The mission of the Digital Enterprise Research Institute is to exploit semantics for people, organisations, and systems to collaborate and interoperate on a global scale.

Enabling networked knowledge.
Our Mission and Vision

The Mission of the Digital Enterprise Institute is “to exploit semantics for
  · People
  · Organisations
  · Systems
to collaborate and interoperate on a global scale”

DERI Galway’s vision is “to be recognised as being among the leading international web science research institutes interlinking technologies, information and people to advance business and benefit society”
Some Statistics

- Founded June 2003 with 1 fulltime member (green field)
- Status October 2010: about 130 members and growing
- Research Publications > 550
  - No 1 organisation in its core space
- Core Industrial partners: (MN) Cisco, Avaya, Ericsson, ..., (SMEs): STORM, Celtrak, Openlink
- Participates in 12 standardisation groups
- Total Research Grants: about 60 M Euro so far
A Network of Knowledge

- Interconnected
- Universal
- All encompassing

- assists humans, organisations and systems with problem solving
- enabling innovation and increased productivity
Two Key Ingredients

1. **RDF – Resource Description Framework**
   - Graph based Data – nodes and arcs
     - Identifies objects (URIs)
     - Interlink information (Relationships)

2. **Vocabularies (Ontologies)**
   - provide *shared understanding* of a domain
   - organise knowledge in a *machine-comprehensible* way
   - give an exploitable *meaning* to the *data*
Why Graphs and Ontologies?

Wikipedia.org

Geo:hasCapital

Cities:Dublin

Geo:hasLargestCity

84421km²

Geo:area

Geo:locatedOn

Geo:hasLargestCity

EU:RepublicOfIreland

Gov.ie

Gov:hasTaoiseach

Person:BrianCowen

Gov:hasDepartment

IE:DepartmentOfFinance
The Linked Open Data cloud
Over 200 open data sets with more than 25 billion facts, interlinked by 400 million typed links, doubling every 10 month!
Linked Data example

**bestbuy.com**
- provides data about product offers (price, delivery time, etc.)

**Apple Inc.**
- provides data about product features (CPU, RAM, HD, etc.)

**DBPedia**
- provides general data about products or companies

**UN environmental indicators**
- provides statistical data, such as carbon footprint, waste, energy usage, etc.

**Vocabularies used:**
- GoodRelations ... http://purl.org/goodrelations/v1#
- Dublin Core ... http://purl.org/dc/terms/
Networked Knowledge – Part 1

Collaboration and Communication Tools
- Blogs, Forums, OSNs, Wikis

Social Connectivity

World Wide Web
- URIs, HTML, HTTP

Syntax

Web Semantics
- RDFS, OWL, SPARQL, microformats

Semantic

Social Semantic Information Spaces
- Web, Desktop

Bringing the Web to its full potential
Semantic Reality

Physical World → Sensors → Semantic Reality

Life

People

World Wide Web

Virtual World

Social Semantic Information Spaces
Enterprise of the Future (Cisco, ….)

- Lightweight semantics and Linked Data on top of existing well-known applications
  - User-driven semantics
  - Combined with advanced browsing and querying interface
Getting to work: The DERI House

Application-Oriented Research Domains
- eBusiness & Financial Services
- Health Care & Life Sciences
- eLearning
- Telecommunications
- eGovernment
- eScience

Social Semantic Information Spaces
- Web 2.0 and collaborative systems
- Semantic Web
- Web Science
- Linked Data

Semantic Reality
- Sensor Networks
- RFID
- Mobile computing
- SOA

Enabling networked knowledge.
DERI – Research Approach

- **Research**
  - Go beyond state of the art

- **Industry Collaborations**
  - Joint projects (IDA, Enterprise Ireland, SFI) (e.g., Tagbuilder)
  - Patents and Licensing (e.g., Atom)

- **Spin-Outs**
  - Peracton, Sindice.com (in preparation),...

- **Open Source Prototypes (selected)**
  - Social Semantic Information Spaces (SIOC)
  - Social Semantic Desktop (part of Linux)
  - Global Sensor Networks
  - Drupal 7

- **Standards**
  - W3C, OASIS
  - Collaborative Architectures, Sensor Data
DERI – Research Approach: Standardisation Activities

- **Social Web and Collaboration**
  - W3C: Social Web Incubator (Privacy, Trust, etc.)
  - OASIS: Integrated Collaboration Object Model for Interoperable Collaboration Services (ICOM)

- **Web Infrastructure**
  - W3C: RDFa and Semantic Web Deployment (SKOS, etc.)
  - W3C: Rule Interchange Format, SPARQL
  - W3C: Relational DB to RDF mapping (RDB2RDF)
  - W3C: Multimedia (Media Fragments & Media Annotation)

- **Sensor and Devices**
  - OASIS: Semantic Execution Environment
  - W3C: Semantic Sensor Network

- **Application Domains**
  - W3C: Health Care and Life Sciences
  - W3C: eGovernment
A global task …

- many trends point into the same direction
- supported by many individual efforts
- collaboration across domains / disciplines is essential
- Tremendous opportunity for Ireland