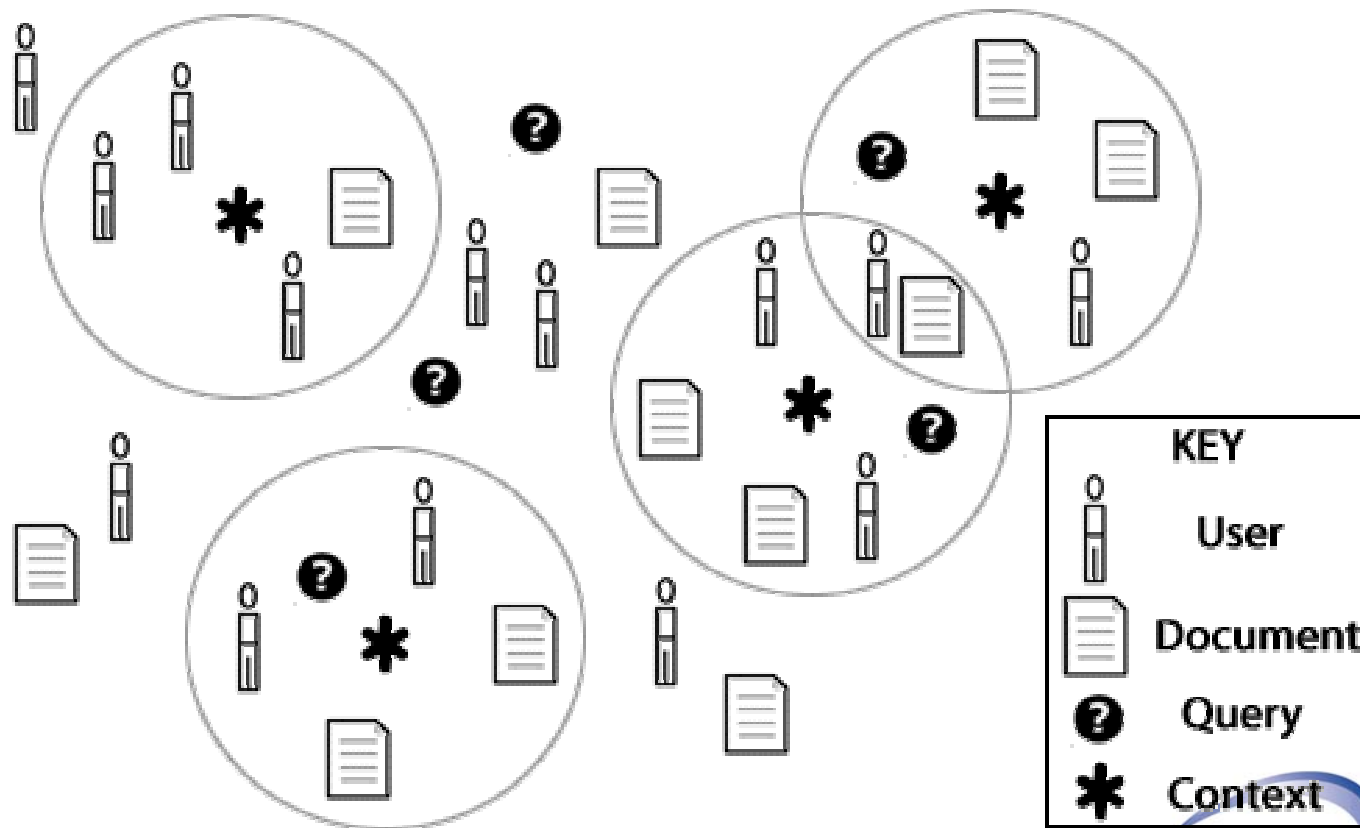
Tier 3

Social Networks

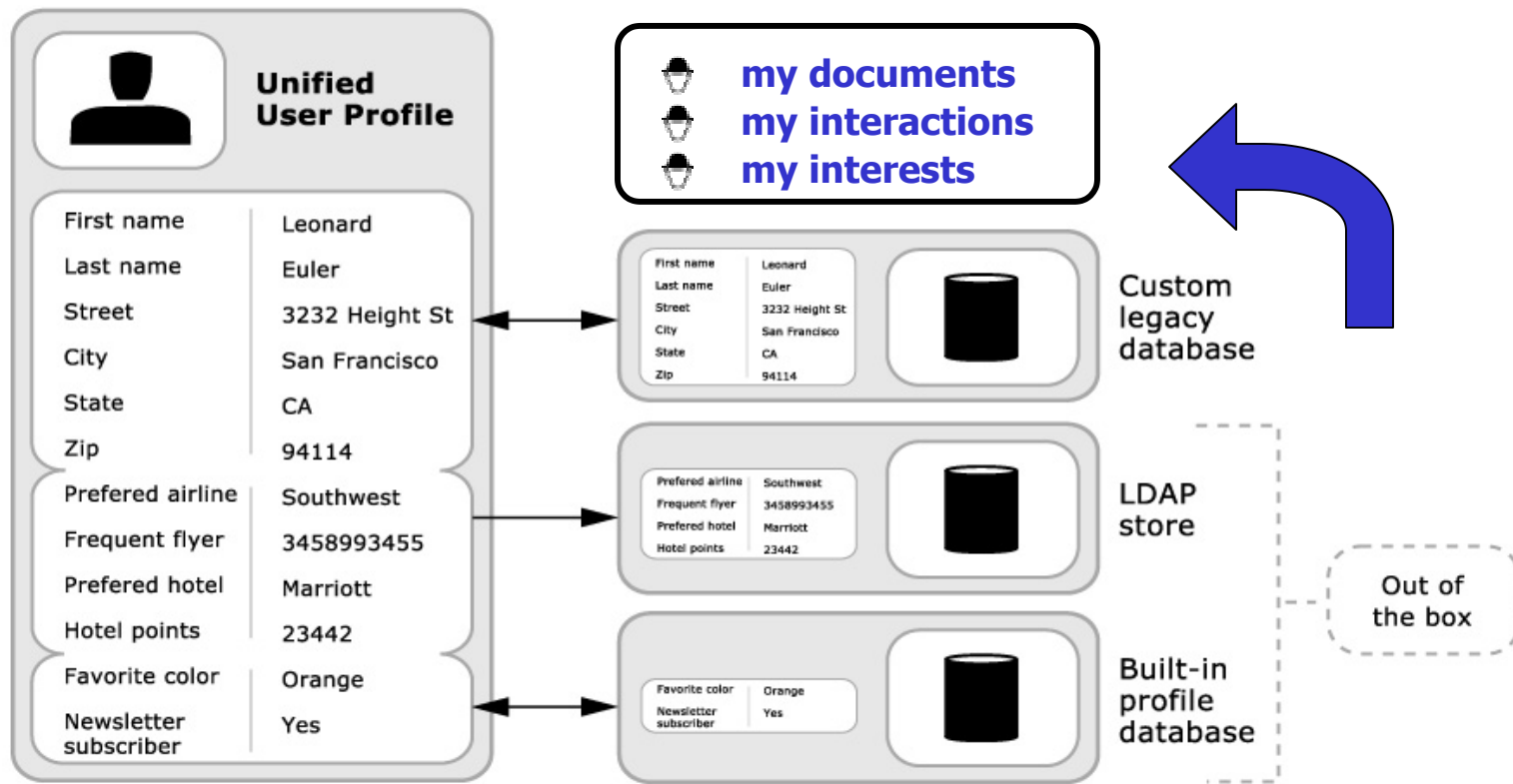


Social Networks – Implicit Links

- Represents users, documents, categories and queries in a dynamic multidimensional Tensor Space
- Model continually learns explicit and implicit associations between these entities



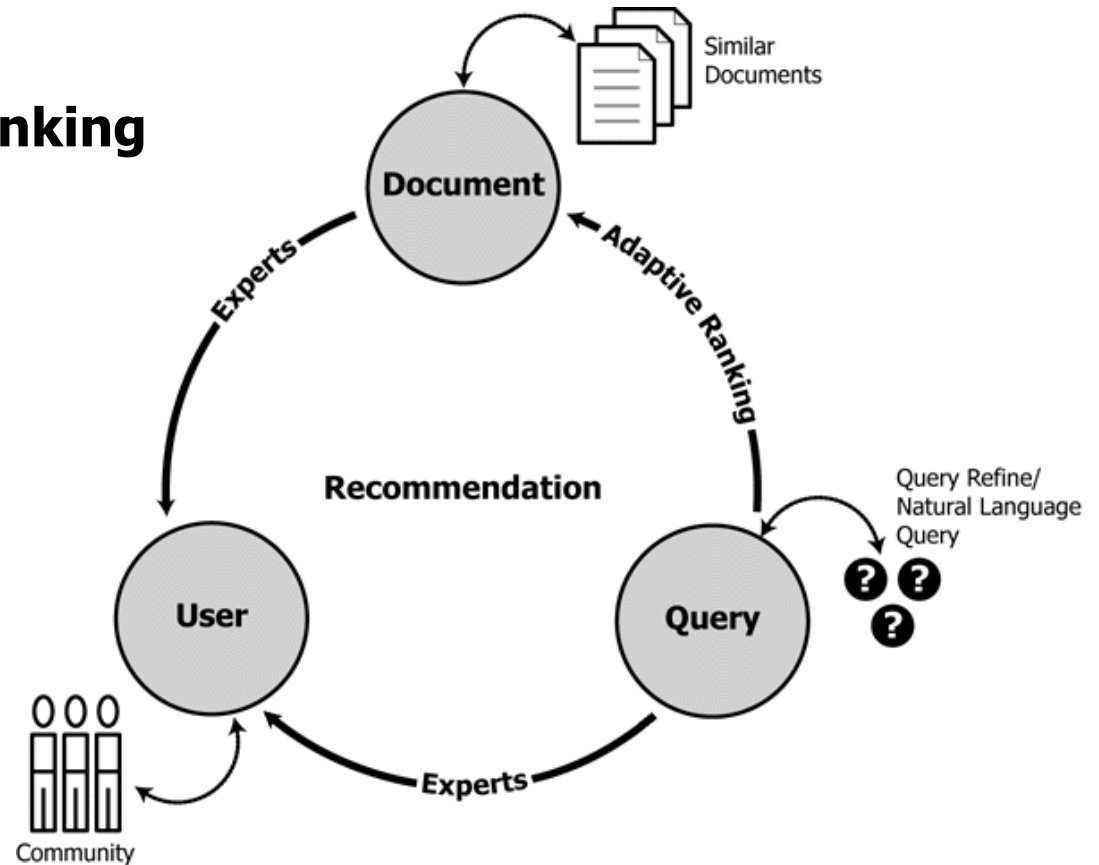
Content-based Personalization



Verity's Recommendation Engine

Functions:

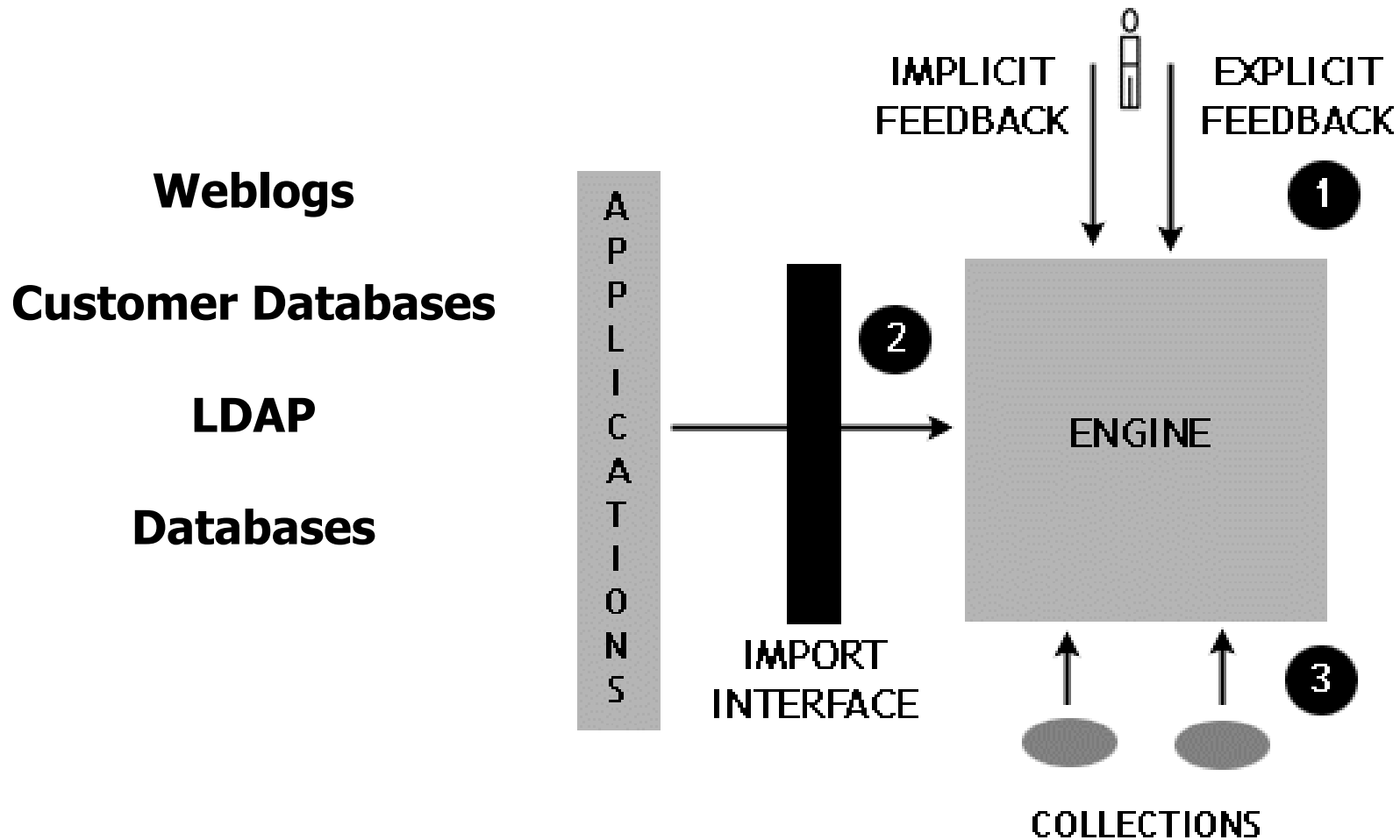
- Popular (Adaptive) Ranking
- Document Recommendation
- Document Similarity
- Community
- Expert Location
- User Transactions



Engine ensures that secure documents are not recommended.

Auto-Initialization

User Feedback



Email Forums Document Collections

Sample Applications

- **Corporate Intranets**
 - Recommendation, finding domain experts,...
- **Intellectual Property**
 - Finding related research, consultations,...
- **Medical Applications**
 - Matching patients to doctors, clinical trials,...
- **Customer Relationship Management**
 - Matching customer problems to internal experts in Technical Support, Development,...
- **Recruitment**
 - Matching job postings to resumes, creating profiles from resumes,...
- **Criminal Profiling**
 - Matching records, crime descriptions, etc.

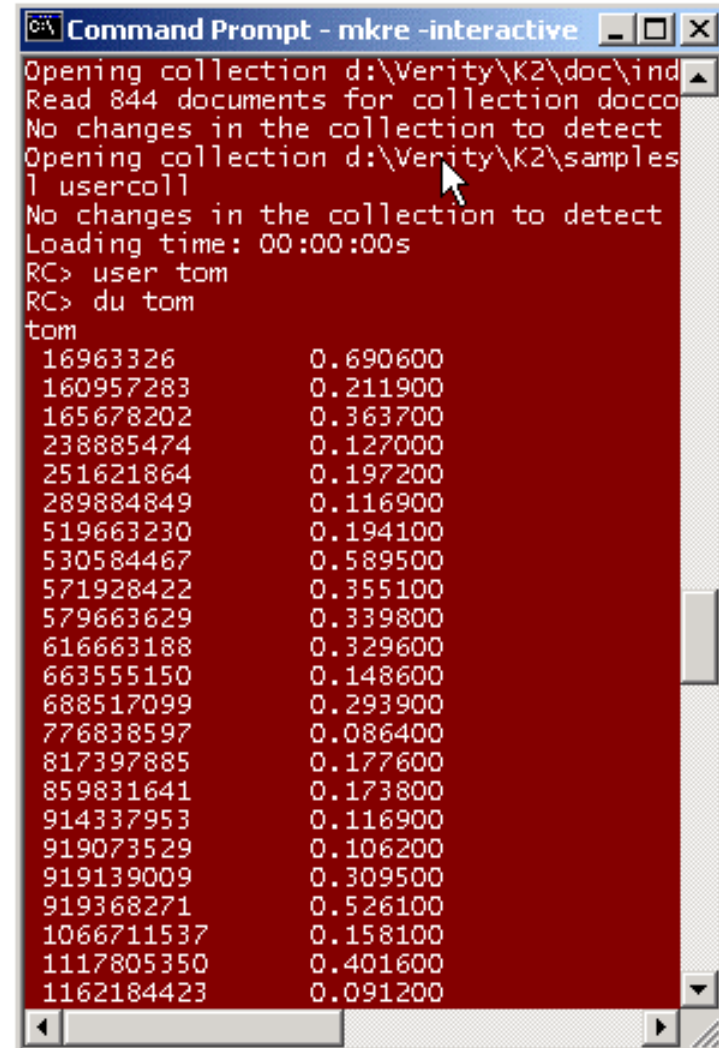
Privacy and Trust

- **Provides an environment that enables privacy and builds trust.**
- **Provides capabilities that adhere to the 4 pillars of trust:**
 - 1. Identification**
 - 2. Notice**
 - 3. Transparency**
 - 4. Control**

Transparency

- **Secure Mode:**
User profile unreadable
– default product
- **Open Mode:**
Authorized personnel
able to export User
Profiles in the clear, if
required by
organization.

User profile →



```
Command Prompt - mkre -interactive
Opening collection d:\Verity\K2\doc\ind
Read 844 documents for collection docco
No changes in the collection to detect
Opening collection d:\Verity\K2\samples
1 usercoll
No changes in the collection to detect
Loading time: 00:00:00s
RC> user tom
RC> du tom
tom
16963326      0.690600
160957283    0.211900
165678202    0.363700
238885474    0.127000
251621864    0.197200
289884849    0.116900
519663230    0.194100
530584467    0.589500
571928422    0.355100
579663629    0.339800
616663188    0.329600
663555150    0.148600
688517099    0.293900
776838597    0.086400
817397885    0.177600
859831641    0.173800
914337953    0.116900
919073529    0.106200
919139009    0.309500
919368271    0.526100
1066711537   0.158100
1117805350   0.401600
1162184423   0.091200
```

User Control

The screenshot shows the Verity K2 Enterprise user management interface. On the left is a sidebar with a search box, a 'by Verity' logo, and buttons for 'Manager' and 'Help'. The main content area is titled 'Enterprise' and contains a 'Manage User Profile' section. This section includes radio buttons for 'New User', 'Update User', 'Reset User', 'Delete User', 'Hide User', and 'Show User'. A text input field contains 'ContentProfiles.xml' with a tooltip that reads '[Profile template data for New/Update]'. A 'Go' button is at the bottom of the main area. Red dashed lines separate the sections of the interface.

Opt-in/opt-out possible

Easy to configure canned user profiles (XML)

Privacy

ty

Enterprise Verity.K2

Query: "tree"

Found in: 55 documents out of 296

Collections: pe_coll

1 to 20

Rank	Document
1	Knowledge Tree Management Utility (ktmgr)
2	Knowledge Trees and Workspaces
3	K2 Server Configuration Options
4	Testing Search on a Server-Examples
5	Classification Wizard
6	Understanding Workspaces
7	Table of Contents
8	Concepts of Utilities
9	Understanding Knowledge Trees
10	Optimized Knowledge Tree Search Utility (qsrch)
11	Testing Search on a Server
12	Topic Editing Tutorial
13	Index
14	Using Verity Intelligent Classifier
15	Knowledge Tree Search Utility (ktsrch)
16	Detailed Operators and Modifiers Reference
17	Panels Within the Intelligent Classifier Window
18	Setting Intelligent Classifier Options
19	Index
20	About Topics and Topic Sets

[PREV] [NEXT]

Verity

Enterprise Verity.K2

Query: "tree"

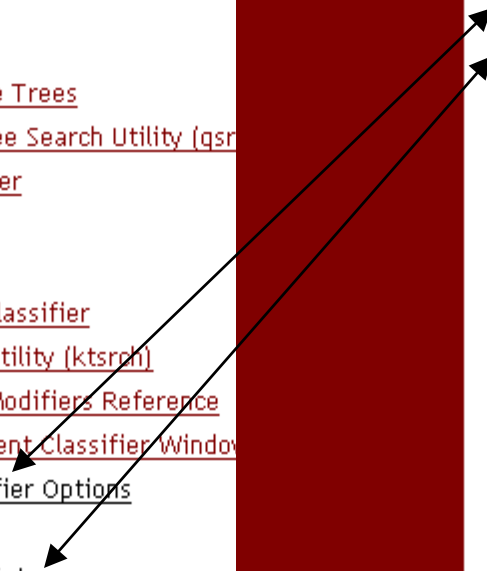
Found in: 55 documents out of 296

Collections: pe_coll

1 to 20

Rank	Document
1	Knowledge Tree Management Utility (ktmgr)
2	Knowledge Trees and Workspaces
3	K2 Server Configuration Options
4	Testing Search on a Server-Examples
5	Classification Wizard
6	Setting Intelligent Classifier Options
7	About Topics and Topic Sets
8	Understanding Workspaces
9	Table of Contents
10	Concepts of Utilities
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13	Testing Search on a Server
14	Topic Editing Tutorial
15	Index
16	Using Verity Intelligent Classifier
17	Knowledge Tree Search Utility (ktsrch)
18	Detailed Operators and Modifiers Reference
19	Panels Within the Intelligent Classifier Window
20	Index

[PREV] [NEXT]



Previous
Next
Index
Contents

Search

Manager

Help

Rate this page:

★ ★ ★ ★ ★

★ ★ ★ ★ ★

★ ★ ★ ★ ★

★ ★ ★ ★ ★

★ ★ ★ ★ ★

Personalized Discovery

The **personalization** feature incorporated in Verity K2 Enterprise automatically connects your users to subject experts within your organization, and recommends documents based on the individual users' past and present queries and/or documents that are similar to selected documents. This highly-advanced technology is based on Verity's proprietary analysis engine that combines business rules with latent patterns in user behavior. It puts simple queries into the context of the social networks created by the interaction of users, information and queries in your organization.

K2 Enterprise's **Personalization** and Adaptive Ranking features all contribute to **personalizing** your users' search experience.

K2 Enterprise Recommendation Engine Feedback ...

File Edit View Favorites Tools | Y! >>

Thank you for your feedback **tom**

... allows administrators to users. One of the features of analyzes group behavior to

... nancy ranking by incorporating document, the higher it appears sers consistently find the most wledge discovery process.

Powered by Verity™

User: tom

Similar Documents

- [Administering the Personalization Engine](#)
- [Personalization Engine Internals](#)
- [Introduction](#)
- [Personalization Engine](#)
- [System Architecture](#)

Interest Group

			tom
			ben
			leo
			george
			ashley

Query: ""

Found in: 229472 documents out of 229472




Collections: c1

Enterprise
Verity, Inc.

1 to 20

Rank

Document

- [Amelie Jacobson](#)
1  Phone: **609-555-1279** Location: **null**
Qualifications: **Masters** Location: **New York University**
- [John Bishop](#)
2 Phone: **null** Location: **NJ**
Qualifications: **Masters** Location: **Purdue University**
- [Kendra White](#)
3  Phone: **979-555-1279** Location: **NJ**
Qualifications: **High School** Location: **St James**
- [Paul Essex](#)
4  Phone: **207-555-0864** Location: **CT**
Qualifications: **Bachelors** Location: **Springfield College**

User: empgraphics

Resumes you may like

- [James Stanley](#)
- [Mark Wilson](#)
- [Jennifer Whattman](#)
- [Kristine Davidson](#)
- [Kim Martin](#)
- [Jeff Parikh](#)
- [Suzette Jeffries](#)
- [Mark Lui](#)
- [Jesse Pacquer](#)
- [Thomas Hanton](#)

Job Postings you may like

- [Job Posting 2213](#)

Summary

- **Security issues do not stop outside the firewall**
- **Node-level, document-level security are critical within enterprise**
- **Huge security lapses can occur without document level security**
- **Encryption, privacy, trust are important in some settings**
- **Infrastructure must have security built into it.**

Thank You

rajatm@verity.com