

# Get R.E.A.L. !!!

---

**R**elevant

**E**ffective

**A**daptive

**L**earning

by: **Wayne Hodgins**

# Don't Worry About Notes!!

---

More information and resources at:

[www.learnativity.com](http://www.learnativity.com)

Let me know:

*[wayne.hodgins@autodesk.com](mailto:wayne.hodgins@autodesk.com)*

# World Village of 100 People

---

- 57 Asians
- 21 Europeans
- 14 Western Hemisphere (North and South America)
- 8 Africans
  
- 52 would be female
- 48 would be male
  
- 70 would be non white, 30 white
- 70 would be non-Christian, 30 would be Christian
- 89% heterosexual, 11% homosexual
  
- 59% world's wealth in the hands of 6 people. All 6 would be citizens of the United States
- 80 would live in substandard housing
- 70 would be unable to read
- 50 would suffer from malnutrition
- 1 would be near death, 1 would be near birth
- Only 1 would have a college education and
- Only 1 would own a computer.

<http://www.members.mva.net/rizvanov/villag100.htm>

# “Village People” - Language

---

16 people speak Mandarin

9 English

8 Hindu/Urdu

6 Spanish

6 Russian

4 Arabic

That list accounts for the mother tongues of only half the villagers. The other half speak (in descending order of frequency) Bengali, Portuguese, Indonesian, Japanese, German, French, and 200 other languages.

# “Village People”: Religion

---

33 Christians (among them 19 Catholics, 8 Protestants, 3 Orthodox)

18 Moslems

16 "Non religious"

13 Hindus

6 Buddhists

4 Atheists

5 Animists

0.3 Jews

5 all other religions

# Information Defined:

---

*“Information causes change;*

*If it doesn't,  
it isn't information.”*

*Claude Shannon*

“Father” of Information Theory

# The Vision

---

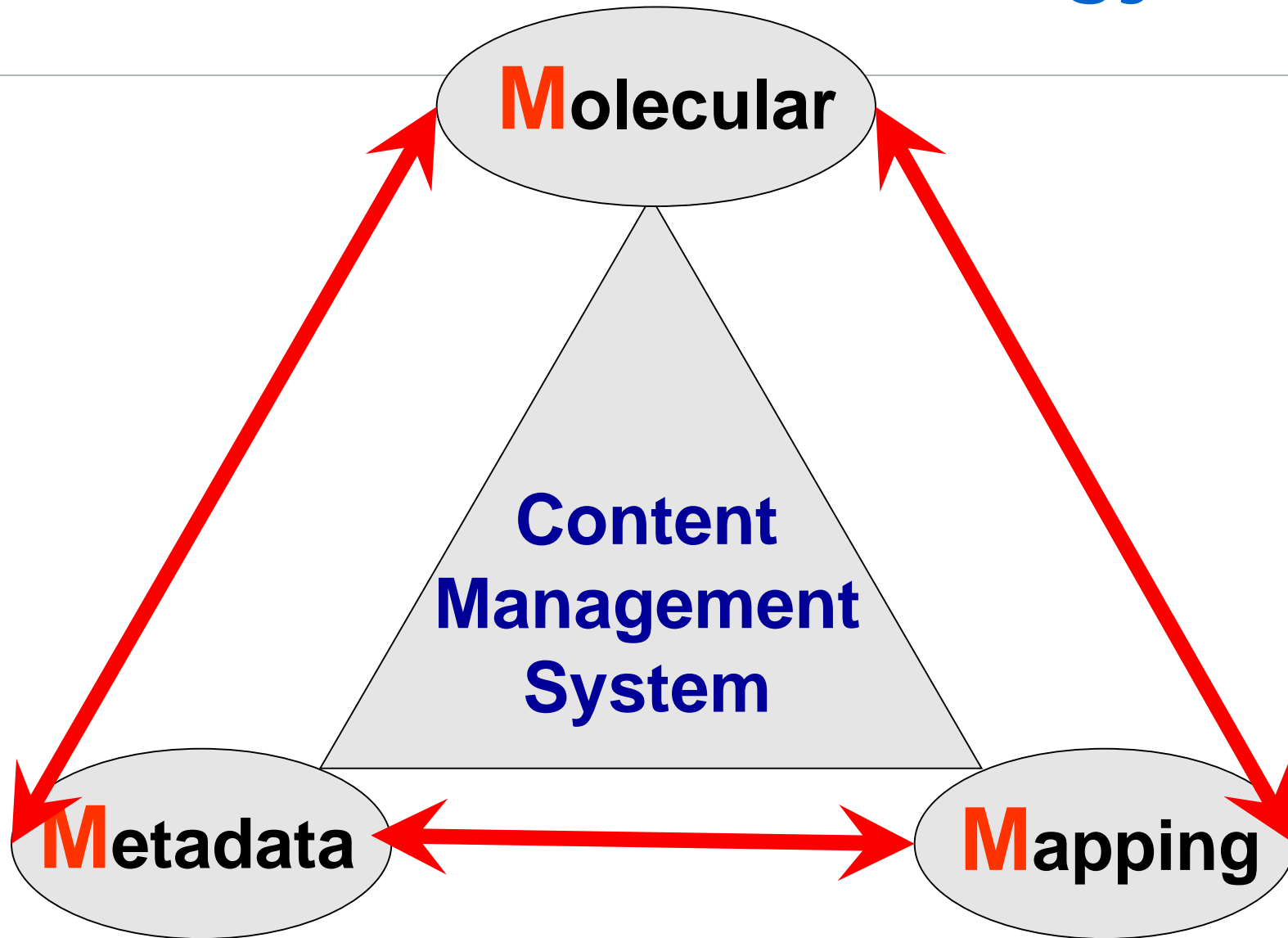
- In a word .....
- PERSONALIZATION
  - Personalized Learning
  - Personalized Content
  - Personalized Technology
- In a few more words .....

# The Vision: Just the “Right Stuff”

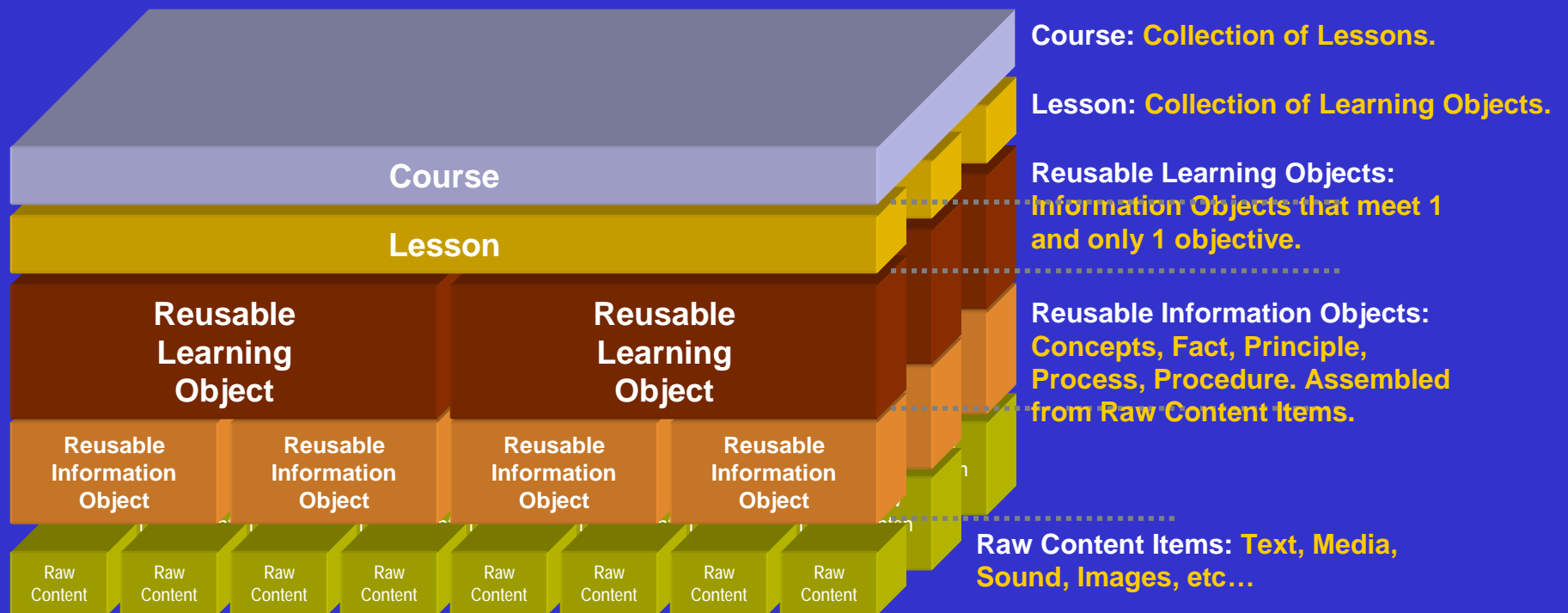
---

- Just the right **CONTENT**, to
- Just the right **PERSON**, at
- Just the right **TIME**, on
- Just the right **DEVICE**, in
- Just the right **CONTEXT**, and
- Just the right **WAY**

# "M3" - Content Strategy

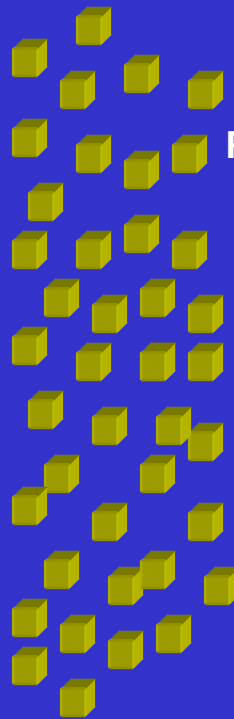


# Autodesk Content Strategy Building Block Model View

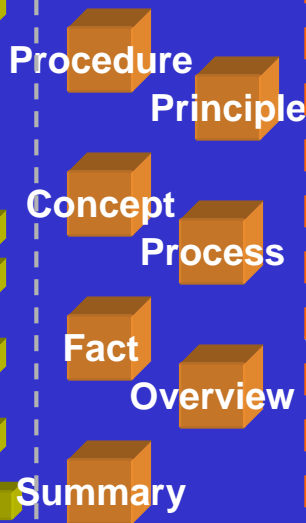


# Autodesk Content Strategy Molecular Model View

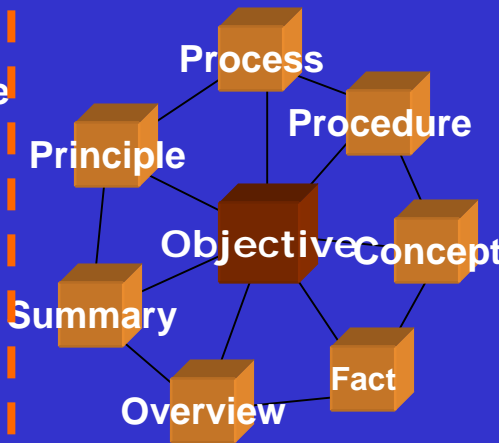
Content  
Items



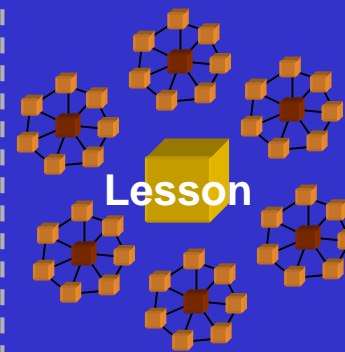
Reusable  
Information  
Objects  
(RIO)



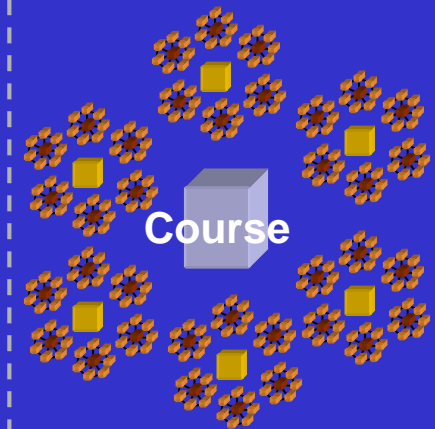
Reusable  
Learning  
Object  
(RLO)



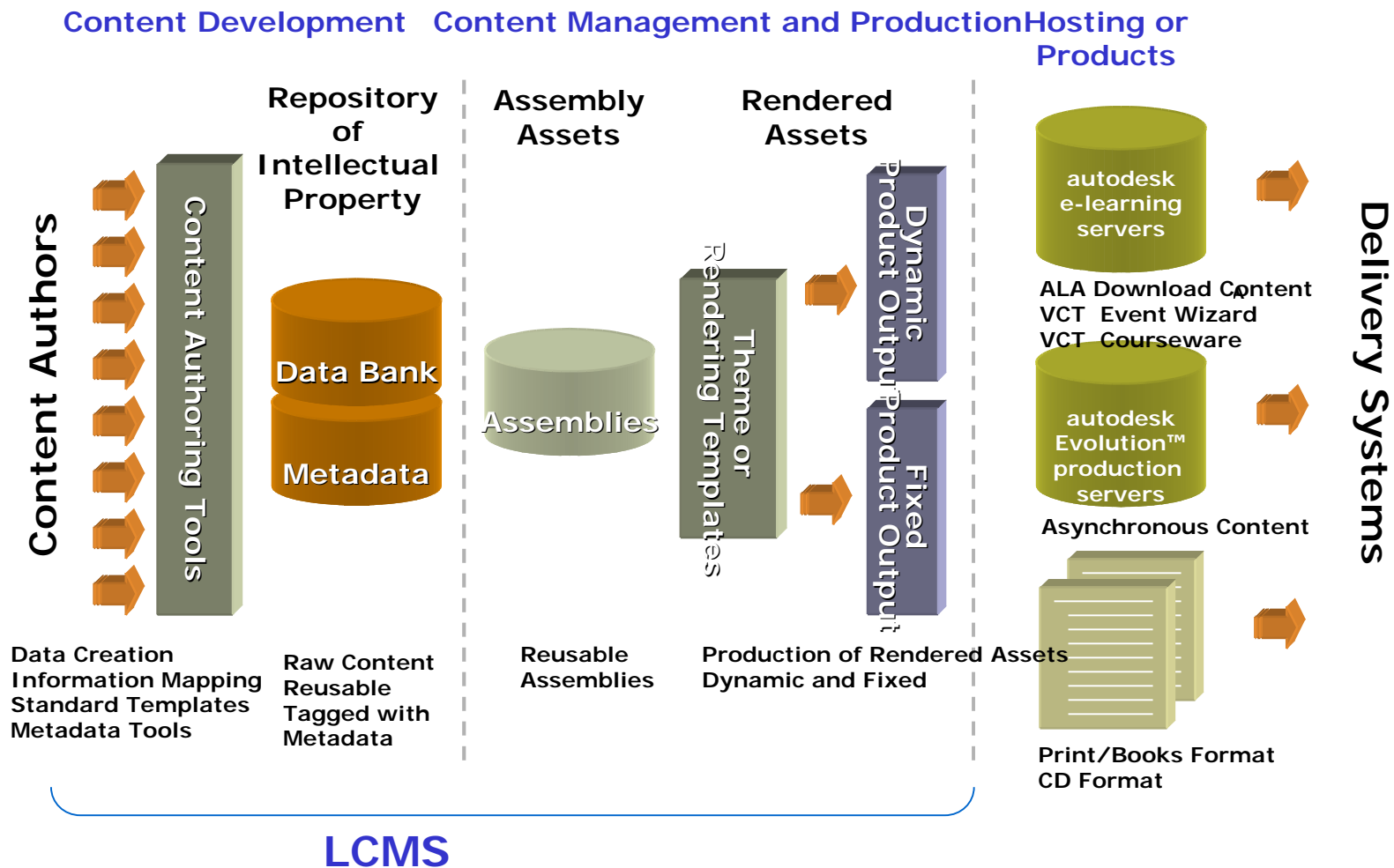
Lessons



Courses



# Content Development Infrastructure

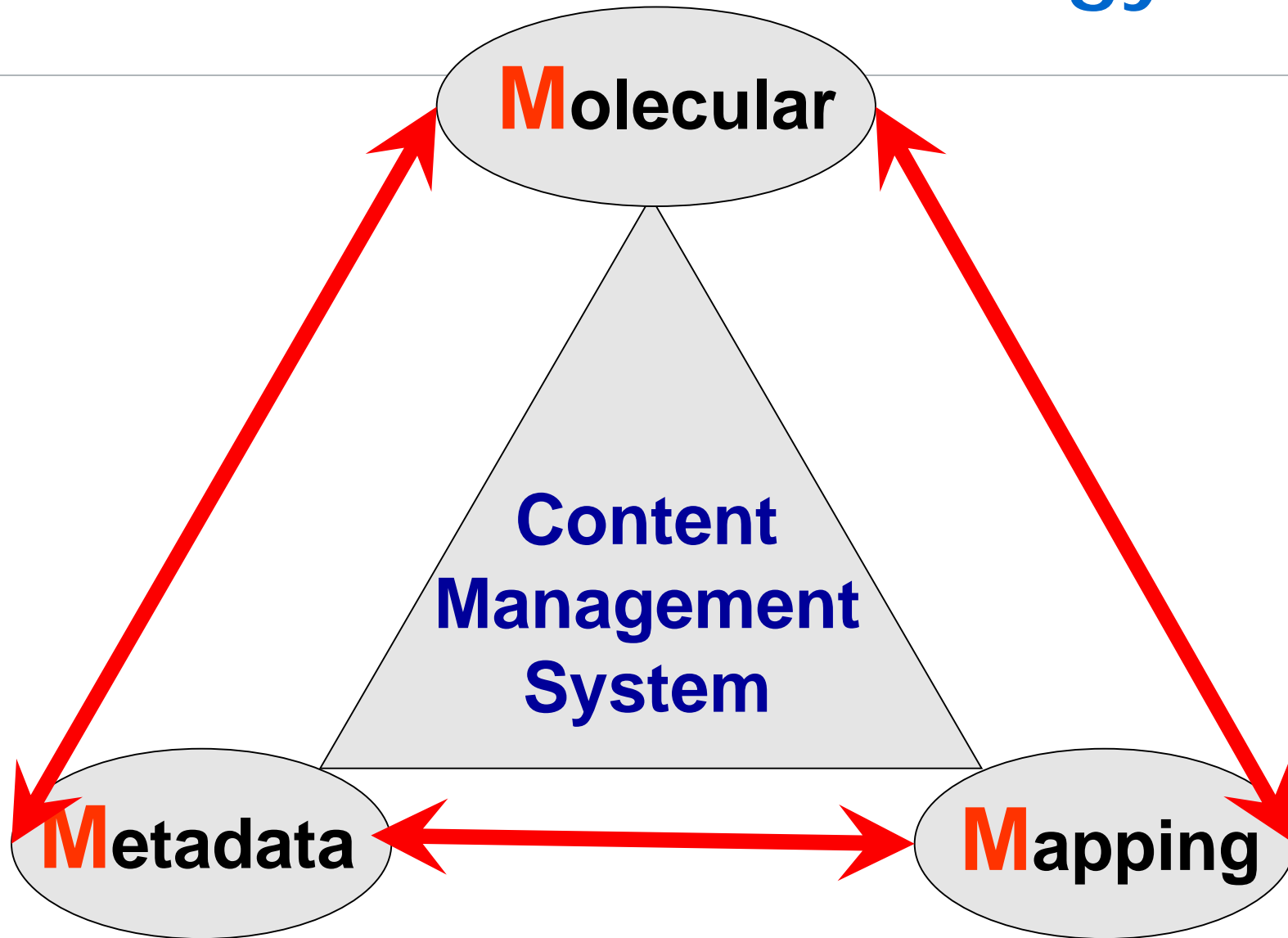


# Next Generation Content TYPES

---

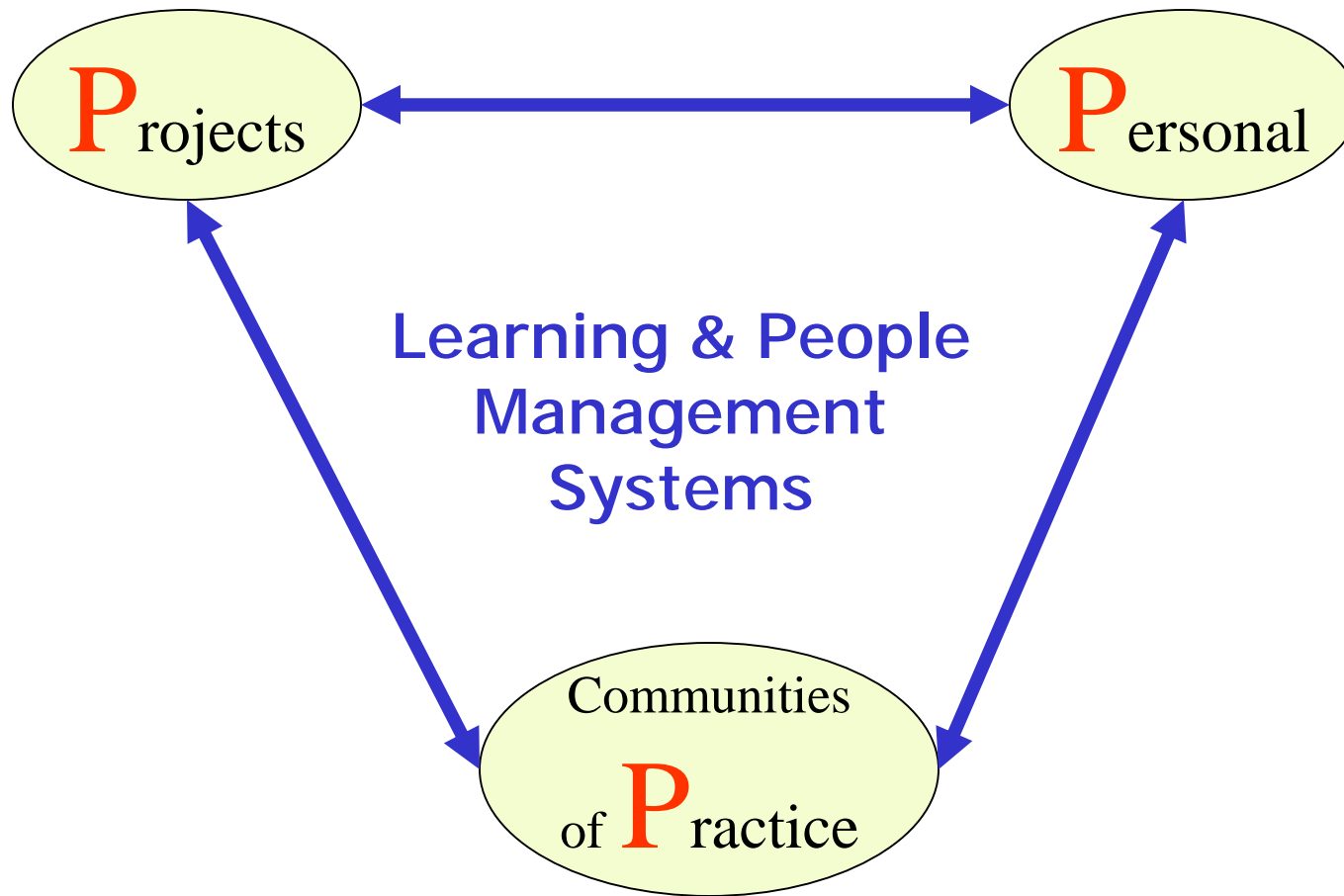
- Simulations
- Metadata?
- Maps?

# M3: Content Strategy

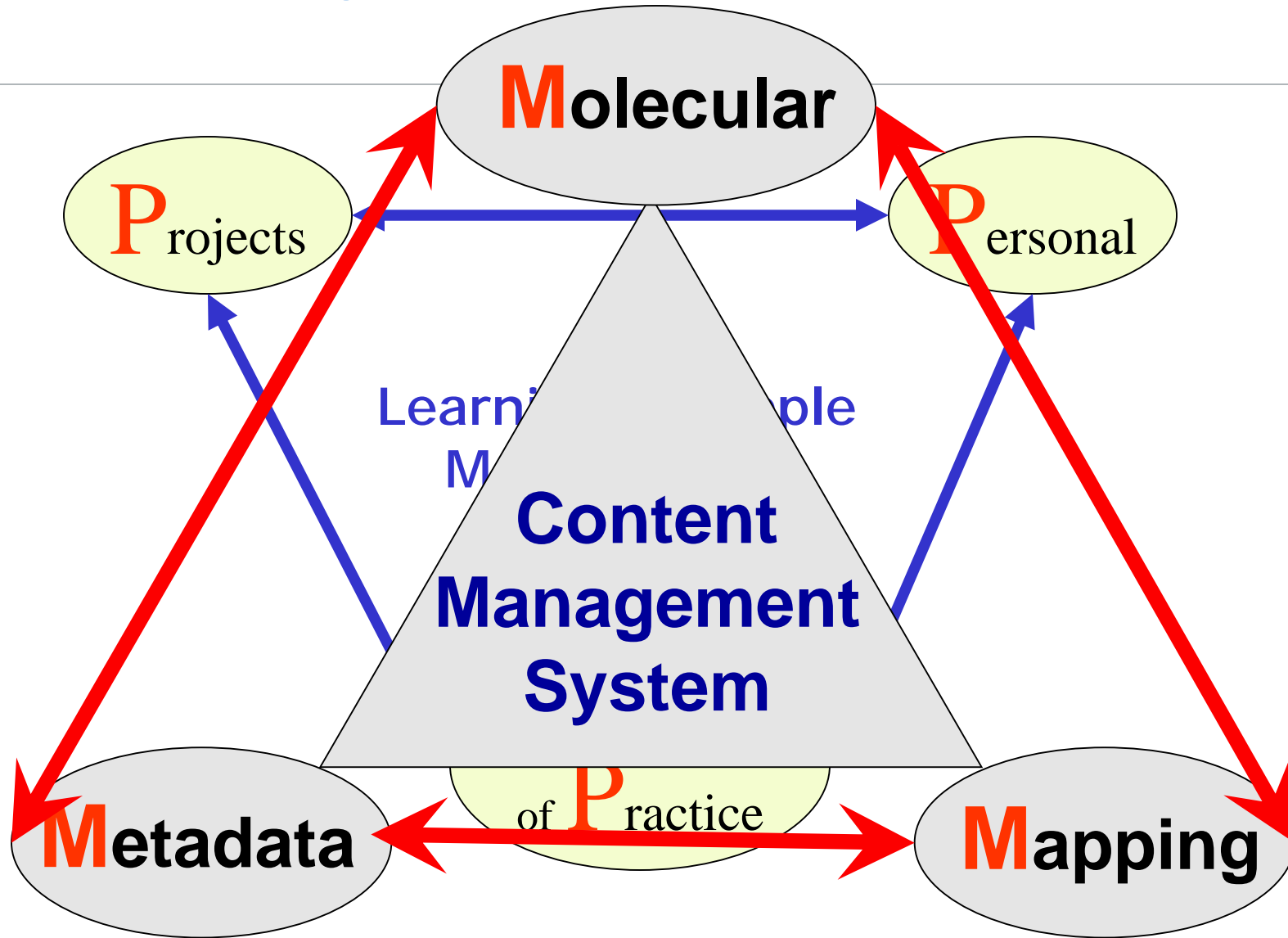


# P3: The People Model

---



# Wayne's "MP3" Model



# MEANING: The missing link?

---

- A “quiet” revolution
- The SEMANTIC web
- “democratic” learning?
- Peer to Peer
- Metadata Magic

# EML

---

- Education Markup Language
- RDF
- Edutella
  - Facilitate reuse of globally distributed learning resources via metadata “eco-system”
- CETIS [www.cetis.ac.uk](http://www.cetis.ac.uk)

# Divide & Conquer

---

- Separating:
  - The Content resources
  - Meaning (metadata)
  - Style (rendering, look & feel, etc.)
  - Media (web, print, etc.)
  - navigation
  - Content sequencing & flow
- AND Separating Data models & maps from implementations & technology

# Structure: HTML

---

Benefits:

- Ubiquity - Most documents on the Web in HTML
- Intrinsic within Header using the <meta> tag
- Drawbacks:
  - Document rather than object-oriented
  - Tags represent formatting rather than meaning
  - Durable? - XHTML - HTML well-formed for XML
  - <http://www.w3.org/TR/xhtml1/>

# Structure: XML eXtensible Markup Language

---

Owner-defined document definitions.

- Formatting separated from semantic meaning. Stylesheets associated with documents or document type definitions (e.g.CSS)
- Enables dynamic document transformations (XSLT)
- multidirectional hyperlinking (Xlink,Xpath)
- Enables data search,retrieval & exchange:
- XQL - XML Query Language <http://www.cuesoft.com/xqlspec.htm>
- **Data Exchange between Repositories:**
- **XMI: Open information interchange model for exchange of models and data over the Internet in a standardized manner.**
- **Common Warehouse Metadata Interchange**

# Format: XML eXtensible Markup Language

---

Defined via:

## **DTD** - Document Type Definition

- Set of instructions to define one type of XML Document
- Defines tags (data elements); information (values within data elements); relationships between tags
- Uses ELEMENT, ATTLIST, ENTITY & NOTATION declarations

# Format: XML eXtensible Markup Language

---

Defined via:

## SCHEMA -

- Layered construct, utilizing namespaces, modular construction with parent-child inheritance
- Separation of tag and type (attribute)
- Simple and complex types with restrictions and extensions to definitions.

# RDF: Resource Description Framework

---

- W3C Resource Description Framework (RDF) Model and Syntax Specification (22 February 1999):  
<http://www.w3.org/TR/REC-rdf-syntax/>
- Provide robust application of metadata in the web environment:
- Model for unambiguous, schema-independent description of resources.
- Key Concepts:
  - Resource: Any object uniquely identifiable by a URI
  - Property-type: Property associated with a resource.
  - Value: Associated with a property type--may be atomic (a string) or another resource, creating a new hierarchy)

# RDF: Resource Description Framework

---

- Enables interoperability among metadata schemes, including the modular use of multiple schemes within a metadata record utilizing the XML namespace facility;
- Adds machine-interpretable semantics to the encoding, exchange and reuse of structured metadata;
- Enables automatic negotiation between search engine, metadata record, and metadata registry for powerful, flexible search and retrieval independent of server and client search and retrieval infrastructures (or, at least, it will!)
- Framing metadata references registries for metadata elements.

# Topic Mapping

---

*"Adding Relevance & Relativity"*

The bridge between content & metadata

ISO/IEC 13250

# Topic Mapping Intro

---

- “the GPS of the information universe”
- Describing knowledge structures & associating them with information resources
- Stimulated by age old and exponentially increasing need for indexes to span multiple documents and large repositories of information
- 12 years in the making to date
- ISO/IEC 13250 approved standard; 1999

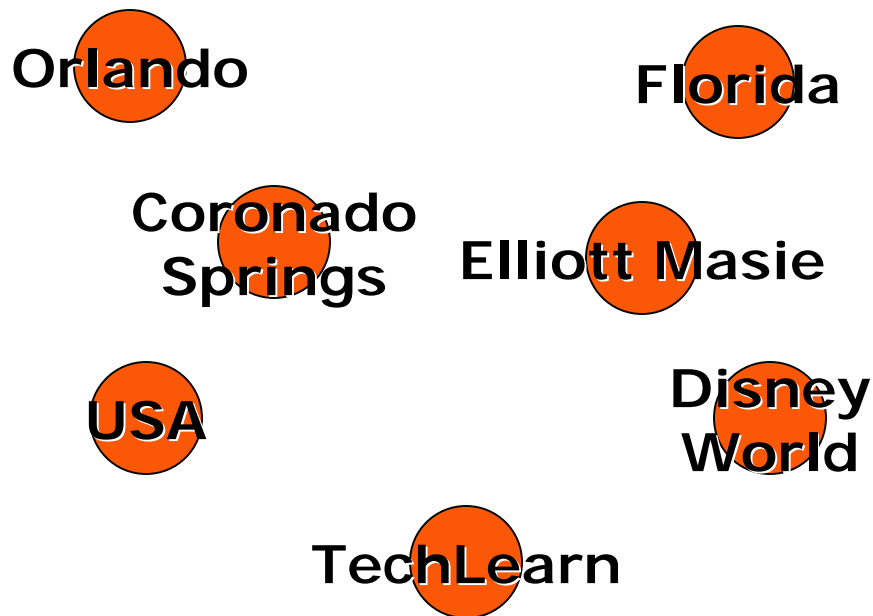
# The “TAO” of Topic Maps

---

- **T**opics
- **A**ssociations
- **O**ccurrences

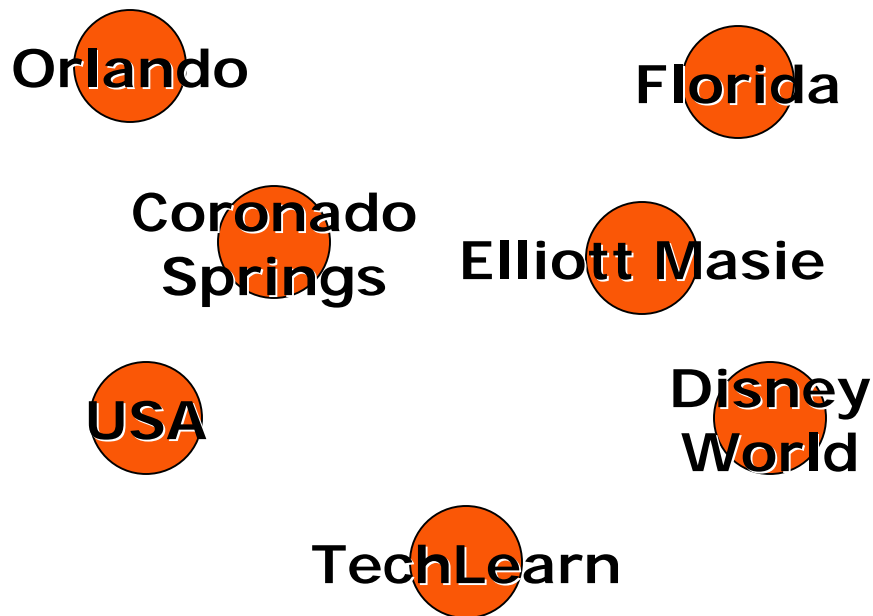
\* All of the following is an adaptation of an excellent paper by Steve Pepper “The TAO of Topic Maps” available at <http://www.ontopia.net/topicmaps/materials/tao.pdf>

# Topics



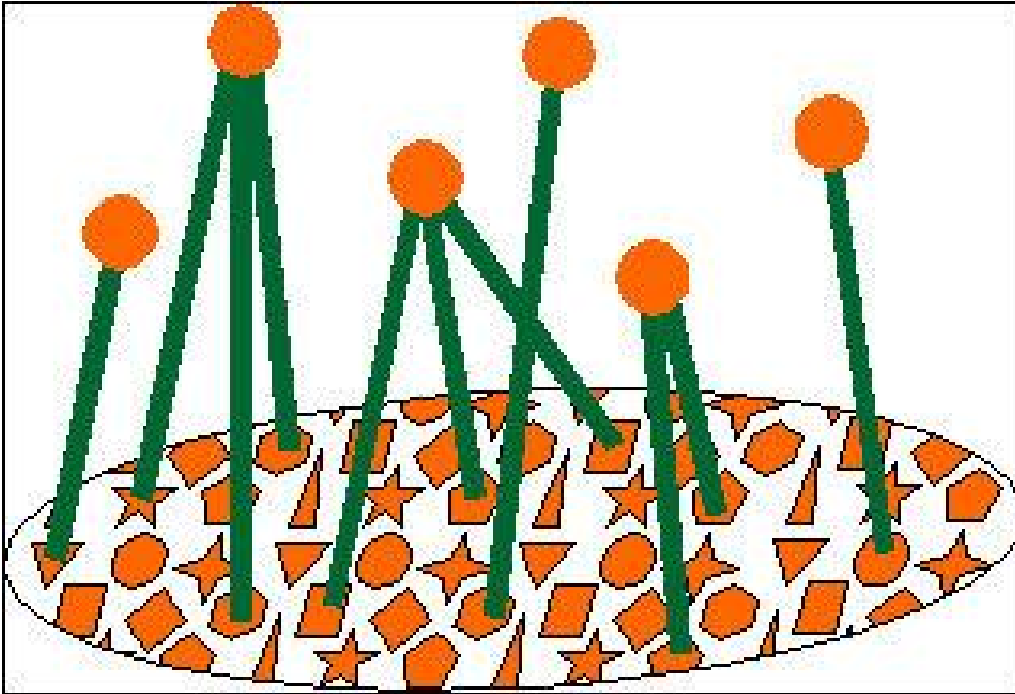
- Can be literally ANYthing
- Think of “subject”
  - “The invisible heart of every topic is the subject that its author had in mind when it was created”*
- Subject corresponds to what Plato called *an idea* .
- A topic, on the other hand, is like the shadow that the idea casts on the wall of Plato's cave

# Topic Types



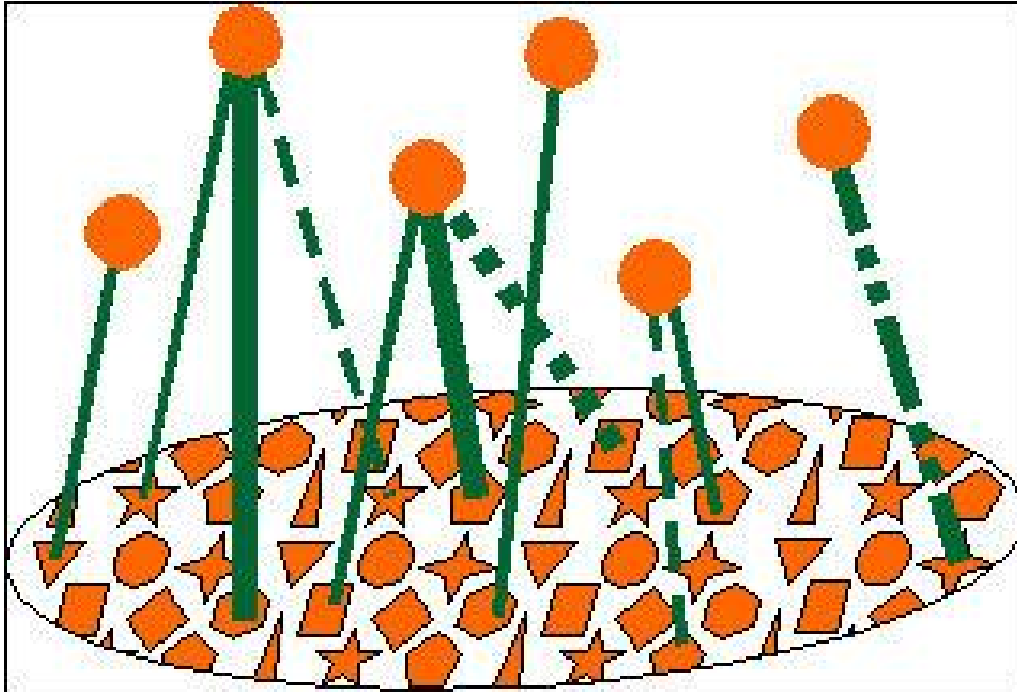
- Classification by type:
  - USA = country
  - Florida = State
  - Orlando = city
  - TechLearn = Event
  - Elliott Masie = person
- Possible to have multiple topic types
- Topic types are topics themselves

# Occurrences



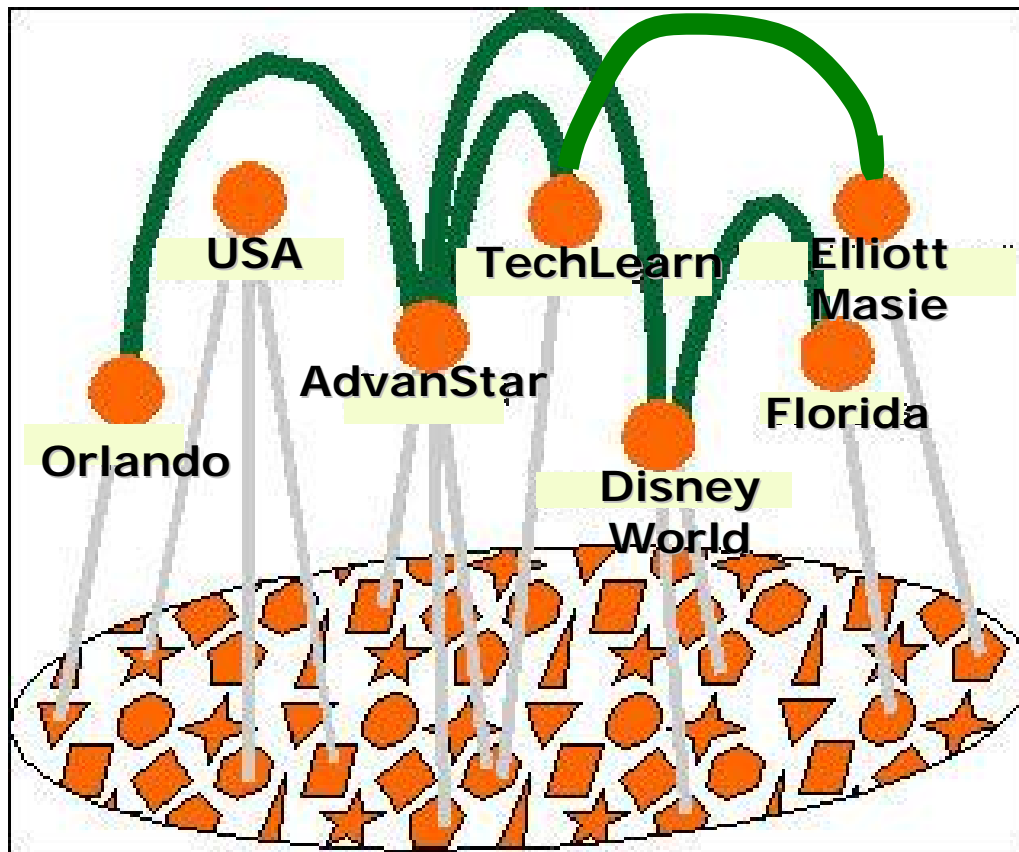
- The actual resources
- Separation of topics and the resources
  - Articles
  - Illustrations
  - Definitions
  - pictures, videos, books
  - person, room, city
- One topic can have any number of occurrences

# Occurrence Roles



- Role of the Occurrence
  - Article
  - Illustration
  - Software program
  - Mention
  - commentary
- Occurrence roles themselves can be topics

# Topic Associations

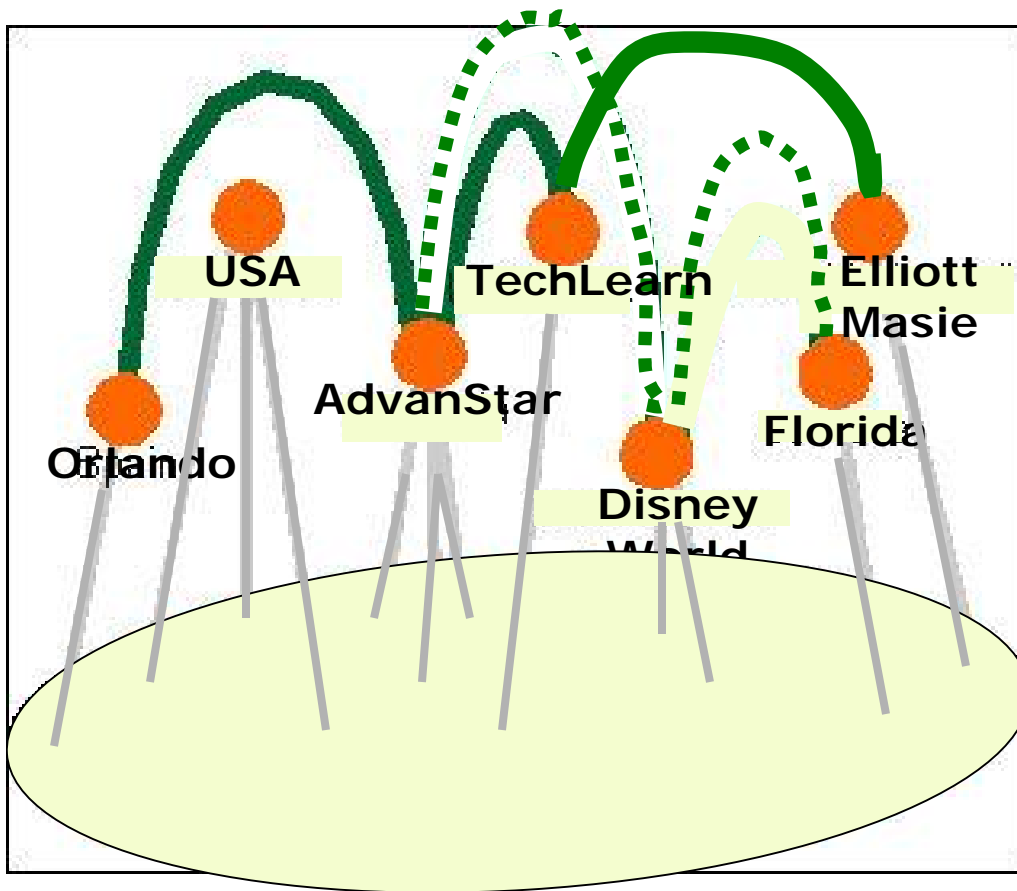


Relationships between two or more Topics

- Florida *is in* the USA
- Orlando *is in* Orange County
- Elliott Masie *is the founder of TechLearn*
- Elliott *is married to* Cathy
- AdvanStar *owns* TechLearn

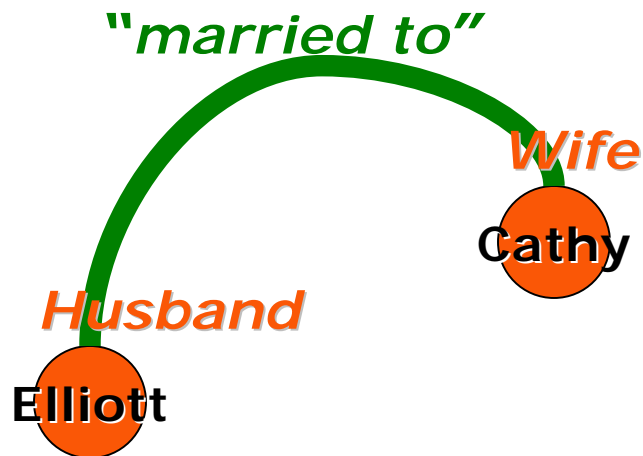
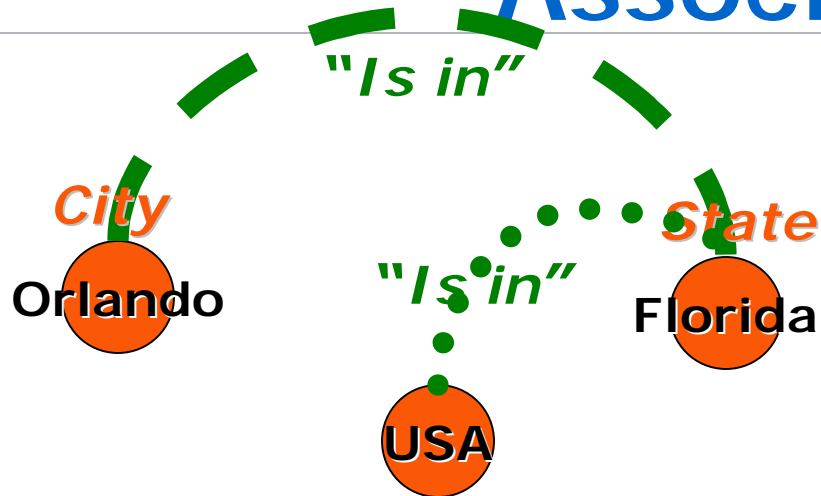


# Topic Maps as Independent Resources



- NOT same as cross references
- Anchor is NOT part of information resource
- COMPLETELY independent
- Topic maps therefore information assets themselves
- Portable semantic networks

# Association Roles



- Role of topic participating in association
- Anchors can be same or different
- Symmetrical
- Asymmetrical
- Directional & non
- Transitive
  - San Rafael is in California
  - California is in the USA
  - Therefore SR is in the USA

# And that's just the basics!

---

- .... Facets, Scope, themes,
- Typed topic associations enable modeling of Thesauri
- Hierarchies of association types
- Topic maps can be used independent of pool of information (occurrences) and used across multiple pools

# So what?

---

- Capturing reusable knowledge
- Semantic networks, associative networks
- Knowledge & Concept maps
- Codifying knowledge structures
- Enables merging of Topic Maps, indexes, Thesauri, concept maps
- Creates new knowledge
- New value creation

# Resources & Follow up:

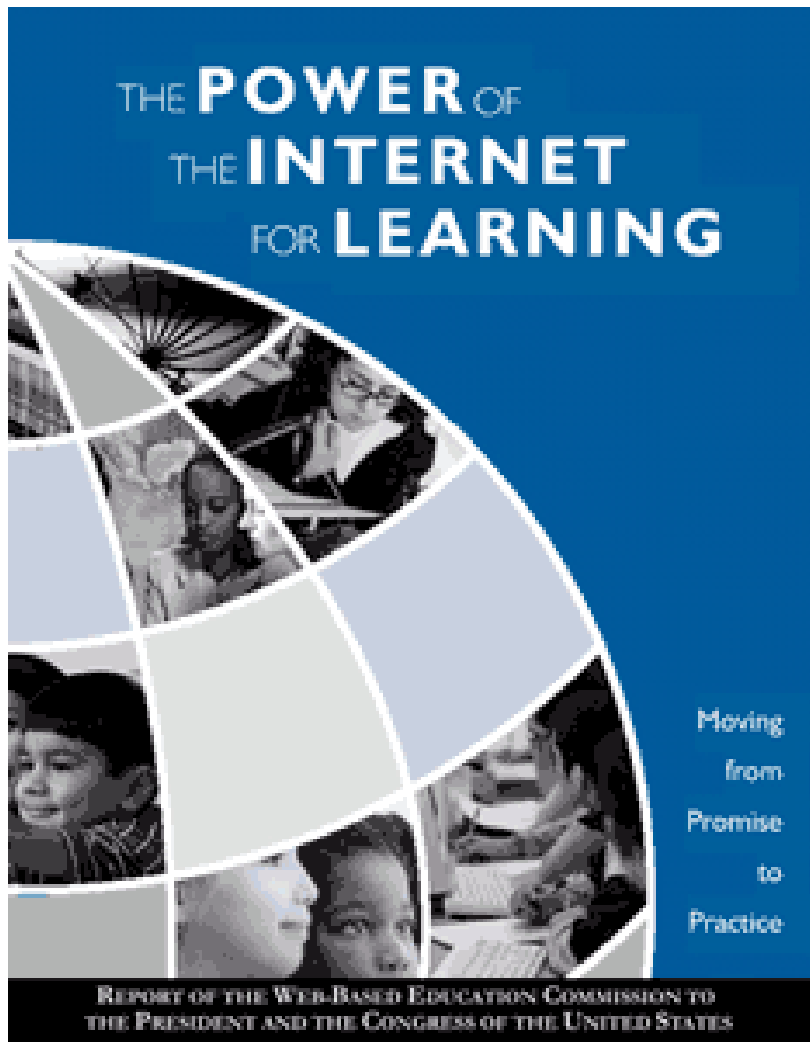
---

- NGA/ASTD Vision Paper “Into the Future”
- “The Power of the Internet for Learning”
- “Metadata and Organizing Educational Resources on the Internet”
- “The Instructional Use of Learning Objects”
- ADL SCORM
- Topic Mapping

All available at:

[Learnativity.com](http://www.learnativity.com)

# *"The Power of the Internet for Learning"*



- Web-Based Education Commission
- Released Dec. 19, 2001
- Full document available: <http://www.webcommission.org>

\*\* Note: ~6 meg PDF file

[www.autodesk.com](http://www.autodesk.com)

[www.learnativity.com](http://www.learnativity.com)

**autodesk®**

# *"Into the Future"*

---

- Vision Paper for
- NGA/ASTD Commission for Technology & Adult Learning
- Public domain content
- Granular "LEGO™" format
- Available at [www.learnativity.com](http://www.learnativity.com)
  - *PDF format*
  - *Note: 1 Meg file size*

# *"The Instructional Use of Learning Objects"*

---

- beyond the technological hype
- connecting learning objects to instruction and learning.
- Each chapter by a different world expert
- licensed under the Open Publication License v2.0
- Full text of the book freely available online at:  
<http://reusability.org/read/>
- Please join the discussion & critique

Thanks to Dr. David Wiley,  
Postdoctoral Fellow  
Instructional Technology Institute at Utah State University

# "Metadata and Organizing Educational Resources on the Internet"

---

- Editor = Jane Greenberg, PhD
- practical presentation of empirical case studies and theoretical elaboration.
- covers groups working on learning related metadata including IEEE LTSC, ARIADNE, GEM, IMS, CDL
- Some content available for a fee from The Haworth Document Delivery Service:

[getinfo@haworthpressinc.com](mailto:getinfo@haworthpressinc.com) or at [www.HaworthPress.com](http://www.HaworthPress.com)

# Topic Mapping References

---

- TAO article
  - <http://www.ontopia.net/topicmaps/materials/tao.pdf>
- Needles & Haystacks at:
  - <http://www.ontopia.net/topicmaps/materials/mlangart.pdf>
- Topic Maps at Work paper at:
  - <http://www.topicmaps.com/content/resources/xmlhb2/hhr-stp.pdf>
- Others at:
  - [http://www.ontopia.net/topicmaps/learn\\_more.html](http://www.ontopia.net/topicmaps/learn_more.html)
  - <http://xml.coverpages.org/gen-apps.html#topicMaps>
  - <http://www.gca.org/papers/xml europe2000/papers/s22-03.html>

# Information Defined:

---

*“Information causes change;*

*If it doesn't,  
it isn't information.”*

*Claude Shannon*

“Father” of Information Theory



Thank  
You!!

More information and resources at:  
[www.learnativity.com](http://www.learnativity.com)

Let me know:  
[wayne.hodgins@autodesk.com](mailto:wayne.hodgins@autodesk.com)

[www.autodesk.com](http://www.autodesk.com)

[www.learnativity.com](http://www.learnativity.com)

autodesk®