IT Futures Briefing
Presenter: Yogi Schulz

IT Responses to Energy Trends

nexen

IT Responses to Energy Business Trends

29 March 2005

Copyright © 2005 Corvelle Management Consultants

Corvelle
Management Consultants

Yogi Schulz Biography

IT Responses to Energy Trends

- President of Corvelle Management Consultants
- Information technology related management consulting
- Project management and systems development
- Computing Canada & Calgary Herald columnist
- PPDM Association board member
- Industry presenter:
  - Project World - 4 years
  - CIPS Informatics - 7 years
  - PMI - Information Systems SIG
  - Convergence - 4 years
  - PPDM Association - several years

Presentation Outline

IT Responses to Energy Trends

- Presentation Objectives
- Energy Business Trends
- IT Responses
- Conclusions
- Recommendations
- Questions & Answers

Corvelle

Presentation Objectives

Trends

- Recognize the trends that are influencing the energy business
- Appreciate the business pressures that the Nexen business units are responding to
- Consider IT responses to the business trends

Presentation intended to spark an idea you can explore with your co-workers

Corvelle

Energy Business Trends

IT Responses to Energy Trends

- Asset Mix/Optimization
- Shareholder Return
- Oil & Natural Gas Price
- Technology
- Workforce Demographics
- Globalization
- Environment

Corvelle

Cross-Trend IT Responses

Energy Trends

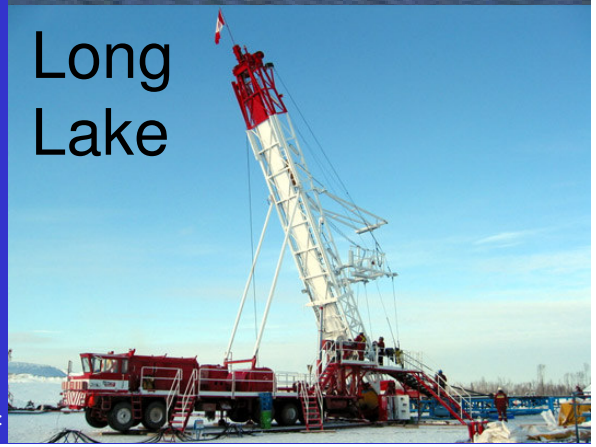
- Operate a high-availability computing environment
- Operate rich application functionality
- Lead the way to high data quality
- Offer superior client support services
- Promote the value of IT in the business planning process
- Lead the systems delivery process with proven methods

Corvelle

Asset Mix/Optimization

IT Responses to Energy Trends

- **Trend Description:**
  - Depletion of onshore & conventional reserves
  - Convergence with utilities
  - NOC ownership of reserves
- **Business Responses:**
  - Focus on deep water/emerging basins
  - Shift to unconventional reserves
  - Growth through merger
  - Non-core asset divestiture
  - Benchmarking
  - Formal risk management



Corvelle

File:

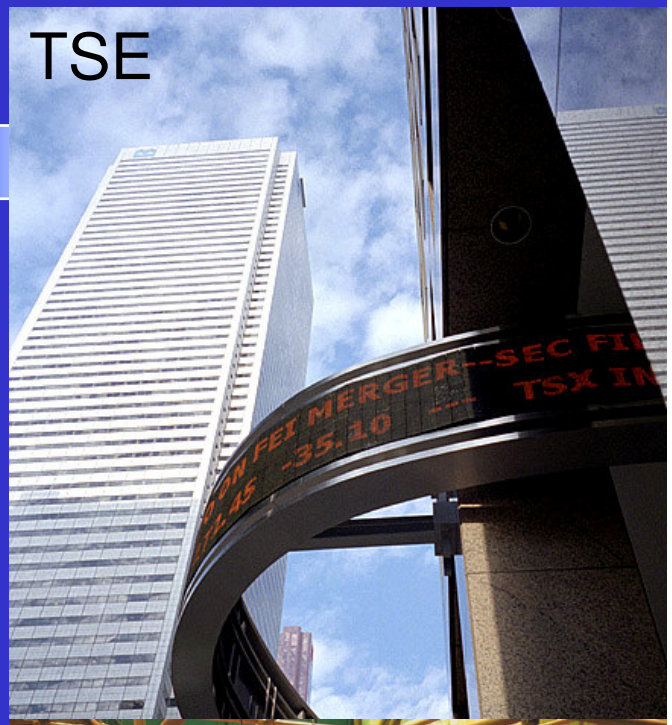
Asset Mix Optimization

Business Response	IT Response
Deep water basins	Remote operations
Unconventional reserves	Engineering application portfolio
Growth through merger	Faster, cheaper merger integration
Non-core asset divestiture	Assembling data for a data room
Benchmarking	Balanced score card
Formal risk management	Risk management tools

Shareholder Return

IT Responses to Energy Trends

- **Trend Description:**
  - High performance expectations of capital market
  - Increasing focus on compliance
- **Business Responses:**
  - Increase returns to maintain access to capital markets
  - Reduce costs to improve net income
  - Reduce capital requirements to increase returns
  - Improve data gathering and reporting processes



Corvelle

Shareholder Return

Energy Trends

Business Response	IT Response
Increase returns	Key performance indicators
Reduce costs	CAPEX & OPEX reporting
Reduce capital requirements	Financial modeling
Data gathering/reporting	Financial & reserves reporting

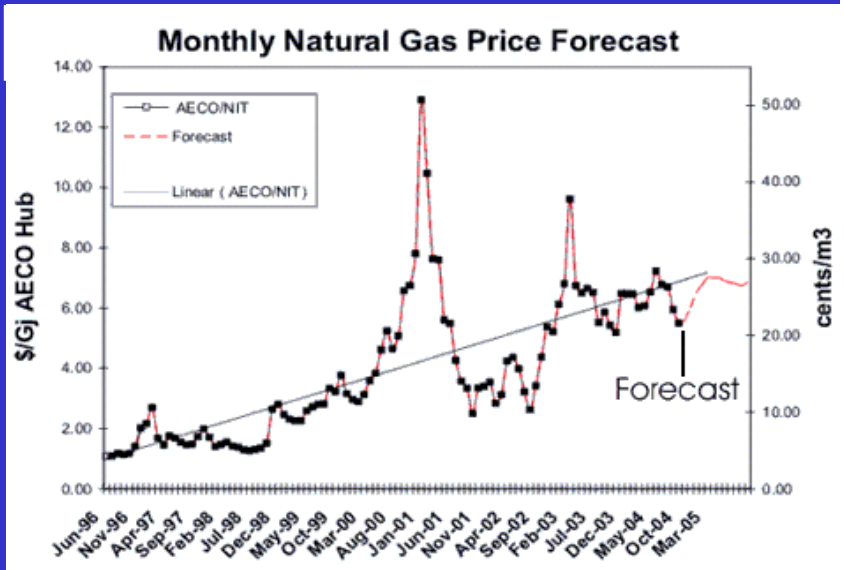
Corvelle

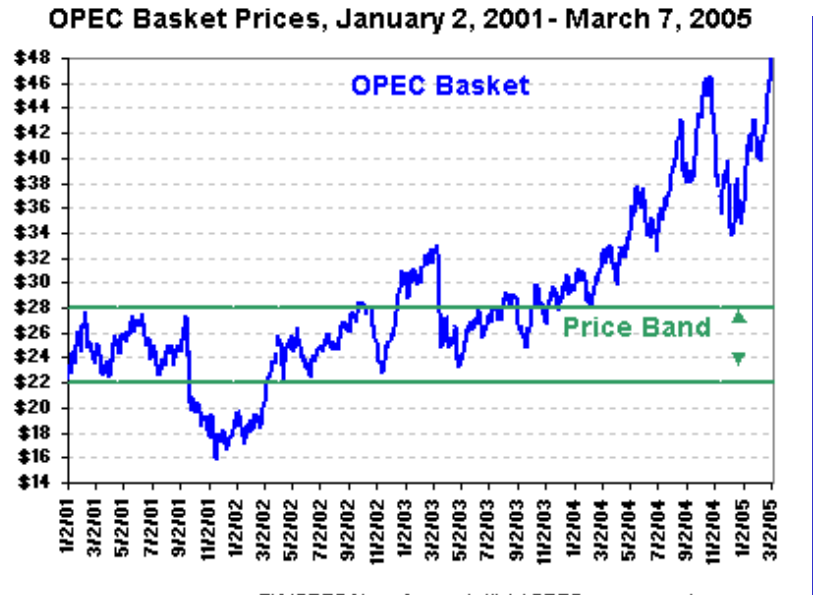
Oil & Natural Gas Price

IT Responses to Energy Trends

$6.00

- **Trend Description:** $13.00
  - Uncertainty/volatility
  - OPEC control $1.00
  - Increasing demand
- **Business Responses:** $50.00
  - Hedging $16.00
  - Trading risk management
  - Strategic plan review $25.00





Corvelle

Oil & Natural Gas Price

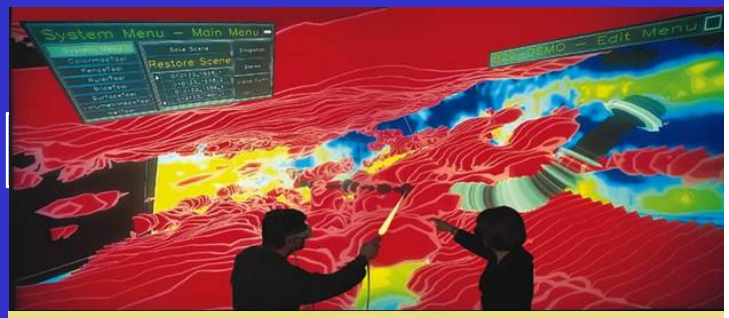
ses to Energy Trends

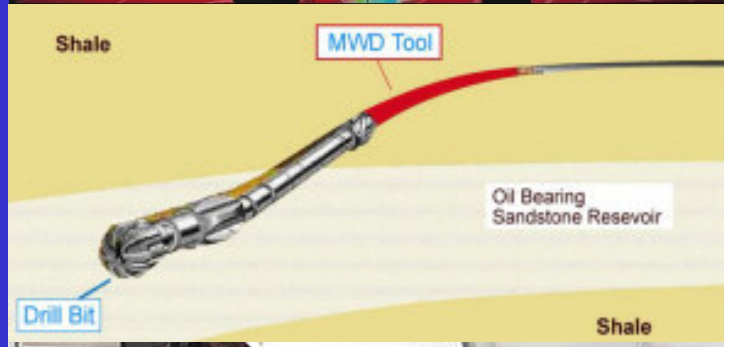
Business Response	IT Response
Hedging	Financial transaction management
Trading risk management	Risk and contract management
Strategic plan review	Acquisition/divestiture modeling

Technology

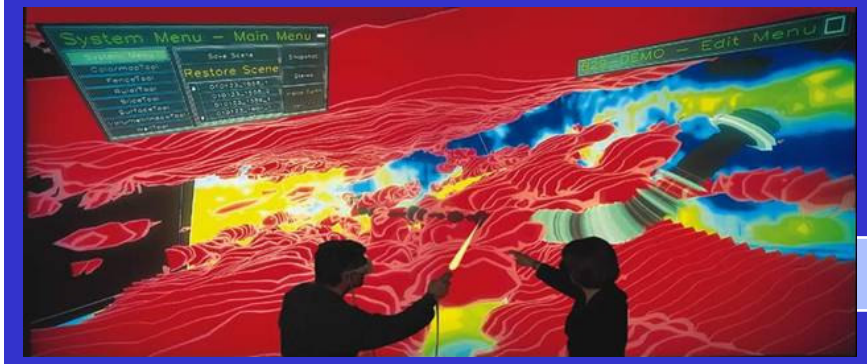
IT Responses to Energy Trends

- **Trend Description:**
  - Better materials, machining
  - Richer application software
- **Business Responses:**
  - Supply chain rationalization
  - Immersive visualization
  - Measurement While Drilling - MWD
  - Remote operations – Smart Oilfields
  - Deepwater production technology
  - Enhanced seismic interpretation





Corvelle



Technology

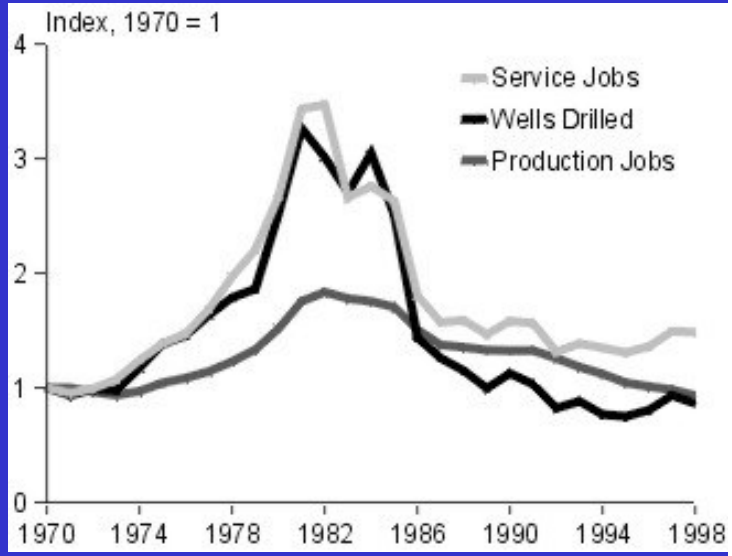
Business Response	IT Response
Supply chain rationalization	Procurement, materials management
Immersive visualization	3-D visualization, collaboration
Measurement while Drilling	Sub-surface modeling systems
Smart oilfields	Remote sensing, telecommunication
Deepwater production	Remote sensing and control
Seismic interpretation	Improved software

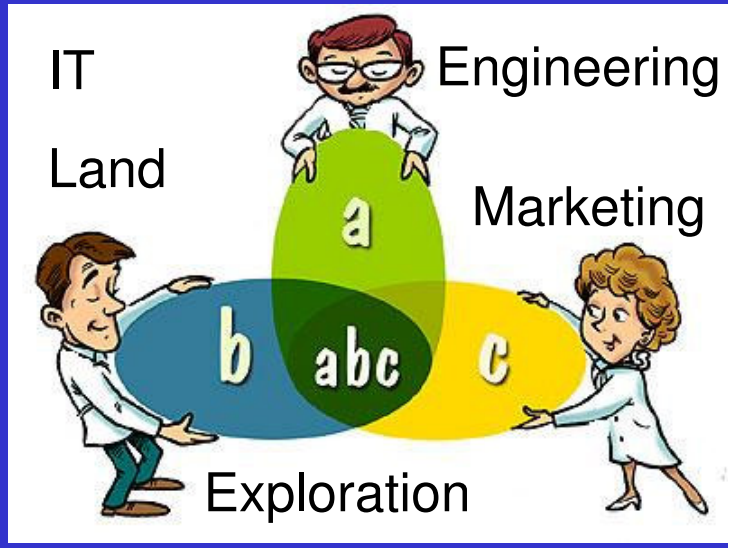
Workforce Demographics

IT Responses to Energy Trends

People → apply → Knowledge → to achieve → Business Goals

- **Trend Description:**
  - Aging workforce
  - Shrinking workforce
  - Changing demographics
- **Business Responses:**
  - Knowledge management
  - Outsourcing
  - Collaboration
  - New work arrangements
  - New relationships/alliances





Corvelle

Workforce Demographics

Energy Trends

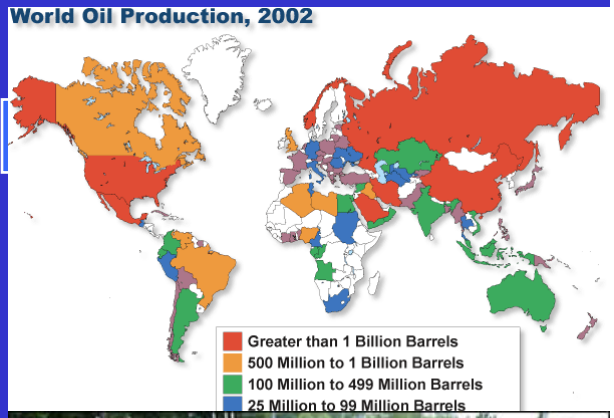
Business Response	IT Response
Knowledge management	Knowledge management, metadata
Outsourcing	Selective use of contractors
Collaboration	Collaboration facilities, tools
New work arrangements	Supporting computing infrastructure
New relationships/alliances	Buy capacity; not hardware

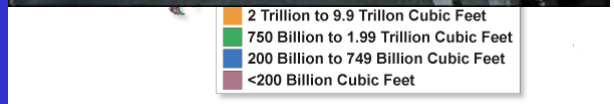
Corvelle

Globalization

IT Responses to Energy Trends

- **Trend Description:**
  - Asian development & expansion
  - Former Soviet Union development
  - Government activism
  - Corporate citizenship expectations
- **Business Responses:**
  - New ventures/alliances
  - Enhanced communication/lobbying
  - Greater cross cultural understanding
  - Multiple operation centers





Corvelle

Globalization

Energy Trends

Business Response	IT Response
New ventures/alliances	Wide area network, remote access
Communication/lobbying	Global connectivity
Cross cultural understanding	Multi-lingual applications, support
Multiple operation centers	Distributed operations

Environment

IT Responses to Energy Trends

- **Trend Description:**
  - Maritime law
  - Health, safety, environment expectations
  - Disposal of inactive fields & platforms
  - Increasing litigation
- **Business Responses:**
  - HSE attention/investment
  - Alternative fuels
  - Reduced footprint field operations
  - More communication/lobbying

Corvelle

Environment

Trends

Business Response	IT Response
HSE attention/investment	Incident tracking, e-learning
Alternative fuels	Simulation, modeling
Reduced footprint operations	Engineering design tools
Communication/lobbying	Web communication/design

Conclusions

- **Major energy trends are changing the business:**
  - Asset Mix/Optimization
  - Shareholder Return
  - Oil & Natural Gas Price
  - Technology
  - Workforce Demographics
  - Globalization
  - Environment

Information Technology is central to meeting the challenge

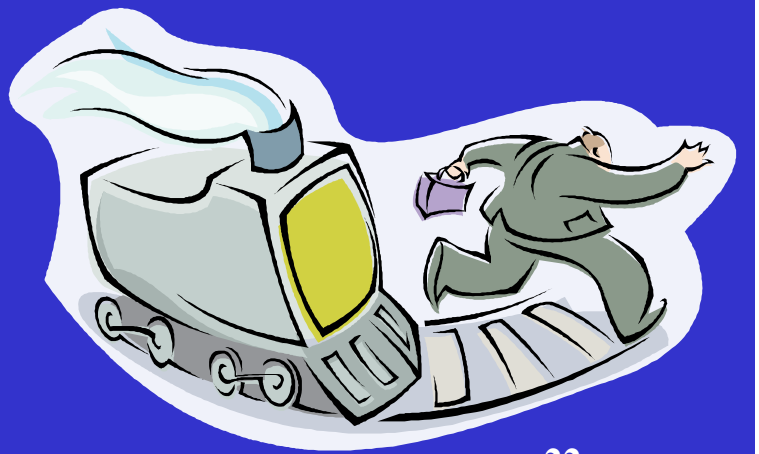
How ready for the challenges are you?

Corvelle

Recommendations

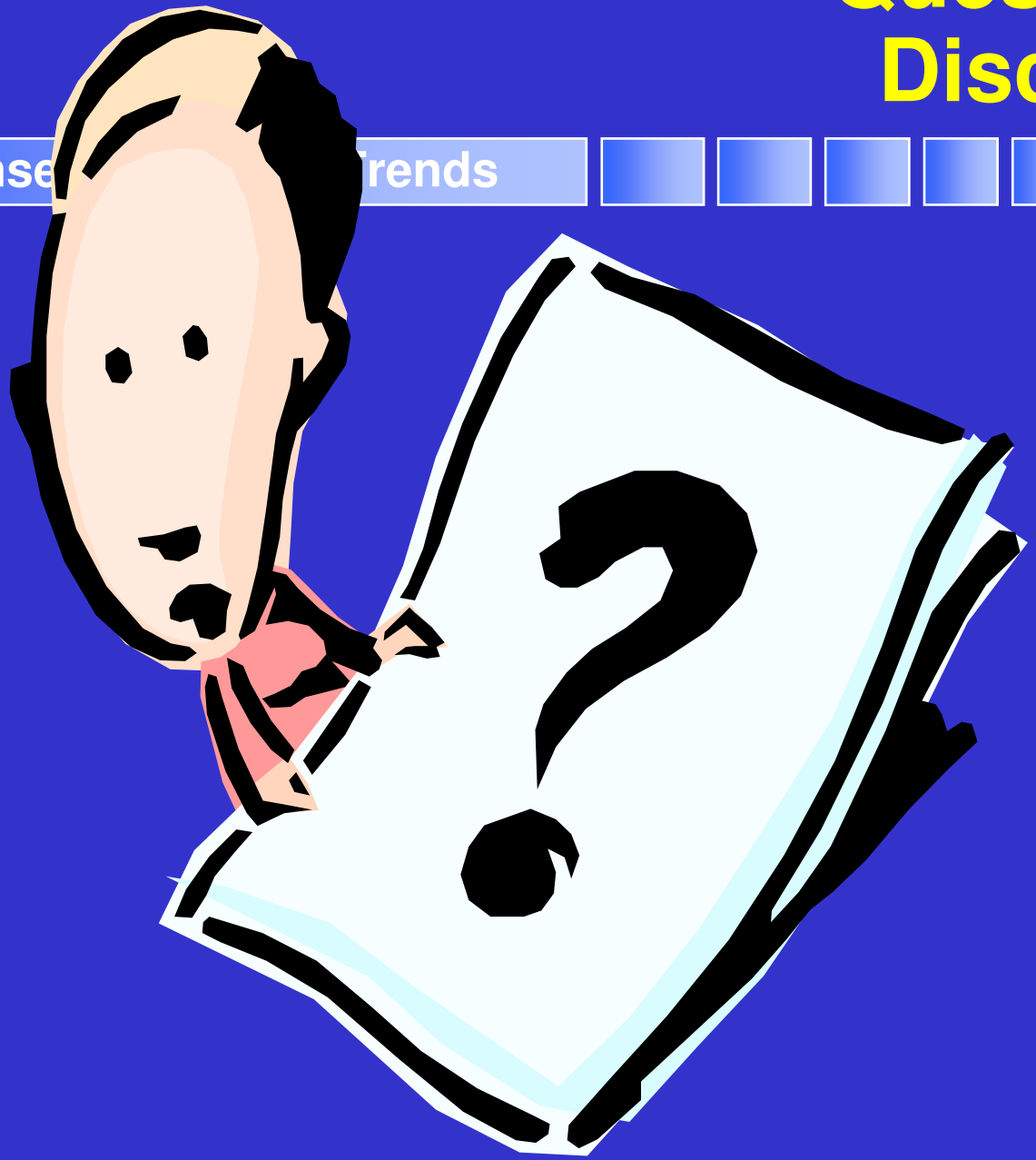
IT Responses to Energy Trends

- **Explore the energy business trends for ways that IT can enable the Nexen business units**
  - strengthen relationship with business units
- **Maintain awareness of leading IT practices employed by competitors and other industries**
- **Use IT as leverage to:**
  - Improve operational effectiveness
  - Improve compliance



Corvelle

Questions & Discussion



What's next?
Potential Future Topics

IT Responses to Energy Trends

- **Upstream Business Themes**
  - How much exploration & production software is enough?
  - Linking IT investments in exploration & production to business value.
- **Upstream Technology Themes**
  - What emerging technologies might have upstream applicability?
  - Windows vs. Linux vs. UNIX – Desktop and server
  - Convergence of voice, data, videoconferencing to IP
  - Document and content management trends
  - How much security is enough?
  - Identity management

Corvelle

IT Responses to Energy Business Trends

1800, 250 - 6th Ave. S.W.
Calgary, Alberta Canada T2P 3H7
Phone/Fax: (403) 249-5255
E-mail: YogiSchulz@corvelle.com
Web: www.corvelle.com

Information technology related management consulting

Project management and systems development

Computing Canada & Calgary Herald columnist

PPDM Association board member

Bibliography - 1

IT Responses to Energy Trends

- **Accsys Corp. – Knowledge Management**
  - www.accsys-corp.com/Who_Are_We/Knowledge_Management/knowledge_management.html
- **Alberta Energy - Business Plan 2003-06**
  - www.finance.gov.ab.ca/publications/budget/budget2003/energy.html
- **Can Oil Giants and Green Energy Mix?**
  - Business Week Oct 02, 2002
  - www.geni.org/globalenergy/library/media_coverage/business-week-online/can-oil-giants-and-green-energy-mix.shtml
- **Characteristics and Possible Impacts of a Restructured OCS Oil and Gas Industry in the Gulf of Mexico – MMS**
  - www.mms.gov/itd/abstracts/95-0055a.html
  - www.mms.gov/eppd/socecon/gom-issues.htm
- **The Competitive Challenges**
  - Kenneth T. Derr, Chairman of the Board and Chief Executive Officer, Chevron Corporation
  - San Francisco, California, September 6, 1996
  - www.chevrontexaco.com/news/archive/chevron_speech/1996/96-9-06.asp
- **Developing Human Resources for the Future Oil & Gas Industry**
  - www.slb.com/press/inside/print_article.cfm?ArticleID=194
- **The Digital future of Oil and Gas in a Life Cycle Perspective**
  - www.teknologiforlaget.no/ files/digital_future_-_dnv_software.pdf

Bibliography - 2

IT Responses to Energy Trends

- **Editors on the Future of Energy - Online Forum: Sept. 21, 2004**
  - msnbc.msn.com/id/6064719/site/newsweek/
- **Eight Wrong Ways To Think About The Future Of Energy**
  - By: Nikiforuk, Andrew, Canadian Business, 00083100, 1/17/2005, Vol. 78, Issue 2
- **Employment Trends in Oil & Gas Extraction**
  - www.eia.doe.gov/oiaf/issues/oil_gas.html
- **The Environment for Future Business - Efficiency will win**
  - Jesse H. Ausubel
  - phe.rockefeller.edu/future_business/
- **Environmental Trends**
  - www.dpi.qld.gov.au/extra/pdf/business/1envrn.pdf
- **Expect a hot polluted future, says EU forecast**
  - By: Pearce, Fred, New Scientist; 5/24/2003, Vol. 178 Issue 2396, p8, 3/4p, 1c
- **ExxonMobil Investment Approach**
  - www.exxonmobil.com/corporate/Newsroom/Publications/eTrendsSite/chapter2.asp
- **ExxonMobil Releases Study on Energy Trends, Greenhouse Gas Emissions and Alternative Energy**
  - www.scandoil.com/moxie/news/company_news/exxonmobil-releases-study.shtml
  - www.peakoil.net/Publications/20040201ExxonMobil.pdf

Corvelle

Bibliography - 3

IT Responses to Energy Trends

- **Future Natural Gas Supplies & the Ultra-Deepwater Gulf of Mexico**
  - 12 March 2003
  - www.energypulse.net/centers/article/article_display.cfm?a_id=232
- **The Future of the Energy Industry**
  - www.globalchange.com/ppt2/energyforum5/
  - www.globalchange.com/ppt/exxonmobil3/
- **Future roles of business in society: the expanding boundaries of corporate responsibility and a compelling case for partnership**
  - www.wbcsd.ch/plugins/DocSearch/details.asp?type=DocDet&ObjectId=MTMzNjY
- **Future of the Oil & Gas industry: Past Approaches, New Challenges**
  - Harry J. Longwell, Director and Executive Vice President, ExxonMobil Corporation
  - www.worldenergysource.com/articles/pdf/longwell_WE_v5n3.pdf
- **Gas Demand & Supply Overview: Getting Past The Near Term Difficulties**
  - www.seniorscientist.org/SSEPres1/
- **Hubbert Peak of Oil Production**
  - www.hubbertpeak.com

Bibliography - 4

IT Responses to Energy Trends

- **Information Technology in the Oil and Gas Industry in Latin America**
  - By Jorge Grinpelc and Richard Siegfried, PricewaterhouseCoopers, SOACAT
  - www.pwcglobal.com/gx/eng/about/ind/energy/itog.pdf
- **IT trends putting oil companies on the road to maximized values**
  - April 11, 2003, Pradeep Anand
  - houston.bizjournals.com/houston/stories/2003/04/14/focus4.html
- **Large offshore platform packs up**
  - http://www.cowi.dk/news/UK/2003/Oktober2003/Stor_produktionsplatform_skal_skrottes_uk.asp?COWIframe=OK
- **Long Lake bitumen project**
  - www.longlake.ca/default.asp
- **Looking at Our Energy Future**
  - by Russell Felton
  - www.imperialoil.ca/Canada-English/thisis/publications/2004Q1/pages/energyFuture.html

Corvelle

Bibliography - 5

IT Responses to Energy Trends

- **Managing Risk in an Uncertain World**
  - www.globalchange.com/ppt/risk/
- **New Old Econmy Challenges Scarcity Assumption**
  - www.futurist.com/futuristnews/archive/archive__new_old_economy.htm
- **The Oil Sands Story**
  - www.oilsandsdiscovery.com
- **Oil & Gas Forecast: This Year and Through 2025**
  - By Katrina C. Arabe
  - news.thomasnet.com/IMT/archives/2004/06/oil_gas_forecas.html
- **Oil And Gas Industry - Strategies For Profitable Growth – SAP**
  - www.sap.com/industries/oil-gas/pdf/BWP_Strategies_Growth_Oil_Gas.pdf
- **Oil & gas photo gallery**
  - www.canadian-wellsite.com/ Gallery/gallery.htm
- **The Oil Patch gets Slippery**
  - BusinessWeek, 28 February 2005, p. 52
- **Oil Price History and Analysis**
  - www.wtrg.com/prices.htm

Bibliography - 6

IT Responses to Energy Trends

- **Peak Oil: an Outlook on Crude Oil Depletion**
  - By C.J.Campbell - Revised February 2002
  - www.mbendi.co.za/indy/oilg/p0070.htm
- **Petroleum Industry Perspective briefing - IHS Energy**
- **Risky business - trends and issues in the geophysical business**
  - Mark Klingbeil - Vigorex Consulting Ltd.
  - www.cseg.ca/conferences/2002/2002abstracts/Klingbeil_M_Risky_Business_BUS-1.pdf
- **The slumbering giants awake - Energy companies will never be the same again**
  - Feb 8th 2001 - The Economist
  - www.economist.com/surveys/displayStory.cfm?Story_id=497418
- **Statement On New World Trends And The Future Of Oil & Energy**
  - www.hazelhenderson.com/recentPapers/finalVancouverStatement.html

Bibliography - 7

IT Responses to Energy Trends

- **Trends Driving Advancements In High-Performance Computing, Visualization**
  - www.sgi.com/pdfs/3303.pdf
- **UKOOA - Meeting the Challenge - Investment Intentions**
  - www.ukooa.co.uk/issues/economic/econ01/econ01_challenge.htm
- **Visualizing the Future: The Upstream Industry Unleashed by Technology**
  - September 2004 - CSEG RECORDER
  - www-1.ibm.com/industries/cpe/download0/22030/chemical_visualizing.pdf
  - www-1.ibm.com/industries/cpe/download8/19589/chem_petro_emerg_technol_1.pdf
- **You can't tell the players without a scorecard**
  - By: Ryser, Jeffrey; Mullen, Theo, Platts Energy Business & Technology, 1540367X, Sep2003, Vol. 5, Issue 7

Corvelle

Information Technology is Enabling Technology

IT Responses to Energy Trends

what does the business want?

- High availability computing infrastructure
- Rich application portfolio
- High quality data
- Superior support services
- Low cost

Corvelle

IT Alignment with the Business
Poor Alignment

IT Responses to Energy Trends

Descriptions	Consequences
❒ "I can't login"	❒ Unhappy customers
❒ "My PC crashes"	❒ Severe, even ridiculous, cost pressure
❒ "The applications I need aren't available"	❒ Little or no investment
❒ "The data I need is poor"	❒ Inappropriate/excessive outsourcing
❒ "IT never gets it right"	

Corvelle

IT Alignment with the Business Good Alignment

IT Responses to Energy Trends

Descriptions

- "Computing is available when I need it"
- "I can access the applications I need"
- "IT is helping me to improve my data"
- "I understand my role in the systems delivery process"

Consequences

- Happy customers
- Reasonable cost expectations
- Willingness to make investments
- Little outsourcing

Good IT Alignment is difficult to maintain

Corvelle

Current Research Areas of ExxonMobil

IT Responses to Energy Trends

- **Proprietary technologies that have the potential to deliver breakthrough capabilities in direct hydrocarbon detection**
  - technology could significantly improve the chance of success in finding new resources prior to drilling
- **Liquefied natural gas (LNG) and other gas-commercialization technology to improve the efficiency of liquefaction, transportation and regasification**
  - to help satisfy the world's increasing gas needs at affordable economic levels
- **Research on hydrogen production**
  - for use in fuel cells with strategic partners for potential new power systems in automobiles
- **More-efficient, cleaner-burning internal combustion engines and engine systems**
  - Lower exhaust pollution quantities
- **Advanced lubricant formulations to meet stringent emission standards**
  - Lower exhaust pollution quantities
- **$100 million in groundbreaking research at Stanford University's Global Climate and Energy Project (GCEP)**
  - address future energy needs with approaches that lead to lower greenhouse gas emissions

Corvelle

Extra Graphics