



Emerging Technologies

# Semantic Web in the Oil & Gas Industry

**Roger Cutler, Chevron Information Technology**

**Lightning Talk for W3C Technical Plenary**

**4 November 2009**

# Key Business Drivers: Information is Critical



Explore  
Develop



Produce



Ship



Refine  
Blend

- Capital-intensive with long-lived assets

- Global



Store  
Pipe



Distribute

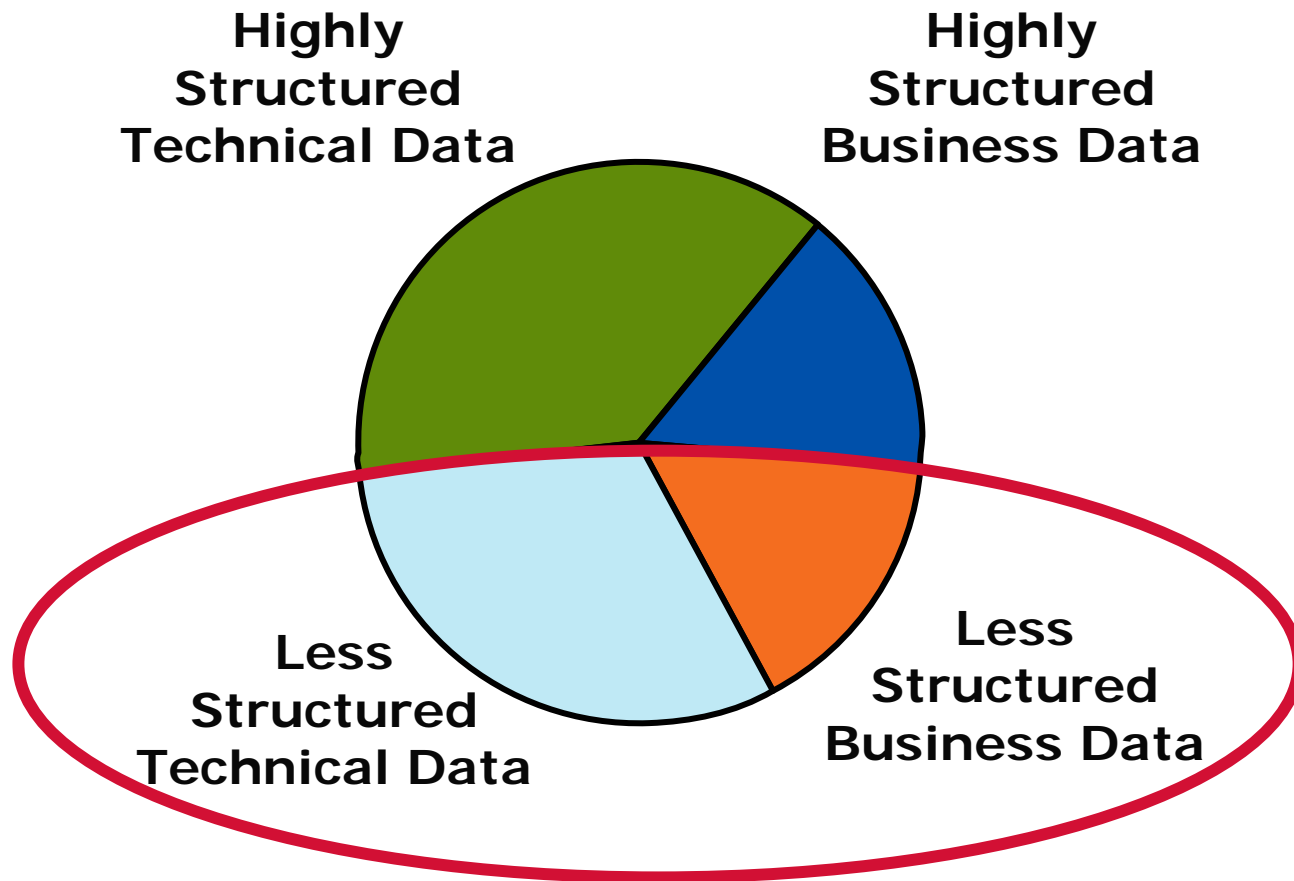


Market



- Information-intensive with wide time-scales
- Work takes place across geographies

# Key Business Drivers: Petabytes of Storage

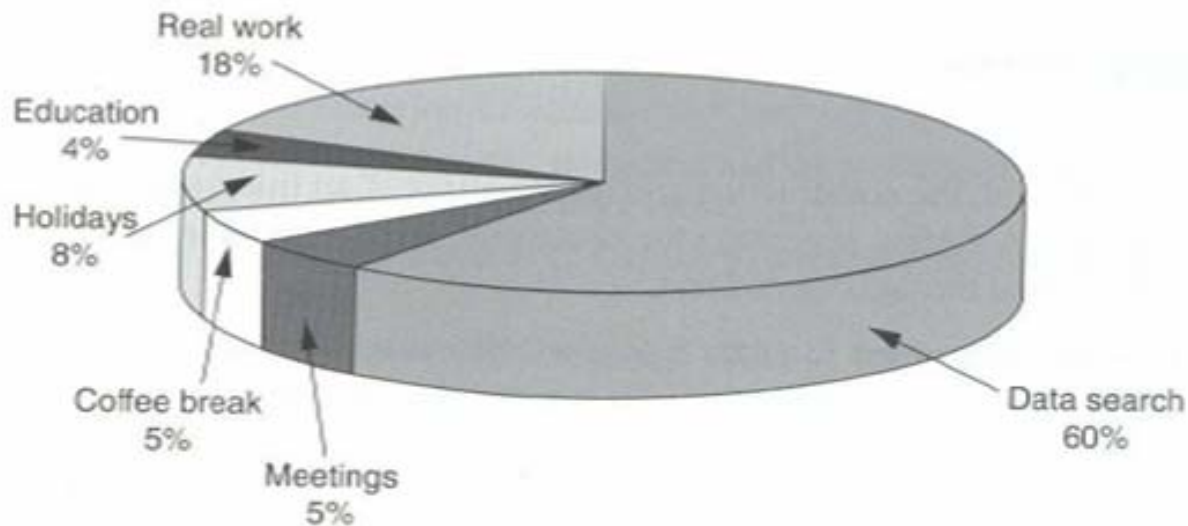


- Data volumes are doubling every 6-12 months (50 HIS clients survey, Berkeley research)
- Growing impact of information volumes on employee productivity
- Growing external compliance and risk elements associated with information

# Key Business Drivers: Efficient Access to Data and Information



- Typical (Petroleum) engineer spends > 60% of time looking for data (SPE 39728)
  - Example:
    - ▶ Reservoir engineer: creates and publishes hundreds (or thousands) of models
    - ▶ Production engineer: "show me the production estimate for Region A in the best *history matched* reservoir model"



# Some Semantic Web technologies activities in Oil & Gas Industry



- Integrated Asset Management
- Metadata management of technical earth sciences data
- Information exchange and integration through international standards and open applications
- Information management in drilling and production and integrated operations
- Knowledge management and experience transfer
- Ontology-based search of earth sciences documents
- Decision support in Enhanced Oil Recovery

# Energy Industry Value Proposition

- Metadata store for iField integrations
  - Chevron IAM, IBM Reference Semantic Model
  - Enables organic growth
- Enterprise scale information management
  - Enables “stitching together” different domains
  - Systematize search refinement
- Knowledge Management
  - Enables capture of “meaning”
- Automated Logical Inference
  - Fill in incomplete information
  - Infer relationships
  - Complex, “intelligent” queries

## W3C O&G Semantic Web Workshop

- Hosted by Chevron, Dec 2008
- Answered Some Questions:
  - Are there real opportunities in the Oil & Gas industry for Semantic Web Technology? [Answer: Yes]
  - Are there opportunities for cooperation? [Answer: Yes]
  - Is there a demonstrated interest? [Answer: Yes]
  - What are the next steps? Who drives? [No Answer]

# Oil & Gas Industry Opportunities

- SW Activity in Oil & Gas Industry
  - Mostly experimental – some deployment
  - Largely uncoordinated
- W3C Interest group?
  - Analogous to HCLS SW IG
  - Energistics (O&G standards consortium) has joined W3C
  - 3 yr membership commitment (>\$200K) insuperable obstacle for most oil companies