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U.S. Air Force Medical Service
Case Study: Enabling Effective
Enterprise Content Management

Country
U.S.

Industry
Military

Client Profile
The AFMS has a budget of $6.9 billion and runs 75 hospitals and clinics providing care to more than 2.6 million beneficiaries during both peacetime and wartime.
http://www.sg.af.mil

Business Situation
With a requirement to effectively deal with a significant amount of information, the AFMS no longer wanted to rely on manual, disparate and resource intensive processes.

Solution
Information retrieval, effective information management and automatic document classification were delivered in an integrated, scalable and robust solution.

"Within the Air Force Medical Service (AFMS), the beginning of the Information Management Lifecycle often starts with the creation of a Microsoft Office document that gets saved into various document management systems and file servers.

Incorporating Concept Searching's compound term processing engine capability into AFMS Knowledge Management operations has increased exposure of enterprise content and the precision by which that information is retrieved.

In addition to eliminating the cost associated with the manual tagging and filing of information assets, Concept Searching's Taxonomy Manager provides our Subject Matter Experts with a user friendly web interface enabling the development of controlled vocabularies that can be used to filter search results and auto-classify content to folder structures."

Lt Col James D. Whitlock, USAF, MSC Chief, Decision Support Branch, Air Force Medical Service

The Organization: U.S. Air Force Medical Service

As the "HMO that goes to war," The United States Air Force Medical Service (AFMS) employs more than 40,000 full-time officers, civilians, and enlisted personnel plus an additional 20,000 members of the Air Force Reserves and Air National Guard. The AFMS has a budget of $6.9 billion and runs 75 hospitals and clinics providing care to more than 2.6 million beneficiaries during both peacetime and wartime. Officer corps include: Biomedical Sciences Corps, Dental Corps, Medical Corps, Medical Service Corps, and Nurse Corps. Air Force Enlisted Medical personnel work in areas of medical administration, dental care, optometry, physical therapy, aeromedical evacuation, medical logistics, laboratory sciences, surgical care, and emergency care, among others.

The Challenge: Increase Information Transparency[1]

Transforming raw information into actionable knowledge requires information awareness. Information retrieval can occur via a search engine or browsing a virtual file folder for its content; both processes involve the use of metadata, a.k.a. data about data.

Information and Management programs and search engines rely on metadata to store and retrieve information.

Benefits

- Automatic meta-tagging of documents and records

- Information is retrievable using concepts versus keywords

- Reading, tagging, and information classification costs are eliminated

- Information retrieval costs are dramatically reduced

When an individual creates a document they have the option to add subjective metadata to the properties of the document they created. These meta-tags determine not only where a piece of information is filed but also the "retrievability" of that information at a later date. When saving a Microsoft Office file the individual is faced with a "behavioral" issue – "do I or do I not populate meta-tags" that will reside within the properties of the document?"

If and when an individual elects to create meta-tags they are, more often than not, created from a subjective point of view and are incomplete most of the time. If the manual meta-tagging process does not occur this "behavioral" decision significantly reduces the chance that this piece of information will be retrievable at a later date.

The Solution

The AFMS decided to move forward with a Service Oriented Architecture (SOA) compliant web services solution known as Concept Searching. Functional requirements included:

- Increasing Information Retrieval precision on the AFMS Intranet

- Enabling Subject Matter Experts to develop business rules for information management

- Eliminating the need to manually meta-tag documents to ensure that they are retrievable and classifiable.

- Providing automatic classification of documents and records based upon contextually relevant and domain-specific information contained within the body of the document

Compound Term Processing on the AFMS Intranet [2]

The AFMS implementation of Concept Searching technology on the AFMS Intranet interprets Shannon's Information Theory in an Information Retrieval context to compute the incremental value of a compound term over its single-word components. Higher order compound terms are evaluated using their lower order compound components.

For example, if we have the concept of "heart surgery" then we compute the incremental value (how much extra information) of this two-word concept over and above its two single-word components. For a three-word concept like: "open heart surgery" we would look for the incremental value of the complete term over and above "open heart" and "heart surgery".

The results are totally dependent upon the totality of documents being indexed since this is an adaptive technology that automatically tunes itself based on the documents it is given.

It is no coincidence that the majority of compound terms are proper nouns, noun phrases and verb phrases. These sentence fragments convey the key concepts in most text. By correctly weighting these compound terms Concept Searching is able to identify documents containing concepts the user is looking for rather than finding documents that contain the right words.

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Software and Services
- concept**Classifier**
- concept**TaxonomyManager**

Smart Content Framework™ Building Blocks
- Metadata
- Insight
- Governance

Taxonomy Management

A corporate taxonomy imparts a structure from which one can initiate an automated metadata generation process and to which information can be auto-classified and retrieved by searching within a virtual folder structure based upon a corporate taxonomy. In addition, it provides organizations with the ability to cluster enterprise search results by function, product, and geographic region.

Taxonomy development requires the use of subject matter experts to develop a vocabulary that contains keywords, metadata, and multi-word fragments that relate to are particular topic. In addition to creating a folder structure for the classification of unstructured content, AFMS staff members used Compound Term Processing within Taxonomy Manager to automatically generate related contextual metadata associated with content that had been previously clustered to a particular concept.

When appropriate these related topics were then added to original keywords, metadata, and multi-word fragments associated with a particular folder or concept. The AFMS controlled vocabulary consists of over 27,000 unique keywords, metadata, and multi-word fragments that when present within a document enable the automatic meta-tagging and auto-classification of that document.

Automatic Metadata Generation, Automatic Meta-tagging, and Auto-classification

In a Microsoft Office SharePoint Server (MOSS) environment metatags are automatically added to the properties field of documents that reside within SharePoint document libraries based upon the content resident within each document. Within Microsoft Office documents are automatically classified at creation time to the corporate taxonomy with classification metadata written back into the custom properties of the document for use within SharePoint. The presence of this additional compound term contextual metadata increases the value of each document making them more retrievable by search engines that filter across metadata in addition to boosting precision when auto-classifying content to multiple folders created in Taxonomy Manager.

Value: Increased Information Transparency for the Enterprise

Customer, staff, and organizational needs, internal perceptions and motivations, strategies, relevant knowledge and awareness of human and financial capital resources combine to serve as the foundation from which raw information is transformed into something that is actionable within a business operation. Connecting decision makers with relevant and timely information in an efficient manner can have a direct and positive impact not just for a particular operation but also a specific outcome.

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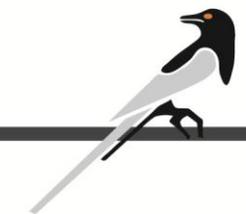info-nz@conceptsearching.com

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Through the transformation of relevant information into actionable knowledge, the AFMS has realized three significant benefits.

- For leadership, they are able to rapidly organize their organization's explicit and implicit content to facilitate more effective communication and decision-making.

- For staff, cross-functional operating units are able to push relevant information to interested persons, reduce process timeline, utilize untapped resources, and enhance outcome quality.

- For the organization, it avails contemporary and relevant information that assists and expedites task performance and decision making advancing individual and group performance via enhanced situational and issue-specific knowledge.

Leveraging existing technology platforms and information resources within the AFMS is resulting in increased utilization of its information resources. Through an incremental approach senior leadership is able to obtain a significant return on investment in a relatively short amount of time as demonstrated by the rapid improvement in support of information discovery and communication of business and health care operations related information across organizational and functional lines.

About Concept Searching

Founded in 2002, Concept Searching provides software products that deliver conceptual metadata generation, auto-classification, and powerful taxonomy management from the desktop to the enterprise.

Concept Searching, developer of the **Smart Content Framework**™, provides organizations with a method to mitigate risk, automate processes, manage information, protect privacy, and address compliance issues.

Concept Searching is the only platform independent statistical metadata generation and classification software company in the world that uses concept extraction and compound term processing to significantly improve access to unstructured information.

Headquartered in the US with offices in the UK, South Africa and Canada, Concept Searching solves the problem of finding, organizing, and managing information capital far beyond search and retrieval.
http://www.conceptsearching.com

References
1 Wolfe, Sanchez, and Chapple, (2008) "Automated Metadata Tagging, Taxonomy Management and Auto-Classification of Information in an Enterprise Environment", Preconference Proceedings: 20th International Conference on Systems Research, Informatics, and Cybernetics, InterSymp 2008, Focus Symposium on Intelligent Software Tools and Services

2 Wolfe, Sanchez, and Whitlock, (2007) "Enhancing Value to Knowledge Management Programs", Preconference Proceedings: 19th International Conference on Systems Research, Informatics, and Cybernetics, InterSymp 2007, Representation of Context in Software

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