Web Services in the Oil Industry

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Web Services in the Oil Industry

Or …

Transforming
Oil & Gas
Exploration & Production
Technical Information Exchange
Across the Internet

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Presentation Outline

- **Context –**
  - ◆ **Oil Industry Data Exchange: A History**
  - ◆ **POSC in the Oil Industry**
- **Results –**
  - ◆ **Web Services Seminars**
  - ◆ **Web Services Pilot Implementation**
- **Plans -**
  - ◆ **Industry Problems WS May Address**
  - ◆ **Challenges – Problems WS May Create**
  - ◆ **POSC Web Reference Services**

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Oil Industry Data Exchange

- This is one of the most collaborative and interdependent industries
  - Many core functions outsourced for decades.
  - Many other core functions have been internally sourced to central expertise groups.
- Result:
  - Early development of data exchange standards
  - But,
    - using specialized, often non-portable, formats,
    - communications using private networks.

It's all about *context* and *vocabulary*!

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POSC in the Oil Industry

- Formed by five major oil companies in 1990
- To set standards for integration through data stores
- Commercially neutral
- Specifications first published in 1993
- Distributed object specs published in 1999
- First XML spec published in 2000
- Focus on deployment and integration

POSC in the Oil Industry

- Roles throughout technology / development cycles:
  - **Early**
    - help stimulate interest
    - brings parties together
  - **Middle of a cycle**
    - develop => implement => deploy => value
    - coordinate, facilitate, encourage, …
  - **Late**
    - supports standards
   - take custody of ad-hoc specifications
    - smooth evolution

Web Services Pilot & Seminars

- In mid-2001, Shell, the UK Department of Trade and Industry, IBM, and POSC developed a Web Services pilot implementation

IBM. dti 🐚 POSC.

- A 3 server plus registry scenario:
  - ◆ A regulatory agency employing a just-in-time data acquisition philosophy seeks specific types of data from oil companies.
  - ◆ Two oil companies pre-positioned data accessible via registered web services.
  - ◆ Regulator is referred to the oil company services by the registry and receives the requested data. Transmission logged and acknowledged. Voila!

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**Oil&Gas Industry registers
their shared applications**

dti **UK**

e-government

**requesting data from
oil&gas companies**
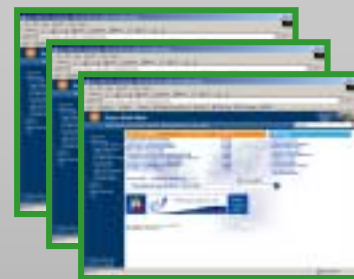
**① Request data & reports
via GUI**
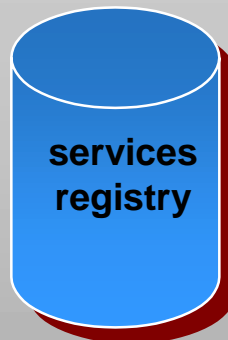
**services
registry**

Enquiry
about
available
reports

Register
services

SHELL
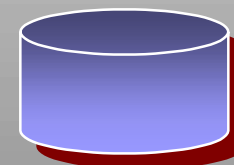
Operating Units
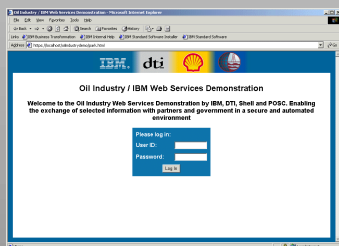
**② Request data & reports
through
automated processes**
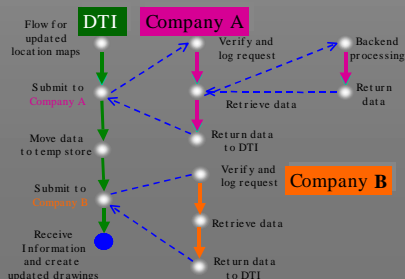
Secure exchange
over the Internet

Company Data
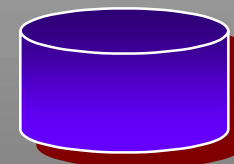
**Well header
data**

**Well
production
data**

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Flow for updated location maps

DTI

Company A

Verify and log request

Backend processing

Submit to Company A

Retrieve data

Return data

Move data to temp store

Return data to DTI

2

Submit to Company B

Verify and log request

Company B

Receive Information and create updated drawings

Retrieve data

Return data to DTI

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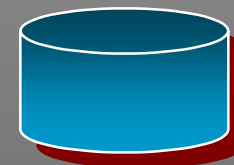
Web Services Seminars

- The four partners organized two by-invitation seminars to present the notion that Web Services are both relevant and ready for use to industry leaders.

- October in London / November in Houston

- Over 40 participants in each

- Agenda:
  - Presentations from each partner
  - Demonstration of the pilot
  - Discussion groups

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Goals of the Seminars

- **Explain Web Services**
  - ◆ Technology Development
  - ◆ Standards Development
  - ◆ Business Applicability
- **Demonstrate an actual implementation**
- **Have the participants explore the potentials**
  - ◆ Identify suitable business processes
  - ◆ Identify challenges: technology and/or cultural
- **See if one or more consensus paths forward emerge → follow-up with action**

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Web Services Seminars

What did the four pilot implementation partners have to say?

Here is a sample – the UK DTI and POSC

Regulator: UK's DTI

- Web Services are compatible with the government directive to Web enable all government services in a very short period of time
- Key information flows from oil companies to DTI
    - Requesting permission to …
    - Reporting results from …
    - Receive answers to requests from …
- Key information flows from DTI to others
    - Pass on information received to …
    - Pass on requests received to …
    - Distribute answers received to …

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The UK DTI's Information Strategy

Just in time v *Just in case*

- Receive and store information used regularly only for necessary business functions.

- Information needed occasionally should be stored / retained elsewhere by third parties, e.g., accessible national data repositories

- Define appropriate standards for storage and exchange of Information (XML schemas), e. g. for production volume reporting

- Audit companies to ensure that they are satisfying their data retention obligations.

Industry Standards: POSC

- Facilitate collaborative development on a non-commercial basis
- Facilitate development of standards for terminology and context
- Develop and/or manage XML standards for Web services
  - Leverage what already exists
  - Develop those which are needed
- *"Start at the edges and work in from there"*
- Be guided by requests from member organizations

Web Services Seminars

What did we say about Web Services?

Here is a sample …

Web Services: A New Web Model

- Until now, the Web has provided for browsing of linked documents, manually-initiated purchases and transactions, and downloading files -- all of this is manual, by way of a browser

- Web Services is a new model for using the Web
  - transactions initiated automatically by a program, not necessarily using a browser
  - can be described, published, discovered, and invoked dynamically in a distributed computing environment
  - new ways of using the web: intelligent agents, marketplaces, auctions
    - all built on XML and other internet standards!

- The content-oriented web is now complemented by a services-oriented web.

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Pilot Demo

Oil Industry / IBM Web Services Demonstration

Welcome to the Oil Industry Web Services Demonstration by IBM, DTI, Shell and POSC. Enabling the exchange of selected information with partners and government in a secure and automated environment

Please log in:

User ID: as69r

Password: ********

Log In

Oil Industry / IBM Web Services Demonstration

Oil Companies Found

- **Norway Oil**
- **Shell**

Extract all Company data

Oil Industry / IBM Web Services Demonstration

Company Information for Norway Oil

CEO Name:	Jennifer Brown
CEO Telephone Number:	+44 (0) 2345 67890
CEO E-mail Address:	jenniferbrown@bp.com
CEO Secretary Name:	Malcolm Ledder
CEO Secretary Telephone Number:	+44 (0) 2345 12345

Oil Industry / IBM Web Services Demonstration

Well Completion Information for Well2 from Shell

Spud Date:	21/7/01
Completion Date:	6/5/01
Well Status:	Production

Tops:

Depth	Strat Code
4	404
8	911
12	808
16	666
32	127

Casing:

Depth	Size
28.9	30
325.5	17.5
1448.0	12.25
2861.1	8.5
3207.1	7

[Get chart for this well]

Oil Industry / IBM Web Services Demonstration

Chart for Well ID Well2 from Shell

rface — 28.9

400 — 325.5

800 —

1200 —

1600 — 1448.0

2000 —

2400 —

2800 — 2861.1

3200 — 3207.1

Oil Industry / IBM Web Services Demonstration

Well ID

Well3 **Well4** **Well1**

Surface

25.6	20.5	24.4
245.9		
633.4	480.3	486.7

Shell

Norw Oil

3011.2

3122.5

3208.7
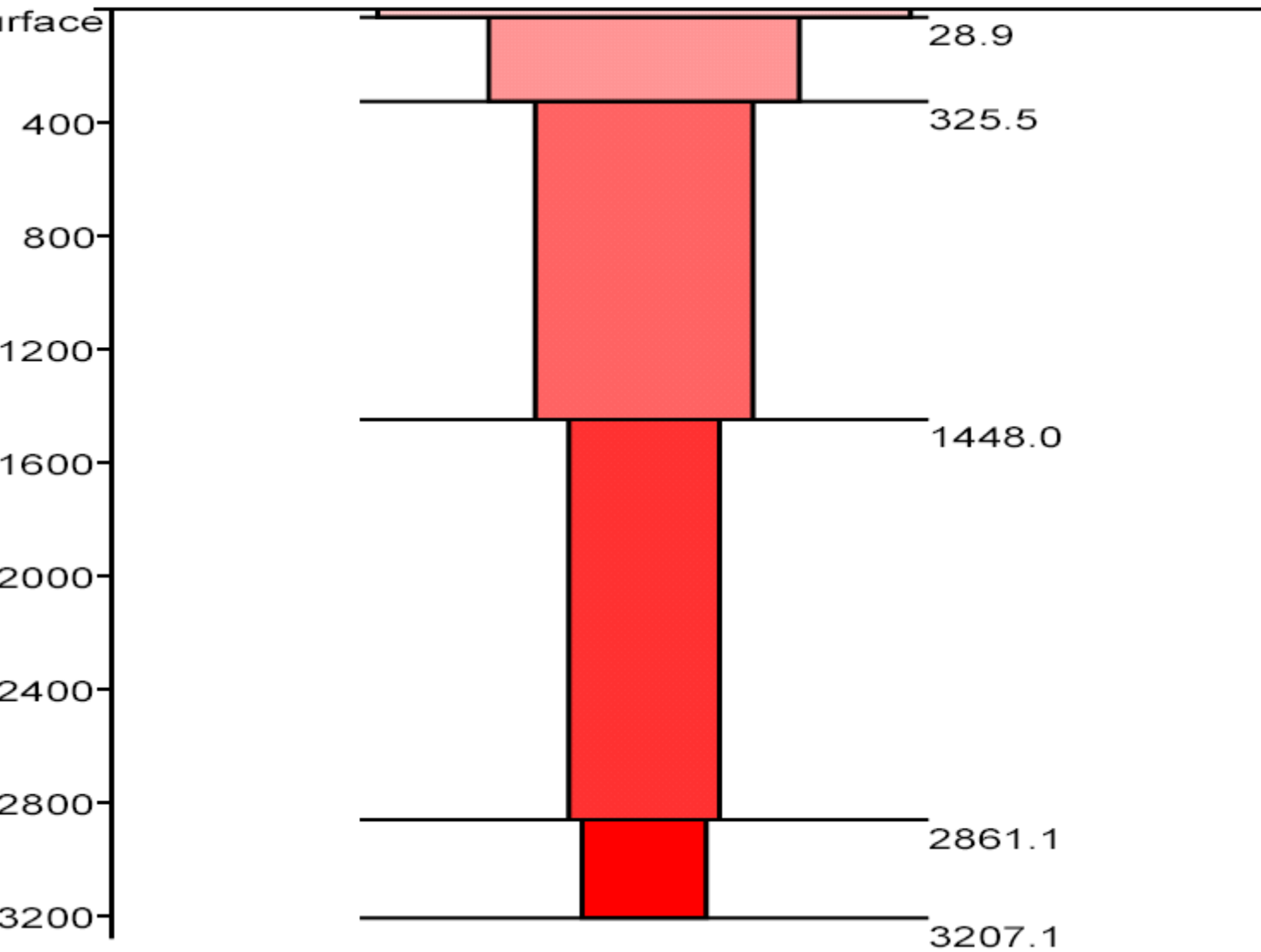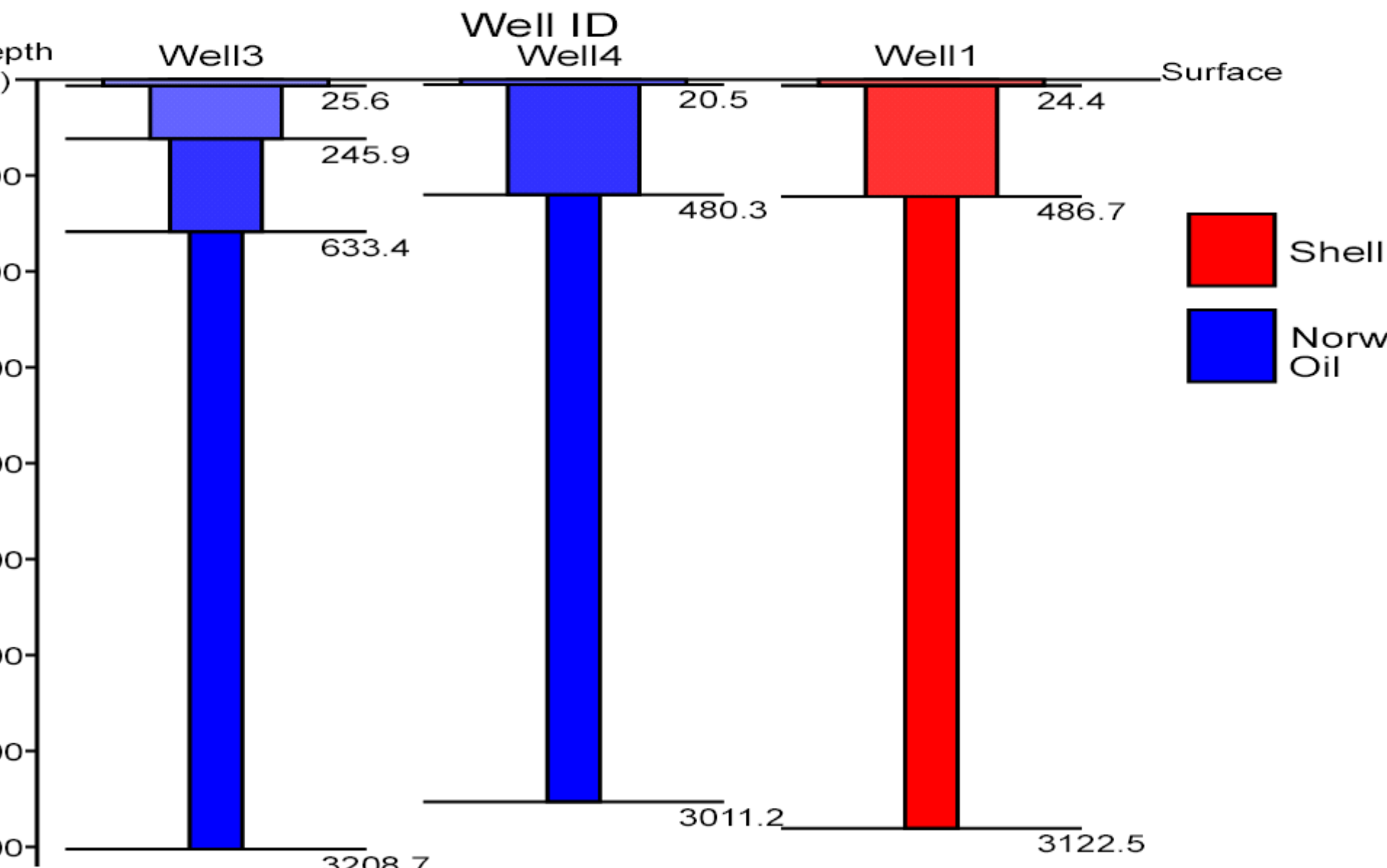
General Discussion -> Plans

- Priorities – Acorns – Value
  - Joint Venture Partner Data Sharing
  - Regulatory Obligations
  - Others
- Industry Standards / Vocabulary
- Registries – management cost
- Entitlement, Authentication, Trust
- Some "pull" data sharing already exists – motivation to upgrade / standardize

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Plans: Next Steps

- **Develop Implementation Pilots**

- **POSC Web Reference Services**
  - ◆ **Practical Well Log Standards**
    - ★ **Web Application enabled for Web Services**
  - ◆ **Add More Reference Data Standards**
  - ◆ **…**

Conclusion

- For this industry, can Web Services …
  1. Cut partner connection establishment costs?
  2. Lead to new supply/service channels?
  3. Usefully advertise in a WS registry?
  4. Build up exchanged in intelligent, higher-level services?

- Yes, to all …
  1. Through standards base and market choice.
  2. Next generation ASP's.
  3. The industry is always data hungry and can benefit from algorithmic services, too.
  4. JV Partner Sharing, Regulatory, others.

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