Integration Strategies for the Petroleum Industry

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July 2003
Key Issues Facing the E&P Industry

• Managing, integrating and making sense of large volumes of data
• Selecting and integrating best-in-class applications
• Preserving and reusing knowledge
Where we are today!

- Global, warehouse to desktop, information lifecycle data/information management & services.

- Real-time analysis, decision support and unique knowledge capture workflows.

- Collaborative intuitive environments for control and decision making.
The technology status

- Business Back Office
  - Smart Field
    - Enablers
      - Living Business Plan
        - Risk to value
      - Dynamic Operations
        - Drilling to production
      - Living Model
        - Static to dynamic
  - InfoStream
    - Optimizing information flows

- DecisionPoint
  - Optimizing role-based workflows

- External Integration
  - Partners
  - Government
  - Investors
  - Recruitment

- System Integration
Framing the data problem...
E&P Information Management: A Complex System...
The Integration Spectrum
Balancing Cost & Deriving Value

Bring value to the User as you add value to the Corporation
Balance Capital Expenditure with Operating Expense

Aggregate
Federate/Abstract
Transfer
Consolidate

Quality and Context Management underpins the solution
The Solution…
Key elements to consider
... when looking for a solution

People establish processes, use technology to access data, extract information, derive best practices, convert all into decisions, derive value, and add to the knowledge base.
Key technical directions

- Technology blueprint & Architecture refresh to build open foundations for flexible integration of strategic workflows and optimization of technical computing environment
- New Interpretation paradigm: Shared Earth Model centric interpretation with self-learning reservoir model, harnessing real-time measurements and reference information
- Ubiquitous access to knowledge and scalable collaborative visualization to foster decision making within distributed organizations
Technical Blueprint for computing architecture

Enterprise infrastructure

Web
- ASP-DSP Solution
- Web Portal solutions

Desktop
- Unix/Linux Desktop
- Desktop application framework

Server
- Compute server
- Information server
Data lifecycle

Optimizing data flow and improving E&P workflow processes

- Exploration Stream
- Drilling Stream
- Operations Stream
- Production Stream
- Your Business Stream
Data lifecycle

Common Attributes
- Open & Modular
- Secure & Entitled
- GIS & Web enabled

Exploration Stream
Drilling Stream
Operations Stream
Production Stream
Your Business Stream
Contents in context

Delivering Decision-Critical Information...

Optimizing data flow and improving E&P workflow processes

Your Business Stream
Production Stream
Operations Stream
Drilling Stream
Exploration Stream

Optimizing Role-based Workflows
The Information Server Architectural Framework

ESRI
ArcIMS Server

DELTA Technology J2EE Framework

Controller: Tasks, actions and Processes Manager

Data Transformation Services: Entitlement, Conversions, Data transfers

Data Access services

Meta Data Model

Bulk Data

Attribute Data

Generic Services
User management
Authentication
SSO
Messaging & events
Etc….

Data Manager, ProSource

Data Transfer, DTM

Desktop
.NET, Linux,

DecisionPoint Portal

Portal

Web Application

Desktop
.NET, Linux,

DecisionPoint data access

Web Application

Shape files

SDE
GeoFrame
OpenWorks
Finder
other

LDAP
AD
Oracle
Examples...
National Data Centers
The Global Picture

Schlumberger’s holds ~ 80-90% of the market share in National Data Centers – *internal NDC survey*

“We think [Schlumberger’s] strengths lie in the following areas: wireline logging, seismic … and related data-management disciplines.” – *MorganStanley Equity Research, April 2003*

“In the field of national data repositories .. [the next providers’] market share is around 15%” – *Andrew McBarnet, OilOnline, September 2002*

Description:
- State data Assets and Standards
- Open to multi-client
- Secure Entitled Access
Pioneer Natural Resources - US

**Need:** Speed up information access and streamline work processes to prevent errors and increase efficiency

**Answer:** Implement company portal with KPI's and alerts into which production data is fed real time

“Instead of a few people becoming experts on a system and providing data to others, the portal did all the work freeing our staff for higher value analysis.” – C. Tessier, Director

“spend their time improving our field results.” – D. Bankhead, Operations
Integration customer example

Statoil – Stavanger, Norway

- **Need**: easier open access to data from multiple repositories, increased data quality
- **Answer**: Implement InfoStream combination of technology, processes and services
- easy data accessibility via single user interface
- Increased
  - data reliability/quality
  - data availability

“more interpretation data will be reused…will result in better quality decisions and a more efficient organization. We are expecting to harvest great value and significant improvements.” - K. Tonstad, Statoil IT Consultant
Sharing knowledge sharing understanding
Customer example

ConocoPhilips – Stavanger, Norway

- **Need:** avoid overburden pressure problems and maximize value of wells from platform slots
- **Answer:** Optimized well design and collaborative planning using Inside Reality
- “The value of re-drilling the B17 well is having production six months earlier than anticipated, worth $18 million. The use of Inside Reality was a vital component in the decision making process.”
Remote Collaboration

- Developed in conjunction with Norsk Hydro
- Solution runs locally at each site
- Data stored locally at each site
- Database synchronization utility
- Only system commands are transmitted during runtime
- Low network bandwidth requirement, 64kbit/sec
- Avatars increase virtual presence
Thank you!

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