

# ISIT 315

## WEB MODELLING

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Consultation Times:

Monday          12.30-3.30

Wednesday      12.30-1.30

Other time by appointment only

# Emergency procedure

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# Subject description

- The subject explores current and future web modelling technologies and the design, development and management of web-based systems.
- The appropriate application environments, knowledge acquisition and representation schemes are examined along with their relationship to contemporary web-based systems.

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# Subject objectives

- On successful completion of this subject, students should be able to:
  - Have a clear understanding of the nature of web modelling techniques.
  - Understand and apply various web modelling techniques in developing contemporary web applications
  - Identify and select appropriate web modelling techniques to design or develop web-based systems.

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# Textbooks

- No prescribed textbooks
  - Use online web references
    - [www.w3.org](http://www.w3.org)

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# Subject outline

- Available in Moodle (eLearning)
- Refer to subject outline for
  - Lecture schedule

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# Assessments & due dates

ASSESSMENT ITEMS & FORMAT	% OF FINAL MARK	GROUP/ INDIVIDUAL	DUE DATE	SUBJECT LEARNING OUTCOMES
Assignment 1	5%	Individual	Week 4 in the computer lab	1, 2, 3
Assignment 2	10%	Individual	Week 6 in the computer lab	1, 2, 3
Assignment 2	10%	Individual	Week 9 in the computer lab	1, 2, 3
Assignment 4	15%	Group	Week 12 in the computer lab	1, 2, 3
Final Exam	60%	Individual	In the Final Exams Period	1, 2, 3

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# Important

- It is important that you attend each lecture as all topics on tutorial exercises will be taught in the lecture.
- The lecture notes only contain outline and brief explanation of the topics, a lot of the examples will be discussed in the class and these materials are not available in Powerpoint slides.
- You **MUST** attend both lectures & tutorials, attendance will be recorded in both lectures & tutorials



# Lecture 1

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# Introduction

- <http://www.youtube.com/watch?v=6gmP4nk0EOE>



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# Overview

- **World Wide Web (Web 1.0)**
  - Social Web (Web 2.0)
  - Semantic Web (Web 3.0)
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- A system of interlinked, hypertext documents that runs over the Internet.
  - Information represented in natural languages
    - Documents contain graphics, multimedia, layouts
    - Suitable for human
    - Web of documents connected by anchors
      - Uniform Resource Identifiers (URI) are used for documents and anchors
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# WWW

- Underlying the Web is a set of messages that developers of web infrastructure have agreed to treat in a standard manner.
  - ❑ When a web server speaking HTTP receives a GET request, it should send back data corresponding to the path portion of the request message. The semantics of these messages have been thoroughly defined by standards committees and documented in W3C recommendations.
  - ❑ This standardized infrastructure allows web application developers to operate behind a facade that separates them from the details of how application data is transmitted between machines, and focus on how their applications appear to users.
  - ❑ Web application developers no longer need to coordinate with other developers about message formats or how applications should behave in the presence of certain data.

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# WWW: Basic Ideas

- Hypertext/hyperlink
  - Resource Identifiers
    - Uniform Resource Identifiers (URIs) are short strings that identify resources in the web: documents, images, downloadable files, services, electronic mailboxes, and other resources.
  - Markup language
    - characters or codes embedded in text which indicate structure, semantic meaning, or advice on presentation
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## The current (syntactic / structural)



# Was the Web meant to be more?





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# Social Web – Web 2.0

- The Web where “ordinary” users can meet, collaborate, and share using **social software** applications on the Web (tagged content, social bookmarking, AJAX, etc.)
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# Features / principles of Web 2.0

- <http://www.oreillyn.net.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>



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# Semantic Web – Web 3.0

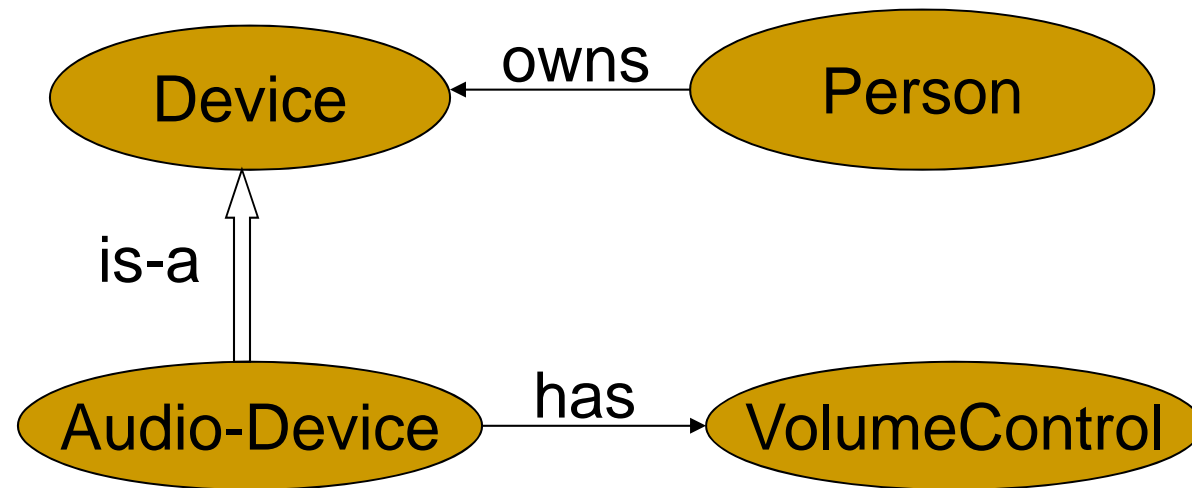
- Tim Berners-Lee has a vision of a Semantic Web which
    - has machine-understandable semantics of information, and
    - millions of small specialized reasoning services that provide support in automated task achievement based on the accessible information
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# Ontology

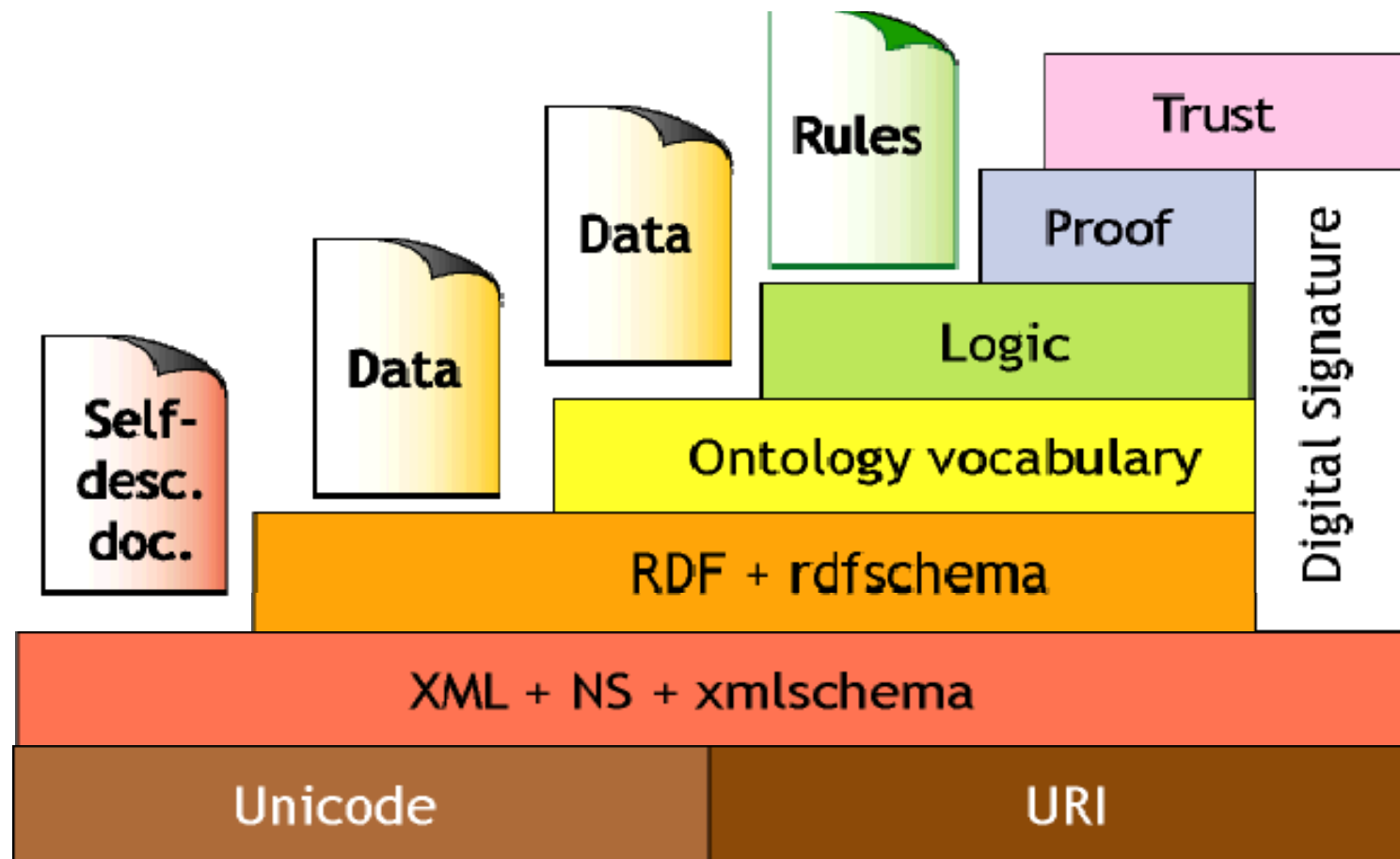
- The semantic Web is essentially based on ontologies
    - **ontologies** are **formal** and **consensual** specifications of conceptualizations...  
(e.g. by OO Models, or Entity Relationship model)
    - providing a **shared and common** understanding of a domain that can be communicated across people and application systems  
(not application specific, but consensual for a domain)
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# A very simple Ontology



Ontologies describe *concepts* and their *Relations*.

## Semantic Web - Language tower

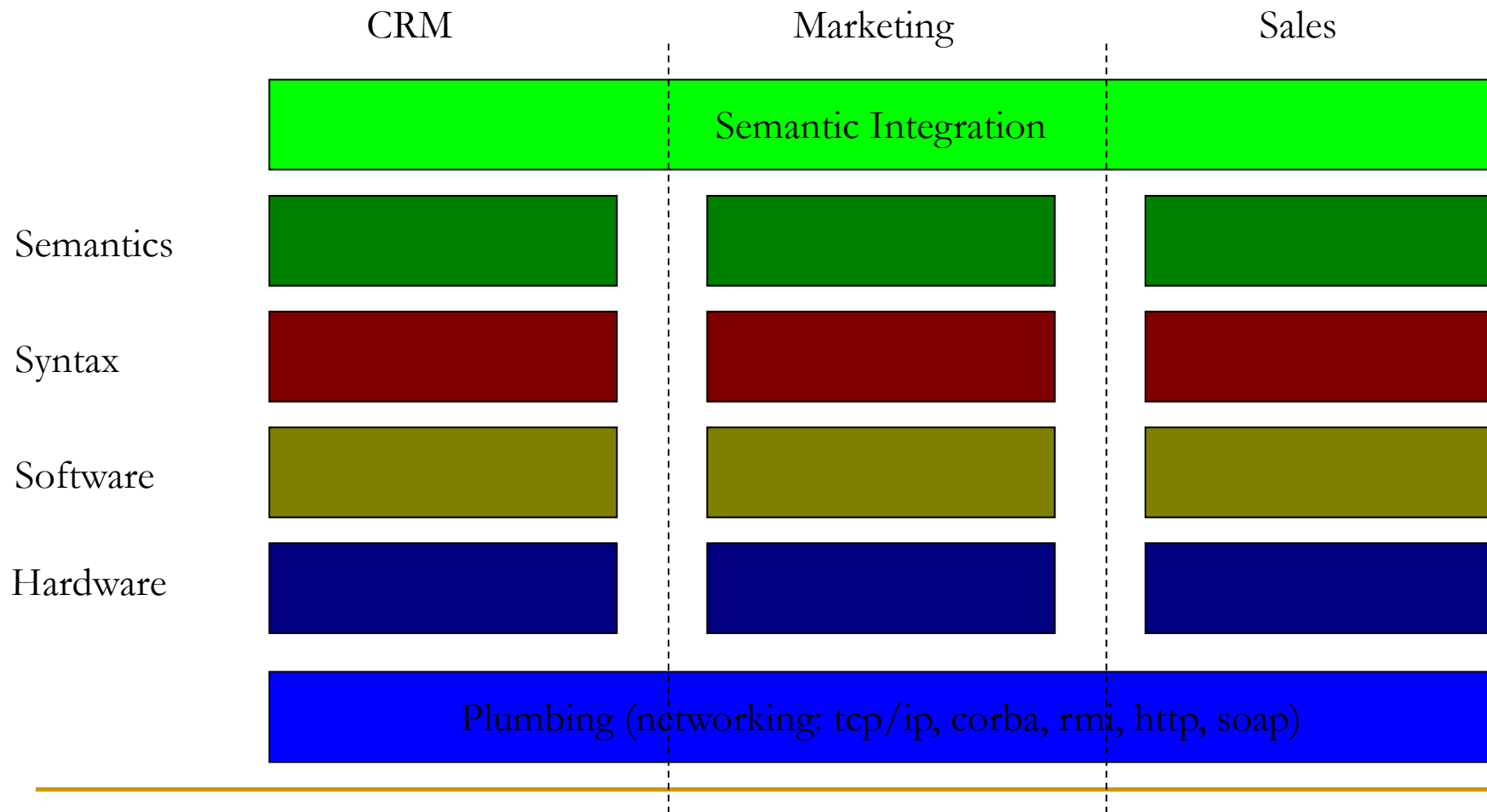


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# What is Semantic Web for?

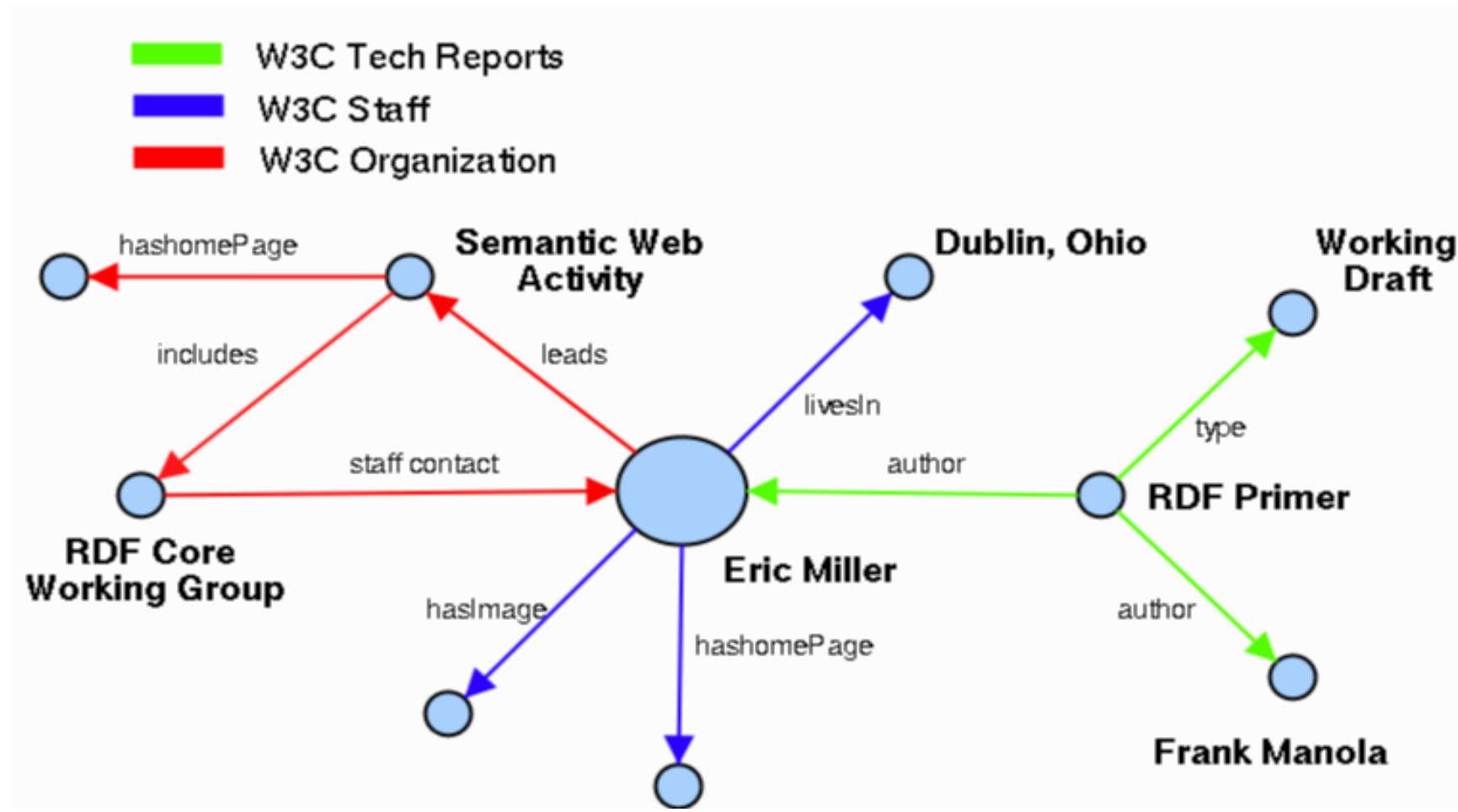
- Integrating - trying to solve the problem of data and service integration
  - Searching - Providing better communication between human and computers by adding machine-processable semantics to data.
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# Semantic Integration





# Semantic Searching



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## Useful link

- <https://www.w3.org/standards/semanticweb/ontology>