

The Meaning of Semantics Depends...

On who you ask and why you are asking

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Topics

- ❑ Definitions for Everyone (who & what)
- ❑ Guidelines on Building Terminologies (how)
- ❑ Teams & Players (who)
- ❑ Technology Ontology - content creation (how)
- ❑ How Semantic Search is Impacted (how)
- ❑ Business Drivers (why, where & when)

Taxonomy not "taxidermy"



Taxonomy

Categorizing ***Terminology*** not
Classifying ***Organisms***

Taxonomy Applied

Simple Navigation through a
Hierarchy of Concepts or Objects to
Retrieve Associated Content

Achieved Through a Process that
Links Terminology in Taxonomy to
the Content

Taxonomy Example:

Endeca application searching "technology" on Guardian.co.uk reveals the taxonomy in stages

Related subjects

- [Technology](#)
- [News](#)
- [Engineering](#)
- [Research and development](#)
- [Computer security](#)
- [Computing](#)
 - [Show five more.....](#)
- [Games](#)
- [Google](#)
- [Green technology](#)
- [Hi-tech crime](#)
- [Internet](#)

- [Science](#)
- [Space exploration](#)
- [Astronomy](#)
- [Mars](#)
- [Science news](#)
- [Physics](#)
 - [Show five more...](#)
- [World news](#)
- [United States](#)
- [China](#)
- [Japan](#)
- [Arctic](#)
- [European Union](#)
 - [Show three more...](#)

Thesaurus not a type of dinosaur



Thesaurus

Is related to Roget but ...much richer in relationships to guide an indexing activity and codify controls on the use of terminology

Built on implied hierarchies of concepts in a complex domain of terminology

Deeply entrenched in science and technology

Thesaurus Example: MeSH

□ Digestive System Diseases

■ **Digestive System Neoplasms**

□ Biliary Tract Neoplasms

- Bile Duct Neoplasms +

- Gallbladder Neoplasms

□ Gastrointestinal Neoplasms

- Esophageal Neoplasms

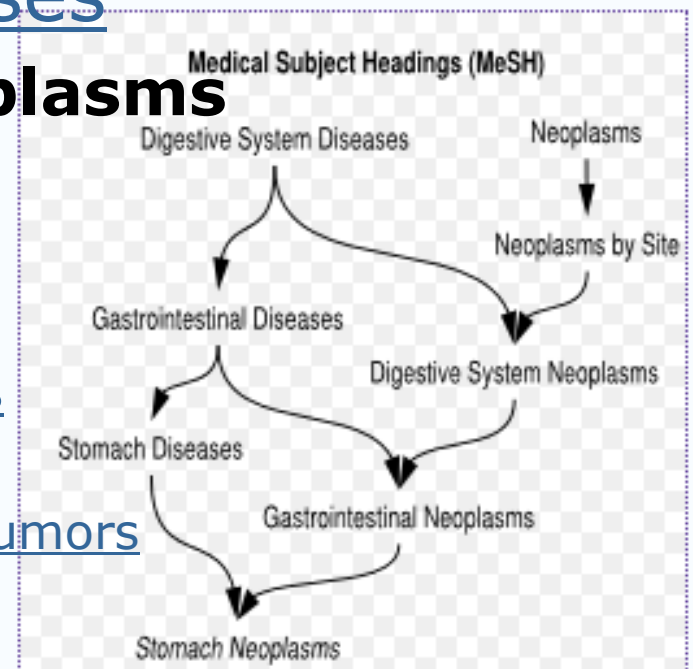
- Gastrointestinal Stromal Tumors

- Intestinal Neoplasms +

- Stomach Neoplasms

- Zollinger-Ellison Syndrome

□ Liver Neoplasms



Ontology not oncology

When I typed "ontology" into Google a couple of weeks ago it came back with this test of my intent:

Did you mean: oncology?

It also produced a lot of links including one for the definition and a lot of paid links for "treatment centers."

Definition: "The study of cancer which defies simple definition. It is a disease that develops when the orderly relationship of cell division and cell differentiation becomes disordered."

Very unlike *ontology*, which is about bringing order to our understanding of content.

Ontology

Answers.com: in computer science *ontology* refers to "what exists" in a system: all elements within all category hierarchies and the relationships between them.

Used to *facilitate semantic search* by enabling richer understanding of meaning in content - helps interpret possibilities with greater probability

Ontology: Examples

- [Protégé view of a credit approval system](#)

<http://www.research.ibm.com/journal/sj/454/akerm5.gif>

- [View of the concepts related to a *roadway*](#)

<http://www.cybergegeo.eu/docannexe/image/8322/img-1.jpg>

- The [goal of the FEA](#) is to transform the Federal Government to one that is citizen-centered, results-oriented, and market-based, as well as to maximize technology investments

http://www.idealliance.org/papers/dx_xml03/papers/05-01-04/05-01-04-fig11.png

Frameworks for a topical domain to enrich understanding of relationships among terms

Semantic Technology

Software that aids the understanding of content by revealing its **meaning**

May-be it could help us with this:

"Government, you know, you're not always a solution. In fact, too often you're the problem."

What can we **"infer"** from this pile of words?

Semantic Web

DMRadio presentation: Theresa Regli

"...evolving destination ..."

However, in the Enterprise *semantic technologies* can best facilitate the exchange of information at a semantic level because of a narrower scope of domain and meaning

EntreTech presentation: Mitch Kokar

"...a social network is a semantic web"

Natural Language Processing (NLP)

Semantic technology to derive meaning from text by interpreting context

Application in Q & A applications:

Q: Where can I go to get my car fixed?

A: ...it depends (need context around the question to understand it)

Other Terms to Know

- [OWL](#) - Web Ontology Language
 - [W3C](#) - Standards body for the semantic web
 - [RDF](#) (example) [RDF](#) - Resource description framework
 - [SPARQL](#)
 - [GEnna](#) - for Linux, GEnna project consolidates information into a GUI
- ...plus other terms in [Glossary](#)

Detour

The Taxonomy>Thesaurus>Ontology
are terminology authorities with
Connection to Content Indexes

Terminology lists are employed to
improve access to content by
organizing it according to the
concepts content contains - exposing
the "aboutness" to searchers

Why use taxonomies/thesauri/ontologies?

They bring information to an indexing engine to give better

- Control and Uniformity
- Quality Assurance
- Consistency of Categorization
- Navigation Framework
- Definitions & Conditional Logic to Improve Inference
- Cross-references (synonyms)
- Richer Terminology Relationships

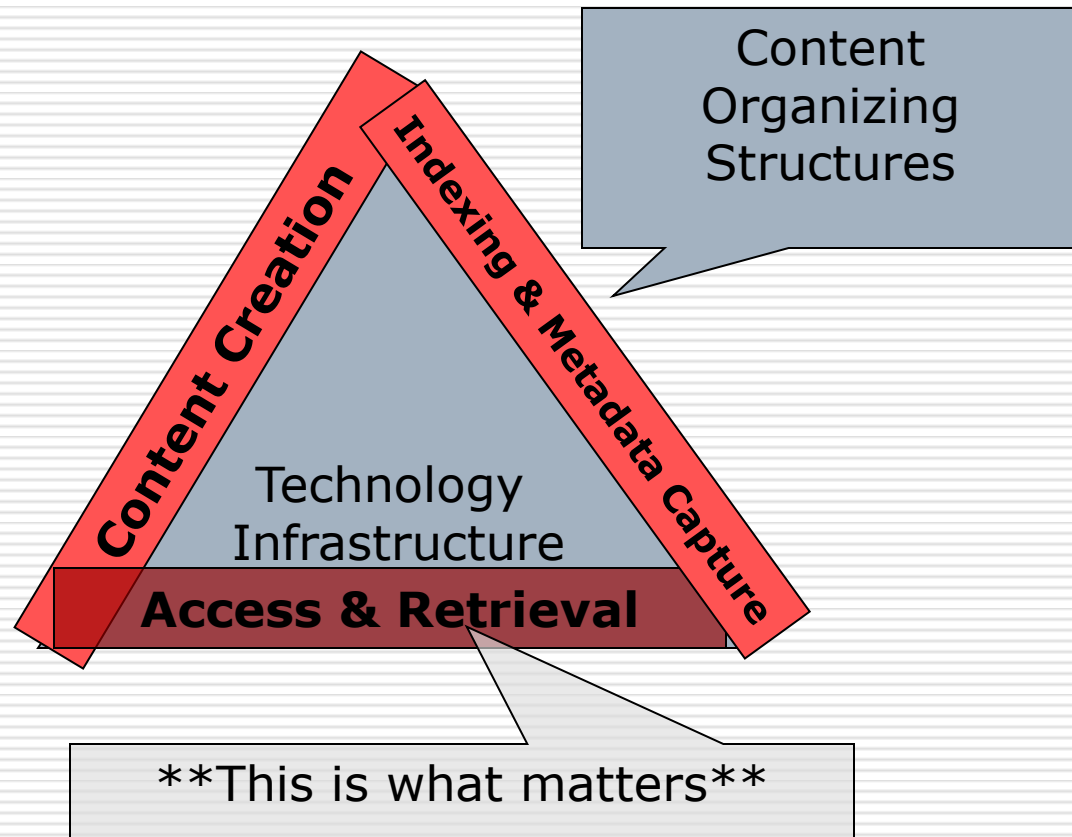
Competencies required to build *T/T/Os*

- Focus
- Communication skills
- Research skills
- Flexibility
- Practicality
- Collaborative skills/teamwork
- Subject matter understanding**
- Experience as a searcher

Team tensions and challenges

- Establishing Goals
- Recognition of Constraints (Budgets, Tools, People, Time)
- Meeting schedules
- Roles
- Expertise
- Change management
- Expectation Management
- Managing the unplanned and unexpected
- Understanding what is appropriate - when is it good enough
- Communication breakdowns

Search - Indexing Connection



Content Technology Ontology

<http://www.cmswatch.com/images/CMS-Watch-Subway-Q3-2008-large.jpg>

To get to "search" a host of other technologies must be brought to the mix to produce content, build terminologies & relationships, and establish frameworks for retrieval. Then search engines & text mining & text analytics take over.

Business Drivers for Semantically Enhanced Search

- ❑ To Stop wasting time
- ❑ To Avoid making mistakes
- ❑ To Improve discovery of relevant content
- ❑ To Elevate worker satisfaction, collaboration and motivation
- ❑ To Get correct content
- ❑ To Get to better business results quicker

Does *Semantic Technology* Play a Role in all Electronic Indexes?

Not always but it can improve these search goals:

- ❑ To facilitate findability - speed, ease of use (business process improvement)
 - ❑ To provide contextual frameworks for the content (understanding)
 - ❑ To expose the scope of a content repository for the searcher (discovery)
-

Electronic Indexes: Examples

Government: fistgov.gov, [PubMed](#), [DOE](#),
Defense Technical Information Center ([DTIC](#))

Libraries: [Structured search](#) – Specified Fields; Directory of
<http://www.publiclibraries.com/>

Academic: [MIT](#), [Harvard Business School](#)

Directories: [Thomas Register](#), Encyclopedia of Associations

E-commerce: [Computer Equipment](#), [Automobiles](#), [Clothing](#),
[Florists](#)

Publishers: [Oxford Univ. Press](#) [Information Week](#)

Specialized Indexes: Chemical Abstracts (subscription-based),
MITRE, Raytheon, Lincoln Laboratory, Air Products,
DuPont, Johnson & Johnson (proprietary in-house)

Can Semantic Technology Bring Meaning to this Comment?

“You know, there are man’s activities that can be contributed to the issues that we’re dealing with now, with these impacts.”

Who said it? Why is it being said? What does it mean? Does having the answer move you any closer to your business goals?

Probably not - it won't solve every problem - EVER

THANK YOU FOR LISTENING

THE END

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More content on Semantic Search & Technologies

<http://kmforum.org/blog/wp-content/uploads/2008/10/bibliography-semantics-10072008-2.pdf>