Creating “Information Gravitation” in the Firm

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Aristotle’s Fantasy

“A suppose that every tool we had could perform its task, either at our bidding or itself perceiving the need
...that shuttles in a loom could fly to and fro
...and a plucker play a lyre of its own accord”

Aristotle

Information Gravitation
The Future of Information Retrieval
The Basics of Search: Relevancy

The ability (of an information retrieval system) to retrieve material that satisfies the needs of the user

Google – Relevancy as a Popularity Contest
**Google – Page Rank Algorithm**

\[ PR(A) = (1-d) + d \left( \frac{PR(T_1)}{C(T_1)} + \ldots + \frac{PR(T_n)}{C(T_n)} \right) \]

- Most popular web pages given highest rank based on 2 inputs:
  - The number of incoming links: The more the better
  - The number of outgoing links on the page which points at your page: The less the better

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**Consumer Search and the Enterprise**

- Consumer search tools have re-defined what people expect
- Gap between the consumer experience and the enterprise
  - although the gap is closing in some cases
  - in other cases web search needs to catch up
- Attorneys want to “Google it” but expect much more from search in the enterprise than with Google

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**Questions?**

- What about the User?
  - Google does not take into account who the user is when determining relevancy of results
- What about the content of the query?
  - Google uses Hypertext-Matching Analysis, meaning it uses the text and metadata of the web pages to figure out whether a web page should even appear for your query
- How does this relate to search in the Enterprise?
Web Search vs Search in Enterprise

### Web Search
- The Web contains a huge store of simple content
- Relevancy based on key word match over layered with popularity score
- Internet content typically lacks much context beyond what is linked within its pages
- Unrestricted access - 'public' content
- Non authoritative – near enough is good enough

### Search in Enterprise
- Enterprises by comparison have small content stores but much complexity
- No link structures mean relevancy needs to be computed in a different way
- Content in the enterprise has many links to information outside of it both inside and outside the enterprise
- Enterprise search tools must respect security
- How does this relate to search in the Enterprise?

Google – Parallels in the Enterprise

Google style search box
- Search returned in list format
- Information rich results list
- Search terms highlighted
- Advanced search & preferences available

Google – Differences in the Enterprise

- Information linked together in context
- Metadata much richer
- Ability to filter down post query
- Relevancy based on sophisticated content analysis not link structures
- Relevancy can extend beyond primary object
Relevancy – Beyond Google

- Concept Search
  - Sophisticated content analysis increases relevancy helping people find content even if all
    the keywords are not present

- Content Linking
  - Complex object types being created through linking of common metadata
  - Objects being found through relevancy joining

- Personalization
  - My Search: Based on office, role, position, practice group, industry, etc
  - User click stream data being used to influence personal relevancy

- Collaborative Filtering
  - Aggregate click stream data being used to influence general relevancy
  - Recommendations of content based on users with similar interests

Evolution of Enterprise Search

- Concept Based Search

- Pattern Matching Search

- Key Word Search

- FLQA (Recommender)

- K-Nearest Neighbor

Concept Search Example
Concept Based Search Systems Automatically Form an Understanding of the Content Being Searched

<table>
<thead>
<tr>
<th>Concept 3</th>
<th>Concept 4</th>
<th>Concept 5</th>
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<tbody>
<tr>
<td>murder</td>
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<td>environmental</td>
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<td>business</td>
<td>infringement</td>
<td>waste</td>
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<td>agent</td>
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<td>sites</td>
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</tbody>
</table>

Content Linking

Importance of content linking in the law firm:
- Need to find and manage information
- Efficiency and productivity
- Risk - regulatory requirement for finding the right information quickly
- Traditional systems are being undermined
- Wikis and SharePoint team sites are encroaching on the DMS - increasingly used as repositories for documents, storing the 'working copy'
- Increase in the volume of content
- Rapidly increasing number of information silos
- Searching each system is not effective
Content Linking Takes Enterprise’s Complexity & Simplifies it for the User

- Democratisation of access
- back end complexity
- front end simplicity

simple user interface

Benefits of a Linked Approach

Enterprise search blends content from diverse locations

Enterprise search

content grows

internal

external

Linking Content Provides For a Complete View That is Easy to Get To

Jonathan Speed, President

Speed Communications

123 Main Street

Anytown, USA 12345

Phone: 555-1234

E-mail: jonspeed@speed.com

"Enterprise search blends content from diverse locations. As content grows, internal and external content can be linked, providing a complete view that is easy to get to."
Results have been filtered down by specific Citation.

West KM filter allows results to be filtered by citation.

All Citations within the document are displayed in the preview screen.

Personalization
Google – Relevancy as a Popularity Contest

Google – What if Relevancy Was All About You?

Joe – Computer Programmer interested in Computer Networking

Jane – Executive Director interested in Business Networking

Collaborative Filtering
Amazon – Collaborative Filtering

How does Amazon make it easy for me to find what I want?

Amazon knows about my past interactions and the interactions of users who performed similar searches and ‘hot’ or popular items.

Parallels in the Enterprise

Passive presentation of filtered information

Decisiv Email at MAILIONS

Parallels in the Enterprise

System anticipates the user’s needs (Push vs Pull)

Decisiv Email at MAILIONS

- filing suggestions
- context sensitive searches
Parallels in the Enterprise

Decisiv Email at MailChimps

Filing information

Web 2.0

Content Rating and Social Bookmarking

Yahoo SearchMonkey - ratings for movies, recipes etc – from StumbleUpon

StumbleUpon link - Knight Returns (Book) (4.9/4.9)

flickr link - The Future: Hackers' football - The Hydra

[Images of various web 2.0 elements and tools]
Content rating and tagging in the enterprise

- Mallesons’ Scotty solution – in beta
- publishes RSS Know How current awareness 'feeds'
- uses open source technology Drupal as a feed aggregator
- includes tagging and digging

Scotty

- items tagged “enterprise 2.0”
The visualization of search

Visualisation – business intelligence

- Mallesons' business intelligence system
- User Support call stats
Maps - Google ride finder

- search for available shuttles, taxis and limousines in your area
- shows you the actual location of each vehicle
- once you have located a vehicle, call the provider to reserve it
- available in 18 US cities
Information Gravitation Case Study

PeopleFinder

1. Simple
2. In taskbar – always there
3. Prefix defines search
4. 1.7 million searches in last 12 months
5. 7,000 searches per day
PeopleFinder presence features
Quickly scan presence icons to determine availability
- PeopleFinder pages update in real-time (no manual refresh is required)
- When a handset is picked up the presence icon changes to
- Users can control presence information using Office Communicator

Presence icons in use:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Andrew Parker</td>
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<tr>
<td>Jane Anderson</td>
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<td>Sue Rogers</td>
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<tr>
<td>Peter</td>
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<td>Michelle Ayer</td>
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<td>Sara Collins</td>
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<td>Bob Ross</td>
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<td>Brian O'Connell</td>
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PeopleFinder presence features
Hover the mouse on a name to show a rolling 7 day calendar view:
- A quick glance to check someone's availability
- Calendar view shows Outlook appointments, flexible working arrangements, training dates/times, leave status and public holidays
- 'Out of Office' notification shown
- Integration of time zone support e.g. Sydney / Hong Kong
- Shows if a person is logged into IM on their BlackBerry
- Communicator note and Outlook out-of-office messages shown
- Next available time is highlighted
- PC idle time is another useful indicator of 'presence'
- Simple opt-out

PeopleFinder presence features
Right click on a name for communication options and contact information:
- Send an email
- Start an Office Communicator chat
- Dial an extension or mobile phone number
- Use camp-on
- Send a SMS text message
- View profile information and office location
- Add the person to your quick contacts list

- Click on any phone number in PeopleFinder or quick contacts list to make a call
- Supports extension mobility
PeopleFinder presence features

Camp-on

- Feature popular in legacy PABX systems
- Leverages presence information in addition to telephone status e.g. alert triggered by 'available' calendar status
- Simple browser-based pop-up window
- When alert is triggered pop-up comes to the fore
- Multiple camp-on requests can be active at once

PeopleFinder presence features

Floor plans and quick contacts

- Printable floor plans show office location
- Data drawn from 'moves' workflow process

PeopleFinder presence features

PeopleFinder integrated with Cisco Customer Response Application
PeopleFinder presence features

Mobile device support
- quickly search for staff presence
- icon integration click to dial any phone number
- click to create new email

PeopleFinder code used to exploit Cisco AXL API
resulted in BlackBerry application to manage call forwarding on VoIP handsets from mobile devices

PeopleFinder presence technology
Real-time Web 2.0 application
- Integration of Cisco CallManager, Microsoft Exchange, Microsoft Active Directory, Microsoft Live Communication Server LCS, PeopleSoft (staff data and working hours), Metastorm Workflows (staff leave, public holidays, training, moves, and secondments)
- SQL Server / Oracle database repositories (eg. Cisco CRA, Premises database)
- Keystone
- Information delivered in real-time through web browser uses standards compliant technology – XHTML, AJAX, XML, JSON-P
- Implemented as abstract API for use in any web page
- Deployed to intranet corporate directory and homepage
- Serving 2,200+ users
- 2 million telephony data feeds generated per day
- 42,000 presence feeds generated per hour

PeopleFinder II – in beta
Next steps - extending PeopleFinder to the client

Information Gravitation Trends

Breakdown of Information Boundaries
- Enterprise content & Internet content melding together (LinkedIn, Facebook, Google, Yahoo, Microsoft, etc)

Forging Deeper Client Relationships
- Instant Message, Text, E-mail, Beyond Extranets, etc

Information Gravitation around Information Objects (e.g. Client/Matter)
- Client/Matter Gravitation (Docs, People, Orgs, Work Done, News...)

Information Awareness
- System aware of and anticipates user's needs (Push vs Pull)

The Importance of the Cloud
- Information/applications increasingly moving to the Cloud
- The Cloud allows for vastly more connections and interactions to occur
- Information/Knowledge delivered as a service, anywhere, anytime
Aristotle’s Fantasy?