



# Exploring The Semantic Web

Answering slightly more than  
What Is It?

# Overview



- What is the Semantic Web
- The Semantic Web Stack
- Logic
- RDF
- OWL

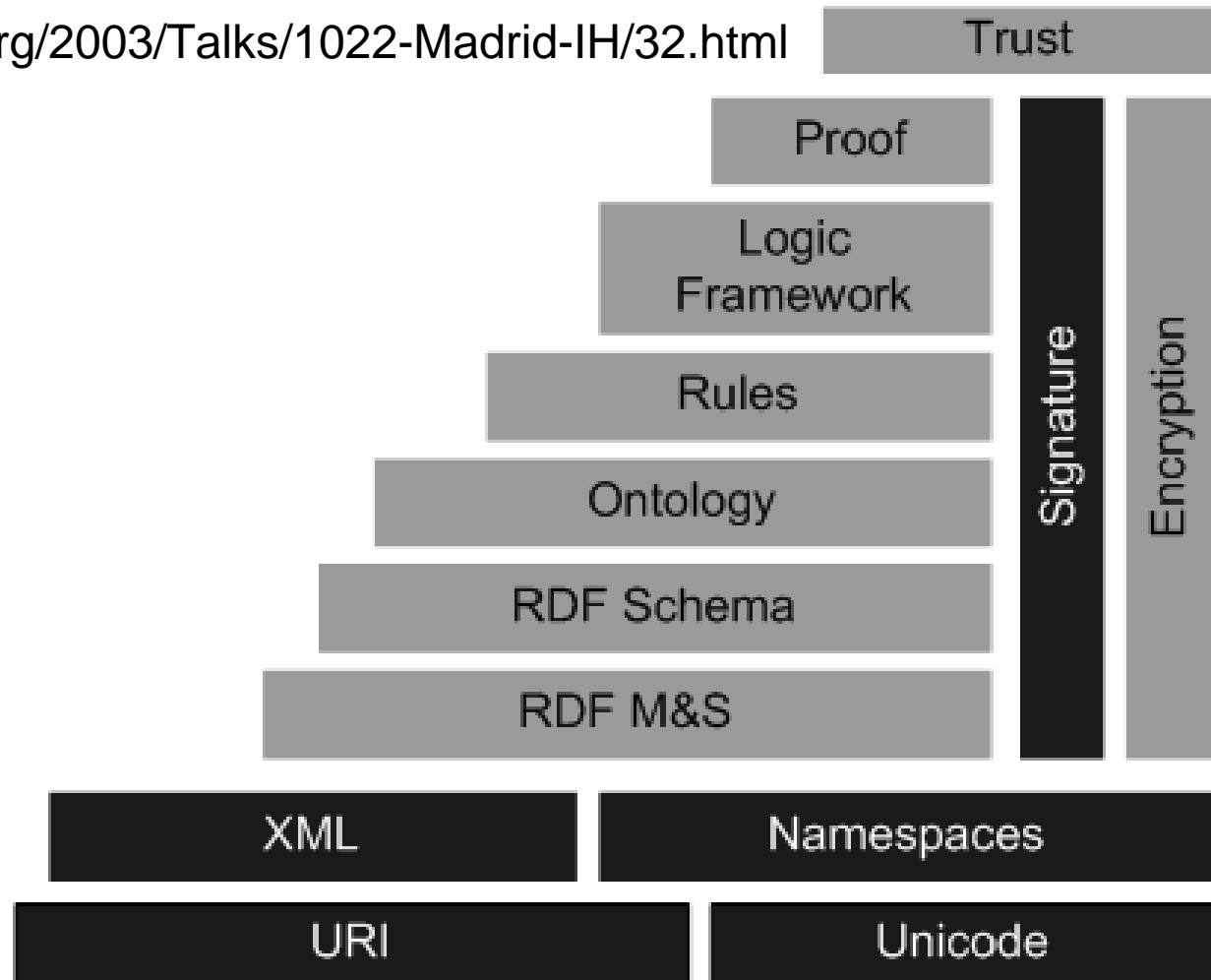
# So, What Is It?



- Seeking meaning lost behind data
- Associations between known facts

# The Semantic Web Stack

<http://www.w3.org/2003/Talks/1022-Madrid-IH/32.html>



# Semantic Web Stack: URI

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- URI

- <http://www.amazon.com/>
- <http://xmlns.com/foaf/0.1/Document/>

# Logic: Syllogisms



- Major premise Humans are mortal
- Minor premise Greeks are humans
- Conclusion Therefore Greeks are mortal

Peter created the document in question  
The document's author studied in London

# Resource Description Framework

A decorative graphic consisting of a horizontal dashed line and a vertical solid line intersecting at the right end of the horizontal line, positioned to the right of the title.

- Knowledge Representation Language
- Triples – in fact Syllogisms

# RDF Triples - Description

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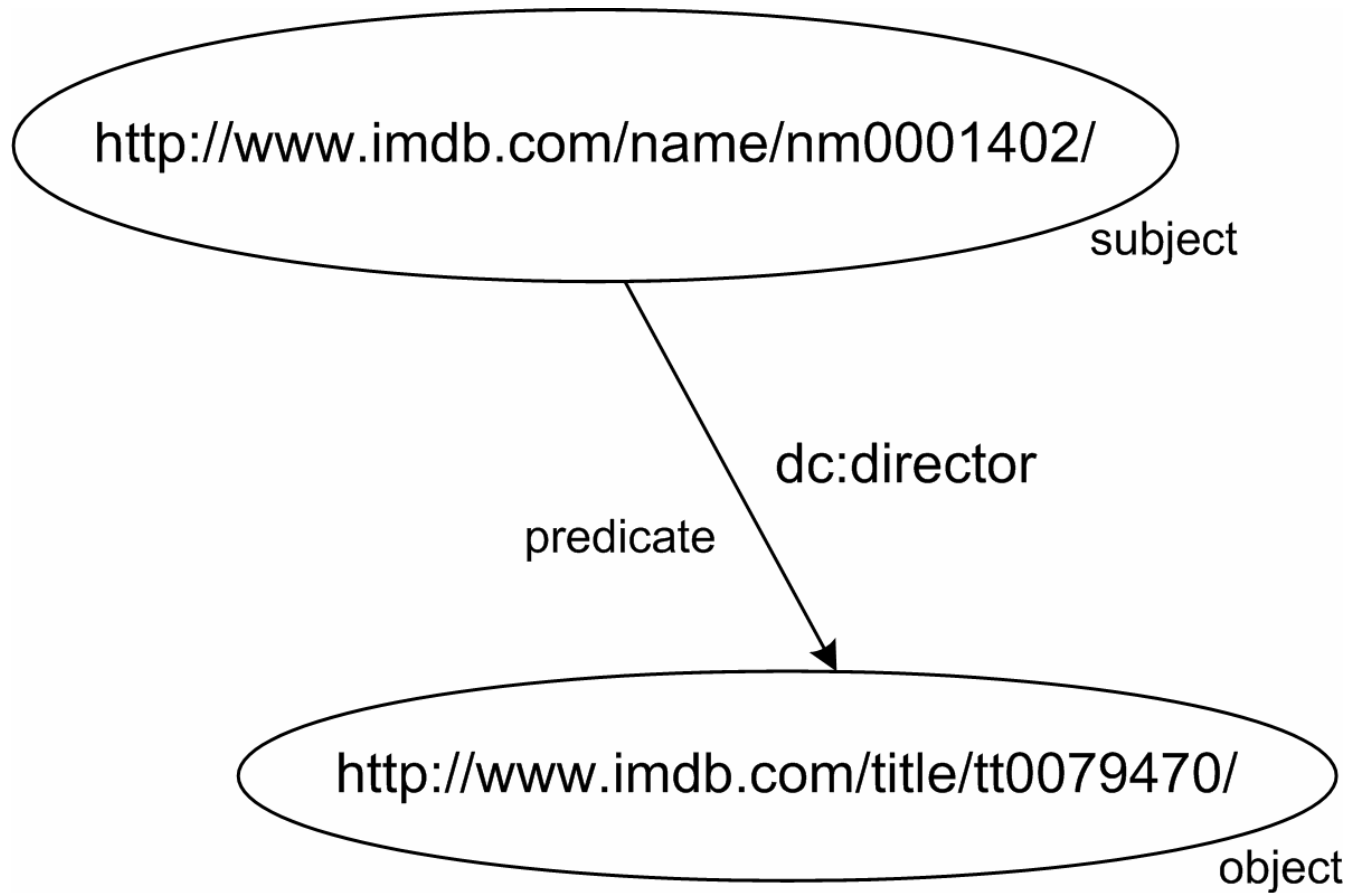
- Film 'Monty Python's Life Of Brian'
- Directed by 'Terry Jones'
- IMDB information online at:
  - Film: <http://imdb.com/title/tt0079470/>
  - Director: <http://imdb.com/name/nm0001402/>

# RDF Triples - Statements

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- (<http://www.imdb.com/title/tt0079470/>,  
rdf:type, imdb:film)
- (<http://www.imdb.com/title/tt0079470/>,  
dc:title, “Life of Brian”)

# RDF Triples - Diagram



# Expansion



- Use further RDF Triples to gain insight
- For instance the Director's name
- RDF has a long lead time

# RDF Example

```
<rss:slide rdf:about="http://grobbins.co.uk/semweb/talk/">
  <rdf:type
rdf:resource="http://xmlns.com/foaf/0.1/Document" />
  <rss:title>Exploring The Semantic Web</rss:title>
  <rss:subtitle>
    Answering slightly more than, What Is It?
  </rss:subtitle>
  <dc:creator>Graham Robbins</dc:creator>
  <dc:organisation>University of Brighton</dc:organisation>
  <dc:date>April 2005</dc:date>
  <rss:description>
    Slides presented as Component four of the
    Dissertation Module, University of Brighton, April 2005
  </rss:description>
  <rss:link>http://grobbins.co.uk/semweb/talk/</rss:link>
</rss:slide>
```

# Ontology – with a small o



- Conceptualisation of the real world
- Absent of ambiguity
- Representing essence behind knowledge

# Knowledge Representation



- **Opposing meaning**
  - John sang strangely
  - Strangely John sang
- **Ambiguous terminology**
  - String and Character
- **Concept terminology**
  - Person, Teenager then Adult / Client then User
  - Young Lady, Teenager

# Web Ontology Language

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- Describe, through definition, a domain
- Computerised reasoning
  - represents objects humans know
  - computers can learn about these objects
  - Then, apply reasoning

# A Little Knowledge...



- What is knowledge?
  - Improving understanding
  - Greater awareness of surroundings
- Industry Domain
  - Focused and reasoned
  - Correct or incorrect
  - Authoritative knowledge

... is a dangerous thing

- False knowledge presented as true
  - Review by Hammersmith and Fulham social services:

“... 48% of the department’s records, covering nearly 55,000 people, did not match the local NHS database. About 3% of the records, 1,445, disagreed on whether a person was alive or dead, and 1% on gender.”  
(Batty 2003)

# Realising the web



- Need for structure
- Changing work patterns
- Generating understanding for a Semantic Web

# Summary



- Not a new Internet
- An additional layer
- Information extended
- Well-defined meanings
- Machine-Processable
- “ubiquitous and devastatingly powerful”  
(Shirky 2003).

Questions?



## **Further Research**

Dissertation

<http://www.grobbins.co.uk/semweb/>

W3C

<http://www.w3.org/2001/sw/>