

14 Ways to Use Your Enterprise Ontology

Semantic Arts, Inc.

So what exactly do you intend to do with this so-called “Enterprise Ontology?”

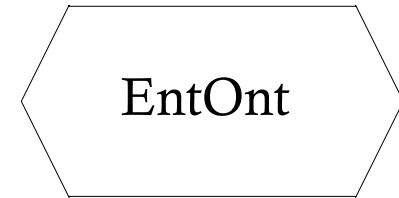


Graham Wilson

“... And just what do you think you're going to do with your silly death ray once you've finished it?!”

What is an Enterprise Ontology

- It is a model
- Of the key, shared information in an Enterprise



- Developed using Semantic Technology
- And is therefore machine interpretable and processable

The Role of an Enterprise Ontology

- We think an Enterprise Ontology is useful even if you only use it for one purpose.
- This is largely because of the intellectual rigor it focuses on the problem of definition.
- But we think the value multiplies when you use a single Enterprise Ontology for multiple purposes.

Remainder of this Session

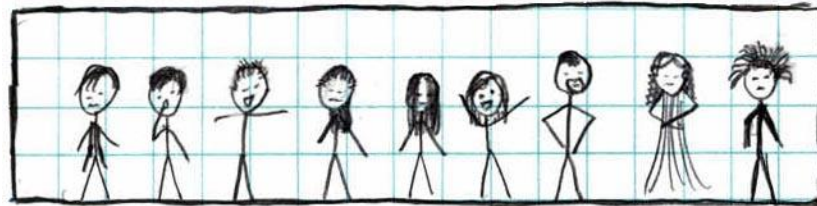
- Is about how you might use your Enterprise Ontology
- What characteristics of an Enterprise Ontology promote those uses?
- How gist supports those characteristics.
- How to understand gist.

Design Time *and* Run Time

- There are two major usage groups regarding enterprise ontologies:
 - Design Time usages
 - Run Time Usages

Design Time – Vision/Communication

EntOnt



- The mere existence of a single understandable whole moves many people from despair to action.

Design Time – Deriving Consistent SOA Messages

EntOnt

```
graph TD; EntOnt{{EntOnt}} --> M1["<plaintiff>\n  <repBy>\n    <attorney></attorney>\n  </repBy>\n</plaintiff>"]; EntOnt --> M2["<attorney>\n  <reping>\n    <plaintiff></plaintiff>\n  </reping>\n</attorney>"]; EntOnt --> M3["<attorney>\n  <worksFor>\n    <lawFirm></lawFirm>\n  </worksFor>\n</attorney>"];
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  <repBy>
    <attorney></attorney>
  </repBy>
</plaintiff>
```

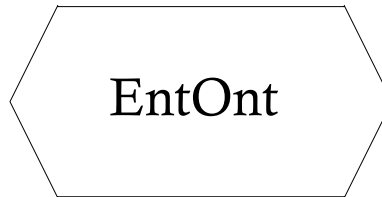
```
<attorney>
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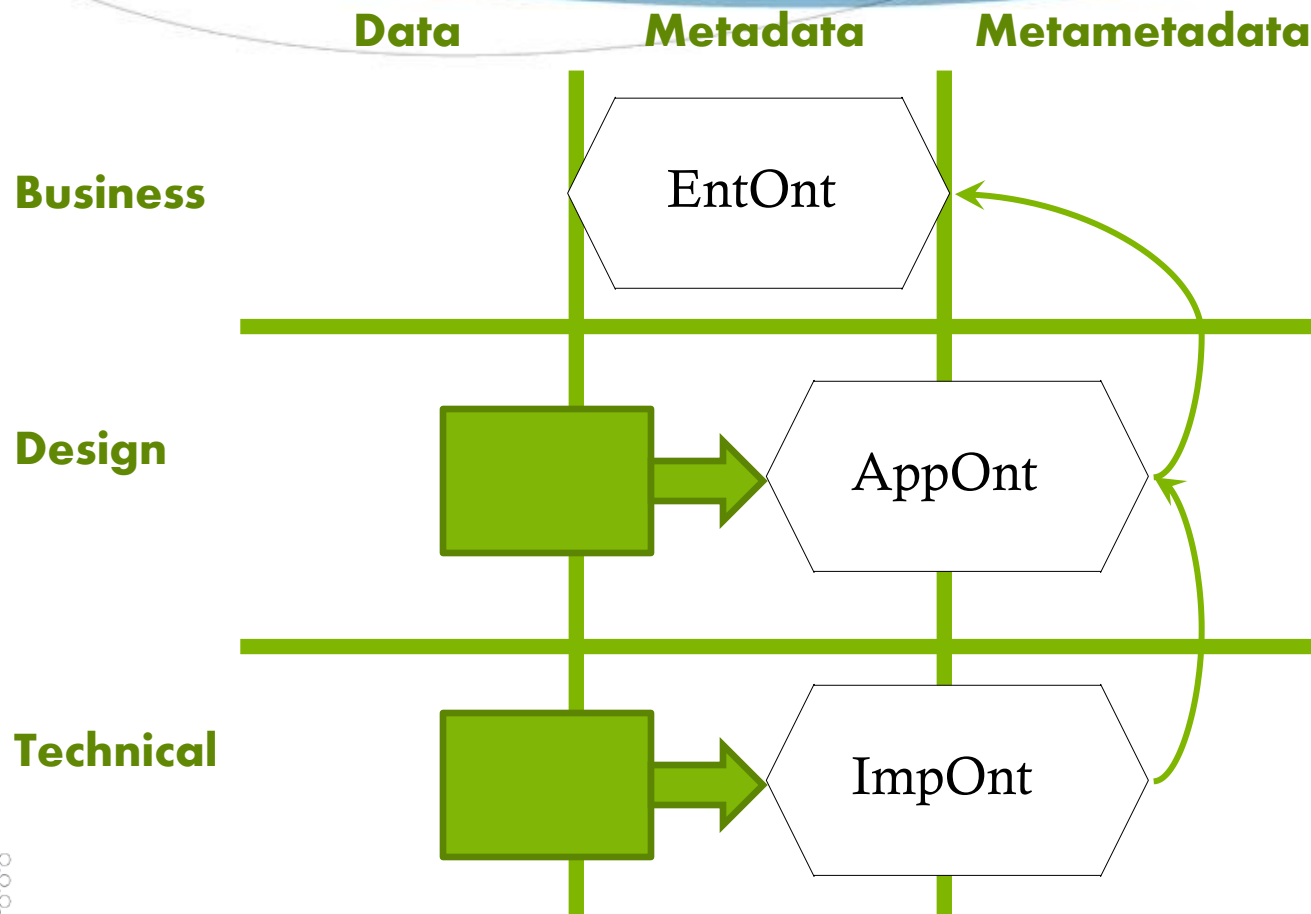


Design Time – Adaptor Design

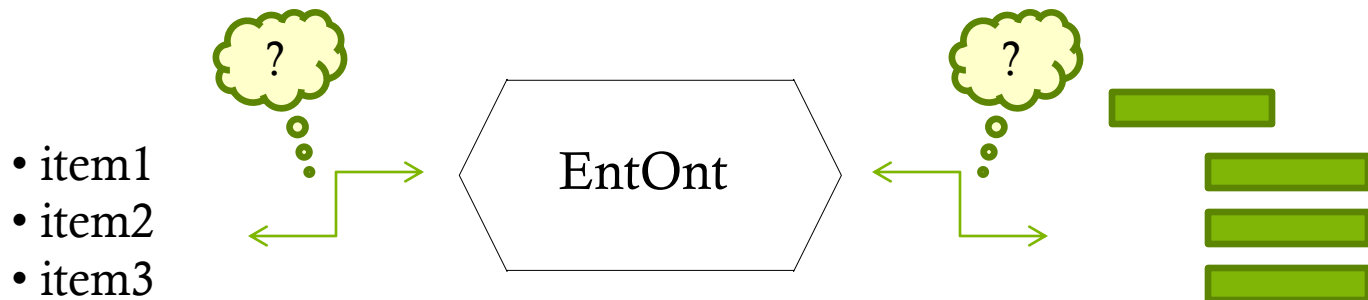
```
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  <repBy>  
    <attorney></attorney>  
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```



Design Time – Repository Management

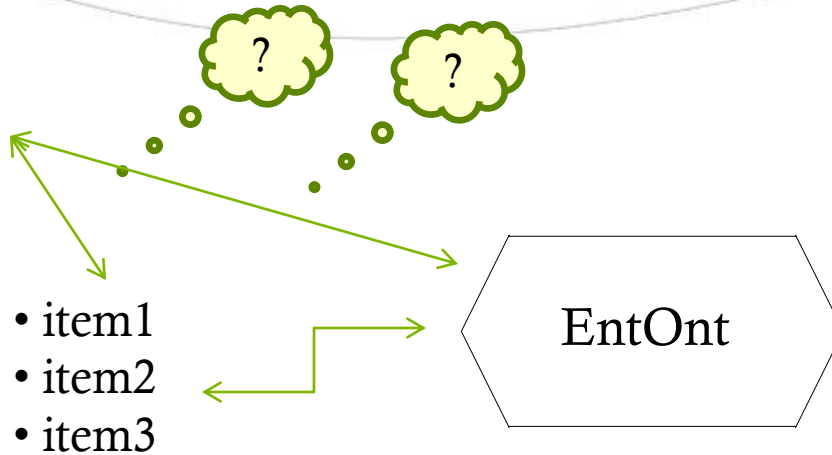


Design Time – Taxonomy and Vocabulary Management



Design Time – Integrating External Nomenclature

- snomed1
- snomed2
- snomed3

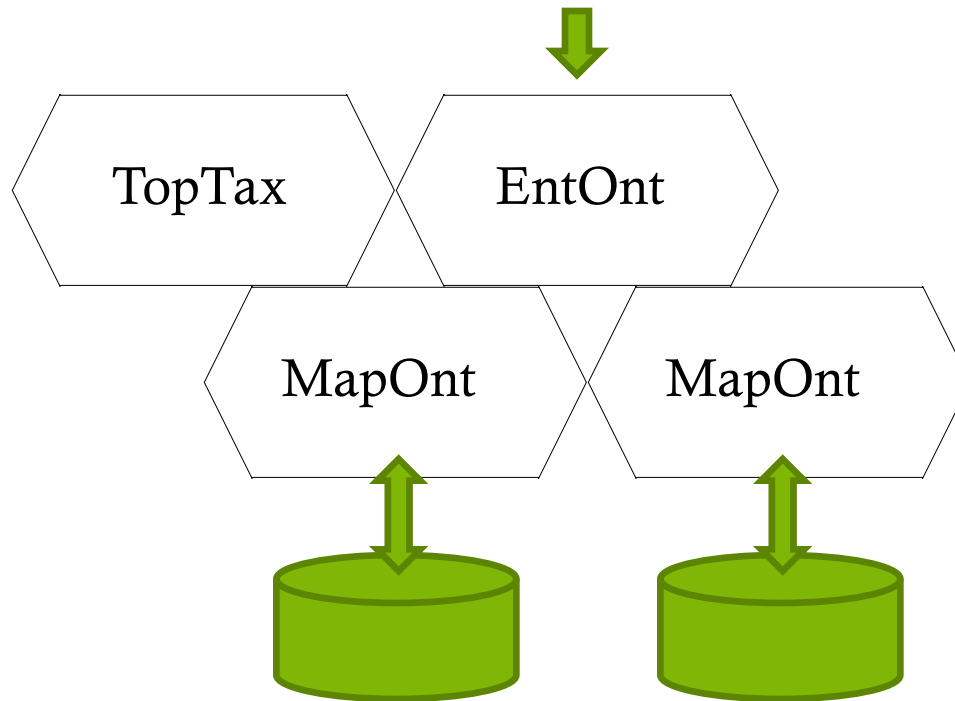


Run Time

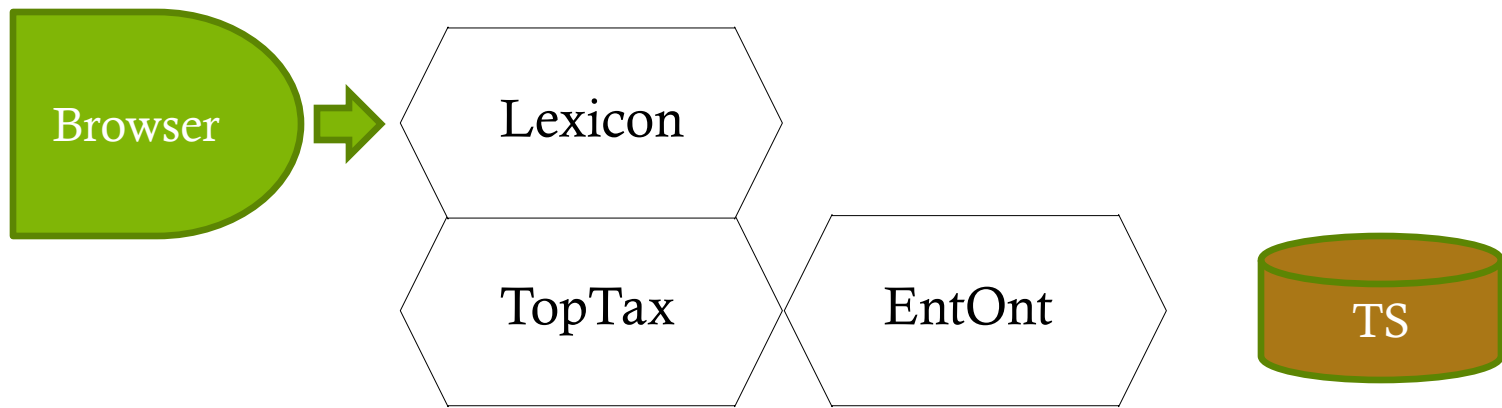
- A run time ontology is one that is participating while the system is running.

Run Time – Conceptual Federated Query

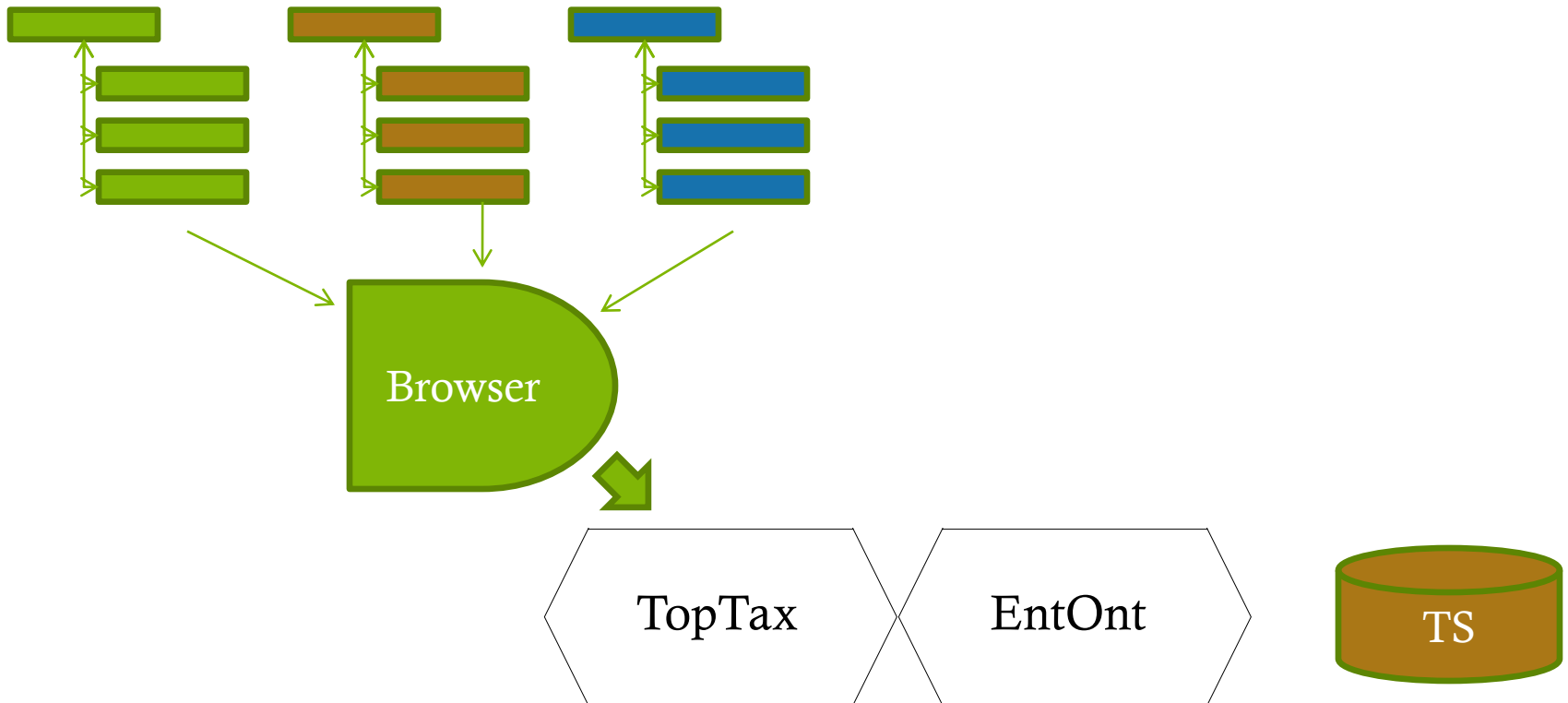
Find Attorneys Who Worked on Hazardous Materials in Ohio



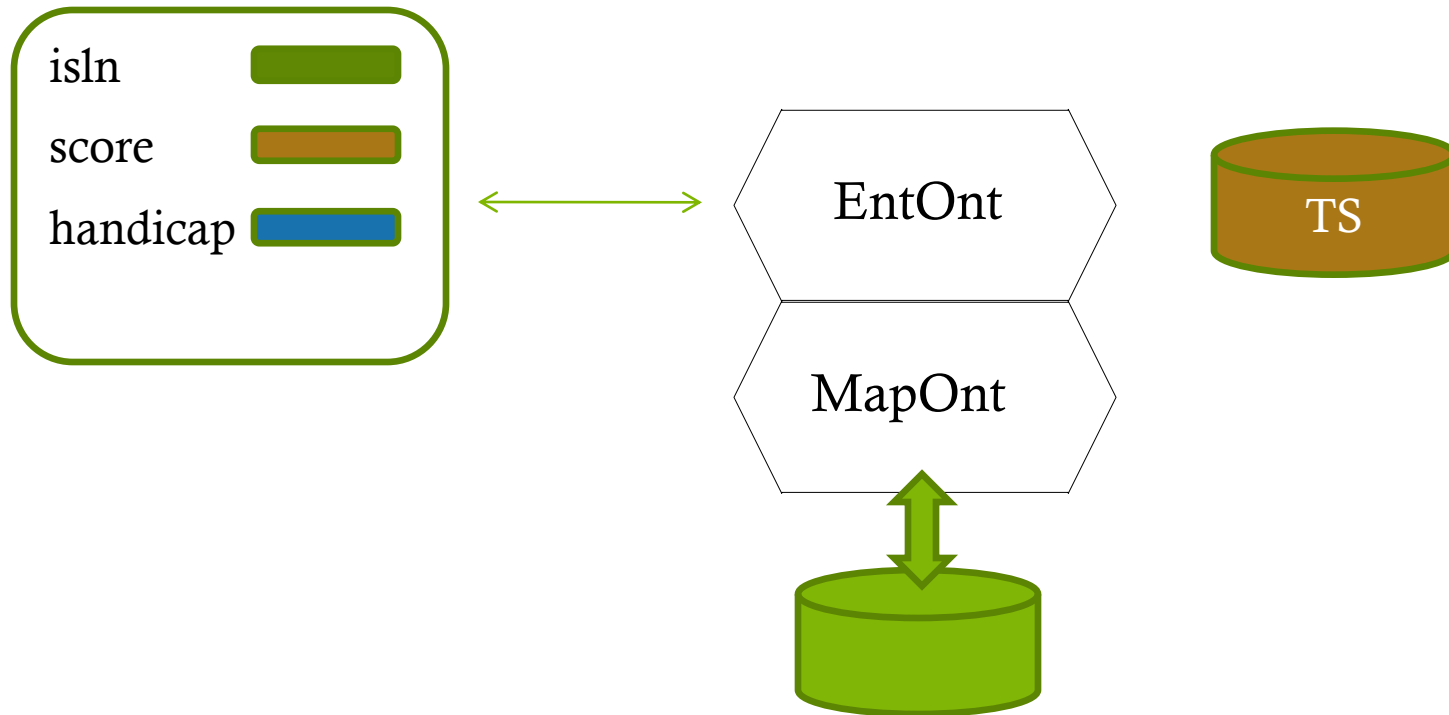
Run Time – Semantic Search



Run Time – Faceted Search



Run Time – Mash ups

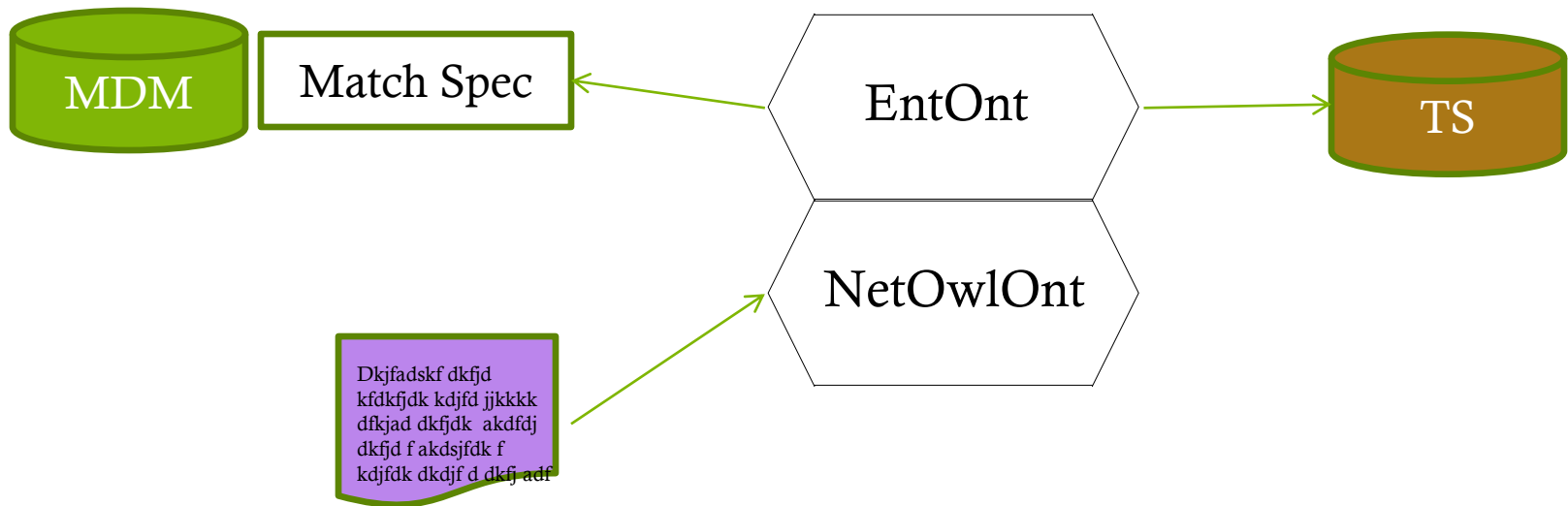


Run Time – Social Media Integration

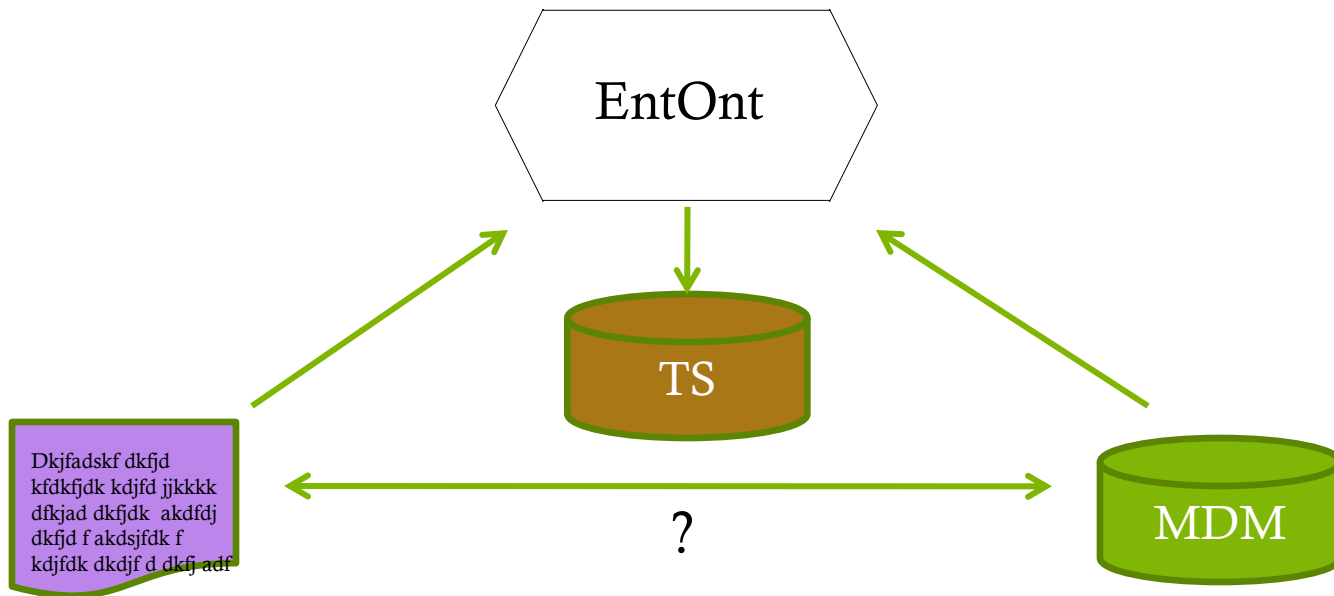
EntOnt



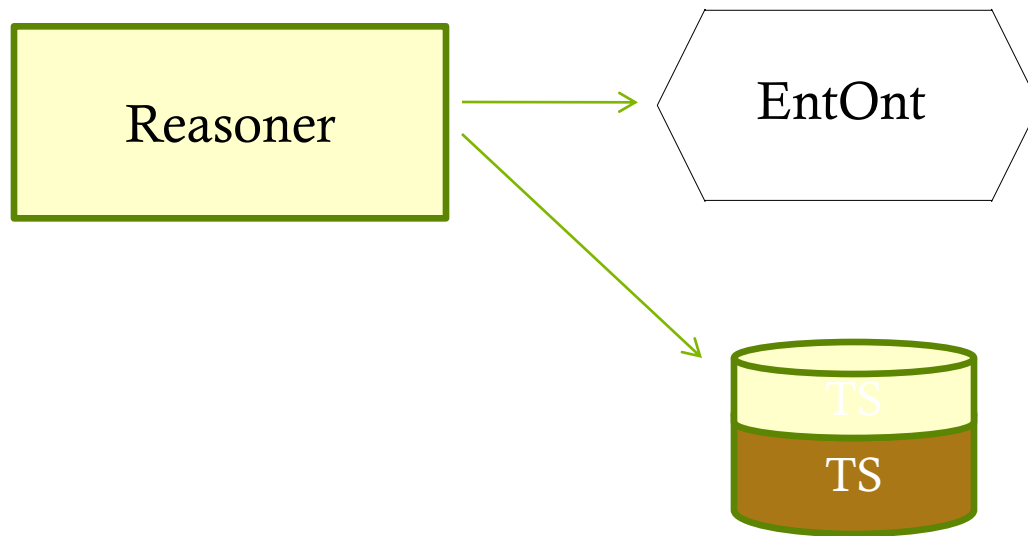
Run Time – Entity Extraction



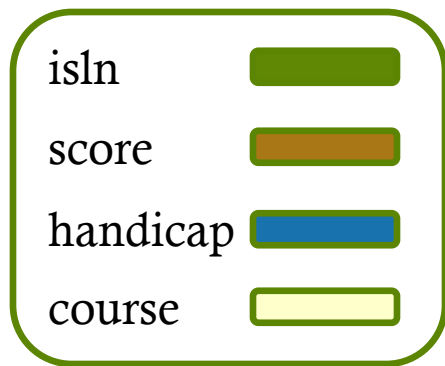
Run Time – Integrating Structured and Unstructured Data



Run Time – Inference



Run Time – Dynamic Apps



Enterprise Ontology?

- Each of the previous could be done without an Enterprise Ontology.
- Some could be done without any kind of ontology.
- But we believe they all benefit from an Enterprise Ontology and especially from using the same Enterprise Ontology.

Some Useful Shared Characteristics of the Enterprise Ontology

- Elegance

Being able to define the most concepts with the fewest primitives pays off in most of the preceding use cases.

- Highly Axiomized

The more axioms (formal definitions), the more likely the ontology is consistent; and the more likely it is consistent, the more it can be used for inference.

- Complete

The more complete the Enterprise Ontology is, the less likely people will create concepts outside it.

Some Useful Shared Characteristics of the Enterprise Ontology

- Understandable

For people to use it they need to understand it, partially by using well-agreed terms, but also by virtue of good documentation and visualization.

- Unambiguous

It should be clear where given concepts need to live in the ontology.

- Consistent

Consistency is both a formal property (are axioms in the ontology in contradiction?) and a property of the usage of terms.

gist

- Semantic Arts' minimalist upper ontology
- Freely available through a creative commons license
- Current version (now 6.1) available at

<http://ontologies.semanticarts.com/gist/gist.owl>

- Modular
 - Core gist
 - Plus seven sub gists: events, durable temporal relations, process, measures, finance, states and concepts

gist Core

- 138 Classes
- 125 Object Properties
- 20 Data Type properties

Learning gist

- We're working on ways to make gist simpler to approach.
- There are about 12 “prime” classes.
- And another 24 “primitive” classes.
- The properties are in six families.

gist Core – Major Families of Classes

UnitOfMeasure

Magnitude

Other (Collections, Concept, Language)

Time

Place

Landmark

Person / UniqueItem

Substance

Organization

Documents

Agreements

Behavior

Intention

Key gist Properties

hasA

(Subject exclusively possesses Object)

[Person hasMagnitude Weight]

hasPart[T]

(Mereology)

[Car hasDirectPart Engine]

geoContains[T]

(Spatial Relations)

[FortCollins geoContains MyHouse]

affects

(Teleology)

[Dave produce Presentation]

regarding

(About or descriptive)

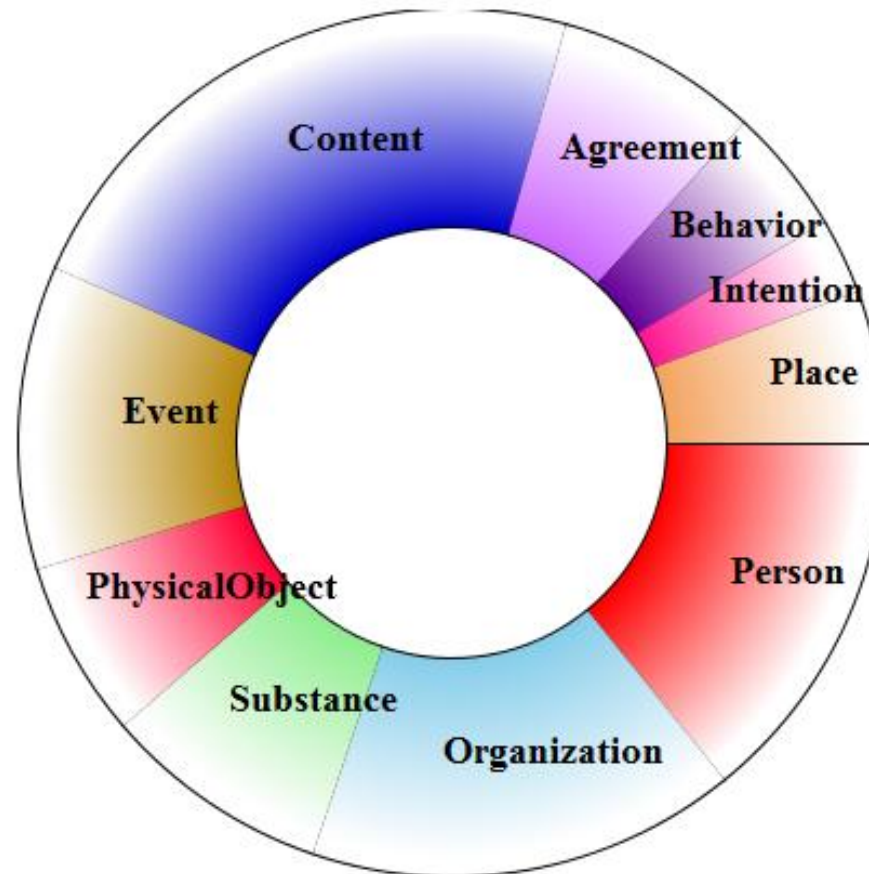
[Book about Horses]

connectedTo

(GenericAssociations)

[Message fromAgent Dave]

gist Primes



gist Primitives

- Magnitude
- UnitOfMeasure
- MonetaryAmount
- Currency
- Language
- ID
- Text
- FormattedText
- Language Specific Text
- Date/Datetime
- Time
- DateInterval
- GeoPoint/Origin (as special case)
- GeoSegment
- GeoRegion
- Address
- Audio
- Video
- Graphics (bit)
- Graphics (vector)
- Actuator
- Sensor
- Collection
- Position

Key SubOntologies of gist

(not yet on our web site as they are not as stable)

- Events – Historical and Planned Events, Physical Events, Tasks and Projects
- Durable Temporal Relationships – Reified properties that exist for a long time such as ownership, location, supervision, employment and membership
- Concepts – skos, measurable concepts and [controlled vocabularies]
- Measures – Relates measurement procedure with the act of measurement, the thing being measured and the four types of measurement (nominal, ordinal, ratio and interval)

Additional gist sub ontologies

- Process – Decomposes a lot of the key manufacturing processes
- Finance – a way of modeling events, transactions, obligations and allocations
- States – as in a “Finite State Machine”

Questions?