

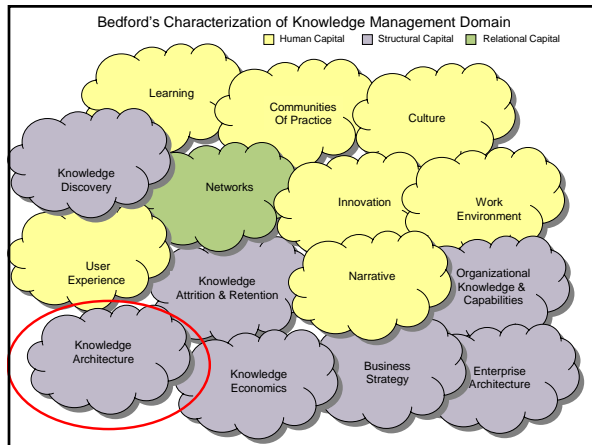
Knowledge Architecture and Semantic Technologies

Knowledge Management in Washington
June 15, 2009

Denise A. D. Bedford

Overview

- Domain of knowledge management
- Context for the Bank's use of semantic analysis technologies
- Knowledge architecture and semantic technologies (or, how to embed the cataloger in semantic technologies...)



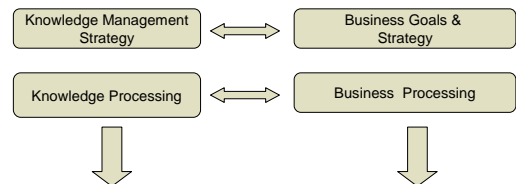
Context

Goal of Knowledge Management

- Stated simply – the goal of knowledge management is to create a knowledge organization
- “The objective of knowledge management is [to] make the organisation act as intelligently as possible and realise the best value from its knowledge assets, i.e. to create a learning organisation that is capable of measuring, storing and capitalising on the expertise of employees to create an organisation that is more than the sum of its parts”

Bollinger and Smith, Managing organizational knowledge as a strategic asset, Journal of Knowledge Management Vol. 5, No. 1, p 8-19

Anchor KM in Business Practice



How do we leverage KM to achieve business results?

What results are we trying to achieve?

Business Goals

- Need to present and expose all perspectives embedded in the Bank's knowledge and information (multiple perspectives)
- Needed to establish a strong information management foundation (persistent metadata)
- Resolve the problems associated with manual approach to information management (machine-generation)

Knowledge Architecture

Knowledge Architecture

- Knowledge architecture consists of
 - Core, Persistent Metadata
 - Master Reference Sources (taxonomies)
 - NLP Technologies
 - Knowledge-Engineered Profiles

Capturing Core Metadata

Identification/ Distinction	Search & Browse	Use Management	Compliant Document Management
Agent	Country	Authorized By	Record Identifier
Title	Region	Rights Management	Disposal Status
Date	Abstract/ Summary	Security/ Access Rights	Disposal Review Date
Format	Keywords	Location	Management History
Publisher	Topic	Use History	Record Classification
Language	Business Function	Disclosure Review Date	Preservation History
Version		Disclosure Status	Aggregation Level
Series & Series #			Relation
Content Type			

Human Creation Programmatic Capture Extrapolate from Business Rules
 Inherit from System Context

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Human Creation Programmatic Capture Extrapolate from Business Rules
 Inherit from System Context ○ = Reference Source

What is Natural Language Processing?

- Natural language processing
 - has been around for a long time – since the 1950s when we first had the computing capacity to explore language behavior
 - is a subfield of artificial intelligence and linguistics. It studies the problems of automated generation and understanding of natural human languages.
 - encompasses a wide range of approaches, including -- Information extraction, Automatic Summarization, Natural language generation, Text to speech conversion, Speech recognition, Machine translation, Question answering, Information retrieval, Text-proofing, Translation technology
 - Natural language understanding systems convert samples of human language into more formal representations that are easier for computer programs to manipulate.

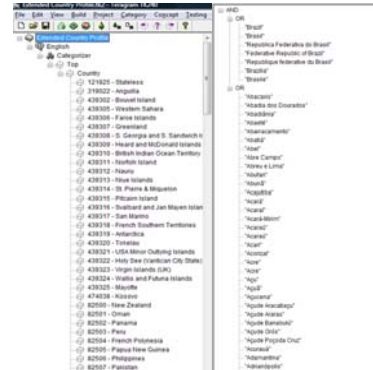
Sample Sentiment Output

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  </CATEGORY>
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  Development March, 2002 Human Development Sector Unit Europe and Central Asia Region Document of the World Bank
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Country Categorization and City Extraction

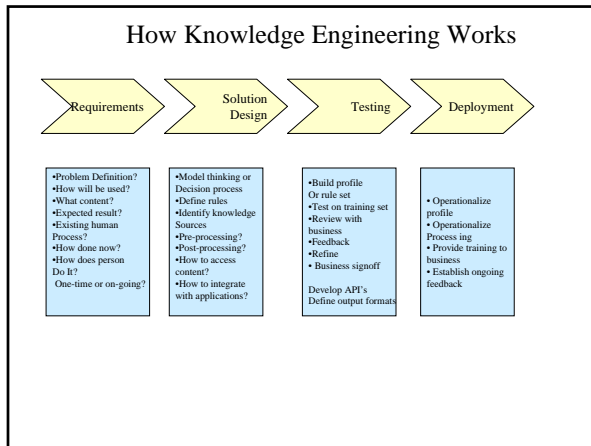


Sample Country and City Output

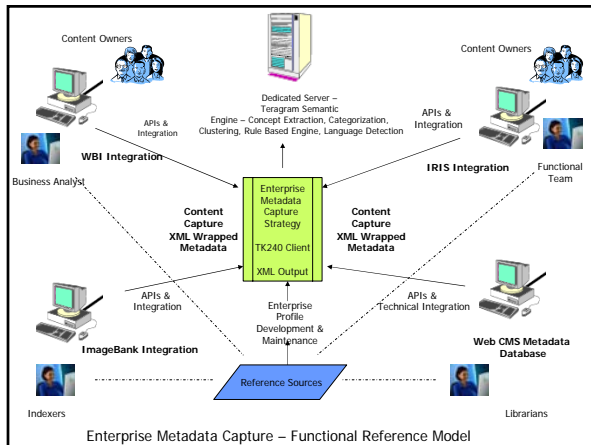
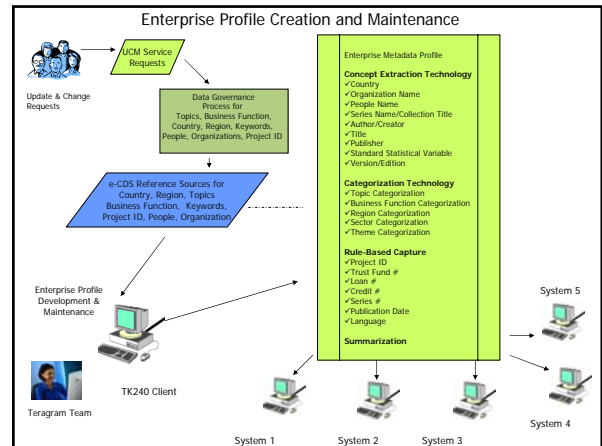
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    </ENVIRONMENT>
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    <CATEGORY name="Country" />
    <CATEGORY_ITEM id="1" name="China" relevance="93.8" />
    <CATEGORY_ITEM id="2" name="Mongolia" relevance="7.8" />
    <CATEGORY_ITEM id="3" name="Mali" relevance="1.8" />
  </CATEGORY>
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    Ningxia, Qinghai, Shaanxi, Sichuan, Shandong, Shanghai, Sichuan, Xinjiang, Yunnan, Zhejiang</CITY_LIST>
  </ORIGINAL_TEXT_EXTRACT>
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Enterprise Profile Creation and Maintenance



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