Leveraging Faceted Search for Project, People, and Socio-Collaborative Experience Discovery

Dr. Donna Cuomo, Krista Kennedy Groenwoldt & Jean Colbert
The MITRE Corporation
Enterprise Search Summit November 2010
Overview

■ Introduce you to MITRE’s overall information landscape

■ Explain why we implemented faceted search

■ Describe the process changes we are making in order to enhance the data

■ Demonstrate how we are using faceted search to improve enterprise information relationship discovery
The MITRE Corporation

- MITRE is a private, not-for-profit organization chartered to work in the public interest
- Founded in 1958 to provide engineering and technical services to the U.S. Air Force
- Manages Federally Funded Research and Development Centers including:
  - Department of Defense
  - Federal Aviation Administration
  - Internal Revenue Service/Department of Veterans Affairs
  - Department of Homeland Security
- Supports a broad and diverse set of sponsors within the U.S. government, as well as internationally

7,000 employees worldwide
Background

2010 Best Intranets Award
Background
Projects, Communities, People, Networks…

**Projects**
- What projects are like mine?
- What is our research program?
- Who in the directs can I transition this to?
- What recommendations did we make?
- What sponsor is this work for?

**Communities**
- What communities of practice exist?
- Who is in them?
- Did my new hire join the right groups?
- Which ones are active? Is a discussion occurring that I care about?

**People**
- What expertise do they have?
- What technical accomplishments did someone have this year?
- Who speaks Chinese?

**Networks**
- Who do we know at Google?
- Can we pull some experts together to work on problem X?
- I want to leverage knowledge from other FFRDCs.
- How do I work with my partners?
Answers – Improved Information Finding

Projects

Goals, Activities, Impacts, Customer, End Users, Budget, Portfolio, Technology, Outcomes, Recommendations, Products, Metrics

Communities

Owners, Subject taxonomy terms, TAT terms, Type, Activity Metrics, Date, Center, Division, Status

People

Tech Stature, Education, Publications, Open Source, Awards, Patents, Languages, Handshake Profile Data

Leverages the Endeca Information Discovery Platform

Common Data Model, Structured Data, Entity Extraction, Clustering, Analytics
Better capture and describe key “business assets”
- What is the view of our technical work program?
  - What has our technical work program accomplished?
- What is the view of our technical staff?
  - What has our technical staff accomplished?

Identify where we have information but it is not in re-usable form
- Restructure business systems and processes to collect this information and make it accessible, do not recollect

Put the information into a discovery system

Deploy a social networking platform for partner networking, profile management, and social graphs/relationship capture
- Internal and partner (external) social business networking
- Improved situational awareness to motivate collection

Integrate these new elements into existing and planned intranet and partnership network capabilities
Finding Projects
Portfolio View

Top-Level Air Force Operational Portfolios

Investment Area

NextGen (25)
Mission Assurance (22)
Composable Capability on Demand (22)
Integrated Sensing, Processing, and Exploitation (21)
Enhancing Intelligence Analysis (13)
Enabling Technologies (12)
Biosecurity/EP&R (12)
Emerging Technologies (11)
Healthcare (9)
Financial Systems Oversight (6)
Social Networking for the Enterprise (5)
Systems Engineering (5)
Comprehensive Screening (5)
Autonomous Systems (4)
Agency of the Future (4)
Measuring and Guiding Engagement (4)

Outcome Title

Outcome 1 - NAS and NextGen System Integration and Evolution
Outcome 2 - Communications Modernization
Outcome 3 - Performance-Based NAS
Outcome 4 - En Route Evolution
Outcome 5 - Terminal Operations and Evolution
Outcome 6 - Airspace Design and Analysis
Outcome 7 - Market Readiness
Outcome 8 - Institutional Readiness
Outcome 10 - Cross-Service Enabling
Outcome 11 - International Engagement
Outcome 12 - Broadcast and Multimedia
Outcome 13 - Special Studies, Laboratory and Data Enhancements

CAASD will assist the Joint Planning and Development Office (JPDO) in its efforts to integrate and synchronize the Next Generation (NextGen) and Integrated Modular Aircraft (IMA) concepts across the Joint Force over the next 20 years. As NextGen evolves, CAASD will conduct detailed operational and technical analyses to inform development of next generation concepts and architectures. This will include analyses of NextGen concept and architecture issues as part of its partnership with the Data Integration and Exchange (DIE) Project. CAASD's Project Management office will drive and execute the project. CAASD will support the Enterprise Architecture team at JPDO to develop, analyze and authorize IMA
capability enhancements.
Conceptual “As Is” Process

Customer Agreements (Projects/LOE):
- Project Leader
- Preparis SOW, budget, staff plan

Oracle Financials (O*F)
- PeopleSoft
- MBT
- Clarity

Source systems:

Data Warehouse

Phonebook & MyMII

Financial Analysts (FAs)
- FAs coordinate project/task info with PLs

Financial/Business Analysts
- Setup Sheets (Data Loss)
- Project financial setup

Project Leader

FAs coordinate project/task info with PLs

Setup Sheets (Data Loss)

Project Leader

Project technical information

PPDev Team/CCKS

Project data

Answers

Air Force Project Work Statements

C3I Validity Files (all projects entered into O*F)
“To Be” Process: Data Collected in Source Systems

Customer Agreements: (Projects/LOE):

Eds/PfMgr

Business Operations

Financial Analyst

Project Leader

Know Admins

Oracle Financials (O*F)

PeopleSoft

MBT

Clarity

Source systems:

(many -> automatic)

Financial/Business Analysts

Project Setup Online

Referential Key to Oracle Project Number

New source system

Data Repository & API

Data Warehouse

Customer Catalog

Integrated View of Project Information Space

Project Information Model

- Capture Work Program details at time of Project Setup (augment existing process)
- Bring all “actors” together collaboratively by creating Online Project Setup application
- Major step toward & foundation for OHIO

And other downstream business apps: MRT, Workplan, etc.
ProjectPages
Longitudinal evaluation and accelerating adoption of social-enabled business models

Principal Investigators
- Donna Cuomo
  Chief Information Architect
  R500 - Knowledge Info&Collab Solutions
  @mitre.org
- John Moore
  Info Systems Eng., Sr
  R503 - Info. Mgmt. and Practice
  @mitre.org
- Julia High
  Artificial Intell Eng., Senior
  ES43 - HSI, Visualization & Dec Supt
  @mitre.org

Overview

Task Description
MITRE, like many other enterprise organizations, has redoubled its efforts to facilitate collaboration both internally and with MITRE’s customers and sponsors via the use of social media tools. While a number of these tools have had subjective success, it is very difficult to objectively measure this success, as well as to link that success to specific use patterns or behaviors at the individual, group, or project level. This seems to be driven by two primary factors:

As with many social media tools, adoption and establishment of typical use patterns is slow, and the relationship between usage patterns and changes in business processes takes time to emerge. As a result, it takes a long time for a sufficiently large and established user population to develop (which makes it difficult to conduct reliable measurements on the system), and the use patterns that characterize a social media tool early in its lifespan may not be typical of later tool use (so early measurements may not be predictive of later success). In many cases, appropriate metrics for tying user behavior to project success within an enterprise context simply do not exist. Most social media metrics are designed for a marketing context, and very few track the establishment and maintenance of relationships over time, instead focusing on short term measures like conversion of anonymous users to subscribed users, allowing little assessment of the network effects that tend to be most valuable within a collaborative business context. To address this latter point, we propose to design evaluation methodologies that assess business value over long time periods, and do assessments in areas where critical mass has been achieved. We would also like to better understand what causes “tipping points” to be reached where maximal business value can be realized, and determine how to accelerate these behaviors.
Finding People
Re-Architect the People Model and Capture Process
TechStature Business Integration

Version 2.0 Goals

MITRE Library Catalog
- Existing PR documents
- Technical reports
- White papers

Public Release System
- New PR documents

Technology Transfer Office
- CRADAs
- Patents
- IP disclosures
- Licenses

HR
- Work experience
- Military service
- Education
- Coursework
- Skills

Web of Science
- Citations

TEM Sites
- Organizers
- Presenters

Prof. Dev. Application
- Conferences
- Coursework

Sources Not Available (Manual Entry)
- Academic Appointments
- Awards/Honors
- Government Advisory Boards
- Standards/Technical Committees
- Confirmed publications & conferences
- Professional Societies

Online Reports

Published Resume

MII Google
- Expertise Finder

External Reports

MII Phonebook
- ANSWERS
- People Finding
- Handshake Profile

Public Release System
- Controlled Vocabulary of Publications

© 2010 The MITRE Corporation. All rights reserved.
Tech Stature/People Profile

TechStature

Beth T. Yost
@mitre.org

Human Factors Eng., Sr AC3

Tags
CyOC, Data visualization, decision making, Human Computer Interaction, Human Systems Integration, information visualization, Mission Assurance, Tactical Edge, Visualization

Education

Virginia Tech
Ph.D., Computer Science and Applications 2007
Virginia Tech
M.S., Computer Science and Applications 2006
Elon University
B.A., Psychology 2002
Elon University
B.A., Computer Science 2002

Additional Courses

CONOPS Master’s Course
Project Management Boot Camp
11/2008 – 11/2008  MITRE Institute
Military 101
10/2008 – 10/2008  MITRE Institute

Technical Activities

Courses Taught
06/2010  Advanced Information Visualization Techniques (1x)
MITRE Institute
12/2008  Introduction to Information Visualization (4x)
MITRE Institute
10/2005  Using Large, High-Resolution Displays for Information Visualization Co-chaired workshop held at IEEE Visualization Conference

Prototypes

Affinity
Common Ground
Tool for clustering and visualizing schemas. Written in Java using combo of SWT and Swing, also uses Prefuse. Co-created the GUI with Craig Bonaceto.

CyOC Visualization
CyOC (ESO500 MA, ESE Capstone)
Original visualization prototype was created using improvis. Later prototypes used Flex and Flare. Co-created with Brian Staats and John

Publications

Books
The Visual Scalability of Integrated and Multiple View Visualizations for Large, High Resolution Displays
Yost, Beth A.,

Articles
Shaping the Display of the Future: The Effects of Display Size and Curvature on User Performance and Insights
Yost, Beth A.,

NVIDIA Transactions on Visualization and Computer Graphics
Yost, Beth A.,

Designing a Conference for Women Engering Academe in the Sciences and Engineering
Yost, Beth A.,

Advancing Women in Leadership Journal
Yost, Beth A.,

Papers
Single Complex Glyphs Versus Multiple Simple Glyphs
Yost, Beth A.,

A Multiple View Approach to Support Common Ground in Distributed and Synchronous Geo-Collaboration
Yost, Beth A.,

Exploring Context Switching and Cognition in Multi-View Coordinated Visualizations
Yost, Beth A.,
People Finding

Refine 201 results by

- Center
  - C2C (112)
  - CILS (35)
  - OEM (27)
  - Corporate (15)
  - C4ISR (8)
  - HS SEDI (3)
- Job Title
  - A-E (27)
  - F-J (64)
  - K-O (17)
  - P-T (93)
- Level
  - AC7 (4)
  - AC6 (12)
  - AC5 (23)
  - AC4 (77)
  - AC3 (65)
  - More...
- Location
- Degree
- Major
- Educational Institution
- Professional Society
- Foreign Languages

You have chosen

Keyword Search: java

Summary

Results 1-15 of 201

Sort by: Relevancy

Jonathan W.
Netwk Sys & Dist Sys Eng, Prin, AC5 in Washington
Declared Tags: JAVA DEVELOPMENT...
Discovered Tags: ACQUISITION, AJAX, ANALYSIS, ANDROID, ANT...

Jonathan W.
Info Systems Eng, Sr, AC3 in Norfolk Naval Base, Virginia
Declared Tags: CINC...
Discovered Tags: API, CDS, CLOUD, DEVELOPMENT, FUNCTIONAL...

Jonathan S.
Multi-Discipline Sys Eng, Lead, AC4 in Virginia-TW
Declared Tags: MIDDLEWARE -- JAVA RMI...
Discovered Tags: CAASD, CMD, IEEE, MIP, MTP... (7 More?)

Michael R.
SW App Dev Eng, Sr, AC3 in Bedford
Declared Tags: JAVA STORED PROCEDURE...
Discovered Tags: AJAX, ANSI, APACHE, APACHE JELLY, API... (110 More?)

Job Level

Degree
Initial People Finding Sources

Tech Stature

Handshake Profiles

Project terminology for PLs

onomi tags

Resume

Wiki metadata from pages you edited

Linked document text

Tags (Declared & Extracted)

Terminology

Declared Tags: JAVA STORED PROCEDURE ... (82 more)

Discovered Tags: AJAX, ANSI, APACHE, APACHE JELLY, API ... (110 More)
Additional Capabilities
“The Buzz”

Also highlights recent activity:

• Updated projects
• Active Communities
• Updated Profiles
• Most visited SharePoint sites
• Popular languages
• Popular professional societies
What are we doing, How do we do it, What do we know, Who knows it, Who do we know…

What are we partnering with Lincoln Lab on?

Where are the deliverables for this project?

I need to talk to SMEs in emergency preparedness.

Who knows people in the State Dept?

What communities exist around SOA?

Who has experience leading cloud computing efforts?

What research are we doing in CCOD?

Is MITRE working on any other projects for this sponsor?

How do I find projects focusing on similar technologies?

At what conferences did MITRE present papers this year?

Who else would know about this?
Future Search Landscape
Next MyMII: Connect, Collaborate, Awareness

Integrated search, more “findable” key business objects

Provide quick situational and status updates

Improved situational awareness of your partner and colleague network activities
Next MyMII: Social-Enabled Phonebook

Lea’s status, connect, leave a message
Lea’s recent activity
Lea’s connections
Next MyMII: People, Technical Accomplishments/Profile Info in Phonebook

Technical information and experiences are:
- derived
- self-declared
- access controlled
- sharable in MPN
Questions?

For additional information, contact:

Dr. Donna Cuomo (dcuomo@mitre.org)
Krista Kennedy Groenwoldt (k kennedy@mitre.org)