Semantic Technology Enabled Information Revolution

Deborah L. McGuinness
Tetherless World Senior Constellation Chair
Professor of Computer and Cognitive Sciences
Rensselaer Polytechnic Institute (RPI)
dlm @ rpi . edu

July 16, 2012
One in three smartphone owners use apps before they get out of bed (Ericsson ConsumerLab, 2011)

Landscape: Information 24x7

- Smart devices abound
- Ubiquitous connectivity
- Open Data explosion
  - linked data, social web, ...
- Instrumented self; instrumented world
  - Fitbit, Zeo, energy-smart homes, ... supportive
- New publication models
  - Provenance explosion (e.g., GCRP ->),
  - Connections to datasets, interactive annotated figures,
  - Free access to scientific research (British in 2 yr)
- Distributed, pervasive, entertainment
  - E.g., movies, books, social collaborative entertainment...

- Need smart assistants that recommend and explain
Semantic Technologies and Next Gen Information

- Context-aware, Personalized Mobile Assistants
  - e.g., semantic sommelier, semantic concierge, Siri, now the microsoft assistant, ...
- Semantic eEverything
  - Semantic environmental monitoring
  - Virtual Observatories
  - Citizen Science
  - Linked Data Explosion
- Next Gen Semantic Enablers – creating actionable services
  - Explanation, e.g., Inference Web
  - Provenance-aware X
  - Data Explorers / Content-aware visualizers
  - Privacy Assistants
  - Conversion / integration tools
  - Distributed Collaborative ontology environments
  - Technical bridges / work arounds...
    - Open / closed world issues, sameasIssues, ...
Cognitive Assistants: Observes, Organizes, Learns, Recognizes, Anticipates, Alerts, Protects

Context/ Situation-aware / Personalized Advocates
Advanced Directive Assistant
Information Broker
Research Assistant
Eco-system aware – e.g., resource manager support evolution from SemantAqua, medical eco-system – support for chronic care or end of life
Forecasting

Ultimately allowing people to find things more quickly and accurately returning answers in actionable-transparent, interactive and probable form
Questions / Suggestions?

The elderly of tomorrow or the x-challenged of tomorrow are us.... It just depends on how far out you look.

Let's create the semantic, actionable eco-systems to support tomorrow

Deborah McGuinness  dlm @ cs. rpi . edu
Semantic assistants of the future allow for more leisure and remote monitoring / action

New forms of web assistants/agents that act on a human’s behalf requiring less from humans and their communication devices...
Chaired SPARQL WG (UMCP)
Edited main OWL docs (Stanford)
OWL 2.0 committee
Edited OWL profiles (OWL RL)

Chaired OWL WG (UMCP)

SPARQL to Xquery translator

RDFS materialization (Billion triple winner)

Data Cube Explorer, Visualization APIs
S2S
Govt Data

Inference Web IW Trust, Air + Trust

N3Logic

Semantic eScience

RIF WG
AIR accountability tool

Govt metadata search
Linked Open Govt Data

Transparent Accountable Datamining Initiative (TAMI)