Enterprise Search Case Study: NASA Langley Google Implementation

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Goals

• Provide engineers and scientists with the capability to easily find technical information helping NASA have successful missions
  • Provide unified search of disparate internal and external data sources to increase the use of corporate and published information.
  • Provide a simple, easy-to-use, Google-like interface and search experience
  • Decrease the time lost to ineffective search of multiple sources and interfaces, and increase the productivity of the technical community
Implementation Approach

- Partnered with Google and leveraged their technical expertise
- Partnered with Langley network and security experts
- Engaged and partnered with users/technical community
  - User interface; Source identification; Testing
- Implemented in Phases
  - Phase I: Proof of Concept
    - Center Web Sites, e-Subscriptions, google.com subset, document repositories
  - Phase II: Langley Google Beta
    - User feedback and enhanced usability; Expanded content
  - Phase III: Full Center Implementation
    - User Outreach and Communications
  - Phase IV: Enhanced Functionality and Content
    - Refining Results; User feedback; Alerts; Enhanced Statistics
Key Sources

**Internal**
- Langley Web Sites (~200)
- Langley Digital Repository – Dspace (~150,000 documents)
- Document management (Xerox Docu Share/CPX)
- Langley Phone Book
- NASA and Langley Photo Collections
- NASA Galaxie/On-line catalog
- NASA Aerospace Database (~400,000 Full-text documents)

**External (~500 Sources)**
- Public NASA sites
- E-Journal and E-books subscription sites (AIAA, IEEE, Elsevier, Safari, Springer, etc.)
- Patents and Standards
- Selected government resources (DOD, DOE, NSF, NIST, OSTI, etc.)
- Research Universities
- Professional Associations
- Other selected technical resources from google.com
Unified and Integrated Search

Document Management System
60K+ Project and Other Documents

15+ search categories

Library Catalogs / Request Forms
Over one million item records

Research Databases

Electronic Journals
Millions of full-text articles

Tens of thousands of full-text reports

Langley and NASA Web Sites

Publicly Indexed Technical Web Sites & Info.

Key Sources Integration
Key Features

Integration of Internal & External Sources

Tabs for Internal & External

Refinement Options
- Clustering
- Author
- Subject
- Category

Inline Metadata For Refinement

Preview of External Results

Alerts

Other Resources

Search Quality Feedback
Customer Outreach and Usage

Usage Highlights
• ~ 13,000 searches per month
• Used mostly for technical topics
• Most Liked features
  • Easy to Use: Google Like searching
  • Integration of Internal and external information
  • One Stop Searching

Key Outreach and Communications
• @LaRC – Center-wide portal
• Demonstrations in the cafeteria
• Organizational meetings
• Search tips
• Did you know you can find...
• E-mails to targeted users
• Langley Researcher News articles
Key Accomplishments

• Integration of web sites, document repositories and image collections
• System in operation since May 08 with no major problems
• Implemented many enhancements:
  ▪ Refining and Narrowing results
  ▪ Linked to sources that are not part of Google search
  ▪ NASA Sites and full-text sites have more weight
  ▪ Search Quality Feedback
  ▪ E-mail alerts
▪ Enhancements in Progress
  ▪ Saving and Sharing results
  ▪ User defined key matches
  ▪ Taxonomy /Semaphore implementation
▪ Federated Google Prototype with three other NASA Centers in Progress
  ▪ Linked to NASA Enterprise Search, a NASA CIO Initiative
Back-Up Charts
Key Features

Integration of Internal & External Sources

Tabs for Internal & External

Refinement Options
- Clustering
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Alerts

Preview of External Results

Inline Metadata For Refinement

Other Resources

Search Quality Feedback
Results Preview

- Small preview shows what additional matches were found from “external” sources.
Dynamic Results Clustering

- Provides dynamically formed subcategories based on the results of each search.
- Each subcategory groups similar documents together.

Narrow your search:
- flow airfoils
- multi element airfoils
- airfoils using transonic airfoils
- reynolds number airfoils
- arbitrary airfoils multielement airfoils
- airfoils described airfoils developed
- airfoils operating
Metadata Narrowing

- Narrow by Author
- Narrow by Subject
- Narrow by Category
- Allows user to limit results to documents with specific metadata values
NASA Thesaurus Integration

- Provides list of alternative search terms based on NASA Thesaurus

You could also try:
- aerodynamic configurations
- aerodynamics
- aircraft design
- aircraft parts
- aircraft structures
- airfoil profiles
- aspect ratio
- blades
- blade-vortex interaction
- blunt leading edges
- blunt trailing edges
Inline Metadata

- Metadata values are displayed with results (when applicable).
- Allows user to search for other documents with same metadata values.

Subsonic Natural-Laminar-Flow Airfoils
... of natural laminar-flow (NLF) airfoil profiles under guidance of an experimentally well-verified theoretical method for the design of airfoils suited to ...

Authors: Dan M. Somers
Subjects: Aerodynamics
Categories: Airfoil Profiles, Angle Of Attack, Laminar Flow, Structural Design Criteria, Subsonic Flow
OpenSearch Plug-Ins

- Add Langley Google as your browser’s search box.