SPE Distinguished Lecturer Program

Primary funding is provided by

The SPE Foundation through member donations and a contribution from Offshore Europe

The Society is grateful to those companies that allow their professionals to serve as lecturers

Additional support provided by AIME

Society of Petroleum Engineers
Distinguished Lecturer Program
www.spe.org/dl
This year marks the 50th anniversary of the SPE Distinguished Lecturer program. Please visit our site to learn more about this amazing program.

www.spe.org/go/DL50
Putting the Focus on Data
For Better Decisions, Higher Productivity and Greater Insight

Jim Crompton
Chevron Global Upstream

Society of Petroleum Engineers
Distinguished Lecturer Program
www.spe.org/dl
IM Moment: Lake Peigneur

- **History**: The lake was a 3 meter deep freshwater lake, popular with sportsmen until an unusual man-made disaster on November 20, 1980 changed everything.

- **Where**: located in Louisiana, 9 miles west of New Iberia, near the northernmost tip of Vermillion Bay

- **What Happened**: The Diamond Crystal Salt Co. operated the Jefferson Island salt mine under the lake. A Texaco rig drilled from the lake but a miscalculation of the drill path, the 14 inch well bore entered the third level of the mine, starting a chain of events which turned the freshwater lake into a salt water lake with a deep hole. The lake drained into the hole, expanding the size of the hole filling the caverns left by the removal of the salt. The resulting whirlpool sucked in the drilling rig, eleven barges and 65 acres of the surrounding terrain. So much water drained into the caverns that the flow of the Delcambre Canal was reversed making the canal a temporary inlet. The backflow created the tallest waterfall ever in the state of Louisiana at 50m as the lake refilled with salt water from Vermillion Bay. Air escaping from the mine created 120 m high geysers up through the mineshafts.

- There were no injuries and no human lives lost. All 55 employees of the mine were able to escape as well as the drilling crew and one local fisherman who was able to drive his small boat to shore before it was caught in the whirlpool.
Outline

• Situation Overview
  • Challenges/Opportunities

• Information Management
  • Information Pipeline, Architecture
  • Processes and Frameworks

• The Return to Sanity

• Why? and Why Now?

• Conclusion/ Key Takeaways
The Opportunity

- **Time**: Need to incorporate relevant time data
- **Productivity**: Significant time is spent looking for data
- **Trust**: Lack of consistent definitions
- **Impact**: Need to share data with others
- **Perspective**: Broad look at asset performance (wells, reservoir & facilities)
Business Challenges

30 to 60% of time

Looking for data

Verifying data accuracy

Formatting data for use
Technical Challenges

- Information explosion
- Process failures
- Hidden solutions
- Many masters of data
- Ongoing support costs
- Communication
How did we end up here?

• Downsizing and merger activity
• Consequences of ‘Best of Breed’ technology
• Powerful desktop tools
• Legacy solutions never die, until the user leaves
• Data explosion
• Absence of a widely deployed standards
We Need to See the Bigger Picture

A City Plan is to Enterprise Architecture…

• Zoning
• Utilities
• Roads
• Services

As a Blueprint is to Solution Architecture

• Foundation
• Framing, sheeting
• Plumbing, Wiring
The Information Pipeline

**Collect Data**
- Real time data collection
- Fully Instrumented Facilities

**Gather & Analyze**
- Data Access, formatting, quality control
- Lack of consistent master data
- Lack of information exchange standards

**Make Decisions**

**Oil Field Automation**
- Real time data collection
- Fully Instrumented Facilities

**Information Overload**
- More detailed models (earth, reservoir, facilities, economic, full asset simulation) for simulation, modeling & visualization

**Capability for Modeling & Simulations**
Information Architecture

- Information has an identified System of Record
- The information model supports sharing and integration
- Adequate data quality
- Information delivered through Service Oriented Architecture
How Information Flows
Return to Sanity

• Start with key decisions, understand the work process
• Establish information quality assurance and standard systems of record
• Establish data governance
• Use data integration and information visualization framework
Process and Framework

• Planning
• Quality improvements
• Identify opportunities to increase value
• Establishing standards for quality, ownership, and exchange
• Demonstrate the information value chain for KEY information
Data Governance

Requires organization, process and technology changes that span both IT and business in the management of data.
Information Quality Management

Data governance and stewardship model
- Clear delineation of responsibility for producers and consumers (people, app)
- Documented processes and cross-functional (line of business) authority

Data quality controls framework
- Can’t govern what you can’t see – need measures
- Measures are consistent, quantitative, and not arbitrary

Metadata repository
- Control measures properly stored and easily accessible
- Analysis is multi-dimensional

Agent of Change
- Breaks down “data fortresses”
- Removes data as an impediment to change and innovation
- Independent of any specific software application
# The Prize: Increasing the Value of Information

| Making data more available for decision-making | • Making data easier to find  
• Providing better analysis tools  
• Integrating data into standard workflows |
| Improved data quality | • Clearly identified systems of record  
• Improved accuracy, increased trust |
| Integration / Interoperability | • Data is stored once and re-used  
• Minimize re-entry of data |
| Effective operations of data management systems | • Quickly respond to customer requests  
• User-friendly systems |
Why?

Being good at information management may be one of last competitive advantages left

- Recognizing an exploration opportunity
- Increasing recovery from existing reservoirs
- Meeting requirements from regulatory agencies and partners
- Making the best decisions requires good data
Why Now?
They are Waiting for an Answer

IT Consumerization
- I love Wikipedia. I want something similar here where I can find reliable information quickly.

Millennials Entering the Workforce
- As a new employee, I need better onboarding tools to quickly get up to speed.

IT Consumerization
- As a manager, I worry that my employees use tools outside the company to discuss internal business.

Global Workforce
- I want a system that will enable me to better communicate with my project team and stakeholders.

Information Overload
- I am overwhelmed by email. We could use a better way to communicate.

Crew Change
- I have 35 years of experience. Why don’t we create a venue where I can share my knowledge and contribute after I retire?
Takeaways

• Our ability to collect data is growing, but our capability to use this data is constrained

• Must begin by understanding your business processes and key decisions

• Apply the principles of information architecture
Conclusion

If we can survive the data deluge, we can get back to business.
Join SPE!
www.spe.org/join